

NATIONAL VOLUNTARY CONSENSUS STANDARDS FOR PERINATAL CARE - 2008

BACKGROUND

Pregnancy and childbirth is the second most common reason for hospital admission. In 2005, 4.2 million childbirth-related hospital stays were recorded, during which pregnancy and childbirth-related procedures accounted for the five most common procedures in patients aged 18-44, and birth-related procedures were the most common procedures in infants.¹ Given the sizeable volume of maternity admissions, deficiencies in perinatal care can affect a large population of vulnerable patients. Morbidity and mortality associated with pregnancy and childbirth is substantial and, evidence suggests, is largely preventable through the delivery of high quality perinatal care and adherence to evidence-based guidelines. Poor quality care during the third trimester, labor and delivery, and in the postpartum period can translate into unnecessary complications, prolonged lengths of stay, costly NICU admissions, and anxiety and suffering for patients and families. Moreover, numerous studies have documented persistent racial, ethnic, and socioeconomic disparities in maternal mortality, preterm births, low birthweight infants, and other adverse outcomes.^{2,3,4}

In 2003, NQF took the first step in standardizing measures for public reporting of hospital performance in obstetrical and newborn care with the endorsement of 5 voluntary consensus standards for perinatal care and services. An additional 4 consensus standards addressing aspects of prenatal care typically received in the ambulatory setting during first trimester of pregnancy were endorsed in 2006. Despite these efforts, however, as quality measurement and reporting efforts to date have primarily focused on medical conditions such as acute coronary syndrome, pneumonia, and surgical performance, the focus on maternal-child care has been limited and considerable gaps in the information available on the quality of perinatal care still exist.

In September 2007, at the request of the Hospital Corporation of America, NQF launched a new effort to address this information gap by seeking national voluntary consensus on a set of performance measures to assess the quality of perinatal services received during the last trimester of pregnancy through hospital discharge for both mother and newborn.

STRATEGIC DIRECTIONS FOR NQF

As NQF nears completion of its first decade, consideration of strategic issues to guide current and future activities has resulted in an expansion of NQF's mission to include three parts: 1) establishing priorities and goals for performance improvement; 2) endorsing performance measures; and 3) education and outreach. As greater numbers 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. An updated Measurement Framework, reviewed by NQF Members in December 2007, promotes shared accountability and measurement across episodes of care with a focus on outcomes, appropriateness, and cost/resource use measures, coupled with quality measures.

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

Driving toward high performance. Stakeholders have expressed concern with multiple process measures that are too far removed from the outcome of interest. These measures ultimately drive attention towards a single accountable entity rather than placing the focus on much-needed system-level improvement.

Emphasis on composite measures. Composite measures are more meaningful and comprehensible to patients and consumers.

Moving towards outcomes measurement. Stakeholders have indicated that outcomes measures provide the most useful and actionable information - particularly for the purposes of consumer and purchaser decision-making.

Consider disparities in all that we do. There is a strong interest in routine data collection of race, ethnicity, and language to allow for stratification of disparities-sensitive quality measures.

EVALUATING POTENTIAL PERINATAL CONSENSUS STANDARDS

Candidate standards were solicited through an "Open Call for Measures" in November 2007 and were actively sought by NQF staff via literature reviews and a search of the National Quality Measures Clearinghouse. In addition, as a part of NQF's ongoing measure maintenance process,

the 5 measures endorsed in 2003 were reconsidered alongside newly submitted candidate standards. A total of 33 measures were ultimately identified and evaluated by the Perinatal Care Steering Committee for appropriateness as voluntary consensus standards for accountability and public reporting. The Steering Committee evaluated the candidate standards using the standardized criteria derived from the work of the NQF Strategic Framework Board and endorsed by NQF:^{a,b}

1. *Importance* - the extent to which a measure reflects a variation in quality, low levels of overall performance, and the extent to which it captures key aspects of the flow of care.
2. *Scientifically acceptable* - the extent to which the measure is evidence-based and will produce consistent and credible results when implemented.
3. *Usable* - the extent to which intended audiences (e.g., consumers, purchasers) can understand the results of the measure and are likely to find them useful for decision making.
4. *Feasible* - the extent to which data can be obtained within the normal flow of clinical care and the extent to which an implementation plan can be achieved.

Additionally the Steering Committee was asked to consider the three strategic issues during their deliberations:

Driving toward high performance

- Consider whether measures address *important* areas where improvement will significantly impact health.
- Approve only those process measures associated with improved intermediate and long-term patient outcomes.
- Approve only measures that assess whether the indicated action was performed.
- Emphasize harmonization across measures.

Emphasis on Composite Measures

- Consider all measures as either stand-alone or measures only within a composite.

^a "The Strategic Framework Board's Design for a National Quality Measurement and Reporting System." *Medical Care*. 2003;41(1)suppl:I-1 – I-89.

- Consider whether submitted measures should be combined into a composite measure.
- Make recommendations for future composite measures to developers.

Moving towards outcomes measurement

- Suggest outcome measures and measures of patient engagement (e.g., shared decision-making) that should be submitted to NQF.
- Approve only those process measures associated with improved intermediate and long-term patient outcomes.

Disparities

- Consider whether measures would be appropriate as a “disparities-sensitive” measure.
- Suggest additional measures that should be considered to assess quality and disparities for at-risk populations.

NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR PERINATAL CARE

This report presents 18 performance measures for perinatal care for 2008 (Table 1).^c The purpose of these consensus standards is to improve the quality of healthcare – via accountability and public reporting – by standardizing quality measurement in all relevant care settings. All NQF-endorsed measures are fully disclosed and available for use by any interested parties.^d The perinatal consensus standards are intended for use at all levels of analysis, including individual practitioners (e.g., physicians and midwives), small and large groups, hospitals, and freestanding birthing centers.

^b National Quality Forum. *A National Framework for Healthcare Quality Measurement and Reporting*. Washington, DC: National Quality Forum; 2002.

^c This report recommends that 4 previously endorsed perinatal consensus standards be retired from use.

^d On January 29, 2003, the NQF Board of Directors adopted a policy that NQF will endorse only fully open source measures. Open source is defined by NQF as being “fully disclosed” (i.e., data elements, measure algorithm, if applicable, and risk adjustment methods/data elements/algorithms are fully described and disclosed; if calculation requires database-dependent coefficients that change frequently, the existence of such coefficients shall be disclosed and the general frequency with which it changes shall be disclosed, but the precise numerical value need not be disclosed.)

