Improving Perinatal Care in California: Reaching 500,000 Annual Births

HQI Annual Conference: November 2015

Funding from:
- California HealthCare Foundation
- Centers for Disease Control
- California Dept. Public Health
- Merck for Mothers

Elliott Main, MD
Julie Vasher, DNP RNC
Valerie Cape
Today’s Discussion

- What is CMQCC?
- Addressing CA Maternal Mortality and Morbidity
- How to reach over 120 hospitals for OB QI projects
- Moving California Projects to the National Scene
- Supporting Vaginal Births/ Reducing First-birth Cesarean rate
CMQCC Key Partner/Stakeholders

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

Public and Consumer Groups
- California Hospital Accountability and Reporting Taskforce (CHART)
- California HealthCare Foundation (CHCF)
- Kaiser Family Foundation
- March of Dimes (MOD)
CMQCC Key Partner/Stakeholders

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

Key Hospital Leaders
- Hospital Quality Institute (HQI)
- CHA and Regional Hospital Associations
- Kaisers, Sutter, Sharp, Dignity, Scripps, Providence, UC, and Public hospitals

...also, Purchaser, and Payer organizations

Transforming Maternity Care
Transforming Maternity Care

CMQCC: Major Areas of Activity

- Maternal Mortality and Morbidity Reduction
- Maternal Data Center
- Large-Scale Implementation
- Maternity Quality Measures

CMQCC

Transforming Maternity Care
Early Elective Delivery (EED) Success:
Collaborative Action :: Collective Impact

- Performance measures
- Public Reporting
- Public advocates (MOD)
- Prof Orgs (Natl and Local)
- Data-driven QI Projects
- Public Policy Medicaid
- Evidence
- Payers Purchasers

70-80% Reduction Nationally

Transforming Maternity Care
Early Elective Delivery (EED) Success:
Collaborative Action :: Collective Impact

Public Reporting

Public advocates (MOD)

70-80% Reduction Nationally

Transforming Maternity Care
The US has the highest Maternal Mortality rate of any high resource country and the only country outside of Afghanistan and Sudan where the rate is rising.


Rate per 10,000 delivery hospitalizations

- 1998-1999
- 2000-2001
- 2002-2003
- 2004-2005
- 2006-2007
- 2008-2009
- 2010-2011

1.6%
Maternal Mortality Rate, California and United States; 1999-2013

Maternal Deaths per 100,000 Live Births

HP 2020 Objective – 11.4 Deaths per 100,000 Live Births

California: ~500,000 annual births, 1/8 of all US births

Our Compelling Purpose:
The Pregnancy-Related Mortality Review Committee served as a driver for change
Pregnancy-Related Mortality in California
Causes, Characteristics, and Improvement Opportunities

Elliott K. Main, MD, Christy L. McCain, MPH, Christine H. Morton, PhD, Susan Holby, MPH, and Elizabeth S. Lawton, MHS

- Pregnancy-related mortality should not be considered a single clinical entity.
- The five leading causes exhibit different characteristics, degrees of preventability, and contributing factors, with the greatest improvement opportunities identified for hemorrhage and preeclampsia.
Transforming Maternity Care

Note: approx 30% of pregnancy-related deaths were from a variety of “other” causes (each below 8% including sepsis, ICH, other hemorrhages)
## Assessments of Preventability

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>North Carolina “Preventable”</th>
<th>California “Good or strong chance to alter the outcome”</th>
<th>United Kingdom “Substandard care that had a major contribution”</th>
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</thead>
<tbody>
<tr>
<td>Hemorrhage</td>
<td>93%</td>
<td>70%</td>
<td>44%</td>
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<tr>
<td>Preeclampsia</td>
<td>60%</td>
<td>60%</td>
<td>64%</td>
</tr>
<tr>
<td>Sepsis / Infection</td>
<td>43%</td>
<td>50%</td>
<td>46%</td>
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<tr>
<td>DVT / VTE</td>
<td>17%</td>
<td>50%</td>
<td>33%</td>
</tr>
<tr>
<td>Cardiomyopathy</td>
<td>22%</td>
<td>29%</td>
<td>25%</td>
</tr>
<tr>
<td>Amniotic Fluid Embolism</td>
<td>0%</td>
<td>0%</td>
<td>15%</td>
</tr>
</tbody>
</table>
## Maternal Mortality and Severe Morbidity

