Quality Measurement in Maternity Services: Staying One Step Ahead

Elliott K. Main, MD
Chair, Dept Ob/Gyn
California Pacific Medical Center, San Francisco
Director, CMQCC
Main@CMQCC.org
Objectives:

- Identify the components of the “Quality Landscape” for maternity services
- List the NQF / TJC Quality Measures for OB
- Understand the issues around physician autonomy and strategies to mitigate concerns

Disclosures:

- No associations of any kind with any company or product discussed in this lecture
Giant baseball is.... *torture!*
As a multi-stakeholder organization, CMQCC will transform OB care in California to improve maternal outcomes

To achieve this we will:

- Develop and implement best practices tool-kits and other QI tools and techniques
- Promote communication and collaboration between all maternity stakeholders
- Gather, review, and organize maternity data and statistics into actionable information for data-driven QI
- Train the next generation of maternal quality improvement leaders
CMQCC: Founding Organizations

- Maternal, Child and Adolescent Health Program, California Department of Public Health:
  Susann Steinberg, MD, Division Chief (former)
  Shabbir Ahmad, DVM, MS, PhD, Acting Division Chief

- California Perinatal Quality Care Collaborative (CPQCC) (est. 1996):
  Jeffrey Gould, MD, MPH,
  Elliott Main, MD,
  Barbara Murphy, MS, RN,
CMQCC Key Partner Organizations

State Agencies:
- MCAH, Dept Public Health
- OSHPD Healthcare Information Division
- Office of Vital Records (OVR)
- Regional Perinatal Programs of California (RPPC)

Public Groups
- California Hospital Accountability and Reporting Taskforce (CHART)
- Kaiser Family Foundation
- March of Dimes (MOD)

Professional groups
- American College of Obstetrics and Gynecology (ACOG)
- Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN)
- American College of Nurse Midwives (ACNM)

Key Medical and Nursing Leaders
- University and Hospital Systems
- Kaisers, Sutter, Sharp, CHW, Scripps, Public hospitals

CMQCC: Transforming Maternity Care
The Maternity Quality and Safety Landscape

- **Risk Mgmt**
  - Shoulder
  - Dystocia
  - Vacuum
  - Teamwork and Communications

- **Oversight**
  - Sentinel Event, RCA, FMEA
  - OPPE, FPPE

- **Outcome Measures**
  - Maternal Mortality/Severe Morbidity
  - Birth Injuries
  - Neonatal Mortality

- **Process Measures**
  - Antibiotics, VTE Prevention, Antenatal Steroids, <30min Emergent CS

- **Quality Indicators**
  - Identify cases for peer review: ACOG, IHI Adverse Events

- **No Harm Event / Near Miss Analyses**
  - Oxytocin

- **Level of Measurement**
  - Hospital, Medical Group, Provider, Population

- **Level of Release**
  - Public, Confidential, Internal Benchmarking

- **Other Measures**
  - Utilization (over/under)
  - Access
  - Disparity
The Maternity Quality and Safety Landscape

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National Quality Forum (NQF)

- National Quality Forum (NQF) created in 1999 by coalition of public- and private-sector leaders after recommendation of President’s Advisory Commission on Consumer Protection and Quality in the Health Care Industry
- Funding from public and private sources, including grants from foundations, corporations, and federal government e.g. RWJ, CMS, AHRQ
- 34% of total funding directly from members’ dues
National Quality Forum (NQF)

NQF Mission: Improve quality of American healthcare by:
- setting national priorities and goals for performance improvement
- endorsing national consensus standards for measuring and publicly reporting on performance
- promoting attainment of national goals through education and outreach programs

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National Voluntary Consensus Standards for Perinatal Care 2008

- In 2008, NQF convened steering committee of 20 perinatal experts, to develop national voluntary consensus standards for perinatal care
- 33 quality measures were submitted by various professional organizations, hospitals and healthcare systems and considered for inclusion by the committee
National Voluntary Consensus Standards for Perinatal Care 2008: Selection Criteria

