



Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to subcriterion 1b).

Brief Measure Information

NQF #: 2892

De.2. Measure Title: Birthrisk Cesarean Birth Measure

Co.1.1. Measure Steward: Birthrisk.com, LLC.

De.3. Brief Description of Measure: This is a measure of the effect that obstetrical care provider's labor management strategies have on their laboring patient's risk for cesarean birth. The target population is limited to women who attempt labor with a singleton vertex pregnancy without a history of a prior cesarean birth and give birth between 37 and 42 weeks of gestation.

1b.1. Developer Rationale: Healthcare administrators, hospital administrators and obstetrical care providers do not currently have an accurate method for determining if their labor management strategies are better or worse than the average. The reason that an accurate method is not available is because the physical process of labor makes it impossible to assess the effect of the obstetrical care provider's labor management strategies unless the unique combination of physical characteristics of the mother and the size of her baby are taken into account.

Empowering obstetrical care providers with an accurate cesarean birth measure will allow them to analyze which labor management strategies work best at reaching the appropriate cesarean birth rate for their population of patients. Hospital administrators will have the ability to conduct and monitor quality improvement projects aimed at achieving the appropriate cesarean birth rate for their institution by analyzing the results achieved by each obstetrical care provider in their hospital. Healthcare administrators will be able to monitor the various organizational units under their jurisdiction in order to identify centers of excellence as well as centers that need improvement. With the ability to compare organizational units to the average in the state or nation, healthcare administrators could initiate a state/nation wide incentive/disincentive program for entities that are statistically significantly better/worse than the average in the state/nation.

S.4. Numerator Statement: Number of cesarean births.

S.7. Denominator Statement: Women without a history of a prior cesarean birth who attempted labor and gave birth to a single baby in vertex presentation between 37 and 42 weeks of gestation.

S.10. Denominator Exclusions: The denominator excludes women with any of the following:

1. Gestational age at birth of less than 37 weeks or greater than 42 weeks.
2. History of a prior cesarean birth.
3. Multiple gestation.
4. Not in vertex presentation.
5. Did not attempt to have a vaginal birth by attempting labor.

De.1. Measure Type: Outcome

S.23. Data Source: Other

S.26. Level of Analysis: Clinician : Individual, Facility

IF Endorsement Maintenance – Original Endorsement Date: Most Recent Endorsement Date:

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results? N/A

1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. **Measures must be judged to meet all subcriteria to pass this criterion and be evaluated against the remaining criteria.**

1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form [Birthrisk_Cesarean_Birth_Measure-evidence_submission_form.docx](#)

1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- disparities in care across population groups.

1b.1. Briefly explain the rationale for this measure (e.g., the benefits or improvements in quality envisioned by use of this measure)
Healthcare administrators, hospital administrators and obstetrical care providers do not currently have an accurate method for determining if their labor management strategies are better or worse than the average. The reason that an accurate method is not available is because the physical process of labor makes it impossible to assess the effect of the obstetrical care provider's labor management strategies unless the unique combination of physical characteristics of the mother and the size of her baby are taken into account.

Empowering obstetrical care providers with an accurate cesarean birth measure will allow them to analyze which labor management strategies work best at reaching the appropriate cesarean birth rate for their population of patients. Hospital administrators will have the ability to conduct and monitor quality improvement projects aimed at achieving the appropriate cesarean birth rate for their institution by analyzing the results achieved by each obstetrical care provider in their hospital. Healthcare administrators will be able to monitor the various organizational units under their jurisdiction in order to identify centers of excellence as well as centers that need improvement. With the ability to compare organizational units to the average in the state or nation, healthcare administrators could initiate a state/nation wide incentive/disincentive program for entities that are statistically significantly better/worse than the average in the state/nation.

1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis. (This is required for endorsement maintenance. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included). This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.

Evaluation of the performance score was evaluated at the facility level for the time period of 2005 to 2007. There were 105 facilities assigned a cesarean birth measure however two of these facilities had less than 10 births during the time period and were not included in the analysis. The mean facility performance score was 15.57% with a minimum score of 7% and a maximum of 29%. The standard deviation was 4.52 and the interquartile range was 5% (Q1=13%, Q3=18%). There were 211,374 births in the analysis with a mean number of births per facility of 2,052 and a range of 64 to 9,364.

Evaluation of the performance score was evaluated at the provider level for the time period of 2005 to 2007. There were 2,542 providers assigned a cesarean birth measure however 650 of these providers had less than 10 births during the time period and were not included in the analysis. The mean provider performance score was 14.31% with a minimum score of 0% and a maximum of 71%. The standard deviation was 11.07 and the interquartile range was 17% (Q1=4%, Q3=21%). There were 209,300 births in the analysis with a mean number of births per provider of 111 and a range of 10 to 1,055.

Evaluation of performance scores were evaluated at the facility with the most births (9,364) for the time period of 2005 to 2007. This facility had a performance score of 17.01%. There were 44 births to providers who had less than 10 births during the time period and were not included in the analysis. The mean provider performance score was 17.11% with a minimum score of 0% and a maximum of 33%. The nine providers who had performance measures that were significantly worse than average were analyzed separately from the remaining 59 providers. The mean provider performance score for the nine providers was 23.62% and these providers attended 1,699 (18%) of the births. The mean provider performance score for the 59 remaining providers was 16.22% and these 59 providers attended 7,621 (82%) of the births.

1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.