TABLE 2: NATIONAL VOLUNTARY CONSENSUS STANDARDS FOR PERINATAL CARE

**Recommended for time-limited endorsement

Measure Number and Title	Measure Description	IP Owner ^e
**PN-007-07^f Elective Delivery Prior to 39 Completed Weeks Gestation	All singletons delivered at term (> or equal to 37 completed weeks gestation) that are electively delivered prior to 39 completed weeks gestation.	HCA – St. Marks Perinatal Center
**PN-013-07 Incidence of Episiotomy	Number of vaginal deliveries with episiotomy procedures performed.	Christiana Care Health Services/NPIC
PN-010-07 Cesarean Rate for Low-Risk First Birth Women	Proportion of livebirths born at or beyond 37.0 weeks gestation to women having their first delivery, that are singleton (no twins or beyond) and vertex presentation (no breech or transverse positions) that had a cesarean birth.	California Maternal Quality Care Collaborative
PN-011-07 Prophylactic Antibiotic in C-Section	All women undergoing cesarean section without evidence of prior infection or already receiving prophylactic antibiotics for other reasons who received prophylactic antibiotics within one hour prior to surgical incision or at the time of delivery.	Massachusetts General Hospital
**PN-006-07 Appropriate DVT Prophylaxis in Women Undergoing Cesarean Delivery	Women undergoing cesarean delivery who receive either fractionated or unfractionated heparin or pneumatic compression devices prior to surgery.	HCA – St. Marks Perinatal Center
PN-002/019-07 Birth Trauma Rate measures (harmonized)	Number of infants with specific birth traumas.	AHRQ/NPIC
PN-001-07 Hepatitis B Vaccine Administration to All Newborns Prior to Discharge	Number of live newborns discharged from the hospital who were administered hepatitis B vaccine.	CDC
PN-016-07 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) who received antenatal steroids at any time prior to delivery.	Providence St. Vincent's Hospital/CWISH
PN022-07 Infants Under 1500g	The number per 1,000 livebirths weighing less than 1500g delivered at hospitals not appropriate for that size infant.	California Maternal Quality

^e Intellectual property owner and copyright holder. ALL RIGHTS RESERVED. For the most current specifications and supporting information, please refer to the IP owner:

- AHRQ – Agency for Healthcare and Research Quality (www.ahrq.gov)
- Asian Liver Center at Stanford (<http://liver.stanford.edu>)
- 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. (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)

^f Candidate standard numbers assigned by NQF during the consensus process.

Measure Number and Title	Measure Description	IP Owner ^e
Delivered at Appropriate Site		Care Collaborative
**PN-003-07 Nosocomial Blood Stream Infections in Neonates	Selected bacterial blood stream infections per 1000 qualifying neonates.	AHRQ
**PN-025-07 Birth Dose of Hepatitis B Vaccine and Hepatitis Immune Globulin for Newborns of Mothers with Chronic Hepatitis B	Percentage of neonates born to hepatitis B surface antigen-positive mothers who receive a birth dose of hepatitis B virus vaccine and hepatitis B immune globulin.	Asian Liver Center at Stanford University
PN-014-07 Newborn Bilirubin Screening Prior to Discharge	Percentage of normal newborns greater than or equal to 35 weeks of gestation who have a serum or transcutaneous bilirubin obtained prior to discharge to identify risk of hyperbilirubinemia according to the Bhutani Nomogram.	Providence Health and Services/NPIC
PN-021-07 Exclusive Breastfeeding at Hospital Discharge	Livebirths not discharged from the NICU who were fed by "breast only" since birth.	California Maternal Quality Care Collaborative
PN-029-07a First Temperature Within One Hour of Admission to NICU	Proportion of infants with weights between 501-1500g whose first temperature was measured within one hour of admission to the NICU.	Vermont Oxford Network
PN-029-07b First NICU Temperature < 36°C	Proportion of infants with weights between 501-1500g whose first temperature was taken within one hour of admission to NICU whose first temperature was < 36°C	Vermont Oxford Network
PN-030-07 Retinopathy of Prematurity Screening	Number of infants born at 22 to 29 weeks gestation who were screened for retinopathy of prematurity.	Vermont Oxford Network
PN-031-07 Timely Surfactant Administration to Premature Neonates	Number of infants born at 22 to 29 weeks gestation who were treated with surfactant at any time who received the surfactant within 2 hours of birth.	Vermont Oxford Network
PN-032-07 Neonatal Immunization	Neonates with a length of stay greater than 60 days who receive DPT, Hepatitis B, Polio, Hib, and PCV vaccines according to current AAP guidelines.	Child Health Corporation of America

RECOMMENDED MEASURES

PN-007-07 Elective Delivery Prior to 39 Completed Weeks Gestation (HCA/St. Marks Perinatal Center)

Guidelines from the American College of Obstetricians and Gynecologists (ACOG) restrict elective delivery (i.e., deliveries without maternal or fetal indication for delivery before the onset of spontaneous labor) prior to 39 completed weeks of gestation. The measure developers presented unpublished data from a recent analysis of 17,000 births in 24 hospitals over a period of three months. The results identified that 31% of deliveries were elective, and among those, 37% were performed at less than 39 weeks. Of infants delivered at 37 weeks, almost 20%

required more than routine newborn care in a higher level nursery; 8% of those delivered at 38 weeks and only 5% of those delivered at 39 weeks needed additional care.

The Steering Committee unanimously agreed that this measure addresses an important and very actionable aspect of perinatal care and that morbidity associated with unnecessary prematurity can be significantly diminished with proper adherence to existing guidelines. The Steering Committee clarified that the measure is applicable only to singletons, as there is a considerable amount of data demonstrating an increase in stillbirth deliveries after 38 weeks with twins that in fact justifies elective induction in such pregnancies. The Committee acknowledged that patient and provider education would be both important and necessary to overcome existing misconceptions that elective early delivery is generally without risk, and was in agreement that this measure will help further that goal. The Committee thus voted unanimously in favor of a 2-year time-limited endorsement, and requested that the developer perform a code review to further identify and analyze what maternal groups have the highest rates of elective inductions and cesarean sections prior to 39 weeks. The developer has agreed to this request.

PN-013-07 Incidence of Episiotomy (Christiana Care Health Service/NPIC)

Episiotomy during vaginal birth has been quite commonplace. Vital statistics in 2000 reported that 33% of U.S. women giving birth vaginally had an episiotomy. However, after a review of the literature, a 2006 ACOG Practice Bulletin on episiotomy states that “the best available data do not support liberal or routine use of episiotomy.”⁵ Additionally, studies of midline episiotomy use have demonstrated increased risk of severe perineal tears, including 3rd and 4th degree lacerations,^{6,7} with an associated increased risk of perineal pain,⁸ sexual dysfunction,⁹ and anal incontinence.¹⁰

The Steering Committee agreed that morbidity associated with this procedure could be significantly diminished with proper adherence to existing guidelines, and that measuring episiotomy rates would draw much needed attention to this actionable aspect of maternal care. Committee members agreed that the measure will be useful at both the clinician and facility levels, and concurred with the developer's opinion that episiotomy rate would

provide a more accurate reflection of quality than the presently-endorsed "3rd and 4th Degree Laceration" measure. While the Steering Committee acknowledged that what constitutes an "ideal" episiotomy rate is not known, and that rates for this measure will not and should never be zero, it agreed that the data generated from this measure will nevertheless be very useful for comparison between facilities. The Committee thus voted unanimously in favor of a 2-year time-limited endorsement during which measure testing can be completed. Of note, the measure developer explained that ICD-9-CM coding practices do not currently allow for distinction between tears resulting from episiotomies and those occurring spontaneously. The developer has initiated efforts with the Expert Committee of Coders to rectify this situation.⁸