- **Importance** – extent to which measure reflects variation in quality, low levels of overall performance, and to which it captures key aspects of flow of care

- **Scientifically acceptable** – extent to which measure is evidence-based and will produce consistent and credible results when implemented

- **Usable** – extent to which intended audiences (e.g., consumers, purchasers) can understand results of measure and are likely to find them useful for decision making

- **Feasible** – extent to which data can be obtained within normal flow of clinical care and to which implementation plan can be achieved
Measures Considered but Not Accepted

- Blood transfusion
- Maternal death
- Maternal ICU admission
- Maternal return to OR or L&D
- Uterine rupture
- Third- or fourth-degree laceration
- Apgar score <7 at 5 min
- Birth trauma/injury
- Intrapartum or neonatal death >2500 g
- Unexpected admission to neonatal ICU (>2500 g and for >24 h)
- VBAC (available)

Transforming Maternity Care

NATIONAL QUALITY FORUM

PERINATAL CARE

National Voluntary Consensus Standards for Perinatal Care 2008

A CONSENSUS REPORT
NQF National Consensus Standards for Perinatal Care 2008 (17 measures—9 OB)

- Episiotomy rate
- Elective delivery prior to 39 weeks
- Cesarean rate for low-risk first births
- Prophylactic antibiotics for Cesarean birth
- DVT prophylaxis for women having a Cesarean birth
- Exclusive breastfeeding at hospital discharge
- Birth trauma rate (limited ICD9 codes)
- Rate of antenatal steroids for under 34 week births
- Infants under 1500g (VLBW) not delivered at Level III center
“No mother (or baby) left behind”

- CMS (Medicare) has had “adult” measures for many years
- Not a single measure concerns pregnancy or children
- Commercial payers also use CMS measures
- NQF is now the inter-agency “clearinghouse” for new measures
- Suddenly, “everyone” wants W&C measures
The Joint Commission (TJC) Perinatal Core Measure Set

- Feb, 2009, TJC convened technical advisory panel of 8 perinatal experts to review NQF recommendations and select a subset for TJC core performance measures for perinatal care.
- The 5 measures selected apply to hospital discharges starting April 1, 2010.
- TJC had not updated core performance measures for perinatal care since 1999.
NQF National Consensus Standards for Perinatal Care 2008 (17 measures—9 OB)

- Episiotomy rate
- Elective delivery prior to 39 weeks
- Cesarean rate for low-risk first births
- Prophylactic antibiotics for Cesarean birth
- DVT prophylaxis for women having a Cesarean birth
Performance Measurement Initiatives

Perinatal Care Core Measure Set

Last Updated 1/2010

Background

UPDATE January 2010: In late 2007, The Joint Commission’s Board of Commissioners recommended retiring and replacing the Pregnancy and Related Conditions (PR) measure set with an expanded set of evidenced-based measures. A technical advisory panel (TAP) comprising experts in the perinatal care field was convened in February 2009 to select the replacement set of measures from among those endorsed for national use by the National Quality Forum. This expanded measure set, now referred to as Perinatal Care (PC) comprises the following measures.

- Elective delivery
- Cesarean section
- Antenatal steroids
- Health care–associated bloodstream infections in newborns
- Exclusive breast milk feeding

Refinement of measure specifications has been completed. The Specifications Manual for Joint Commission National Quality Core Measures Version 2010A2 and the January Release Notes are now available. The PC measure set is now available for selection for hospitals beginning with April 1, 2010 discharges. If you have any questions about this measure set, please submit your question online.