As far back as 1989 Goyert et al. concluded that individual practice style may be an important determinant of the wide variations in the rates of cesarean delivery among obstetricians [1]. In June of 2007 Clark et al. reported on 220,000 births and concluded that rates of operative delivery in the United States are highly variable and suggest a pattern of almost random decision making [2]. In March 2009 Kozhimannil et al. found that cesarean rates varied tenfold across 593 U.S. hospitals [3]. The significant variation in cesarean birth rates is illustrated every year in the National Vital Statistics Reports [4].

The variation in cesarean birth rates is not a problem unique to the United States. In 2009 Brennan DJ et al. concluded that analysis of international obstetric cesarean practice identifies wide variations in women in spontaneous cephalic term labor [5]. However, to date there are no published studies that take into account the unique combination of the physical characteristics of the mother and the size of her baby. Unfortunately, if a study does not take into account the unique combination of the physical characteristics of the mother and the size of her baby then the reported performance gap may not be accurate. Only a measure that can accurately account for the unique combination of a woman's physical characteristics and the size of her baby will be able to determine how much of the variation in rates is dependent on the physical characteristics of the women who are giving birth and how much of the variation in rates is due to the labor management strategies being used by the obstetrical care provider. The research that resulted in the development of the Birthrisk Cesarean Birth Measure shows that there is a significant performance gap with some obstetrical care providers performing 20 to 30 more cesarean births per 100 women in labor when compared to the average in their state [6].

1. Goyert GL, Bottoms SF, Treadwell MC, Nehra PC. The Physician Factor in Cesarean Birth Rates. N. Engl J Med 1989; 320:706-9
2. Clark SL, Belfort MA, Hankins GDV, Meyers JA, Houser FM (2007) Variation in the rates of operative delivery in the United States. Am J Obstet Gynecol 196:526.e1-5
3. Kozhimannil KB, Law MR, Virnig BA. Cesarean Delivery Rates Vary Tenfold Among US Hospitals; Reducing Variation May Address Quality and Cost Issues. Health Affairs, 32, no.3 (2013):527-35
4. Hamilton BE, Martin JA, Osterman MJK, Curtin SC. Births: Preliminary data for 2014. National vital statistics reports; vol 64 no 6. Hyattsville, MD: National Center for Health Statistics. Released June 17, 2015
5. Brennan DJ, Robson MS, Murphy M, et al. Comparative analysis of international cesarean delivery rates using 10-group classification identifies significant variation in spontaneous labor. Am J Obstet Gynecol 2009;201:308.e1-8.
6. Birthrisk.com, LLC., Information for Healthcare Professionals. Available at <https://www.birthrisk.com/Public/BirthriskVideos1.aspx>. Retrieved January 16, 2016

1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability. (This is required for endorsement maintenance. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.

N/A

1b.5. If no or limited data on disparities from the measure as specified is reported in 1b4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations.

Ehrenthal et al. conducted a retrospective cohort study of cesarean births among nulliparous women delivering a live, singleton, vertex pregnancy at term [1]. They used clinical data from electronic hospital obstetric records at a large, regional, obstetric hospital, approximating a population-based cohort. Their results showed a greater odds of cesarean birth from the following sociodemographic characteristics: black race, marital status, patient type (private or service), insurance type (Medicaid or private), and age older than 35 years.

However, Declercq et al. used a sample of 2,233,144 women who had a singleton, vertex, term (37–41 weeks) birth in 2012 and no prior cesarean to demonstrate that prepregnancy obesity was found to represent an independent risk factor for primary cesareans [2]. Their results showed that obesity rates were highest among American Indian and Alaska Native (32.5%) and non-Hispanic black mothers (30.5%).

Unfortunately, there are no studies that address disparities in care due to sociodemographic factors while adequately adjusting for the unique combination of a woman's physical characteristics and the size of her baby. For example, in the study by Ehrenthal et al. the continuous variables of fetal weight, prepregnancy body mass index, maternal age, gestational age and maternal weight gain are

represented as ordinal variables. Representing a continuous variable as an ordinal variable could decrease the significance of that variable in the multiple logistic regression analysis. Ehrental's finding that black race had greater odds of having a cesarean birth was based on their multiple logistic regression analysis.

Identifying true disparities in care associated with sociodemographic factors will require the use of a method that takes into account the unique combination of a woman's physical characteristics and the size of her baby. The Birthrisk Cesarean Birth Measure provides that method.

1. Ehrental DB, Jiang X, Strobino DM. Labor Induction and the Risk of a Cesarean Delivery Among Nulliparous Women at Term. *Obstet Gynecol* 2010;116:35-42
2. Declercq E, MacDorman M, Osterman M, Belanoff C, Iverson R. Prepregnancy Obesity and Primary Cesareans among Otherwise Low-Risk Mothers in 38 U.S. States in 2012. *Birth* 2015;42(4):309-18

1c. High Priority (previously referred to as High Impact)

The measure addresses:

- a specific national health goal/priority identified by DHHS or the National Priorities Partnership convened by NQF; OR
- a demonstrated high-priority (high-impact) aspect of healthcare (e.g., affects large numbers of patients and/or has a substantial impact for a smaller population; leading cause of morbidity/mortality; high resource use (current and/or future); severity of illness; and severity of patient/societal consequences of poor quality).

1c.1. Demonstrated high priority aspect of healthcare

Affects large numbers, High resource use, Patient/societal consequences of poor quality

1c.2. If Other:

1c.3. Provide epidemiologic or resource use data that demonstrates the measure addresses a high priority aspect of healthcare.

List citations in 1c.4.