PN-010-07 Cesarean Rate for Low-Risk First Birth Women (California Maternal Quality Care Collaborative)

The California Maternal Quality Care Collaborative uses this measure, "Cesarean Rate for Low-Risk First Birth Women" (a.k.a. NTSV [nulliparous, term, singleton, vertex] Cesarean Rate), to focus attention on the maternal population most affected by elective medical practices such as induction and early labor admission – the nulliparous mother. The variation in cesarean rates in this population is striking - states,¹¹ hospitals within a state,^{12,13} and physicians within a hospital¹⁴ have rates that vary by 3-5 fold. And while some hospitals now have cesarean rates exceeding 50%, evidence indicates that facilities with rates as low as 15-20% have equivalent infant and better maternal outcomes.¹⁵ Several studies have in fact linked higher cesarean rates to worse neonatal outcomes.^{15,16,17} Main et al¹⁸ found that over 60% of the variation among hospitals can be attributed to first birth labor induction rates and first birth early labor admission rates. In addition, many authors have demonstrated that physician factors, rather than patient characteristics or obstetric diagnoses, are the major driver for the differences in rates within a hospital.^{19,20} A "Listening to Mothers" survey by Childbirth Connection found that 25% of C-section patients felt pressured to have the surgery.

The Steering Committee noted that while there are no existing guidelines on what is an "appropriate" C-section rate, it agreed that the current degree of provider variation in this aspect

⁸ According to the measure developer, the Expert Committee of Coders were supportive of a change in the

of care is nevertheless unfounded. Moreover, the Committee noted that the impact of cesarean delivery on the first-time mother is substantial, as subsequent deliveries will likely be surgical as well. The Committee appreciated that the measure has proven usable and has been associated with decreased cesarean rates where implemented, and ultimately recommended that the measure advance for further endorsement consideration. As an age-associated linear increase in cesarean rates has been noted, the Steering Committee also recommends that reported results be stratified by maternal age.

PN-011-07 Prophylactic Antibiotic in C-Section (Massachusetts General Hospital)

This is a measure of providers' adherence to the Infectious Disease Society of America (IDSA) and ACOG guidelines for prophylactic antibiotic administration for cesarean deliveries. The developer cites that cesarean section is the most important risk factor for infectious complications of delivery, and the administration of prophylactic antibiotics is a well-established quality and safety practice. ACOG recommends this practice for all cesarean deliveries, regardless of patients' risk factors for infection.^{21,22} The Steering Committee agreed that the measure addresses an important and highly actionable perinatal health issue for which there is considerable provider variation and substantial room for improvement. Moreover, the measure is complementary to the NQF-endorsed™ SCIP “Prophylactic Antibiotics in Surgery” measure, from which C-section patients are excluded. The Steering Committee unanimously recommended this measure for endorsement.

PN-006-07 Appropriate DVT Prophylaxis in Women Undergoing Cesarean Delivery (Hospital Corporation of America [HCA]/ St. Marks)

This standard measures adherence to ACOG and American College of Chest Physicians (ACCP) guidelines for deep venous thrombosis (DVT) prophylaxis for patients with various risk factors.^{23,24} Surgery lasting greater than 30-45 minutes and pregnancy are listed as risk factors that, if present together, require DVT prophylaxis - even if no other predisposing factors (e.g., obesity) are present. While not all C-sections last longer than 45 minutes, the Steering Committee noted that it is impossible to reliably predict the duration of surgery and therefore agreed that all women undergoing cesarean deliveries should receive prophylaxis. The

codes, though a final decision will not be made until June 2008 and would go into effect in October 2008.

Committee thus voted unanimously in favor of 2-year time-limited endorsement, during which measure reliability and validity testing can be completed. Accepted prophylactic regimens include fractionated, unfractionated, or low-molecular weight (LMW) heparin or pneumatic compression devices.²⁴

Notably, the Committee also considered an outcome measure of maternal DVT/pulmonary embolism incidence (PN-018). While Committee members acknowledged NQF's strategic movement towards outcome measures, they agreed that the low incidence of this particular outcome [i.e., 0-1% incidence per year] would be of little use in comparing clinicians or facilities.

PN-002-07 Birth Trauma Rate (Agency for Healthcare Research and Quality [AHRQ] and National Perinatal Information Center [NPIC])

Two very similar outcome measures of birth trauma, both based on administrative data, were submitted by AHRQ and NPIC. The Steering Committee agreed that a measure of birth trauma provides valuable information and requested that the two organizations harmonize the differences in their measure specifications. The developers were agreeable and the measures were ultimately aligned. Notably, the majority of the Steering Committee recommended that the harmonized measure be advanced without the hierarchical risk adjustment originally utilized by the AHRQ measure. Some expressed concern that the lack of risk adjustment would place facilities that perform a disproportionate number of high-risk deliveries at a disadvantage; however, the Committee largely believed that even the most advanced risk models do not completely correct for patient population variations, and that most consumers will mistakenly assume that problems of data comparability have been completely corrected through the risk-adjustment process. Moreover, the Steering Committee noted that interpretation of results will be made even more complex, as the categories of birth trauma in these measures range from the relatively clinically insignificant (e.g., a superficial scalpel wound) to the devastating (e.g., splenic rupture). As such, the majority of the Committee agreed that reporting the "straight, unmanipulated" data would be more comprehensible and meaningful to consumers, and that performance variations resulting from disparate patient populations can be effectively explained when reported. As with all the measures recommended in this report, the Steering Committee urges

potential consumers of perinatal services to discuss the data with a trusted provider prior to making final decisions on where to receive care.

AHRQ has been queried as to whether it is agreeable with this recommendation, and its response is pending. If not, the Steering Committee recommends that the NPIC measure (PN-019) alone be advanced for further consideration. Conversely, if AHRQ agrees, the Committee recommends the measures advance as a single, harmonized standard for which AHRQ and NPIC would share stewardship.