Specifications Manuals for Joint Commission National Quality Core Measures


- 5 Perinatal Care Core Measures (specs revised 1-10)
  - PC-01: Elective Delivery
  - PC-02: Cesarean Section
  - PC-03: Antenatal Steroids
  - PC-04: Health Care-Associated Bloodstream Infections in Newborns
  - PC-05: Exclusive Breast Milk Feeding
- Discharges 04-01-10 thru 09-30-10

Elective Delivery (PC-01)  
The Joint Commission

- Patients with elective vaginal deliveries or elective cesarean sections at $\geq 37$ and $< 39$ weeks of gestation completed
  - Numerator: Patients with elective* deliveries
  - Denominator: Patients delivering singleton livebirths from 37+0 to 38+6 weeks of gestation
- Exclusions: Patients with a medical or obstetric indication (from a TJC standard list of ICD9 codes)

*Elective: Induction or Cesarean section in absence of active labor or rupture of membranes
Key Resource for Implementation

www.CMQCC.org/

www.marchofdimes.com/

Formally supported by ACOG (California and several other Districts), AHWONN, ACNM
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Abruptio placenta</td>
<td>• Placental abruption, placenta previa, unspecified antenatal hemorrhage</td>
</tr>
<tr>
<td>• Fetal demise</td>
<td>• Fetal demise, fetal demise in prior pregnancy</td>
</tr>
<tr>
<td>• Post-term pregnancy</td>
<td>• Post-term pregnancy</td>
</tr>
<tr>
<td>• Premature rupture of membranes</td>
<td>• Rupture of membranes prior to labor (term or preterm)</td>
</tr>
<tr>
<td>• Gestational hypertension, preeclampsia, eclampsia, chronic hypertension</td>
<td>• Gestational hypertension, preeclampsia, eclampsia, chronic hypertension</td>
</tr>
</tbody>
</table>
| • Maternal medical conditions, e.g., diabetes, renal disease, chronic pulmonary disease, antiphospholipid syndrome | • Preexisting diabetes, gestational diabetes  
• Renal disease  
• Maternal coagulation defects in pregnancy (includes anti-phospholipid syndrome)  
• Liver diseases (including cholestasis of pregnancy)  
• Cardiovascular diseases (congenital and other)  
• HIV infection |
| • Fetal compromise, e.g., severe Intrauterine Growth Restriction (IUGR), isoimmunization, oligohydramnios | • IUGR, oligohydramnios, polyhydramnios, fetal distress, abnormal fetal heart rate  
• Isoimmunization (Rh and other), fetal-maternal hemorrhage  
• Fetal malformation, chromosomal abnormality, or suspected fetal injury |
# Sample Scheduling Form

## BEST MEDICAL CENTER

**SCHEDULING FORM FOR INDUCTIONS AND CESAREAN SECTIONS**

Call (XXX) XXX-XXXX or Fax (XXX) XXX-XXXX

<table>
<thead>
<tr>
<th>Name</th>
<th>OB Provider</th>
<th>Phone</th>
<th>G/P</th>
<th>Type of Delivery Planned:</th>
<th>Desired Date/Time:</th>
</tr>
</thead>
</table>

**DATING**

- **EDC:** Gestational Age at Date of Induction or C/S: (week+day)
- EDC Based on: [ ] US 10-20 weeks; [ ] Doppler FHT for 30 weeks; [ ] hCG for 36 weeks
- Other dating criteria: [ ] (details)

By ACOG Guidelines, women should be 39 wks or greater before initiating an elective (no indication) delivery. ACOG also states that a mature fetal lung test in the absence of clinical indication is not considered an indication for delivery.

- [ ] Fetal Lung Maturity test result: ______ Date: ______

## INDICATION

### Obstetric and Medical Conditions (OK if <39 weeks)
(need to deliver <39 weeks dependent on severity of condition)

- [ ] Abruptio
- [ ] Previa
- [ ] Preeclampsia
- [ ] Gestational HTN
- [ ] GDM
- [ ] ≥41+0 weeks
- [ ] PROM
- [ ] Fetal Demise (current)
- [ ] Fetal Demise (prior)
- [ ] Oligohydramnios
- [ ] Polyhydramnios
- [ ] IUGR
- [ ] Non-reassuring fetal status
- [ ] Isoimmunization
- [ ] Fetal malformation
- [ ] Twin with complication

- [ ] Other: ______

Perinatology consult obtained and agrees with plan: [ ]

(consultant name)

### Scheduled C/S (>39 wks)

- [ ] Prior C/S
- [ ] Prior classical C/S
- [ ] Prior myomectomy (may be earlier with fetal lung maturity test)

- [ ] Breech presentation
- [ ] Other malpresentation
- [ ] Patient choice
- [ ] Other:
- [ ] Twin w/o complication (ok ≥38 wks)

**Elective Induction (>39 wks)**

- [ ] Patient choice/social
- [ ] Macrosomia
- [ ] Distance
- [ ] Other:

## CERVICAL EXAM (for inductions)

Date of Exam: ______ (within 7 days of date of induction)

- [ ] Bishop Score: circle each element of the exam below and add:
  - Score: [ ] Closed, [ ] 0-30%, [ ] 30-50%, [ ] 50-70%, [ ] 70-80%, [ ] ≥80%
  - Dilation: [ ] 1-2, [ ] 3-4, [ ] ≥5-6
  - Effacement: [ ] -2, [ ] -1, [ ] 0, [ ] 1, [ ] 2
  - Station: [ ] Firm, [ ] Medium, [ ] Midposition, [ ] Soft, [ ] Anterior
  - Consistency: [ ]
  - Position: [ ]

**Total Score:** [ ]

This section is used only by those hospitals using cervical exam criteria for scheduling inductions.

## SCHEDULING OFFICE USE

- [ ] Scheduled? by: ______
- [ ] Confirmed Date/Time: ______
- [ ] Referred to Dept Chair? [ ]
- [ ] Prenatal Record presented? LD: [ ] Yes

[www.CMQCC.org](http://www.CMQCC.org)
Critical Elements for Successful Implementation

Clinician and/or Patient Desire to Schedule an ELECTIVE [Non-Medically Indicated] Induction or Cesarean Section

- Clinician, Staff & Patient Education
- Elective Delivery Hospital Policy
- Physician Leadership
  A. Enforce policy
  B. Approve exceptions
- Induction / Cesarean Scheduling Process
- Case NOT Scheduled if Criteria Not Met
- QI Data Collection & Trend Charts
- Public Awareness Campaign

www.CMQCC.org
Typical Medical Staff FAQ’s

Why are some good reasons for doing a CS before 39 weeks not on the list, e.g. prior Classical CS?

- Not an ICD9 code for this diagnosis and certain other similar diagnoses, but they are rare and therefore do not change any center’s status.

Will University/Tertiary departments be disadvantaged because of an increased number of unusual cases not on the “approved” list?

- The number of such cases between 37-39 weeks is small.
- It is not expected that any department would reach 0%
Typical Medical Staff FAQ’s (2)

Does this tell me how I (the obstetrician) should manage an individual case?

- Quality measures look at aggregate data to identify good practices; not individual cases
- Averages among hospitals will be compared
- If a hospital is significantly higher than their peers that would raise concern

It still seems like “someone is telling us what to do…”

- To a certain extent, there is no longer complete freedom for all aspects of our care – but this is also true for all specialties, e.g. Cath labs, Transplant programs

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It takes special skills to herd cats...
It is no longer herding cats…

It’s Aligning EAGLES!
Why are doctors like cats?

- Aloof
- Independent
- Generally don’t travel in groups
- Don’t show emotion
- Always show up for food

Autonomy
Attacks on Autonomy

- Insurer’s review of our care plans
- Calls for public reporting of errors and quality indicators
- Steadily increasing oversight of our documentation, billing, and clinical management
- Government legislation on care and even CME’s!
- Clamor to do better policing of our own
Individual clinical autonomy is an important cause of the sometimes suboptimal performance in the timely and consistent application of clinical science; thus, it contributes to the decline in overall professional autonomy.
But what is the Zen part?

Physicians must give up some autonomy in order to regain it.
Loss leads to Grieving

- **Denial**: “This isn’t my data” “I can’t believe the administrative data!” “We don’t have a problem!”

- **Anger**: “It's not fair!"; "You can’t do this to me!"; “I will take my patients and leave for the next hospital!"

- **Bargaining**: “I understand this will happen, but if I could just have more time…”

- **Depression**: “Why bother, they are just going to screw me anyway!”

- **Acceptance**: ”If I can't fight it, I may as well prepare for it."


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Professional Leadership Key
For “Elective Delivery Prior to 39 weeks”

- ACOG has taken an active role
  - Letters of support and active leadership from multiple ACOG Districts. National has been supportive (This project builds on an ACOG guideline since 1979…)

- March of Dimes publishing the Toolkit and support materials

- State Health Departments

- Need MD/RN Leadership Training!!!
Cesarean Section (PC-02)

The Joint Commission

Nulliparous women with a term, singleton baby in a vertex position delivered by cesarean section

- Numerator: Patients with cesarean sections
- Denominator: Nulliparous patients delivered of a live term singleton newborn in vertex presentation
- Exclusions: none
- Risk Adjustment: maternal age
Cesarean Births Have Risen by Over 50% in the Last 10 years

NOTE: The total cesarean delivery rate is the percentage of all live births by cesarean delivery.
Risks of Being a Prior Cesarean…

- Decisions around VBAC-TOL vs. Rpt CB
- Risk of Uterine Rupture
- Risk of Hemorrhage/Transfusions
- Epidemic of Placenta Previa
- Epidemic of Placenta Accretas
- Marked Increase of Peripartum Hysterectomies
Marked Variation in Primary Cesarean Sections

Public Release Efforts in Other States
Guide to Avoiding Unnecessary Cesarean Sections in New York State

April 21, 2010

Sidney Wolfe, M.D.
Public Citizen Health Research Group

Full report as a pdf
Statements from press conference

Introduction
Objectives
Methods
About New York
Variations in Cesarean Sections, VBACs, and Midwife Availability by County and by Hospital Within Each County
Healthy Outliers: Two New York Hospitals that Have Bucked the Trend
Factors Possibly Associated with Variation in Rates
What is Driving Cesareans in New York?
How a Woman Can Avoid an Unnecessary Cesarean in New York State
What Health Departments and Hospitals Can Do to Reduce Unnecessary Cesareans
New York Hospital Birth Statistics by County

INTRODUCTION
The steep rise in cesarean sections has become a growing concern for those committed to improving the health of mothers and infants. A report in March 2010 from the U.S. National Center for Health Statistics concerning the rising rate of cesarean births stated that:

Cesarean delivery involves major abdominal surgery, and is associated with higher rates of surgical complications and maternal rehospitalization, as well as with complications requiring neonatal intensive care unit admission. In addition to health and safety risks for mothers and newborns, hospital charges for a cesarean delivery are almost double those for a vaginal delivery, imposing significant costs.[1]
### NY Public Citizen: Web reports of Hospital CS 2007 Data (released 4/21/10)

<table>
<thead>
<tr>
<th>The 10 hospitals with the LOWEST primary cesarean rates</th>
<th>The 10 hospitals with the HIGHEST primary cesarean rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn Memorial Hospital</td>
<td>Lawrence Hospital Center</td>
</tr>
<tr>
<td>Phelps Memorial Hospital</td>
<td>Good Samaritan Hospital Medical Center</td>
</tr>
<tr>
<td>St. Barnabas Hospital</td>
<td>St. Anthony Community Hospital</td>
</tr>
<tr>
<td>Brookhaven Memorial</td>
<td>St. Catherine of Siena Hospital</td>
</tr>
<tr>
<td>Samaritan Medical Center</td>
<td>Sound Shore Medical Center of Westchester</td>
</tr>
<tr>
<td>Ellis Hospital - McClellan Division</td>
<td>Westchester Medical Center</td>
</tr>
<tr>
<td>North Central Bronx Hospital</td>
<td>St. John’s Riverside Hospital</td>
</tr>
<tr>
<td>Seton Health System - St. Mary's</td>
<td>New York Presbyterian</td>
</tr>
<tr>
<td>Catskill Regional Medical Center</td>
<td>Claxton-Hepburn Medical Center</td>
</tr>
<tr>
<td>Good Samaritan Hospital of Suffern</td>
<td>St. Charles Hospital</td>
</tr>
</tbody>
</table>

**CMQCC:** Transforming Maternity Care
### Virginia Obstetrics Reports

Click any column to sort

= Better than expected performance

<table>
<thead>
<tr>
<th>Hospital Name</th>
<th>Deliveries</th>
<th>Cesarean</th>
<th>Epsiotomy</th>
<th>Hospital Length of Stay</th>
<th>Average Hospital Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inova Alexandria Hospital</td>
<td>3,563</td>
<td>28.43%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inova Fair Oaks Hospital</td>
<td>3,559</td>
<td>26.09%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inova Fairfax Hospital</td>
<td>11,673</td>
<td>30.10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inova Loudoun Hospital</td>
<td>2,227</td>
<td>19.19%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potomac Hospital</td>
<td>2,651</td>
<td>17.85%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prince William Hospital</td>
<td>2,642</td>
<td>16.31%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reston Hospital Center</td>
<td>3,014</td>
<td>33.51%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virginia Hospital Center</td>
<td>3,259</td>
<td>30.71%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Transforming Maternity Care**

**Issues:**
- Primary CS rate - right measure? Any other adjusters?
  - “My patients are high risk…”
- Attribution?
- Midwives, FP
- Statistical analysis?
Importance of NTSV population to the CS rate

98% of inter-institutional variation in overall CS rates can be attributed to NTSV (TSCN) rates

NTSV Induction Rate Correlates with NTSV Cesarean Rate

- 20 Hospitals
- Circle size is proportionate to birth rate

\[ r = 0.57 \quad (r^2 = 0.32) \]
\[ p < 0.0001 \]

NTSV Early Labor Admit Rate Correlates with NTSV Cesarean Rate

-20 Hospitals
-Circle size is proportionate to birth rate

\[ r = 0.62 \quad (r^2 = 0.38) \]

\[ p < 0.0001 \]

Combined Induction+Early Admit Rate Correlates BEST with NTSV Cesarean Rate

Not Easy to Solve…

- Elective inductions with unfavorable cervixes or early labor admissions are “associations”… (but strong ones)
- L&D Culture: units with high intervention rates have high primary CS rates
  - Culture involves doctors, nurses and women themselves
  - Requires interventions at all levels
Resources for Implementation

- CMQCC Toolkit under development

References:


CMS Leadership for Maternity Quality Measures

- NTSV CS has been selected by CMS as its lead maternity Medicaid measure
- Elective Delivery prior to 39 weeks is also being picked up by several states
- Medicaid pays for 48-52% of births in US
- Expect many commercial payers to follow the lead for OB measures, just as they did for the adult CMS measures
Antenatal Steroids (PC-03)
The Joint Commission

- Patients at risk of preterm delivery at 24-32 weeks gestation receiving antenatal steroids prior to delivering preterm newborns
  - Numerator: Patients with a full course of antenatal steroids completed prior to delivering preterm newborns
  - Denominator: Patients delivering preterm newborns with 24-32 weeks gestation completed
  - Exclusions: Patients with documented reason for not administering antenatal steroids
Key Resource for Implementation

CPQCC Antenatal Corticosteroid Therapy (ANS) Toolkit

Revised October 2009

http://www,cpqcc.org/quality_improvement/qi_toolkits/antenatal_corticosteroi_therapy_rev_october_2009
CPQCC Antenatal Corticosteroid Therapy (ANS) Toolkit

- ANS Evidence Based Guidelines
- Benchmarking
- Problem Identification Worksheets
- FOCUS PDCA
- ANS Quality Improvement Examples
- References

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www.cpqcc.org
Exclusive breast milk feeding (PC-05)
The Joint Commission

- Exclusive breast milk feeding during the newborn's entire hospitalization
  - Numerator: Newborns that were fed breast milk only since birth
  - Denominator: Newborns discharged from the hospital
  - Exclusions:
    - Discharged from the hospital while in NICU
    - Documented maternal medical conditions for which breast milk feeding should be avoided (a short list of TJC defined infections and medications)
    - Note: does not exclude baby indications for supplementation such as hypoglycemia

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Breastfeeding: Key Resource for Implementation

Implementing The Joint Commission Perinatal Care Core Measure on Exclusive Breast Milk Feeding

www.usbreastfeeding.org
Implementing The Joint Commission Perinatal Care Core Measure on Exclusive Breast Milk Feeding

- Background
- Discussion of the measure details
- Recommendations for documentation
- Additional internal process measures for QI
- Example forms and charting samples
The Maternity Quality and Safety Landscape

**Risk Mgmt**
- Shoulder Dystocia
- Vacuum
- Teamwork and Communications

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- Identify cases for peer review: ACOG, IHI Adverse Events

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- Access Disparity

**Analyses**
Questions? / Discussion?

Elliott Main, MD
CMQCC Principal Investigator
main@CMQCC.org
Whither Composite Measures?

- Value in combining related rare events
- Need objective definitions
- Best if similar in frequency (so one sub-measure does not dominate)

Example term neonatal composite:
- Birth injury(PS17) + “Low” 5’ Apgar + ventilation + NICU LOS >”3”days/Neonatal transfer ???

Example maternal morbidity composite:
- Hemorrhage/Transfusion + ICU admission + Op injury + Return to OR ???

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# OB Adverse Outcomes Index (AOI)

<table>
<thead>
<tr>
<th>Event</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood transfusion</td>
<td>5-6</td>
</tr>
<tr>
<td>Maternal death</td>
<td>0.1</td>
</tr>
<tr>
<td>Maternal ICU admission</td>
<td>2-3</td>
</tr>
<tr>
<td>Maternal return to OR or L&amp;D</td>
<td>2-5</td>
</tr>
<tr>
<td>Uterine rupture</td>
<td>0-1</td>
</tr>
<tr>
<td>Third- or fourth-degree laceration</td>
<td>20-30</td>
</tr>
<tr>
<td>Apgar score &lt;7 at 5 min</td>
<td>4-8</td>
</tr>
<tr>
<td>Birth trauma/ injury</td>
<td>3-4</td>
</tr>
<tr>
<td>Intrapartum or neonatal death &gt;2500 g</td>
<td>1-2</td>
</tr>
<tr>
<td>Unexpected admission to neonatal ICU (&gt;2500 g and for &gt;24 h)</td>
<td>20-30</td>
</tr>
</tbody>
</table>

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OB Adverse Outcomes Index (AOI)

- Collection of unrelated, mostly rare events for both mother and infant
- Index dominated by two measures: 3rd/4th lacerations and term NICU admission
  - 3rd/4th lac: driven by % nulliparity and local definitions (eg. does a partial 3rd count?)
  - NICU admits: often driven by local policies
- At best, suited for time course trials at a single institution
Birth Trauma/Injury (AHRQ PS17)

*ICD-9-CM Birth Trauma diagnosis codes:*

- **7670** Subdural and cerebral hemorrhage (due to trauma or to intrapartum anoxia or hypoxia)
- **7671.1** Epicranial subaponeurotic hemorrhage-massive (Sub-Galeal bleed)
- **7673** Injuries to Skeleton (excludes Clavicle)
- **7674** Injury to spine and spinal cord
- **7677** Other cranial and peripheral nerve injuries
- **7678** Other specified birth injuries
- **7679** Birth trauma, unspecified
Birth Trauma/Injury (AHRQ PS17)

Exclusions:

- Infants with a subdural or cerebral hemorrhage (subgroup of birth trauma coding) and any diagnosis code of pre-term infant (denoting birth weight of less than 2,500 grams and less than 37 weeks gestation or 34 weeks gestation or less).

- Infants with injury to skeleton (767.3, 767.4) and any diagnosis code of osteogenesis imperfecta (756.51).
### NPIC Total Inborn Birth Trauma Rate
#### Database Averages (per hospital)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>767.0</td>
<td>Subdural or cerebral hemorrhage</td>
<td>2</td>
</tr>
<tr>
<td>767.11</td>
<td>Epicranial subaponeurotic hemorrhage</td>
<td>1</td>
</tr>
<tr>
<td>767.19</td>
<td>Other injuries to scalp</td>
<td>57*</td>
</tr>
<tr>
<td>767.2</td>
<td>Fracture of clavicle</td>
<td>11*</td>
</tr>
<tr>
<td>767.3</td>
<td>Other injuries to skeleton</td>
<td>1</td>
</tr>
<tr>
<td>767.4</td>
<td>Injury to spine and spinal cord</td>
<td>0</td>
</tr>
<tr>
<td>767.5</td>
<td>Facial nerve injury</td>
<td>1</td>
</tr>
<tr>
<td>767.6</td>
<td>Injury to brachial plexus</td>
<td>6*</td>
</tr>
<tr>
<td>767.7</td>
<td>Other cranial and peripheral nerve inj.</td>
<td>0</td>
</tr>
<tr>
<td>767.8</td>
<td>Other specified birth trauma</td>
<td>8</td>
</tr>
<tr>
<td>767.9</td>
<td>Birth trauma unspecified</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Cases**: 86

**Total Inborn Birth Trauma Rate**: 1.9%

*excluded in AHRQ PS17

**Total Codes for AHRQ PS17**: 14

**AHRQ PS17 Birth Trauma Rate**: 0.3%
Figure 1. Distribution of all neonatal birth trauma and birth trauma considered to be a Patient Safety Indicator by AHRQ, 2004-2005\(^1\).

Distribution of All Trauma
- Other injuries to scalp (767.19)
- PSI birth trauma
- Fracture to clavicle (767.2)
- Injury to brachial plexus (767.6)
- Facial nerve injury (767.5)

Distribution of PSI Birth Trauma
- Other specified birth trauma (767.8)
- Subdural and cerebral hemorrhage (767.0)\(^2\)
- Other injuries to skeleton (767.3)\(^3\)
- Birth trauma unspecified (767.9)
- Epicranial subaponeurotic hemorrhage (massive) (767.11)
- Other cranial or peripheral nerve injury (767.7)
- Injury to spine or spinal cord (767.4) - unable to calculate weighted number due to small sample size.
NQF National Consensus Standards for Perinatal Care 2008 (17 measures—9 OB)

- Episiotomy rate
- Elective delivery prior to 39 weeks
- Cesarean rate for low-risk first births
- Prophylactic antibiotics for Cesarean birth
- DVT prophylaxis for women having a Cesarean birth
- Exclusive breastfeeding at hospital discharge
- Birth trauma rate (limited ICD9 codes)
- Rate of antenatal steroids for under 34 week births
- Infants under 1500g (VLBW) not delivered at Level III center

=Measures that are highest value (Quality + Savings)

JC Core Measure Set

Leapfrog Group Measures