According to the National Center for Health Statistics (NCHS) cesarean birth is the most commonly performed inpatient surgical procedure in the United States [1]. The NCHS also reports that the overall cesarean birth rate in the United States is up nearly 60% (almost twelve percentage points) since 1996 with an all-time high of 32.9% of all births in 2009 [2]. Recent efforts to address the rising rate have only achieved a 2% decrease (seven tenths of one percentage point) from 2009 to 2014 [2-4]. Each percentage point in the United States cesarean birth rate represents approximately 40,000 women who undergo a surgical procedure which has increased morbidity and costs when compared to a vaginal birth [5-7]. A recent study concluded that National cesarean delivery rates of up to approximately 19 per 100 live births were associated with lower maternal or neonatal mortality which suggests that a National cesarean birth rate of approximately 19% would be appropriate [8].

The majority of pregnant women will attempt labor with the goal of achieving a vaginal birth. The pregnant women who do not attempt labor presumably schedule a cesarean birth as the result of a well-informed discussion with their obstetrical care provider. If all of the scheduled cesarean births are appropriate then in order to achieve the appropriate cesarean birth rate the focus must be on the women who labor. Understanding the factors that affect the cesarean birth rate for women who labor will first and foremost require the acknowledgement that labor is a physical process. It has been shown that a woman's physical characteristics and the size of her baby affect her risk that labor will result in a cesarean birth [9-17]. However, the risk that labor will result in a cesarean birth is also significantly affected by the obstetrical care provider's labor management strategies [18-20]. These strategies can either increase or decrease a woman's risk. For example, the use of forceps can decrease a woman's risk for a cesarean birth whereas an impatient obstetrical care provider may increase a woman's risk.

The goal of a cesarean birth measure is to measure the effect of the labor management strategies applied by obstetrical care providers to each woman's risk that labor will result in a cesarean birth, keeping in mind that the obstetrical care provider's labor management strategies can either increase or decrease a woman's risk. In order to be able to accurately measure the effect of labor management strategies it is mandatory to have an accurate risk adjustment method that accounts for each woman's unique combination of physical characteristics and the size of her baby. Prior attempts at creating cesarean birth measures have used established methods for risk adjustment such as direct standardization or grouping by risk factors [21,22]. Direct standardization is easy to use but will create meaningless results if any of the risk strata are empty or contain very few patients. This makes direct standardization impractical for comparing obstetrical care providers. Grouping women by risk factors that ignore the physical characteristics of the women who are giving birth will yield results that are dependent on the physical characteristics of the women in each group rather than a measure of the labor management strategies applied by the obstetrical care provider. It is for these

reasons that no prior cesarean birth measure has ever been validated. Only an accurate cesarean birth measure will allow for the discovery of the labor management strategies that are best at reaching the appropriate cesarean birth rate for any given population of women.

1c.4. Citations for data demonstrating high priority provided in 1a.3

1. National Center for Health Statistics. Fast Stats - Inpatient Surgery. Available at <http://www.cdc.gov/nchs/fastats/inpatient-surgery.htm>. Retrieved January 7, 2016
2. Hamilton BE, Martin JA, Osterman MJK, Curtin SC. Births: Preliminary data for 2014. National vital statistics reports; vol 64 no 6. Hyattsville, MD: National Center for Health Statistics. Released June 17, 2015
3. The Joint Commission. Specifications Manual for Joint Commission National Quality Core Measures version 2012B. Available at <https://manual.jointcommission.org/releases/TJC2015B2/MIF0167.html>. Retrieved January 16, 2016
4. Department of Health and Human Services. Healthy People 2020 summary of objectives, maternal, infant, and child health. Available at http://www.healthypeople.gov/node/4900/data_detailsMaternalChildHealth.pdf. Retrieved January 16, 2016
5. American College of Obstetricians and Gynecologists Task Force on Cesarean Delivery. Evaluation of cesarean delivery. Washington (DC): American College of Obstetricians and Gynecologists; 2000. p. 1-59
6. Kozhimannil KB, Law MR, Virnig BA. Cesarean Delivery Rates Vary 10-Fold Among US Hospitals; Reducing Variation May Address Quality, Cost Issues. Health affairs (Project Hope). 2013;32(3):527-535
7. National Center for Health Statistics. Health, United States, 2013: with special feature on prescription drugs. Hyattsville, MD. 2014; <http://www.cdc.gov/nchs/data/abus/abus13.pdf>. Accessed January 6, 2016.
8. Molina G, et. al. Relationship Between Cesarean Delivery Rate and Maternal and Neonatal Mortality. JAMA 2015;314(21):2263-2270
9. Bailit JL, Love TE, Mercer B. Rising cesarean rates: are patients sicker? Am J Obstet Gynecol 2004;191:800-3.
10. Chen G, Uryasev S, Young T. On prediction of the cesarean delivery risk in a large private practice. Am J Obstet Gynecol 2004;191:617-25
11. Peregrine E, O'Brien P, Omar R, Jauniaux E. Clinical and Ultrasound Parameters to Predict the Risk of Cesarean Delivery After Induction of Labor. Obstet Gynecol 2006;107:227-33
12. Wilkes P, Wolf D, Kronbach D, Kunze M, Gibbs R. Risk Factors for Cesarean Delivery at Presentation of Nulliparous Patients in Labor. Obstet Gynecol 2003;102:1352-7
13. Bergholt T, Lim L, Jorgensen J, Robson M. Maternal body mass index in the first trimester and risk of cesarean delivery in nulliparous women in spontaneous labor. Am J Obstet Gynecol 2007;196(2):163.e1-5
14. Declercq E, MacDorman M, Osterman M, Belanoff C, Iverson R. Prepregnancy Obesity and Primary Cesareans among Otherwise Low-Risk Mothers in 38 U.S. States in 2012. Birth 2015;42(4):309-18
15. Maslow A, Sweeny A. Elective Induction of Labor as a Risk Factor for Cesarean Delivery Among Low-Risk Women at Term. Obstet & Gynecol 2000;95:917-22
16. National Collaborating Centre for Women's and Children's Health. Induction of Labour – Clinical Guideline. 2nd ed. Regent's Park, London: RCOG Press; 2008
17. Ehrenthal DB, Jiang X, Strobino DM. Labor Induction and the Risk of a Cesarean Delivery Among Nulliparous Women at Term. Obstet Gynecol 2010;116:35-42
18. Luthy DA, Malmgren JA, Zingheim RW, Leninger CJ. Physician contribution to a cesarean delivery risk model. Am J Obstet Gynecol 2003;188:1579-87.
19. Coonrod DV, Drachman D, Hobson P, et al. Nulliparous term singleton vertex cesarean delivery rates: institutional and individual level predictors. Am J Obstet Gynecol 2008;198:694.e1-694.e11
20. Barber EL, Lundsberg LS, Belanger K, Pettker CM, Funai EF, Illuzzi JL. Indications Contributing to the Increasing Cesarean Delivery Rate. Obstet Gynecol 2011;118:29-38
21. Main E, Moore D, Farrel B, Schimmel L, Altman R, Abrahams C, et al. Is there a useful cesarean birth measure? Assessment of the nulliparous term singleton vertex cesarean birth rate as a tool for obstetric quality improvement. Am J Obstet Gynecol 2006;194:1644-52
22. Robson MS. Classification of caesarean sections. Fetal and Maternal Medicine Review. 2001;12:23–39.