PN-001-07 Hepatitis B Vaccine Administration to All Newborns Prior to Discharge (Center for Disease Control and Prevention [CDC])

Administration of a dose of hepatitis B vaccine to all newborns prior to hospital discharge is recommended by the Advisory Committee on Immunization Practices (ACIP), and this recommendation has been endorsed by the American Academy of Pediatrics (AAP), ACOG, and the American Academy of Family Physicians (AAFP). Despite this, however, the most recent CDC National Immunization Survey (NIS) revealed that only 48.8% of newborns in the U.S. received a birth dose of the vaccine, with a range of 14.2-82.7%, depending on the state.²⁵

While the Steering Committee supported the measure, the majority voiced concern that the lack of an exclusion for parental refusal is not reflective of current practices and would improperly fault facilities when pediatricians recommend to parents that the first vaccine dose be administered as an outpatient. Others argued that as current guidelines recommend that the first dose be administered at hospital discharge, endorsement of this measure "as is" would promote proper adherence to these recommendations. Ultimately, however, the Committee recommended the measure on the condition that the exclusion for parental refusal is incorporated into the measure, to which the developer agreed. The Committee acknowledged that this modification would increase burden as chart reviews will be required to identify the exclusion. As testing has not yet been performed, the recommendation is for time-limited endorsement.

PN-016-07 Appropriate Use of Antenatal Steroids (Providence St. Vincent's Hospital/ Council of Women and Infants Specialty Hospitals [CWISH])

In 1994, the National Institutes of Health recommended giving a single course of corticosteroids to all pregnant women between 24 and 34 weeks of gestation who are at risk of preterm delivery within 7 days to reduce the risks of prenatal mortality, respiratory distress syndrome, and other morbidities.^{26,27} While there was some debate within the Steering Committee on how best to define "preterm" (i.e., dates versus birthweight), the Committee largely appreciated that this measure is consistent with the definition contained in the current ACOG guidelines (i.e., 24-32 weeks with preterm premature rupture of membranes or 24-34 weeks with intact membranes). Despite requiring chart review, the Committee agreed that this measure effectively captures a larger portion of the at-risk population than would a weight-based measure, as larger preterm babies would not be included in the denominator of such a measure. Two Committee members strongly favored a similar weight- and dates-based measure submitted for consideration (PN-023-07) because it is used in Vermont Oxford Network nurseries, does not require chart review, and targets only the smallest preterm infants. Again, however, the majority of the Steering Committee believed that the weight-based measure would exclude a significant proportion of at-risk infants. One Committee member in particular argued that it is the larger preterm babies not captured in the weight-based measure that are often at greatest risk for respiratory distress. Ultimately, the Steering Committee voted in favor of a recommendation for 2-year time-limited endorsement.

PN-022-07 Infants Under 1500g Delivered at Appropriate Site (California Maternal Quality Care Collaborative)

Premature and low birth weight newborns generally require neonatal intensive care at high-level nurseries. California and other states have shown that < 1500g infants have significantly better outcomes if delivered in a facility with immediate access to a Regional or Community Level 3 Neonatal Intensive Care Unit.²⁸ The Steering Committee acknowledged and expressed concern that there has in fact been a shift towards caring for these high-risk infants at lower-level facilities. Moreover, the developer noted that significant regional and hospital-level variation has been documented with use of the measure in California.

Several Steering Committee members suggested that this measure might be unfair to rural facilities, as there may be no hospitals with high-level NICUs close enough for transfer. However, the developer noted that California's rural hospitals have generally performed well on

this measure, while large urban areas have not. The developer thus suggests that this measure is primarily a reflection of provider judgment rather than resource availability.

Other Steering Committee members questioned how NICU levels are differentiated with this measure. The developer responded that each state defines its NICU levels, and the measure will be calculated for a given facility using that state's designation. The Steering Committee agreed that endorsement of this measure would ultimately push states to reassess and perhaps reconsider conclusions on the appropriate designation of NICU levels. Moreover, it was agreed that endorsement would help encourage appropriate and early transfer of high-risk patients and will promote regionalization, as hospitals will need to work together to perform well.

PN-003-07 Nosocomial Blood Stream Infections in Neonates (AHRQ)

Nosocomial bacteremia is significant problem for infants admitted to neonatal intensive care units (NICUs) and other hospital units. This is especially true for very low birth weight (VLBW) infants, who are at high risk for infection due to their immature immune systems combined with the need for invasive monitoring and supportive care.^{29,30,31} Reported nosocomial infection rates range from 6-33%, but the rate varies widely among different centers. Mortality rates are high and infections result in increased length of stay, as well as increased hospital costs and charges.^{32,33,34} Effective preventive measures range from simple hand-washing protocols or closed medication delivery systems to more elaborate multidisciplinary quality improvement plans involving hand-washing, nutrition, skin care, respiratory care, vascular access, and diagnostic practices. All of these interventions have been shown to substantially reduce infection rates.^{32,33,35}

The Steering Committee agreed that this measure addresses a highly important perinatal health outcome that can be minimized with proper adherence to existing guidelines and, although the measure is limited to bloodstream infections, is an acceptable proxy measure for healthcare acquired infection rates. The Committee believed that exclusion of patients with lengths of stay < 2 days is an adequate means of focusing the measure exclusively on infections acquired in the hospital. Finally, the Committee appreciated the fact that the measure focuses on the highest risk patients (i.e., low birth weight [LBW] and VLBW neonates

and neonates that have undergone invasive procedures). However, one Committee member noted that proper identification of patients to be included in the numerator may prove challenging, as sepsis is rarely recorded as a primary diagnosis. Nonetheless, the Committee unanimously agreed that the measure is of sufficient importance to justify a recommendation for time-limited endorsement, during which the measure's reliability and its efficacy in contributing to performance improvement can be demonstrated.

PN-025-07 Birth Dose of Hepatitis B Vaccine and Hepatitis Immune Globulin for Newborns of Mothers with Chronic Hepatitis B (Asian Liver Center at Stanford University)

Most individuals chronically infected with Hepatitis B virus (HBV) acquire their infection at birth through mother-to-child transmission of the virus, and more than 90% of newly infected infants develop chronic hepatitis B.³⁶ The time of birth is the critical period not only for acquisition of chronic HBV infection, but also for its prevention - prophylaxis against HBV transmission is most effective when it is administered within 12 hours of birth.³⁷ According to the 2005 recommendations of the ACIP, all infants born to HBsAg-positive women should receive the HBV vaccine and Hepatitis B immune globulin (HBIG) within 12 hours of birth, complete the HBV vaccine series after age 24 weeks, and undergo post-vaccination serological testing for hepatitis B surface antibody (anti-HBs) and HBsAg between 9 and 18 months of age. Of the estimated 20,000 infants born each year to women with chronic Hepatitis B, fewer than 50% are currently identified.^{38,37}

The Steering Committee was in unanimous agreement that this measure addresses a highly important perinatal health issue for which the potentially devastating consequences are largely avoidable with proper adherence to existing evidence-based guidelines. The Committee was especially appreciative that the measure addresses not only immunization but also disease prevention, as both vaccine and immunoglobulin administration are considered. The Committee did acknowledge that the denominator population will be small and questioned how meaningful the measure would be in public reporting initiatives. However, given the importance of this issue and the potentially devastating outcomes with failure to adhere to existing guidelines, all agreed with a recommendation for time-limited endorsement during which testing can be completed and measure performance can be demonstrated. The developer has agreed to two modifications recommended by the Steering Committee:

- The 12-hour timeframe in which prophylaxis should be administered should be specifically specified in the numerator; and
- Infants born to mothers with unknown disease status should be included in the denominator, as up to 10% of women are not tested during pregnancy.

PN-014-07 Newborn Bilirubin Screening Prior to Discharge (Providence Health and Services/NPIC)

This measure assesses prevention of one of NQF's Serious Reportable Events 4E: *Death or serious disability (kernicterus) associated with failure to identify and treat hyperbilirubinemia in neonates*. Acute bilirubin encephalopathy (ABE) or acute kernicterus resulting from newborn jaundice is again being reported in hospitals around the country. In 2001, the Joint Commission issued a sentinel event alert³⁹ and the AAP released a statement bringing the issue of kernicterus to the attention of the pediatric community.⁴⁰ The actual incidence of acute kernicterus is unknown because of limited clinical experience with the uncommon event and the lack of a national reporting policy. However, surrogate or proxy measures such as readmission of healthy term and near-term newborns for intensive phototherapy for extreme hyperbilirubinemia (TSB > 25) provide reasonable alternative measures of jaundice-related adverse outcomes.⁴¹

Studies have demonstrated the constant underdetection of hyperbilirubinemia if visual recognition is the only method used for identification of jaundice,⁴⁰ and visual recognition is particularly inaccurate in babies with darker skin tones and in documenting the cephalo-caudal progression of jaundice in infants.⁴² A study reported by Keren and Bhutani concludes that pre-discharge bilirubin expressed as a risk zone on an hour specific bilirubin nomogram is more accurate and generates wider risk stratification than a clinical risk factor score.⁴³ AAP clinician practice guidelines state that prior to discharge, every newborn should be assessed for the risk of developing severe hyperbilirubinemia, and all nurseries should establish protocols for assessing this risk via two clinical options used individually or in combination - pre-discharge measurement of the bilirubin level using TSB or TcB and/or assessment of clinical risk factors. Whether either or both options are used, appropriate follow up after discharge is essential.

Again, the Steering Committee agreed that this measure addresses a potentially profoundly

devastating perinatal health issue, which is largely avoidable when existing guidelines are observed. Despite the existing controversy on the cost-effectiveness of a universal screening program, the Steering Committee agreed that the fiscal, societal, and emotional costs resulting from this preventable disease are incalculable and justify its unanimous recommendation for endorsement of this measure.

PN-021-07 Exclusive Breastfeeding at Hospital Discharge (California Maternal Quality Care Collaborative)

Exclusive breastfeeding (BF) for the first 6 months of neonatal life has long been the expressed goal of the World Health Organization,⁴⁴ the Department of Health and Human Services,⁴⁵ AAP,⁴⁶ and ACOG.⁴⁷ Exclusive breastfeeding is now a Healthy People 2010 measure and is routinely reported by the CDC.⁴⁸ Many states, including California,⁴⁹ also report it at the hospital level. The data in California has been used for several major intervention projects on county and regional levels. A recent Cochrane review substantiates the benefits.⁵⁰

Much evidence has now focused on the prenatal and intrapartum period as critical for the success of exclusive (or any) breastfeeding.^{51,52,53} Exclusive breastfeeding rates during birth hospital stay has been calculated by the California Department of Public Health for the last several years using newborn genetic disease testing data - rates during the birth hospitalization range from 8% to over 90%. Several disadvantaged populations have lower rates of BF (e.g., African Americans, Latinas), but many authors have found that these low rates can be overcome by active provider encouragements and interventions.

The Steering Committee was in unanimous agreement that this is an important measure, and appreciated that its use in California has resulted in improved performance and has been linked with improved outcomes. While one Committee member questioned whether the measure could be improved if risk-adjusted, the developer reported that both maternal age and race had been considered and were found to be amenable to intervention in studies, suggesting that these variables are not a true barrier and can be overcome with providers' efforts to properly educate patients. The developer noted, however, that while the measure is reported as a whole, California does stratify results to identify problem areas. Two Committee members had reservations regarding the measure's strict definition of "exclusive breastfeeding", which does not

include infants who received even a single bottle-feed prior to discharge. The developer countered that the CDC is moving towards "exclusive feeding" in its guidelines, and that existing literature suggests that breastfeeding rates are lower at both 3 and 6 months when there was *any* supplemental feeding in the hospital. Moreover, there is little variation in California between hospitals when looking at "any breastfeeding", while considerable variation exists with "exclusive breastfeeding", suggesting that use of the "exclusive" definition can be better used as a vehicle for performance improvement.

Finally, one Committee member had serious concerns that infants of HIV-positive mothers are not excluded from the measure, despite universal agreement that this is an absolute contraindication to breastfeeding. However, the developer noted that current Healthy People 2010 goals expect performance to be only approximately 70%. This allows for 30% of the eligible population to be excluded for a variety of medical reasons - one of which would be HIV positivity. As the highest rate of HIV-positive mothers in any given region is only 2%, the developer asserted that the measure provides sufficient leeway for this contraindication. He also noted that the underlying issue is one of existing data sources, as newborn screening forms currently have no place to identify breastfeeding contraindications.

PN-029-07 First NICU Temperature (Vermont Oxford Network)

Hypothermia on admission to the NICU occurs frequently in very low birth weight (VLBW) and preterm neonates, varies significantly among hospitals, and is associated with increased risk of morbidity and mortality. In 2006, the Vermont Oxford Network Database identified that 61% of the 46,000 infants weighing 501- 1500g from 632 hospitals had admission temperatures below 36.5°C (25% of the hospitals had rates over 76%), and rates varied dramatically among hospital units. The median temperatures on admission ranged from 35.3° at 23 weeks to 36.4° at 29 weeks.⁵⁴ In a study of over 5,000 infants weighing 401-1499g from 15 centers in the NICHD Neonatal Research Network in 2002 and 2003, 50% had admission temperatures under 36°C.⁵⁵ After adjusting for patient characteristics, admission temperature was found to be inversely related to the risks for mortality and late onset sepsis.

While the Steering Committee was in unanimous agreement that this measure addresses a highly

important and actionable aspect of perinatal care, it was noted that measurement burden has not been assessed for providers who are not a member of Vermont Oxford Network. Nonetheless, it was agreed that given the importance of this measure, a recommendation for endorsement is both justified and will serve to promote quality improvement. The measure developer agreed with the Steering Committee's recommendation that, as there are two distinct data items within the measure, it be broken down into two complementary measures - "First Temperature Within One Hour of Admission to NICU" and "First NICU Temperature < 36°C". Committee members felt that this division would be "cleaner" and more easily collected and reported.

PN-030-07 Retinopathy of Prematurity Screening (Vermont Oxford Network)

According to the American Academy of Pediatrics' (AAP) 2006 recommendations on screening examinations of premature infants for retinopathy of prematurity (ROP), "ROP is a disorder of the developing retina of low birth weight preterm infants that potentially leads to blindness in a small but significant percentage of affected infants.... Because of the sequential nature of ROP progression and the proven benefits of timely treatment in reducing the risk of visual loss, effective care now requires that at-risk infants receive carefully timed retinal examinations by an ophthalmologist who is experienced in the examination of preterm infants for ROP and that all pediatricians who care for these at-risk preterm infants be aware of this timing."⁵⁶

The Steering Committee acknowledged that the denominator population would be relatively small for this measure, as very few infants remain hospitalized after 29 weeks. However, the majority agreed that this is nevertheless an important measure for which there are established guidelines, and that failure to adhere to those guidelines can have devastating, lifelong consequences. Moreover, the Committee was in agreement that there is room for improvement in this aspect of care and that endorsement would raise the level of awareness and ultimately promote a higher quality of care.

PN-031-07 Timely Surfactant Administration to Premature Neonates (Vermont Oxford Network)

Meta-analyses of randomized controlled trials have demonstrated that surfactant replacement, given as either prophylaxis or rescue treatment, reduces the incidence and severity of respiratory distress syndrome, air leaks, and mortality in preterm infants with surfactant deficiency.⁵⁷

Prophylactic surfactant administration to infants of less than 30 weeks' gestation reduces mortality, the frequency and severity of respiratory distress syndrome, air leaks, and the combined outcome of bronchopulmonary dysplasia and death compared with infants who receive placebo or rescue surfactant.⁵⁸ Early rescue surfactant (< 2 hours from birth) given to infants of less than 30 weeks' gestation reduces the frequency of adverse respiratory outcomes compared with later rescue surfactant.⁵⁹ Delayed surfactant treatment occurs frequently and the proportion of infants treated within 2 hours of birth varies markedly among hospitals.⁶⁰ In 2006, for 22-29 weeks' gestation infants reported to the Vermont Oxford Network by 632 participating hospitals, only 76% were treated with surfactant. 14% of all infants received the first dose of surfactant after 2 hours of age.⁶¹

The Steering Committee was in unanimous agreement that this is an important measure that has a strong evidence base and is consistent with current guidelines. The Committee debated, however, over whether the measure might dissuade hospitals from attempting CPAP (continuous positive airway pressure) trials. Infants receiving a trial of CPAP, if ultimately treated with surfactant, typically receive their first dose later than those infants who are not tried on CPAP, and would thus likely not be included in the measure's numerator. As early CPAP has not yet been largely studied and results are not conclusive, the Steering Committee does not wish to discourage hospitals studying this potentially beneficial intervention. As such, the Committee agreed that if endorsed, the measure should be stratified according to whether the infant received a trial of CPAP. Another concern was the potential, given the inconclusiveness of early CPAP trials to date, that the measure will not reflect the optimal standard of care within a couple of years should CPAP prove highly beneficial. However, as NQF policy dictates routine measure maintenance on a tri-yearly basis - and earlier review should new evidence come to light - the Committee was comfortable with and unanimously recommended endorsement with the condition that the measure be stratified to reflect CPAP trials.

PN-032-08^h Neonatal Immunization (Child Health Corporation of America)

This measure was endorsed in 2003 and is being re-evaluated as a part of NQF's routine measure maintenance activities. While no information was identified demonstrating that use of this

^h Previously endorsed measure; evaluated as part of NQF's ongoing measure maintenance activities.

measure since its initial endorsement in 2003 has had a significant impact on performance or outcomes, the Steering Committee nonetheless agreed that the measure addresses an important perinatal health issue for a particularly vulnerable patient population - NICU patients who have been hospitalized for greater than 60 days. Moreover, the measure is consistent with the AAP's current immunization guidelines and effectively meets NQF's four evaluative criteria. The Steering Committee was thus unanimous in its recommendation for continued endorsement of this measure.

MEASURES NOT RECOMMENDED

PN-004-07 Neonatal Mortality (AHRQ)

The Steering Committee agreed that the measure addresses a highly important perinatal outcome and appreciated that the measure employs a hierarchical risk adjustment, which they believed to be superior to the risk model contained in the currently endorsed Neonatal Mortality measure (PN-026-07). However, there was consensus that attribution would be difficult without a fully integrated system, as patients may be readmitted to a different hospital. Moreover, the measure excludes transfers-out - likely the sickest infants - and does not include transfers-in after day 2 of life. The Committee noted that this would oftentimes result in the sickest babies not being included in either the transferring or receiving facility's denominator population. Committee members suggested that this could actually conceal poor care, as hospitals could transfer dying infants > 2 days old without attribution. The Steering Committee also speculated that endorsement of the measure might induce inappropriate behaviors such as "cherry-picking" patients - conceivably even prenatally. Finally, as transfers-out are excluded, Level 1 and 2 NICUs would appear to be providing better care than Level 3 NICUs. The Committee feared this might be misleading to consumers when choosing a facility to care for very ill neonates. The Steering Committee ultimately agreed that the measure doesn't truly reflect the quality of care provided and unanimously recommended against endorsement.

PN-026-07 Risk Adjusted Inpatient Neonatal Mortality (The Joint Commission)

This measure was endorsed in 2003 and is being reevaluated as a part of NQF's routine measure maintenance activities. While the measure addresses a highly important perinatal outcome, the

Steering Committee noted that this is both a relatively infrequent occurrence (i.e., 0.4%) and that there has been no change in this number since the measure was endorsed and implemented in 2003. Likewise, the Committee noted that as hospitals currently self-designate NICU levels, there is too much variability across the country for consistent measurement. Unlike AHRQ's "Neonatal Mortality" measure discussed above (PN-004), this measure includes transfers-in up until day 28 of life. However, as transfers-out are excluded, Level 1 and 2 NICUs would again misleadingly appear to be providing better care than Level 3 NICUs. Additionally, the hierarchical risk model employed by the competing AHRQ measure was agreed to be technically superior to this measure's model. Finally, the Steering Committee remarked that NICU quality does not generally correlate well with mortality, as > 95% of all NICU infants survive. Rather, morbidity is a better reflection of NICU care. Thus the Committee agreed that this standard isn't a true reflection of the quality of care provided and unanimously and strongly recommended that endorsement not be continued.

PN-005-07 Prevention of Pathologic Hyperbilirubinemia in Term and Near Term Neonates (HCA/St. Marks)

The Steering Committee acknowledged that this measure addresses a very important and preventable perinatal outcome. However, the Committee agreed that attribution would be difficult without a fully integrated system, as patients may be readmitted to a different hospital. Additionally, the Committee noted that the measure would hold hospitals responsible for what would likely be the responsibility of the outpatient care provider. While the Committee appreciated the improved performance resulting from implementation of this measure within the HCA system, it was noted that a universal bilirubin screening measure was also implemented – it is thus unclear that this measure contributed significantly to observed improvements. Ultimately, the Steering Committee unanimously recommended against endorsement of this measure.

PN-008-07 Appropriate Management of Group B Streptococcal (GBS) Colonization in Labor (HCA/St. Marks)

PN-012-07 Intrapartum Group B Streptococcus Prophylaxis (Massachusetts General Hospital)

PN-015-07 Group B Streptococcus Antepartum Screening and Intrapartum Treatment (CWISH/Sharp Mary Birch Hospital)

While the Steering Committee acknowledged that this measure addresses a very important perinatal health issue, it was noted that GBS guidelines are already consistently being followed and that the Healthy People 2010 goals in this area have already been met. Moreover, the Steering Committee reports that as GBS rates have declined, the incidence of penicillin-resistant sepsis has increased. In addition, there is an average risk of 10-20 maternal deaths per year due to anaphylaxis from GBS prophylaxis. As the Committee agreed that as there is currently little room for improvement in this aspect of perinatal care and that antibiotic use is not without risks, none of the GBS measures submitted for endorsement consideration are recommended for endorsement. However, the Committee wished to clarify that this decision is a reflection of the success of GBS guidelines to date and is not intended to remove focus from that area. The Steering Committee urges continued adherence to these existing guidelines.

PN-009-07 Administration of Corticosteroids for Fetal Maturation in Women at Risk of Preterm Delivery (HCA/St. Marks)

PN-023-07 Use of Corticosteroids for Fetal Lung Maturation in Infants Under 1500g (California Maternal Quality Care Collaborative)

Of the 3 antenatal steroid measures submitted for consideration, the Steering Committee generally preferred the denominator definition of PN-016 (“Appropriate Use of Antenatal Steroids” by NPIC), as it considers only those women who actually delivered preterm infants. Conversely, the PN-009-07 denominator includes all women “with a diagnosis of labor and at risk of preterm delivery”. The Steering Committee felt that this definition does not effectively target the population of greatest interest (i.e., delivered preterm neonates). While the CMQCC measure (PN-023) employs a combined weight- and dates-based definition, the majority of the Steering Committee agreed that this would both complicate data collection and increase burden. Thus despite the similarities between these 3 measures, the majority of the Steering Committee agreed that PN-016 is “cleaner “ and would better capture the population of interest.

PN-017-07 Disruption of an Obstetrical Wound Requiring Repair (NPIC/CWISH)

The Steering Committee noted that there is a very low incidence of both abdominal and perineal wound dehiscence (i.e., 0-0.02%, as reported by CWISH). Moreover, the measure considers

wounds requiring repair prior to discharge, while the break down of vaginal repairs are generally handled in the outpatient setting. As such, the Committee did not believe this measure would be useful as a publicly reported measure.

PN-018-07 Perinatal Deep Venous Thrombosis/Pulmonary Embolism (NPIC/CWISH)

The Steering Committee acknowledged that the measure addresses an important cause of maternal mortality and that measurement cost and burden would be minimal, given the administrative data source. However, the Committee agreed that the rarity of this outcome (i.e., 0-1% incidence per year) would render this measure of little use for comparisons at the individual clinician or facility level.

PN-028-07 Risk Adjusted Vaginal Birth after Cesarean Delivery Rate (The Joint Commission)

This measure was endorsed in 2003 and was re-evaluated as a part of NQF's routine measure maintenance activities. While some Steering Committee members agreed that the measure does provide valuable information for the large population of multiparous childbearing women who desire access to VBAC, the majority felt that this measure is not a true indicator of quality. As an "ideal" VBAC rate has not been established, results are neither meaningful nor actionable as it is unclear whether a higher or lower rate is better. Despite this, however, as a Joint Commission ORYX measure, greater than 700 facilities are currently collecting this data for accreditation purposes.

While the majority was not in favor of either of the VBAC measures considered in this project, the Steering Committee nonetheless expressed concern that VBAC rates have been declining since the mid-1990s, and that access to the procedure has become problematic as fewer facilities and providers are offering the service. Ultimately, while the Committee acknowledged that reporting VBAC rates might help consumers in selecting a hospital for delivery, the majority agreed that the measure does not meet the NQF evaluative criteria for importance or usability and recommended that the measure be retired from endorsement.

PN-020-07 VBAC Availability (California Maternal Quality Care Collaborative)

While some Committee members believed that endorsement of this measure would encourage facilities to provide access to VBAC consistent with current ACOG guidelines (which recommend counseling eligible women and offering VBAC with immediate access to emergency care), the majority agreed that this measure might have the unintended consequence of driving facilities ill equipped to perform VBACs to offer the procedure, ultimately placing patients in jeopardy. Moreover, while the measure defines access as a specific VBAC rate (i.e., 5% or greater), the Steering Committee noted that there is no existing consensus on what the “ideal” VBAC rate is. One Committee member pointed out that measuring facilities’ VBAC rates has been done since 2003 without notable impact. Given these reservations, the majority of the Committee recommended against endorsement of this measure.

However, while neither of the VBAC measures considered within this project were recommended for use in public reporting, the Steering Committee nonetheless wished to emphasize its concern about the diminishing VBAC availability and its belief that this is an extremely important quality issue that must be addressed. To that end, the Committee has developed several germane research and development recommendations detailed in the following section of this report.

PN-024-07 Obstetrical Anesthesia Complications Rate (NPIC/CWISH)

The Committee agreed that this measure addresses an important aspect of perinatal care. Moreover, measure use and field testing have demonstrated that the data collection strategy can be implemented, and cost and burden would be minimal as the measure employs an administrative data source. Ultimately, however, given the relatively low incidence of obstetrical anesthesia complications, the Steering Committee could justify neither a recommendation in favor of nor an investment of resources in this measure.

PN-027-07 Risk Adjusted Third or Fourth Degree Laceration (The Joint Commission)

This measure was endorsed in 2003 and was evaluated as a part of NQF’s routine measure maintenance activities. The Steering Committee noted that for 3rd and 4th degree lacerations, the patient’s outcome depends on the quality of the repair, which is not addressed by the measure. Moreover, only 3 of 9 risk factors identified in the measure – induction, use of forceps, and

vacuum extraction – are modifiable. The Committee agreed that the major controllable risk factors for 3rd and 4th degree laceration are operative delivery, which is declining, and routine episiotomy. The Steering Committee concurred that as episiotomy is a “targetable” antecedent to 3rd and 4th degree lacerations that is amenable to intervention, PN-013 (“Incidence of Episiotomy”) would provide a more accurate reflection of quality than PN-027.

Moreover, the Steering Committee also noted that the data for this measure is notoriously unreliable. For instance, many providers have been encouraged not to code the “partial 3rd degree laceration” as a 3rd degree tear (i.e., providers “code down”). Finally, the Steering Committee observed that there has been no appreciable change in reported rates of significant perineal lacerations (3-5%) since the measure was endorsed and implemented in 2003, supporting the Committee’s premise that the measure does not effectively drive performance improvement. As such, the majority of the Committee ultimately agreed that this measure does not effectively meet NQF’s evaluative criteria for importance, scientific acceptability (i.e., reliability with “coding down”), or usability, and strongly recommended that endorsement be withdrawn.

PN-033-07 Cesarean Delivery Rate (Healthy People 2010)

This measure was endorsed in 2003 and is being evaluated as a part of NQF’s routine measure maintenance activities. The Committee agreed that the measure addresses an important and actionable perinatal health issue wherein there is substantial unfounded provider variation. And while there are no existing guidelines on what an “appropriate” c-section rate is, the currently high rates are thought to primarily reflect provider, rather than patient, preferences. However, the Steering Committee agreed that the CMQCC measure (“Cesarean Rate for Low-risk First Birth Women”, PN-010-07) has improved greatly on this standard:

- The Committee appreciated that the CMQCC measure specifically targets nulliparous patients, as the remainder of their reproductive life can be affected by this decision.
- The CMQCC measure has been associated with decreased Cesarean rates where implemented.
- The Steering Committee agreed with the CMQCC developer that cesarean rates

should be stratified by maternal age.

Ultimately, the majority of the Committee strongly preferred PN-010 and recommended that it replace this measure.

RECOMMENDATIONS

The following recommendations were put forward by the Steering Committee to accompany the measures:

- **Group B Streptococcus (GBS) Prophylaxis and Treatment.** While none of the GBS measures submitted for endorsement consideration were ultimately recommended, the Steering Committee nevertheless strongly urges continued adherence to the existing guidelines that have so effectively contributed to the marked decline in the pathogen's transmission and related complications. Specifically, the Committee recommends (1) continued monitoring to ensure use of the appropriate antibiotic (e.g., penicillin and not ampicillin) and (2) continued tracking and documentation of pathogen resistance. The Committee further recommends that (3) maternal anaphylaxis resulting from antibiotics administered for GBS prophylaxis and treatment be tracked.
- **Corticosteroids for Fetal Maturation in Women at Risk of Preterm Delivery.** The Steering Committee urges further research into the safety and efficacy of (1) multiple courses of antenatal steroids and (2) administering antenatal steroids to mothers 32 to 34 weeks pregnant with premature rupture of membranes (PROM). Given the current state of research, ACOG recommendations appropriately offer little guidance with regard to this clinical scenario, potentially encouraging the underuse of a very effective intervention.
- **Vaginal Birth after Cesarean Delivery Rate (VBAC).** While neither of the VBAC measures considered within this project was recommended for endorsement, the Steering Committee wished to emphasize its concern about the diminishing VBAC availability and its belief that this is an extremely important access issue that must be addressed. The Committee believes that it will be important to develop future measures related to information, access, and choice, and that multiple

and/or composite VBAC-associated measures would be appropriate to address the scale and complexity of the issue. The Committee suggests consideration of the following important factors in future measure development:

- Women’s needs for high-quality information, counseling, and shared decision-making must be considered in the context of access to choice of care options;
 - Measures looking at the number of VBACs as a percentage of total births or as a percentage of all repeat cesareans are meaningless, as they do not address the underlying and central issue of access; and
 - A measure of whether a facility meets ACOG VBAC guidelines would include both the ability to offer the service to eligible women and the ability to provide immediate emergency services for failed VBAC trials.
- **Hyperbilirubinemia Education.** The Steering Committee believes that the most effective means of both avoiding hyperbilirubinemia and minimizing its deleterious consequences is through proper parental education and thus urges developers to focus future efforts on the creation of an indicator assessing this aspect of care. The Committee suggests that appropriate education materials would necessarily include a clear message about risk, would encourage parents to ask about bilirubin testing, would emphasize the importance of early follow up, and would provide appropriate information on breastfeeding. Of note, the Steering Committee recognized that existing PICK (Parents of Infants and Children with Kernicterus)/CDC education materials effectively address these topics through the use of posters, a mothers’ workbook, and a video. These materials have been tested in focus groups and surveyed throughout the U.S., and have been endorsed by the Department of Health and Human Services. The Steering Committee thus suggests that a measure assessing the implementation and use of the PICK/CDC or similar materials would effectively fill this current measurement gap.
 - **Normal Birth Measure.** Some Steering Committee members noted that interventions such as induction of labor and episiotomy are frequently employed in the largely healthy maternal population. The development of a risk-adjusted

"normal birth" measure would benefit women who wish to avoid such procedures when possible.

- **Informed Decision Making.** The Steering Committee suggests that measures of the quality of information provided to childbearing women and of the quality of informed consent would be valuable additions to a national measure set and thus urges developers to focus future efforts and resources on these important topics.
- **Smoking Cessation.** While not limited in scope to the third trimester, the Steering Committee nonetheless strongly urges the development of measures of maternal tobacco use. Specifically, the Committee recommends that developers focus future efforts on creating measures that gauge smoking cessation rather than counseling or referral.
- **Patient Experience.** The Steering Committee believes that patient experience is an important NQF measure class and notes that no patient experience measures were available for consideration. The CAHPS® surveys currently in use have many strengths, but are limited in their application to childbearing women. The Steering Committee thus recommends that a "consumer assessment" instrument in the CAHPS® family be tailored specifically to this population. Population-specific considerations include accommodating the range of maternity care providers and birth settings, the range of approaches to labor pain relief, and the range of routes of medication.
- **Transitions of Care.** The Steering Committee noted that obstetric admissions involve transfers from outpatient to inpatient care settings (and vice versa), and that such "hand-offs" often provide significant opportunity for medical errors. As such, the Committee urges developers to in the future consider the creation of perinatal transitions of care measures, such as a "prenatal chart present at labor admission" measure.
- **Value Added.** The Steering Committee acknowledges and appreciates the time and resources that facilities invest in performance measurement. Given that some of the measures being recommended in this report address relatively uncommon occurrences, the Steering Committee offers that it will be important to assess the

value added for patients, providers, and payers after endorsement and implementation. The Committee thus recommends that research be conducted to determine whether the collection and dissemination of these quality measures results in measurable improvement in perinatal care and outcomes.

RELATIONSHIP TO OTHER NQF-ENDORSED CONSENSUS STANDARDS

This report does not represent the entire scope of NQF work relevant to the quality of care for mothers and infants. As noted previously, NQF has already endorsed several prenatal consensus standards addressing prenatal services provided in the outpatient setting, typically during the first trimester of pregnancy:ⁱ

- Screening for Human Immunodeficiency Virus (HIV)
- Anti-D Immune Globulin Administration
- Assessment of Blood Group (ABO) and D (Rh) Type
- Blood Group Antibody Testing

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

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ⁱ Endorsed in 'National Voluntary Consensus Standards for Ambulatory Care: Phase III' (2006).

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