Underlying causes, compiled from multiple studies

<table>
<thead>
<tr>
<th>Cause</th>
<th>Mortality (1-2 per 10,000)</th>
<th>ICU Admit (1-2 per 1,000)</th>
<th>Severe Morbid (1-2 per 100)</th>
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<tbody>
<tr>
<td>VTE and AFE</td>
<td>15%</td>
<td>5%</td>
<td>2%</td>
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<tr>
<td>Infection</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>10-15%</td>
<td>35%</td>
<td>55%</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>15%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Cardiac Disease</td>
<td>25%</td>
<td>15%</td>
<td>5%</td>
</tr>
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</table>
Provider Contributing Factors in Maternal Deaths (California)

From detailed chart reviews of maternal deaths (CA-Pregnancy Associated Mortality Review Committee; CDPH-MCAH)

Obstetric Hemorrhage and Preeclampsia: Summary

- Most common preventable causes of maternal mortality
- Far and away the most common causes of Severe Maternal Morbidity
- High rates of provider “quality improvement opportunities”

Transforming Maternity Care
Improving Health Care Response to Obstetric Hemorrhage Version 2.0

Audrey Lyndon, PhD, RNC, FAAN; David Lagrew, MD; Larry Shields, MD; Elliott Main, MD; Valerie Cape, Editors.

University of California, San Francisco; Memorial Care Health Systems; Dignity Health; California Pacific Medical Center; California Maternal Quality Care Collaborative

Will implementation of a bundle change outcomes?

v2 Released 3/24/15: >4,000 downloads

www.CMQCC.org
OB Hemorrhage Response Plan

STAGE 1: OB Hemorrhage
Cumulative Blood Loss >500ml vaginal birth or >1000ml C/S - OR - Vital signs >15% change or HR >110, BP <85/45, O2 sat <95% - OR - Increased bleeding during recovery or postpartum

Mobilize

<table>
<thead>
<tr>
<th>Primary nurse, Physician or midwife to:</th>
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</thead>
<tbody>
<tr>
<td>□ Activate OB Hemorrhage Protocol and Checklist</td>
</tr>
<tr>
<td>□ Notify obstetrician (in-house and attending)</td>
</tr>
<tr>
<td>□ Notify charge nurse</td>
</tr>
<tr>
<td>□ Notify anesthesiaologist</td>
</tr>
</tbody>
</table>

ACT

<table>
<thead>
<tr>
<th>Primary nurse:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Establish IV access if not present, at least 18 gauge</td>
</tr>
<tr>
<td>□ Increase IV fluid rates (Lactated Ringers preferred) and increase Oxytocin rate (500 mL/hour of 10-40 units/1000 mL solution), Titrate Oxytocin infusion rate to uterine tone</td>
</tr>
<tr>
<td>□ Continue vigorous fundal massage</td>
</tr>
<tr>
<td>□ Administer Methergine 0.2 mg IM protocol (if not hypertensive) give once, if no response, move to alternate agent, if good response, may give additional doses q 2 hr</td>
</tr>
<tr>
<td>□ Vital Signs, including O2 sat &amp; level of consciousness (LOC) q 5 minutes</td>
</tr>
<tr>
<td>□ weighed materials, calculate and record cumulative blood loss q 5-15 minutes</td>
</tr>
<tr>
<td>□ Administer oxygen to maintain O2 sat at &gt;95%</td>
</tr>
<tr>
<td>□ Empty bladder, straight cath or place Foley with urimeter</td>
</tr>
<tr>
<td>□ Type and Crossmatch for 2 units Red Blood Cells STAT (if not already done)</td>
</tr>
<tr>
<td>□ Keep patient warm</td>
</tr>
</tbody>
</table>

THINK

<table>
<thead>
<tr>
<th>Consider potential etiology:</th>
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</thead>
<tbody>
<tr>
<td>□ Uterine atony</td>
</tr>
<tr>
<td>□ Trauma/Laceration</td>
</tr>
<tr>
<td>□ Retained placenta</td>
</tr>
<tr>
<td>□ Amniotic Fluid Embolism</td>
</tr>
<tr>
<td>□ Umbilical Cord Torsion</td>
</tr>
<tr>
<td>□ Uterine Rupture</td>
</tr>
</tbody>
</table>

If: Continued bleeding or uncontrolled vital sign instability and <1500 mL cumulative blood loss proceed to STAGE 2