1c.5. If a PRO-PM (e.g. HRQoL/functional status, symptom/burden, experience with care, health-related behaviors), provide evidence that the target population values the measured PRO and finds it meaningful. (Describe how and from whom their input was obtained.)

N/A

2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. **Measures must be judged to meet the subcriteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.**

2a.1. Specifications The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

De.5. Subject/Topic Area (check all the areas that apply):

Perinatal and Reproductive Health : Perinatal

De.6. Cross Cutting Areas (check all the areas that apply):

S.1. Measure-specific Web Page (Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)

<https://www.birthrisk.com/Public/NQF.aspx>

S.2a. If this is an eMeasure, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)

This is not an eMeasure Attachment:

S.2b. Data Dictionary, Code Table, or Value Sets (and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)

No data dictionary Attachment:

S.3. For endorsement maintenance, please briefly describe any changes to the measure specifications since last endorsement date and explain the reasons.

N/A

S.4. Numerator Statement (Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome)

IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm.

Number of cesarean births.

S.5. Time Period for Data (What is the time period in which data will be aggregated for the measure, e.g., 12 mo, 3 years, look back to August for flu vaccination? Note if there are different time periods for the numerator and denominator.)

The time period has a minimum value of one day. Public reporting and external bench-marking can be provided monthly, quarterly, annually or any other time period with a minimum value of one day.

S.6. Numerator Details (All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm.

The number of births with Method of Delivery reported as Cesarean. U.S. Standard Certificate of Birth item number 46 (METHOD OF DELIVERY), processing variable: ROUT=4.

S.7. Denominator Statement (Brief, narrative description of the target population being measured)

Women without a history of a prior cesarean birth who attempted labor and gave birth to a single baby in vertex presentation between 37 and 42 weeks of gestation.

S.8. Target Population Category (Check all the populations for which the measure is specified and tested if any):

Maternal Health

S.9. Denominator Details (All information required to identify and calculate the target population/denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

The denominator is all of the women who gave birth during the specified time period as determined by an existing Certificate of Birth. Data collection items from the U.S. Standard Certificate of Birth are listed by Item Number, Description and (Processing Variable(s)):

Item 2 TIME OF BIRTH (TB)

Item 4 DATE OF BIRTH - infant (IDOB_YR, IDOB_MO, IDOB_DY)

Item 5 FACILITY NAME (FNAME)

Item 6 CITY, TOWN OR LOCATION OF BIRTH (FLOC)

Item 7 COUNTY OF BIRTH (CNAME)

Item 8b DATE OF BIRTH - mother (MDOB_YR, MDOB_MO, MDOB_DY)

Item 27 ATTENDANT'S NAME, TITLE, AND NPI (ATTENDN, NPI)

Item 28 MOTHER TRANSFERRED FOR MATERNAL MEDICAL OR FETAL INDICATIONS FOR DELIVERY? (TRAN, NFAFL)

Item 31 MOTHER'S HEIGHT (HFT, HIN)

Item 32 MOTHER'S PREPREGNANCY WEIGHT (PWGT)

Item 33 MOTHER'S WEIGHT AT DELIVERY (DWGT)

Item 35a NUMBER OF PREVIOUS LIVE BIRTHS - NOW LIVING (PLBL)

Item 35b NUMBER OF PREVIOUS LIVE BIRTHS - NOW DEAD (PLBD)

Items 41 RISK FACTORS IN THIS PREGNANCY - Mother had a previous cesarean delivery (PCES)

Item 44 ONSET OF LABOR - Precipitous labor, Prolonged Labor (PRIC, PROL)

Item 45 CHARACTERISTICS OF LABOR AND DELIVERY – Induction of labor, Augmentation of labor, Non-vertex presentation (INDL, AUGL, NVPR)

Item 46 METHOD OF DELIVERY- Fetal presentation at birth, Final route and method of delivery, If cesarean, was a trial of labor attempted? (PRES, ROUT, TLAB)

Item 49 BIRTHWEIGHT (BWG)

Item 50 OBSTETRIC ESTIMATION OF GESTATION (OWGEST)

Item 52 PLURALITY (PLUR)

S.10. Denominator Exclusions (Brief narrative description of exclusions from the target population)

The denominator excludes women with any of the following:

1. Gestational age at birth of less than 37 weeks or greater than 42 weeks.
2. History of a prior cesarean birth.
3. Multiple gestation.
4. Not in vertex presentation.
5. Did not attempt to have a vaginal birth by attempting labor.

S.11. Denominator Exclusion Details (All information required to identify and calculate exclusions from the denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

1. Gestational age at birth of less than 37 weeks or greater than 42 weeks: Exclude women whose birth certificate item number 50 (OBSTETRIC ESTIMATION OF GESTATION), processing variable: OWGEST<37. Exclude women whose birth certificate item number 50 (OBSTETRIC ESTIMATION OF GESTATION), processing variable: OWGEST>42.
2. History of a prior cesarean birth: Exclude women whose birth certificate item number 41 (RISK FACTORS IN THIS PREGNANCY), processing variable: PCES=Y.
3. Multiple gestation: Exclude women whose birth certificate item number 52 (PLURALITY), processing variable: PLUR>1.
4. Not in vertex presentation: Exclude women whose birth certificate item number 45 (CHARACTERISTICS OF LABOR AND DELIVERY), processing variable: NVPR=Y. Exclude women whose birth certificate item number 46 (METHOD OF DELIVERY), processing variable: PRES>1.
5. Did not attempt to have a vaginal birth by attempting labor: Exclude women whose birth certificate item number 46

(METHOD OF DELIVERY), processing variable: ROUT=4 AND TLAB=N UNLESS birth certificate item number 44 (ONSET OF LABOR), processing variable: PRIC=Y OR birth certificate item number 44 (ONSET OF LABOR), processing variable: PROL=Y OR birth certificate item number 45 (CHARACTERISTICS OF LABOR AND DELIVERY), processing variable: INDL=Y OR birth certificate item number 45 (CHARACTERISTICS OF LABOR AND DELIVERY), processing variable: AUGL=Y.

S.12. Stratification Details/Variables (All information required to stratify the measure results including the stratification variables, definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b)

N/A

S.13. Risk Adjustment Type (Select type. Provide specifications for risk stratification in S.12 and for statistical model in S.14-15)

Other

If other: Cohort comparison

S.14. Identify the statistical risk model method and variables (Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development and testing should be addressed with measure testing under Scientific Acceptability)

The statistical risk model uses a cohort comparison method derived from the concept behind logistic regression methodology. Logistic regression methodology creates an equation based on prior outcomes which is then used to predict the number of expected cesarean births in a target population. The risk adjustment is created by dividing the actual cesarean birth rate by the expected cesarean birth rate. The cohort comparison method uses the prior outcomes of similar patients to predict the number of expected cesarean births in a target population. Similar is determined by eight previously proven risk factors for cesarean birth. Those risk factors are: parity (nulliparous or multiparous), fetal size, maternal prepregnancy body mass index, maternal age, maternal height, gestational age, maternal pregnancy weight gain and type of onset of labor (spontaneous or induced).

S.15. Detailed risk model specifications (must be in attached data dictionary/code list Excel or csv file. Also indicate if available at measure-specific URL identified in S.1.)

Note: Risk model details (including coefficients, equations, codes with descriptors, definitions), should be provided on a separate worksheet in the suggested format in the Excel or csv file with data dictionary/code lists at S.2b.

Provided in response box S.15a

S.15a. Detailed risk model specifications (if not provided in excel or csv file at S.2b)

The risk adjustment is created by comparing the actual cesarean birth rate to the expected cesarean birth rate for the target population. The expected cesarean birth rate is created by first predicting the probability of cesarean birth for each woman in the target population. Each woman's probability of cesarean birth represents her inherent risk that labor will result in a cesarean birth. Once the inherent risk for each woman in the target population is determined then the average of these inherent risks is calculated and becomes the expected cesarean birth rate for the target population.

The inherent risk for each woman is determined by finding a cohort of 100 similar women in our database of birth records. Once a cohort of at least 100 birth records of women with similar physical characteristics are found, the percentage of cesarean births found in the most recent 100 birth records is used to assign the inherent risk for that woman's birth. Similar is determined by finding birth records with the same parity (nulliparous or multiparous), onset of labor (spontaneous or induced) newborn weight plus or minus 200 grams, prepregnancy maternal body mass index plus or minus three kg/m², maternal age plus or minus three years, maternal height plus or minus one inch, gestational age plus or minus one week, maternal weight gain plus or minus nine pounds. If the initial search does not result in 100 matching birth records within the same state then a second search is conducted ignoring the state of birth. If the second search does not result in 100 matching birth records, then the range of the physical characteristics of the birth are expanded until at least 100 matching records are found.

The Birthrisk Cesarean Birth Measure for the target population is created by multiplying the risk adjustment (actual cesarean birth rate / expected cesarean birth rate) by a constant. The average inherent risk for all births in the database that occurred in the same time frame as the target population creates the constant.

Processing variables:

1. Newborn weight: BWG from item 49

2. Prepregnancy maternal body mass index calculated from: HFT and HIN from item 31, PWGT from item 32

3. Maternal age calculated from: MDOB_YR, MDOB_MO, MDOB_DY from 8b, IDOB_YR, IDOB_MO, IDOB_DY from item 4

4. Maternal height: HFT and HIN from item 31
5. Gestational age: OWGEST from item 50
6. Maternal weight gain calculated from: DWGT from item 33, PWGT from item 32
7. Parity (nulliparous or multiparous) determined from: PLBL from item 35a, PLBD from item 35b
8. Onset of labor (spontaneous or induced): INDL from item 45

S.16. Type of score:

Rate/proportion

If other:

S.17. Interpretation of Score (Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)

Better quality = Lower score

S.18. Calculation Algorithm/Measure Logic (Describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; aggregating data; risk adjustment; etc.)