UTEROTONIC AGENTS for POSTPARTUM HEMORRHAGE

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Side Effects</th>
<th>Contraindications</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitocin (Oxytocin)</td>
<td>10-40 units</td>
<td>IV infuse</td>
<td>Continuous</td>
<td>Usually none: Nausea, vomiting, hypotension (uterine inversion) with prolonged IV, 1000 mg IV, and 1 HMP with high doses, esp IV push</td>
<td>Hypersensitivity to drug</td>
<td>Room temp</td>
</tr>
<tr>
<td>Mesterolone (PG 225)</td>
<td>0.2 mg</td>
<td>IM (not given IV)</td>
<td>Q 2.4 hours</td>
<td>If no response after first dose, it is unlikely that additional doses will be of benefit</td>
<td>Nausea, vomiting, Severe hypertension, esp with rapid administration or in patients with HMP or MHP</td>
<td>Rehydrate, Protect from light</td>
</tr>
<tr>
<td>Hemabateren (15 methyl PG 225)</td>
<td>250 mg</td>
<td>IM or intra-</td>
<td>Q 15-30 min</td>
<td>If no response after 3 doses, it is unlikely that additional doses will be of benefit</td>
<td>Nausea, vomiting, Diarrhea, Fever, hypothermia, Headache, Hypotension, Hyperkalemia</td>
<td>Rehydrate</td>
</tr>
<tr>
<td>Cytotec (Misoprostol)</td>
<td>300-1000 mcg</td>
<td>Per rectum (PG)</td>
<td>One time</td>
<td></td>
<td>Rare: Known allergy to prostaglandin</td>
<td>Room temp</td>
</tr>
</tbody>
</table>

These tools are adapted for each hospital's resources.

2.0 Edition: www.CMQCC.org

Transforming Maternity Care
Maternal Mortality Rate, California and United States; 1999-2013

California: ~500,000 annual births, 1/8 of all US births

Maternal Deaths per 100,000 Live Births

- California Rate
- United States Rate


HP 2020 Objective – 11.4 Deaths per 100,000 Live Births

California Approach to Reduce Maternal Mortality and SMM

• Hemorrhage Taskforce (2009)
• Hemorrhage QI Toolkit (2010)
• Multi-hospital QI Collaborative(s) (2010-11)
  Test the “tools” and implementation strategies
• State-wide Implementation (2013-2014)

• Preeclampsia Taskforce (2012)
• Preeclampsia QI Toolkit (2013)
• Multi-hospital QI Collaborative (2013-2014)

• Cardiovascular Detailed Case Analysis (2013)
• Cardiovascular QI Toolkit (2015)
CMQCC Key Partners for Maternal Mortality and Morbidity

- California Dept. Public Health
- Merck For Mothers
- **Hospital Quality Institute (HQLI)**
  - CHA and Regional Hospital Associations
  - Patient Safety First
  - Hospital Engagement Network (HEN)
- Participating Hospitals (self-funded collaboratives)
- HRSA/ Maternal Child Health Bureau
Maternal Mortality Rate, California and United States; 1999-2013


HP 2020 Objective – 11.4 Deaths per 100,000 Live Births

Transforming Maternity Care
Maternal Mortality Rate, California and United States; 1999-2013

HP 2020 Objective – 11.4 Deaths per 100,000 Live Births

Maternal Mortality Rate, California and United States; 1999-2013

Recognition of the need to reduce maternal mortality and morbidity in the United States has led to the creation of the National Partnership for Maternal Safety. This collaborative, broad-based initiative will begin with three priority bundles for the most common preventable causes of maternal death and severe morbidity: obstetric hemorrhage, severe hypertension in pregnancy, and peripartum venous thromboembolism. In addition, three unit-improvement bundles for obstetric services were identified: a structured approach for the recognition of early warning signs and symptoms, structured internal case reviews to identify systems improvement opportunities, and support tools for patients, families, and staff that experience an adverse outcome. This article details the formation of the National Partnership for Maternal Safety and introduces the initial priorities.

(Obstet Gynecol 2014;123:973–7)
DOI: 10.1097/AOG.0000000000000219

issued a Sentinel Alert entitled “Preventing Maternal Death” and proposed various initiatives to decrease maternal mortality including case reporting and review, health care provider education, team training and drills, and thromboembolism prophylaxis.

During the past 2 years, several organizations—including the American College of Obstetricians and Gynecologists (the College), the Centers for Disease Control and Prevention, the Society for Maternal–Fetal Medicine, the Health Resources and Services Administration, the Association of Women’s Health, Obstetric, and Neonatal Nurses, and the American College of Nurse-Midwives—have collaborated to identify priorities for maternal safety. Universal recognition of the need for action to reduce U.S. maternal mortality and morbidity led to the creation of the National Partnership for Maternal Safety. This report outlines a national initiative for every birthing facility
Council on Patient Safety in Women’s Health Care

Includes senior leaders from:

- ACOG
- AWHONN
- ACNM
- SMFM
- SOAP, ASA
- AAFP

- AHA, VHA (Hospitals)
- AABB (Blood Banks)
- AABC (Birthing Centers)
- TJC (The Joint Commission)
- MCHB, CMMI, CMS, AHRQ (federal agencies)
National Partnership for Maternal Safety: 3 Maternal Safety Bundles in 3 Years

“What every birthing facility in the US should have…”

- Obstetric Hemorrhage
- Preeclampsia/Hypertension
- Prevention of VTE in Pregnancy

Note: The bundles represent outlines of highly recommended protocols and materials important to safe care **BUT** the specific contents and protocols should be individualized to meet local capabilities. Example materials are available from perinatal collaboratives and other organizations.
Creating a bundle is the easy part
AIM
Alliance for Innovation in Maternal Health

Cooperative Agreement between the Council for Safety in Women’s Health Care and the Maternal and Child Health Bureau
4 year grant from HRSA/Maternal Child Health Bureau to the Council for Patient Safety in Women’s Health (ACOG serving as the lead)

Goals:
1. Reduction in 1,000 deaths and 100,000 cases of severe maternal morbidity by adoption of safety bundles
2. Improvement of Post-partum visit content and uptake
3. Reduction of Low-risk First Birth Cesarean births

Engage 4-6 States every year for the next 4 years… First up: OK, MD, LA, MI, IL, NC, FL
CALIFORNIA PARTNERSHIP FOR MATERNAL SAFETY
What is the California Partnership for Maternal Safety

- Large scale implementation project in California
  - Nationally developed patient safety bundle
    - Obstetric Hemorrhage
  - Goal is to reach 100% of hospitals with birthing services
- Utilizing a “mentor” model for collaboration
Obstetric Hemorrhage Bundle

**Readiness**
- Every unit
  - Hemorrhage cart with supplies, checklist, instruction cards and posters
  - Immediate access to hemorrhage medications (kit or equivalent)
  - Establish a response team – who to call when help is needed
  - Establish massive and emergency release transfusion protocols/policies (type O negative/uncrossmatched)
  - Unit education on processes, unit-based drills (with post-drill debriefs)

**Recognition & Prevention**
- Every patient
  - Assessment of hemorrhage risk (prenatal, on admission, prior to delivery and post birth)
  - Measurement of cumulative blood loss (normal, as quantitative as possible)
  - Active management of 3rd stage of labor

**Response**
- Every hemorrhage
  - Unit-standard, stage-based on CQBL, obstetric hemorrhage emergency management plan with checklists
  - Support program for patients, families, and staff for all significant hemorrhages

**Reporting/Systems Learning**
- Every unit
  - Establish a culture of huddles for high risk patients and post-event debriefs to identify successes and opportunities
  - Multidisciplinary review of significant hemorrhages for systems issues
  - Monitor outcomes and process metrics in perinatal quality improvement committee

This bundle was developed by the Council On Patient Safety in Women’s Health Care, National Partnership for Maternal Safety 2014
Obstetric Hemorrhage Bundle

**READINESS**

*Every unit*

- Hemorrhage cart with supplies, checklist, instruction cards and posters
- Immediate access to hemorrhage medications
- Establish a response team
- Establish massive and emergency release transfusion protocols/policies
- Unit education on processes, unit-based drills
Obstetric Hemorrhage Bundle

RECOGNITION & PREVENTION

Every patient

- Assessment of hemorrhage risk (prenatal, on admission, prior to delivery and post-birth)
- Measure of cumulative blood loss (formal, as quantitative as possible)
- Active management of 3rd stage
Obstetric Hemorrhage Bundle

RESPONSE

Every hemorrhage

✓ Unit-standard, stage-based on QBL, obstetric hemorrhage emergency management plan with checklists

✓ Support program for patients, families, and staff for all significant hemorrhages
Every unit

- Establish a culture of huddles for high risk patients and post-event debriefs to identify successes and opportunities
- Multidisciplinary review of significant hemorrhages for systems issues
- Monitor outcomes and process metrics in perinatal quality improvement committee
What is a mentor model?

Hospital Implementation Teams

Mentor Physician
Mentor Nurse
Project Summary

- Impacting 274,000 Births (based on 2013 data)
- 126 Participating Hospitals
- 20 Teams of 6-8 hospitals
- 40 Active Mentor Leaders
PSF Hospital Participants

Alameda Health System – Highland Campus
Alta Bates
Anaheim Regional Medical Center
California Pacific Medical Center
California Pacific Medical Center – St. Luke’s
Citrus Valley Health Partners
Community Hospital of the Monterey Peninsula
Community Memorial Hospital
Community Regional Medical Center
Dameron Hospital
Desert Valley Hospital
Doctors Medical Center of Modesto
Dominican Hospital
El Centro Medical Center
Foothill Presbyterian Hospital
Fremont Medical Center – Rideout Health
Garfield Medical Center
Good Samaritan Hospital – Los Angeles
Hemet Valley Medical Center
Henry Mayo Newhall Memorial Hospital
Hoag Memorial Hospital
Huntington Beach Hospital
John Muir Medical Center
Kaiser – Fresno
Kaiser – Vacaville
Kaiser – Vallejo
Lodi Memorial Hospital
Long Beach Memorial Medical Center
Marian General Hospital
Memorial Hospital of Los Banos
Mendocino Coast District Hospital
Miller Children’s Long Point
Mills Peninsula Health Services
Monterey Park
Olive View UCLA
Orange Coast Memorial Medical Center
Palomar Memorial Center
PIH Health Hospital Downey
Pioneers Memorial Healthcare District
Pomerado Hospital
Pomona Valley Hospital Medical Center
Redlands Community Hospital
Ronald Regan UCLA Medical Center
Saddleback Memorial Medical Center
Salinas Valley Memorial Hospital
San Antonio Community Hospital
San Gabriel
Scripps Memorial Encinitas
Scripps Memorial La Jolla
Scripps Mercy Hospital
Scripps Chula Vista
Seton Medical Center
Sharp Chula Vista
Sharp Grossmont
Sharp Mary Birch Sharp Memorial Hospital
Sierra View District Hospital
St. Rose Hospital
Sutter Tracy Community Hospital
Torrance Memorial Medical Center
Tri-City Medical Center
UC Davis Medical Center
UC San Diego Healthcare System
Watsonville Community Hospital
Whittier Hospital Medical Center

Transforming Maternity Care
## Patient Safety First Participants

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<tr>
<th>HASC</th>
<th>HASDIC</th>
<th>HCNCC</th>
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<td>Wastonville Community Hospital</td>
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Transforming Maternity Care

Small Hospitals

< 1000 births per year

82 in CA

23 in

5 in
Small Hospitals: PSF

- Mendocino (North Coast) (140)
- Dominican (Santa Cruz) (830)
- Desert Valley (High Desert) (800)
- Olive View/UCLA (San Fernando Valley) (530)
- Tracy (Central Valley) (620)
Challenges

- Managers wear many hats
- Transport policies and Level of care
- Blood product availability and Transport to unit
- RN and MD competency and training
- Emergency response personnel

Transforming Maternity Care
Next steps

- Partner with local and regional blood banks, Standardized response
- Outreach from tertiary hospitals, Remote learning, Onsite drills
- OB education and tools for non-OB providers
- Grow QI potential within present staff
- Formal transport policies for EVERY facility

Transforming Maternity Care
Goals

- Find solutions to identified challenges
- Share with others in CPMS and Beyond
- Generalize process for “in between” hospital sizes
- Many of the same challenges
Stories of success from the field

- **Drills**
  - Low fidelity, multidisciplinary - Pioneer

- **Debriefing**
  - Rules, stopwatch, pathway for change

- **MTP**
  - ‘Having a policy in place helped everyone know their roles, get blood to the patient quickly, and save her life.’

- **Response teams (code crimson)**
  - Sutter Tracy
  - Dominican

- **Communication with all shifts**
  - Shift huddles
  - Communication binders
  - Drills – support from larger centers to include smaller centers in drills/simulations
CMQCC Maternal Data Center

Rapid-cycle data: metrics available within 45 days after every month!

- **PDD—Discharge Diagnosis File (ICD9/10 Codes)**
  - Monthly uploads: mother and infant PDD (participating hospitals)

- **Birth Certificate (Clinical Data)**
  - Monthly uploads: electronic files for all CA births

- **Chart Review (select metrics/QI projects)**
  - Supplemental files or manual data entry for these measures

Automated Linkage of all 3 files

Interactive Analytics Guide QI Practice

Links over 1,000,000 mother/baby records each year!

Transforming Maternity Care
CMQCC Key Partners for the Data Center

- California Health Care Foundation
- Centers For Disease Control
- Pacific Business Group on Health (PBGH)
- Hospital Quality Institute (HQI)
  - CHA and Regional Hospital Associations
- IHA
- CA Dept. HealthCare Services ( Medi-Cal)
### Measures

#### Hospital Clinical Performance Measures

- **Elective Delivery (PC-01)**: 16.1%
- **Low-Risk Cesarean Section Rate-NTSV (PC-02)**: 32.0%
- **Vaginal Birth After Cesarean (VBAC) Rate**: 11.5%
- **Uncomplicated (AHRQ IQI 22)**
- **Total Cesarean Section**: 35.0%
- **Primary Cesarean Section**: 22.6%
- **Failed Induction**: 16.2%

View all 31 Hospital Clinical Performance Measures

#### Provider Performance Measures

- **Cesarean Births**
- **Elective Deliveries**
- **Vaginal Births**

#### Hospital Data Quality Measures

- **Missing / Inconsistent Delivery Method**: 0.8%
- **Missing / Inconsistent V27 (Outcome of Delivery)**: 0.0%

View all 15 Hospital Data Quality Measures

### CPMS/PSF Hemorrhage Safety Initiatives

- **Massive transfusions (≥ 4 RBC units) per 1000 mothers**: 2
- **Total RBC/FFP blood products transfused per 1000 mothers**: 28
- **Severe Maternal Morbidity with Obstetric Hemorrhage**
- **Hemorrhage Case Debriefs**: 10 *
- **Hemorrhage Safety Bundle**: 44.4% *

View all 7 CPMS/PSF Hemorrhage Safety Initiatives

### CPMS Preeclampsia Safety Initiatives

- **Severe Maternal Morbidity with Preeclampsia**
- **Preeclampsia Timely Treatment**: 66.7%
- **Preeclampsia Case Debriefs**: 3 *
- **Preeclampsia Safety Bundle**: 0.0% *

### Hospital Statistics

- **Demographic Statistics**
- **Delivery Statistics**
- **Maternal Comorbidity Statistics**
- **Baby/Prematurity Statistics**
- **Utilization Statistics**
- **CCS Report**
Classic Run Chart with Comparisons

Screen Shot from the CMQCC Maternal Data Center
Bar Chart with Comparisons

C-Section Rate: Low Risk-NTSV (PC-02)

Start Date: 01/01/2014, Duration: 12 Months, Data Source: MDC, Confidence Intervals: On

- Demo Hospital: 29.8%
- Los Angeles County (32): 27.3%
- South Coastal LA-Orange Region (10): 28.1%
- CA MDC (135): 26.2%

The H-Bars on the graphs represent a 95% Confidence Interval (CI) around the calculated rate for each of the hospitals or groups represented on the bar graph. The Confidence Interval is calculated using the Clopper–Pearson technique.
CMDC
Comparative Statistics

Maternal Age (2013)

<table>
<thead>
<tr>
<th>Category</th>
<th>Under 20 yo</th>
<th>20-24 yo</th>
<th>25-29 yo</th>
<th>30-34 yo</th>
<th>35-39 yo</th>
<th>40+ yo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alameda County</td>
<td>4.4%</td>
<td>15.5%</td>
<td>25.3%</td>
<td>31.2%</td>
<td>18.6%</td>
<td>5.1%</td>
</tr>
<tr>
<td>North Coast East Bay</td>
<td>4.2%</td>
<td>15.1%</td>
<td>24%</td>
<td>30.6%</td>
<td>20.3%</td>
<td>5.9%</td>
</tr>
<tr>
<td>All Community Nurseries</td>
<td>6.5%</td>
<td>19.6%</td>
<td>26.2%</td>
<td>28.1%</td>
<td>15.5%</td>
<td>4.2%</td>
</tr>
<tr>
<td>California Statewide</td>
<td>6.4%</td>
<td>19.6%</td>
<td>26.3%</td>
<td>28.2%</td>
<td>15.5%</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

Demographic Groups (2013)

<table>
<thead>
<tr>
<th>Category</th>
<th>Hispanic, Native Born</th>
<th>Hispanic, Foreign Born</th>
<th>Non-Hispanic White</th>
<th>Non-Hispanic Black</th>
<th>Asian / Pacific Islander</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alameda County</td>
<td>13%</td>
<td>18.4%</td>
<td>22.3%</td>
<td>13.2%</td>
<td>28.2%</td>
<td>4.9%</td>
</tr>
<tr>
<td>North Coast East Bay</td>
<td>11.5%</td>
<td>20.4%</td>
<td>37.8%</td>
<td>7.7%</td>
<td>20.4%</td>
<td></td>
</tr>
<tr>
<td>All Community Nurseries</td>
<td>27.5%</td>
<td>23.5%</td>
<td>25.5%</td>
<td>5.6%</td>
<td>15.7%</td>
<td></td>
</tr>
<tr>
<td>California Statewide</td>
<td>26.9%</td>
<td>22.2%</td>
<td>28.2%</td>
<td>5.7%</td>
<td>14.8%</td>
<td></td>
</tr>
</tbody>
</table>

Payers (2013)

<table>
<thead>
<tr>
<th>Category</th>
<th>Medicaid</th>
<th>Private</th>
<th>Self-pay</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alameda County</td>
<td>40.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Coast East Bay</td>
<td>47.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Community Nurseries</td>
<td>49.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Statewide</td>
<td>46.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cesarean Births Have Risen by Over 50% in the Last 15 years

US 2013 = 32.7%
CA 2013 = 33.1%
Why should we care about CS rates? (1)

- Relentless Rise without Baby or Mother benefit
  - 6% in early 70’s, 20% in mid 80’s, 33% in 2010
  - CP rates, neonatal seizures unchanged since 1980
  - Overall, no benefit for long-term urinary continence

- Increased maternal and neonatal morbidity
  - Impaired neonatal respiratory function, NICU admits
  - Affects maternal-infant interaction/Breast Feeding
  - Increased maternal PP infections, VTE, transfusions
  - Longer recovery, 2X PP re-admissions

- Prior CS can have major complications
  - Placenta previa and accreta (invasion deep into or thru the uterine wall) ➔ hysterectomy or worse
  - Uterine rupture; abdominal adhesions
Why should we care about CS rates? (2)

- Immediate Costs
  - PBGH study of actual payments—both for commercial health plans and for Medi-Cal
  - Provider payments were modestly different, Hospitals had significant more for CS
  - Total payments averaged $5,000 more for CS*
    - $7,300 more for Commercial Plans
    - $2,861 more for Medi-Cal

- Longer-term Costs
  - Each first-birth CS averted will prevent at least one additional CS (no repeats!)
  - Fewer readmissions, complications

Large Variation of **Total** Cesarean Rate Among 251 California Hospitals: 2013

- **Range:** 15.0—71.4%
- **Median:** 32.5%
- **Mean:** 32.8%

"But, our patients are higher risk than other hospitals!"
Nulliparous, Term, Singleton, Vertex (NTSV) Cesarean Section Rate: Performance Measure

- Risk Stratified ("standard population")
- Widely Adopted Nationally
  - DHHS: Healthy Person 2010 and 2020
  - NQF endorsed, Joint Commission Perinatal Core Measure (PC-02), LeapFrog, CMS
- Further risk adjustment adds little
- >15 years experience
NTSV CS Rate Among CA Hospitals: 2014
(Nulliparous Term Singleton Vertex)
(Source: Linked OSHPD-Birth Certificate Data)

Range: 12%—70%
Median: 25.3%
Mean: 26.2%

40% of CA hospitals meet national target

Large Variation = Improvement Opportunity

National Target = 23.9%
4 Key Strategies for Reducing Primary Cesarean Sections

1. Establish the view that “Cesarean Section rates are important” among employers, purchasers, health plans, hospitals and providers
2. Provide rapid-cycle data with standard measures and QI tools for all facilities and providers
3. Change the culture on L&D to better support labor and vaginal birth—statewide QI project
4. Promote public and patient engagement
CMQCC Toolkit to Promote Vaginal Birth and Reduce Primary Cesarean Delivery

- **Readiness** (Developing a maternity culture that values, promotes, and supports intended vaginal birth)
- **Recognition** and Prevention (General labor support)
- **Response** to every labor challenge (Management of labor abnormalities)
- **Reporting** (Using Data to Drive Improvement)
- Lessons from Hospitals that have successfully reduced their NTSV CS Rate
- Lessons from Hospitals that have low NTSV CS Rates (year after year)

Multi-disciplinary author and reviewing teams—to be ready for distribution in February 2016

Transforming Maternity Care
Measure Analysis: Identify Drivers of the CS Rate (Step 1)

NTSV: Nulliparous (first-birth), Term, Singleton, Vertex presentation
MTSV: Multiparous (second or more-birth), Term, Singleton, Vertex presentation

Screen Shot from the CMQCC Maternal Data Center
Measure Analysis: Identify Drivers of the CS Rate (Step 2)

What Drives Our Nulliparous Term Singleton Vertex (NTSV) CS Rate?

Screen Shot from the CMQCC Maternal Data Center
New National Guidelines for Defining Labor Abnormalities and Management Options

Transforming Maternity Care
ACOG/SMFM Criteria for Dystocia: CMQCC Checklist

1. Diagnosis of Dystocia/Arrest Disorder
   (All 3 should be present)
   - Cervix 6 cm or greater
   - Membranes ruptured, then
   - No change X 4 hrs with adequate uterine activity (or 6 hrs with oxytocin)

2. Diagnosis of Failed Induction before 6 cm dilation
   (both should be present)
   - Bishop Score ≥ 6 cm before elective induction
   - Oxytocin used for a minimum of 12 hrs after membrane rupture

3. Diagnosis of Failed Induction after 6 cm dilation
   (see criteria 1)
Measuring Adherence to Labor Management Guidelines

<table>
<thead>
<tr>
<th>Category</th>
<th>Guidelines Not Met</th>
<th>Guidelines Met</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Labor Abnormalities (44 cases)</strong></td>
<td>Overall 59.1% Met Guidelines</td>
<td></td>
</tr>
<tr>
<td>Max Dilation &lt;6cm, Spontaneous Labor</td>
<td>2</td>
<td>N/A (0.0%)</td>
</tr>
<tr>
<td>Max Dilation &lt;6cm, Induced</td>
<td>1</td>
<td>10 (90.9%)</td>
</tr>
<tr>
<td>Active Phase (≥6cm)</td>
<td>12</td>
<td>10 (45.5%)</td>
</tr>
<tr>
<td>Second Stage (10cm/Complete)</td>
<td>3</td>
<td>6 (66.7%)</td>
</tr>
</tbody>
</table>

Screen Shot from the CMQCC Maternal Data Center
### Provider-Level Cesarean Rates

<table>
<thead>
<tr>
<th>Provider</th>
<th>Total Deliveries</th>
<th>NTSV Cesarean Section Rate</th>
<th>D</th>
<th>Total CS Rate</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct 2012 - Sep 2013 Statewide</td>
<td></td>
<td>27.6%</td>
<td>163090</td>
<td>33.2%</td>
<td>478231</td>
</tr>
<tr>
<td>Sample Medical Center</td>
<td>5844</td>
<td>32.2%</td>
<td>2369</td>
<td>37.9%</td>
<td>5844</td>
</tr>
<tr>
<td>G5xxxx</td>
<td>52</td>
<td>13.6%</td>
<td>22</td>
<td>9.6%</td>
<td>52</td>
</tr>
<tr>
<td>G6xxxx</td>
<td>47</td>
<td>36.8%</td>
<td>19</td>
<td>40.4%</td>
<td>47</td>
</tr>
<tr>
<td>G7xxxx</td>
<td>68</td>
<td>20.8%</td>
<td>24</td>
<td>42.6%</td>
<td>68</td>
</tr>
<tr>
<td>G8xxxx</td>
<td>60</td>
<td>15.4%</td>
<td>26</td>
<td>21.7%</td>
<td>60</td>
</tr>
<tr>
<td>A8xxxx</td>
<td>190</td>
<td>42.7%</td>
<td>75</td>
<td>44.7%</td>
<td>190</td>
</tr>
<tr>
<td>A6xxxx</td>
<td>52</td>
<td>35.0%</td>
<td>20</td>
<td>42.3%</td>
<td>52</td>
</tr>
<tr>
<td>A5xxxx</td>
<td>2</td>
<td>No Cases</td>
<td>0</td>
<td>100.0%</td>
<td>2</td>
</tr>
<tr>
<td>A4xxxx</td>
<td>114</td>
<td>35.3%</td>
<td>51</td>
<td>46.5%</td>
<td>114</td>
</tr>
<tr>
<td>A8xxxx</td>
<td>214</td>
<td>18.3%</td>
<td>82</td>
<td>28.0%</td>
<td>214</td>
</tr>
<tr>
<td>A9xxxx</td>
<td>481</td>
<td>36.2%</td>
<td>163</td>
<td>43.2%</td>
<td>481</td>
</tr>
</tbody>
</table>

Note the two busiest providers had widely different rates.
Data-Driven QI: NTSV CS

Pilot Hospital: Orange County

- NTSV CS Rate

National Target for NTSV CS = 23.9%

Transforming Maternity Care
This is the same “Orange County” as depicted in the popular television show.

This is the hospital where most of these mothers deliver…

Not the easiest population to start with…
CMQCC Data-Driven QI: NTSV CS

Pilot Hospital: PBGH / RWJ CS Collaborative

NTSV CS Rate

QI Project Started: Jan 16

National Target for NTSV CS = 23.9%

Transforming Maternity Care
What Drivers of the NTSV CS Rate Changed?

Baseline time period (2012)

Target

Last 12 month time period (Mar/2014--Feb/2015)

Collateral Benefit

Screen Shot from the CMQCC Maternal Data Center
### Low-risk First-birth (NTSV) Cesarean Reduction Project

<table>
<thead>
<tr>
<th>Period</th>
<th>Hoag Hospital</th>
<th>Miller Childrens/Long Beach Memorial</th>
<th>Saddleback Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline 2011-13 mean</td>
<td>32.60%</td>
<td>31.20%</td>
<td>27.20%</td>
</tr>
<tr>
<td>Post QI mean (last quarter)</td>
<td>24.70%</td>
<td>24.30%</td>
<td>21.90%</td>
</tr>
<tr>
<td>Percent Reduction</td>
<td>24.20%</td>
<td>22.10%</td>
<td>19.50%</td>
</tr>
</tbody>
</table>
Transforming Maternity Care

Collaborative Action: Collective Impact

Multiple Leverage Points are much more effective than one or two alone

Transforming Maternity Care
Thank You!

Visit: CMQCC.org

Transforming Maternity Care