1. The target population is created from women who gave birth during the specified time period as determined by an existing Birth Certificate. Required data collection from each birth is obtained according to the U.S. Standard Certificate of Birth Item Number, Description and (Processing Variable(s)) as previously listed in the denominator details.
2. Women are excluded from the denominator if they gave birth prior to 37 weeks or after 42 weeks, had a history of a prior cesarean birth, had a multiple gestation, did not have a vertex presentation or did not attempt to have a vaginal birth by attempting labor as previously illustrated in the denominator exclusion details.
3. Each birth record is assigned a predicted risk of cesarean birth (inherent risk) by finding a cohort of 100 similar births in our existing database and using the number of cesarean births in the cohort as the assigned risk. Similar has been previously defined in the detailed risk model specifications.
4. The actual cesarean birth rate is determined by dividing the number of cesarean births by the number of births in the target population. The actual cesarean birth rate is determined for each obstetrical care provider and facility in the target population.
5. The expected cesarean birth rate is determined by calculating the average of the inherent risk assigned to each birth in the target population. The expected cesarean birth rate is determined for each obstetrical care provider and facility in the target population.
6. The risk adjustment is created by taking the actual cesarean birth rate and dividing it by the expected cesarean birth rate. The risk adjustment is determined for each obstetrical care provider and facility in the target population.
7. The Birthrisk Cesarean Birth Measure is created by multiplying the risk adjustment by a constant. That constant is the average inherent risk for all births occurring in the same time frame in the database as the target population and in the same state regardless of the provider or facility. The Birthrisk Cesarean Birth Measure is created for each obstetrical care provider and facility in the target population.

S.19. Calculation Algorithm/Measure Logic Diagram URL or Attachment (You also may provide a diagram of the Calculation Algorithm/Measure Logic described above at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

Available at measure-specific web page URL identified in S.1

S.20. Sampling (If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)

IF a PRO-PM, identify whether (and how) proxy responses are allowed.

N/A

S.21. Survey/Patient-reported data (If measure is based on a survey, provide instructions for conducting the survey and guidance on minimum response rate.)

IF a PRO-PM, specify calculation of response rates to be reported with performance measure results.

N/A

S.22. Missing data (specify how missing data are handled, e.g., imputation, delete case.)
Required for Composites and PRO-PMs.

N/A

S.23. Data Source (Check ONLY the sources for which the measure is SPECIFIED AND TESTED).

If other, please describe in S.24.

Other

S.24. Data Source or Collection Instrument (Identify the specific data source/data collection instrument e.g. name of database, clinical registry, collection instrument, etc.)

IF a PRO-PM, identify the specific PROM(s); and standard methods, modes, and languages of administration.

Birth Certificate Records.

S.25. Data Source or Collection Instrument (available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

No data collection instrument provided

S.26. Level of Analysis (Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)

Clinician : Individual, Facility

S.27. Care Setting (Check ONLY the settings for which the measure is SPECIFIED AND TESTED)

Hospital/Acute Care Facility

If other:

S.28. COMPOSITE Performance Measure - Additional Specifications (Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)

2a. Reliability – See attached Measure Testing Submission Form

2b. Validity – See attached Measure Testing Submission Form

[Birthrisk_Cesarean_Birth_Measure-measure_testing_form.docx](#)

3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

3a.1. Data Elements Generated as Byproduct of Care Processes.

Generated or collected by and used by healthcare personnel during the provision of care (e.g., blood pressure, lab value, diagnosis, depression score)

If other:

3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

3b.1. To what extent are the specified data elements available electronically in defined fields? (i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields)

ALL data elements are in defined fields in a combination of electronic sources

3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources.

3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL.

Attachment:

3c. Data Collection Strategy

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

3c.1. Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

IF a PRO-PM, consider implications for both individuals providing PROM data (patients, service recipients, respondents) and those whose performance is being measured.

The goal is to have each entity provide all of their data electronically. The data can be digitally extracted from the facility from the information used to report data for the U.S. Standard Certificate of Birth. Ideally, the data will be provided by a software bridge between the software at the facility and the software that creates the measure. The goal for timing and frequency of data collection is to have data submitted monthly so that performance measures can be made available within three months of when the births occurred.

The data provided by healthcare entities will be provided under a limited data use agreement in order to meet patient confidentiality requirements. The database that stores the records provides encryption of both the date of the birth and the date of the mother's birth to further improve confidentiality. It is anticipated that the amount of missing data will be significantly decreased through dedicated communication between the healthcare entity and Birthrisk.com, LLC.

3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified (e.g., value/code set, risk model, programming code, algorithm).

A licensing fee would be required for use of the proprietary software. The license fee would depend on how the data is provided. There would be additional costs for creation and maintenance of software bridges. Data on all births would be submitted so that birth data can be accurately reconciled.

The pricing structure is dependent on the method of data entry. If every birth in the United States was submitted on paper then the break-even point is less than one quarter of one percentage point decrease in the cesarean birth rate and if all births were reported via a software bridge then less than one tenth of one percentage point decrease would be the break-even point (assuming a \$5,000 savings of a vaginal birth over a cesarean birth). However, if a system of value-based reimbursement is put into place then the break-even point can be achieved immediately. In fact, putting a value-based reimbursement system into place would more than just break-even; it would immediately result in a substantial cost savings.

4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

4.1. Current and Planned Use

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported

within 6 years of initial endorsement in addition to performance improvement.

Planned	Current Use (for current use provide URL)
<p>Public Reporting</p> <p>Quality Improvement with Benchmarking (external benchmarking to multiple organizations)</p> <p>Quality Improvement (Internal to the specific organization)</p>	

4a.1. For each CURRENT use, checked above, provide:

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included

N/A

4a.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons? (e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?)

Currently, public reporting of an accurate cesarean birth measure does not exist. Unfortunately, there has been public reporting of fatally flawed cesarean birth measures in both Canada and the United States which have impeded implementation. Persistence at contacting the Canadian Institute for Health Information and a critical analysis published in the Journal of Obstetrics and Gynaecology Canada has led to the removal of their publicly reported fatally flawed cesarean section indicator from their website. Persistence at contacting the Joint Commission of the leveraging error present in their direct standardization age adjustment technique for core measure PC-02 has led to an email acknowledging that they are aware of the error and that they are planning on removing the direct standardization adjustment from their measure. The LeapFrog Group has published a nationwide list of unadjusted NTSV cesarean birth rates by hospital claiming that this measure uses a “tested, validated measure endorsed by the Joint Commission, National Quality Forum and CMS”. Critical analysis reveals that an unadjusted NTSV cesarean birth rate has never been tested or validated and is not the measure that was endorsed by the National Quality Forum. Unfortunately, contacting every member of the board at the Leapfrog Group as well as their obstetrical advisory panel to inform them that their cesarean birth measure is fatally flawed and provides a huge disservice to the women who are giving birth has not resulted in any response from the Leapfrog Group.

Several states have requirements on hospitals to report overall and primary cesarean birth rates but these rates are of no practical use to the public. This problem has been discussed with department of health officials in many states and they are looking for an accurate cesarean birth measure. The Joint Commission will be looking to replace core measure PC-02 with a cesarean birth measure that is free from the errors caused by direct standardization and the Leapfrog Group will eventually realize that their measure is fatally flawed. I believe that the ability of the Birthrisk Cesarean Birth Measure to accurately measure the effects of labor management strategies in any target population of women regardless of the actual cesarean birth rate will result in its adoption at the national, state, facility and provider level within a few years after endorsement.

4a.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement. (Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.)

Upon endorsement of the Birthrisk Cesarean Birth Measure the stakeholders who are concerned with decreasing the number of cesarean births across the nation would be made aware that an accurate cesarean birth measure is available. Both the Joint Commission and the LeapFrog group currently work with hospitals across the country with the goal of obtaining and reporting a cesarean birth measure to the public. Either of these organizations would benefit from collaboration. If neither organization collaborates then State Departments of Health would be contacted in an attempt to establish state wide reporting of the cesarean birth measure. In states where state wide reporting is not available, healthcare systems as well as individual hospitals would be

contacted for use of the cesarean birth measure for process improvement or public reporting. Large obstetrical group practices can use this measure for process improvement as well.

This performance measure can be made public through the reporting mechanisms of the entities themselves or directly through the internet to the general public if so desired. Access to the general public could be through any device that can access the internet including mobile devices like smart phones.

4b. Improvement

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

4b.1. Progress on Improvement. (Not required for initial endorsement unless available.)

Performance results on this measure (current and over time) should be provided in 1b.2 and 1b.4. Discuss:

- Progress (trends in performance results, number and percentage of people receiving high-quality healthcare)
- Geographic area and number and percentage of accountable entities and patients included

N/A

4b.2. If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

Improving the quality of care provided to women who labor is ultimately up to the obstetrical care provider. Performance results provided at the provider level reveal that performance scores at the facility level could be misleading. For example, performance measure scores provided for the facility with the most births revealed that almost 90% of the providers at that facility had average performance scores and that the below average score of the facility was a result of the performance of only about 10% of the providers. Having a performance measure that provides provider specific results will allow for quality improvement at the obstetrical care provider level.

4c. Unintended Consequences

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

4c.1. Were any unintended negative consequences to individuals or populations identified during testing; OR has evidence of unintended negative consequences to individuals or populations been reported since implementation? If so, identify the negative unintended consequences and describe how benefits outweigh them or actions taken to mitigate them.

N/A

5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

5. Relation to Other NQF-endorsed Measures

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

Yes

5.1a. List of related or competing measures (selected from NQF-endorsed measures)

0471 : PC-02 Cesarean Birth

5.1b. If related or competing measures are not NQF endorsed please indicate measure title and steward.

5a. Harmonization

The measure specifications are harmonized with related measures;

OR

The differences in specifications are justified

5a.1. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):

Are the measure specifications completely harmonized?

5a.2. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.

5b. Competing Measures

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);

OR

Multiple measures are justified.

5b.1. If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):

Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)

The Birthrisk Cesarean Birth Measure is superior to measure #0471 for several reasons.

The case mix used by the Birthrisk Cesarean Birth Measure includes approximately two thirds of pregnant women whereas the case mix for measure #0471 only includes about one third. Measure #0471 uses a case mix suggested by the American College of Obstetricians and Gynecologists (ACOG) in their Evaluation of Cesarean Delivery from 2000. However, ACOG also stated that “The highest variation occurs among nulliparous patients with term singleton fetuses with vertex presentations (NTSV) without other complications.” and “Differences in patient characteristics probably account for some of the variations in cesarean delivery rates and explain some of the differences between practitioners and hospitals.” in their Evaluation of Cesarean Delivery. Measure #0471 ignores ACOG’s statements concerning patients with “other complications” as well as the significant effect on the risk for cesarean birth due to differences in patient characteristics. The Birthrisk Cesarean Birth Measure includes the NTSV pregnancies that are without other complications and accounts for differences in patient characteristics. Additionally, the Birthrisk Cesarean Birth Measure includes women who have already had a prior vaginal birth. The case mix used by the Birthrisk Cesarean Birth Measure better reflects the statements made by ACOG in 2000 as to NTSV pregnancies and will allow for the improvement of care to not only nulliparous women but also to women who have had a prior vaginal birth.

Including patients with “other complications” in the case mix for measure #0471 results in including women who have contraindications for vaginal birth such as placenta previa, fetal distress prior to labor, medical contraindications for labor, fetal contraindications for labor, women with an un-inducible cervix and women who have requested an elective cesarean birth. An increase or decrease in women with these diagnoses can significantly affect the outcome of the measure resulting in an inaccurate measure of the effect that the obstetrical care provider has on a woman’s risk for a cesarean birth. Even one or two additional cesarean births due to these diagnoses can significantly affect the measure as is illustrated in the most important concern below.

Measure #0471 assumes that all nulliparous women with a term single fetus in the vertex position (NTSV) have the same risk for cesarean birth after adjusting for age. However, in addition to maternal age, there are other physical characteristics of the mother and her baby that have been previously proven to significantly affect the risk for a cesarean birth. These include newborn weight, maternal prepregnancy body mass index, maternal height, gestational age and maternal weight gain. In addition, induction of labor has also been previously proven to significantly increase the risk for a cesarean birth. Failure to provide any risk adjustment for all of these previously proven risk factors will result in a misleading measure for obstetrical care providers. For example, analysis of data from millions of women who attempted labor reveals that inducing labor in a five foot two inch 36 year old nulliparous woman with a starting weight of 175 lbs. who has gained 42 lbs. and is carrying a 4,000 gram baby has a cesarean birth rate of approximately 70%. Whereas a five foot four inch 18 year old nulliparous woman with a starting weight of 115 lbs. who has gained 30 lbs. carrying a 3,500 gram baby who arrives in spontaneous labor has a cesarean birth rate of approximately 7%. This tenfold difference in the rate of cesarean birth due to the physical characteristics of the mother and her baby reveals that using an unadjusted or only age adjusted NTSV cesarean birth rate as a cesarean birth measure may result in simply a measure of the physical characteristics of the woman who are giving birth and not a measure of the effect of the obstetrical care provider’s labor

management strategies.

The most important concern is a major flaw found in the direct standardization technique being used to create the risk adjustment for age. The direct standardization technique used in measure #0471 is based on the work of Main et al. from 2006. The flaw in the direct standardization technique is illustrated by the sample hospital in their study. The sample hospital in their study had approximately 18,000 births over a three year period in order to create a target population of 7,068 nulliparous term singleton vertex (NTSV) births of which only 68 were in the 15 to 19 year old age group. This age group is assigned a weight of 21% in the direct standardization. This means that even though the sample hospital only had 1% of their births in the 15 to 19 year old age group this age group will be used to assign 21% of their cesarean birth measure. A small change in the number of cesarean births within that age group will result in a large change in their cesarean birth measure. Even with 6,000 total births each year the sample hospital will only have two patients per month and six patients per quarter accounting for 21% of their cesarean birth measure. This will make it very difficult for the sample hospital to obtain consistent results and this problem would only be magnified if the hospital had fewer than 6,000 births per year. If a hospital has the same age distribution of NTSV patients as the sample hospital in the study, critical analysis reveals that one additional cesarean birth in the 15 to 19 year old age group per 1,000 total births will increase their measure #0471 by five percentage points. This flaw makes measure #0471 meaningless not only for hospitals that have an age distribution that is similar to the sample hospital but also for hospitals whose age distribution is not similar to the national average.

Lastly, the goal of a cesarean birth measure is to measure the effect applied by the labor management strategies used by the obstetrical care provider. The accuracy of a cesarean birth measure is best validated by proving its ability to use the measure to predict future outcomes. Despite the fact that measure #0471 was developed many years ago this measure has never been validated by using it to accurately predict future outcomes. In fact, measure #0471 relies only on face validity. A cesarean birth measure that cannot accurately predict future outcomes is merely an educated guess of the risk applied by the obstetrical care provider and not truly a measure of the effect of the obstetrical care provider's labor management strategies.

Appendix

A.1 Supplemental materials may be provided in an appendix. All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.

Available at measure-specific web page URL identified in S.1 **Attachment:**

Contact Information

Co.1 Measure Steward (Intellectual Property Owner): Birthrisk.com, LLC.

Co.2 Point of Contact: Gustavo, San Román, M.D., DoctorGus@Birthrisk.com, 631-331-8885-248

Co.3 Measure Developer if different from Measure Steward: Birthrisk.com, LLC.

Co.4 Point of Contact: Gustavo, San Román, M.D., DoctorGus@Birthrisk.com, 631-331-8885-248

Additional Information

Ad.1 Workgroup/Expert Panel involved in measure development

Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.

Measure Developer/Steward Updates and Ongoing Maintenance

Ad.2 Year the measure was first released:

Ad.3 Month and Year of most recent revision:

Ad.4 What is your frequency for review/update of this measure?

Ad.5 When is the next scheduled review/update for this measure?

Ad.6 Copyright statement: Copyright 2007 by Birthrisk.com, LLC. All rights reserved.

Ad.7 Disclaimers:

Ad.8 Additional Information/Comments:

