Perinatal Quality Collaboratives:
State and National Successes

Elliott K. Main, MD
Medical Director, CMQCC
Clinical Professor, Obstetrics and Gynecology
University of California, San Francisco, and
Stanford University, Medical School
Objectives:

- Describe the national initiatives to improve safety and performance in OB
- Understand the power of perinatal collaboratives
- Describe the California experience with perinatal collaboratives
- Present the California Maternal Data Center and how it can be used to drive maternal QI efforts.
Presenter Disclosure(s):

- No conflicts

Acknowledgement of Support:

- California HealthCare Foundation
- Centers for Disease Control
- California Department of Public Health, Maternal Child Health Branch (Title V)
CPQCC and CMQCC

California Perinatal Quality Care Collaborative (CPQCC)
- Expertise in data capture from hospitals
- Established Perinatal Data Center in 1996, works with VON
- Data use agreements in place with 130 hospitals with NICUs
- Model of working with state agencies to provide data of value

California Maternal Quality Care Collaborative (CMQCC)
- Expertise in maternal data analysis
- Developer of QI toolkits: Early Elective Delivery, OB Hemorrhage, Preeclampsia, Primary Cesarean
- Host of collaborative learning sessions
- Established Maternal Data Center in 2011
California Perinatal Quality Care Collaborative

- Multi-stakeholder (providers, state agencies, public groups like MOD)
- Pioneered partnering with state agencies to use state data for QI
- Lead neonatal quality and safety collaboratives (>10 QI initiatives since 1996)
- Data submission from 131 of 136 Level 2 and Level 3 NICUs in CA (~17,000 infants), started as a branch of VON
California Perinatal Quality Care Collaborative
QI Initiatives since 2000

- Antenatal Steroids
- Postnatal Steroids
- Neonatal Hospital Acquired Infection Prevention
- Improving Initial Lung Function
- VLBW Nutritional Support Parts 1&2
- Perinatal Group B Streptococcus
- Severe Hyperbilirubinemia Prevention
- Perinatal HIV Prevention
- Delivery Room Management of the VLBW
- Care and Management of the Late Preterm Infant

CMQCC: Transforming Maternity Care
California Maternal Quality Care Collaborative

CMQCC is a multi-stakeholder organization that drives improvement in maternal and infant outcomes through rapid-cycle data analytics and collaborative actions.

- Development and validation of perinatal quality metrics and QI tools
- Lead (with partners) maternal quality and safety collaboratives
- QI implementation to scale: all 260 CA maternity hospitals
- All driven by the California Maternal Data Center
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
- 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),
- American Academy of Family Physicians (AAFP)

Key Medical and Nursing Leaders
- Universities and Hospital Systems
- Kaisers, Sutter, Sharp, Dignity, Scripps, Providence, Public hospitals,

CMQCC: Transforming Maternity Care
CMQCC Key Partner/Stakeholders (con’t)

Hospital Associations:
- California Hospital Association / HQI
- Regional Hospital Associations

Payers
- Aetna
- Anthem Blue Cross
- Blue Shield
- Cigna
- Health Net

Purchasers
- CALPERS (State and local government employees and retirees)
- Medi-Cal (for managed care plans)
- Pacific Business Group on Health/ Silicon Valley Employers Forum
- Cover California (ACA entity)
<<Considerations>>

- Importance of including as many stakeholders as possible in the collaborative
- Creating value for each stakeholder—thinking thru “what can the collaborative do for each stakeholder category?”
CMQCC: Transforming Maternity Care

Major Areas of Activity

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

CMQCC: California Maternal Quality Care Collaborative
<<Considerations>>

- Important for Quality Collaboratives to do BOTH performance and safety projects
- Maximize stakeholder engagement
- Builds recognition and respect

CMQCC: Transforming Maternity Care
Ongoing reviews of pregnancy-related deaths
- To identify causes and improvement opportunities
- Important driver of QI toolkits
- Severe maternal morbidity represents an accessible more frequent metric
Maternal Mortality Ratios in Selected Countries over the Past 30 Years

Hogan et al, Lancet 2010; 375:
Maternal Mortality Rate, California and United States; 1999-2010

SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2010. Maternal mortality for California (deaths ≤ 42 days postpartum) was calculated using ICD-10 cause of death classification (codes A34, O00-O95,O98-O99) for 1999-2010. United States data and HP2020 Objective were calculated using the same methods. U.S. maternal mortality rates are published by the National Center for Health Statistics (NCHS) through 2007 only. Rates for 2008-2010 were calculated using NCHS Final Birth Data (denominator) and CDC Wonder Online Database for maternal deaths (numerator). Accessed at http://wonder.cdc.gov/ucd-icd10.html on Apr 17, 2013 8:00:39 PM. Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, April, 2013.
THE CALIFORNIA PREGNANCY-ASSOCIATED MORTALITY REVIEW

Report from 2002 and 2003 Maternal Death Reviews

This project was supported by federal Title V block grant funds received from the California Department of Public Health; Center for Family Health; Maternal, Child and Adolescent Health Division

April 2011
# CA-PAMR: Chance to Alter Outcome

## Grouped Cause of Death; 2002-2004 (N=145)

<table>
<thead>
<tr>
<th>Grouped Cause of Death</th>
<th>Chance to Alter Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strong / Good (%)</td>
</tr>
<tr>
<td>Obstetric hemorrhage</td>
<td>69</td>
</tr>
<tr>
<td>Deep vein thrombosis/pulmonary embolism</td>
<td>53</td>
</tr>
<tr>
<td>Sepsis/infection</td>
<td>50</td>
</tr>
<tr>
<td>Preeclampsia/eclampsia</td>
<td>50</td>
</tr>
<tr>
<td>Cardiomyopathy and other cardiovascular causes</td>
<td>25</td>
</tr>
<tr>
<td>Cerebral vascular accident</td>
<td>22</td>
</tr>
<tr>
<td>Amniotic fluid embolism</td>
<td>0</td>
</tr>
<tr>
<td>All other causes of death</td>
<td>46</td>
</tr>
<tr>
<td><strong>Total (%)</strong></td>
<td>40</td>
</tr>
</tbody>
</table>
Dominance of Provider QI Opportunities: Hemorrhage and Preeclampsia

• California Pregnancy Associated Mortality Reviews
  – Missed triggers/risk factors: abnormal vital signs, pain, altered mental status/lack of planning for at risk patients
  – Underutilization of key medications and treatments
  – Difficulties getting physician to the bedside
  – “Location of care” issues involving Postpartum, ED and PACU

• University of Illinois Regional Perinatal Network
  – Failure to identify high-risk status
  – Incomplete or inappropriate management

Present in >95% of cases
Present in >90% of cases


## Maternal Mortality and Severe Morbidity

Approximate distributions, 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>
</tr>
</thead>
<tbody>
<tr>
<td>VTE and AFE</td>
<td>15%</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td>Infection</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>15%</td>
<td>30%</td>
<td>45%</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>15%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Cardiac Disease</td>
<td>25%</td>
<td>20%</td>
<td>10%</td>
</tr>
</tbody>
</table>
California Pregnancy-Associated Mortality Review (CA-PAMR) Quality Improvement Review Cycle

1. Identification of cases

2. Information collection, review by multidisciplinary committee

3. Cause of Death, Contributing Factors and Quality Improvement (QI) Opportunities identified

4. Strategies to improve care and reduce morbidity and mortality

5. Evaluation and Implementation of QI strategies and tools

Toolkits Developed:
- Hemorrhage
- Preeclampsia
Improving Health Care Response to Obstetric Hemorrhage

A California Toolkit to Transform Maternity Care

Improving Health Care Response to Preeclampsia: A California Quality Improvement Toolkit

www.CMQCC.org
**Stage 0**

<table>
<thead>
<tr>
<th>Assessments</th>
<th>Meds/Procedures</th>
<th>Blood Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every woman in labor/giving birth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Stage 0 focuses on risk assessment and active management of the third stage.*

**Stage 1**

*Blood loss: >500 ml vaginal or >1000 ml Cesarean, or VS changes (by >15% or HR ≥110, BP ≤85/45, O2 sat <95%)*

- Activate OB Hemorrhage Protocol and Checklist
- Notify Charge nurse, Anesthesia Provider, VS, O2 Sat q5
- Calculate cumulative blood loss q15
- Weigh bloody materials
- Careful inspection with good exposure of vaginal walls, cervix, uterine cavity, placenta
- IV Access: at least 18gauge
- Increase Oxytocin rate, and repeat fundal massage
- Methylene 0.2mg IM (if not hypertensive)
- May repeat if good response to first dose, but otherwise move up to 2nd level uterine drug (see below)
- Empty bladder: straight cath or place Foley with urimeter
- T&C 2 Units PRBCs (if not already done)

*Stage 1 is short: activate hemorrhage protocol, initiate preparations and give Methylene IM.*

**Stage 2**

*Continued bleeding with total blood loss under 1500ml*

- OB back to bedside (if not already there)
- Extra help: 2nd OB, Rapid Response Team (per hospital), assign roles
- VS & cumulative blood loss q5-10 min
- Weigh bloody materials
- Complete evaluation of vaginal wall, cervix, placenta, uterine cavity
- Send additional labs, including D&C panel
- If in Postpartum: Move to LED/OR
- Evaluate for special cases:
  - Uterine Inversion
  - Amni. Fluid Embolism
  - 2nd Level Uterotonic Drugs:
    - Hemabate 250 mg IM q2h
    - Misoprostol 600-100 mg FR (at least 18gauge)
  - Isonitropriline
  - Place intravascular balloon
  - Selective Embolization
  - Cesarean Birth (still intra-op) (typical order)
  - Use blood warmer for transfusion
  - Consider thawing 2 FFP (takes 35-45min)
  - Use if transfusing >2 PRBCs
  - Determine availability of additional RBCs and other Coag products

- Notify Blood Bank of OB Hemorrhage
- Bring 2 Units PRBCs to bedside, transfuse per clinical signs – do not wait for lab values
- Use blood warmer for transfusion
- Consider thawing 2 FFP (takes 35-45min)
- Use if transfusing >2 PRBCs
- Determine availability of additional RBCs and other Coag products

**Stage 2 is focused on sequentially advancing through medications and procedures, mobilizing help and Blood Bank support, and keeping ahead with volume and blood products.**

**Stage 3**

*Total blood loss over 1500ml, or >2 units PRBCs given or VS unstable or suspicion of DIC*

- Mobilize team
- Advanced GYN surgeon
- 2nd Anesthesia Provider
- OR staff
- Repeat labs including coags and ABG’s
- Central line
- Social Worker/ family support
- Activate Massive Hemorrhage Protocol
- Laparotomy
- B-Lynch Suture
- Uterine Artery Ligation
- Hysterectomy
- Patient support
- Fluid warmer
- Upper body warming device
- Sequential compression stockings

**Transfuse Aggressively Massive Hemorrhage Pack**

- Near 1:1 PRBC:FFP
- 1:1 Plasma:packed RBCs

**Unresponsive Coagulopathy**

- After 10 units PRBCs and full coagulation factor replacement may consider Factor VIII

*CMQCC Obstetric Hemorrhage Care Guidelines: Table Chart Format*

**www.CMQCC.org**

*These tools are adapted for each hospital's circumstances*
The National Partnership for Maternal Safety

Mary E. D’Alton, MD, Elliott K. Main, MD, M. Kathryn Menard, MD, and Barbara S. Levy, MD

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
National Partnership for Maternal Safety: 3 Maternal Safety Bundles

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

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

Note: The bundles represent outlines of 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.
Transforming Maternity Care

**READINESS**

*Every unit*
- Hemorrhage cart with supplies, checklist, and instruction cards for intrauterine balloons and compression stitches
- Immediate access to hemorrhage medications (kit or equivalent)
- Establish a response team - who to call when help is needed (blood bank, advanced gynecologic surgery, other support and tertiary services)
- Establish massive and emergency release transfusion protocols (type-O negative/uncrossmatched)
- Unit education on protocols, unit-based drills (with post-drill debriefs)

**RECOGNITION & PREVENTION**

*Every patient*
- Assessment of hemorrhage risk (prenatal, on admission, and at other appropriate times)
- Measurement of cumulative blood loss (formal, as quantitative as possible)
- Active management of the 3rd stage of labor (department-wide protocol)

**RESPONSE**

*Every hemorrhage*
- Unit-standard, stage-based, 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 serious hemorrhages for systems issues
- Monitor outcomes and process metrics in perinatal quality improvement (QI) committee
Importance of Protocols and Checklists creating standardized approaches esp. for Emergencies

Importance of Drills and Debriefs
Reduce Maternal Mortality and SMM (CA-PAMR)

- Hemorrhage Taskforce (2009)
- 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 (2014)
Maternal Mortality Rate, California and United States; 1999-2010

SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2010. Maternal mortality for California (deaths ≤ 42 days postpartum) was calculated using ICD-10 cause of death classification (codes A34, O00-O95, O98-O99) for 1999-2010. United States data and HP2020 Objective were calculated using the same methods. U.S. maternal mortality rates are published by the National Center for Health Statistics (NCHS) through 2007 only. Rates for 2008-2010 were calculated using NCHS Final Birth Data (denominator) and CDC Wonder Online Database for maternal deaths (numerator). Accessed at http://wonder.cdc.gov/ucd-icd10.html on Apr 17, 2013 8:00:39 PM. Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, April, 2013.
Improving Maternal Quality Measures

- Development of national quality measures with endorsement by NQF
- Support for collection and reporting of NQF and other quality measures
- Toolkits and Collaboratives for reducing:
  - Early Elective Delivery (EED)
  - First-birth Low-risk (NTSV) Cesarean birth
NQF National Consensus Standards for Perinatal Care 2013 (12 OB measures)

- #0469 Elective delivery prior to 39 weeks
- #0470 Episiotomy rate
- #0471 NTSV Cesarean rate, aka “low-risk” first births
  - #0472 Prophylactic antibiotics for Cesarean birth (< 1hr)
  - #0473 DVT prophylaxis for women having a Cesarean birth
- #0475 Hepatitis B Vaccine for all newborns
- #0476 Rate of antenatal steroids for under 34 week births
  - #0477 Infants under 1500g (VLBW) not delivered at Level III.
- #0480 Exclusive breastfeeding at hospital discharge
- #0716 Healthy Term Newborn (aka Unexpected Newborn Complications)
- #1402 Newborn Hearing Screening
- #1746 Intrapartum GBS antibiotic prophylaxis

★=Measures that are highest value (Quality + Savings)==CMS

JC Core Measure Set

Leapfrog Group Measures
CMQCC Perinatal QI Toolkits Adopted Nationally
EED Success: Collective Impact

- OB Leaders
- Public Policy
- Quality measures
- Public Reporting
- Data-driven QI
- Evidence
- Payment Incentives

70-80% Reduction Nationally!

Final angle to complete initiative
Total CS Rate Among 251 California Hospitals 2011-2012
(Source: CMQCC--California Maternal Data Center combining primary data from OSHPD and Vital Records)

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

Large Variation Among Hospitals!
Low-Risk First-Birth (Nuliparous Term Singleton Vertex) CS Rate
(endorsed by NQF, TJC PC-02, CMS, HP2020)
Among 249 California Hospitals: 2011-2012
(Source: CMQCC--California Maternal Data Center combining primary data from OSHPD and Vital Records)

Range: 10.0—75.8%
Median: 27.0%
Mean: 27.7%

National Target = 23.9%

36% of CA hospitals meet national target

July 24, 2013
Safe Prevention of the Primary Cesarean Delivery
CMQCC Data-Driven QI: NTSV CS

Pilot Hospital: PBGH / RWJ CS Collaborative

Keys for Success:
1. Evidence-based QI Plan based on rapid-cycle data
2. Local leadership
3. Hospital-Provider alignment
4. Modest incentives (shared savings)

National Target for NTSV CS = 23.9%
Vision: Data ↔ Action

Steering committee includes leaders from DHCS, MCH, CHSI, Payers, Providers and Public

Subcommittees for Measures, Users

Supported by grants from the CDC and CHCF

Approved by several state IRBs / VSAC
What is the CMDC?
Low-burden/High-value

A Rapid-Cycle one-stop shop to support hospitals’ obstetric quality improvement initiatives and service line management

- Overall hospital obstetric performance measures (>40)
- Benchmarking statistics--to compare your hospital to regional, state, and like-hospital peers
- Facilitating reporting to Leapfrog, HEN, and CMS IQR
- Provider-level statistics—to assess variation within a hospital

CMQCC: Transforming Maternity Care
CMQCC Maternal Data Center

- PDD--Discharge Diagnosis File (ICD9 codes)
- Birth Certificate File (Clinical Data)

CMQCC Data Center

1) Q MONTH: Upload mothers and infants PDD: Partic. hospitals
2) Q 6 MOS: Upload mothers and infants PDD: ALL (from OSHPD)

Limited manual data entry for these measures

Q MONTH: Upload electronic files for ALL CA births
Automatically Link Birth Data to PDD file (Deterministic + Probabilistic)

Immediately calculates all the Measures

REPORTS
- Benchmarks against other hospitals
- Sub-measure reports

Support Data QI

Mantra: “If you use it, they will improve it”
CMDC receives birth certificate data approximately 45 days after the end of each month. This means the data for April 2014 will be available around June 15th 2014.

Rate of Cesarean Section among women with no prior Cesarean.
See full definition.

Jul 2012 – Jun 2013 California: 21.0%
Considerations:

- Important to move beyond reporting metrics to addressing WHY?
- Need to have timely data (months old rather than years old)
- Need a base of the entire population and then build projects requiring special data collection on that foundation
Beyond Reporting Rates
(Numerator/Denominator)

- Automated Measure analysis using nested sub-measures to guide and focus your QI journey
- Drill-down to the patient level with Case Review Worksheets to understand quality improvement opportunities—for both clinical quality and data quality
- Trend analyses of both measures and sub-measures
3 Major Drivers of the NTSV CS Rate

Sample Hospital 1

All Intermediate Nurseries (Jul 2012 – Jun 2013)
- Spontaneous Labor: 22.4%
- Induced Labor: 5.9%
- No Labor: 6.3%
- Total: 34.6%

Statewide (Jul 2012 – Jun 2013)
- Spontaneous Labor: 15.1%
- Induced Labor: 7.7%
- No Labor: 4.3%
- Total: 27.1%

Sample Hospital 2

All Community Nurseries (Jul 2012 – Jun 2013)
- Spontaneous Labor: 16.9%
- Induced Labor: 7.3%
- No Labor: 3.7%
- Total: 27.9%

Statewide (Jul 2012 – Jun 2013)
- Spontaneous Labor: 15.3%
- Induced Labor: 7.4%
- No Labor: 5.2%
- Total: 27.9%
Comparison Rates for the 3 Major NTSV Drivers

Sample Hospital 1

**Spontaneous Labor**

- **FTP / CPD**
  - Sample Hospital 1: 22.9%
  - Statewide (Jul 2020): 15.3%
  - All Intermediate Facilities: 15.2%

- **Fetal Distress**
  - Sample Hospital 1: 5.7%
  - Statewide (Jul 2020): 5.3%
  - All Intermediate Facilities: 5%

**Induced Labor**

- **FTP / CPD**
  - Sample Hospital 1: 25.8%
  - Statewide (Jul 2020): 23.8%
  - All Intermediate Facilities: 24.6%

- **Fetal Distress**
  - Sample Hospital 1: 10.8%
  - Statewide (Jul 2020): 7.2%
  - All Intermediate Facilities: 7.4%

- **Other**
  - Sample Hospital 1: 2.2%
  - Statewide (Jul 2020): 4.5%
  - All Intermediate Facilities: 4.4%

Proportion of the NTSV Spontaneous Labor population that had a CS for the specific indication.

Proportion of the NTSV Induced population that had a CS for the specific indication.
Comparison Rates for the 3 Major NTSV Drivers
Sample Hospital 2

Failed Induction: Measure Analysis

Period: Apr 2013 - Mar 2014 (12 months)

By Parity

Failed Induction: Overall
- Sample Hospital 2: 26.8%
- All Regional Nurseries (Jul 2012 – Jun 2013): 20.2%
- Statewide (Jul 2012 – Jun 2013): 21.1%

Failed Induction: Nullip
- Sample Hospital 2: 43.1%
- All Regional Nurseries (Jul 2012 – Jun 2013): 30.8%
- Statewide (Jul 2012 – Jun 2013): 34.2%

Failed Induction: Multip
- Sample Hospital 2: 7.1%
- All Regional Nurseries (Jul 2012 – Jun 2013): 8.3%
- Statewide (Jul 2012 – Jun 2013): 7.9%
Are there confounding factors needing risk adjustment? A Bay Area Story

Maternal Age (Jul 2012 - Jun 2013)

- Sample Hospital: 33.6% 10.9% 44.5%
- San Francisco County: 28.4% 9.4% 37.8%
- Sutter Systemwide: 18.4% 5.2% 23.6%
- North Coast East Bay Region: 19.9% 5.9% 25.8%
- All Regional Nurseries: 20.5% 6% 26.6%
- California Statewide: 15.2% 4.1% 19.3%

Pre-pregnancy BMI (Jul 2012 - Jun 2013)

- Sample Hospital: 4.3% 0.5% 4.8%
- San Francisco County: 9.2% 1.5% 10.7%
- Sutter Systemwide: 16.5% 3.1% 19.6%
- North Coast East Bay Region: 15.9% 3.1% 19%
- All Regional Nurseries: 15.7% 3% 18.7%
- California Statewide: 19.2% 3.5% 22.7%

NTSV CS=24.0%
Are there confounding factors needing risk adjustment? A Central Valley Story

Maternal Age (Jul 2012 - Jun 2013)

<table>
<thead>
<tr>
<th>Area</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>Sample Hospital</td>
<td></td>
<td></td>
<td></td>
<td>12.4%</td>
<td>3.3%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Fresno County</td>
<td></td>
<td></td>
<td></td>
<td>12.9%</td>
<td>2.9%</td>
<td>10%</td>
</tr>
<tr>
<td>Community Medical Centers Systemwide</td>
<td></td>
<td></td>
<td></td>
<td>13.4%</td>
<td>3.2%</td>
<td>10.2%</td>
</tr>
<tr>
<td>Central San Joaquin Valley – Sierra Nevada Region</td>
<td></td>
<td></td>
<td></td>
<td>11.7%</td>
<td>2.4%</td>
<td>9.3%</td>
</tr>
<tr>
<td>All Community Nurseries</td>
<td></td>
<td></td>
<td></td>
<td>4.1%</td>
<td>4.1%</td>
<td>15.2%</td>
</tr>
<tr>
<td>California Statewide</td>
<td></td>
<td></td>
<td></td>
<td>19.3%</td>
<td>4.1%</td>
<td>15.2%</td>
</tr>
</tbody>
</table>

Pre-pregnancy BMI (Jul 2012 - Jun 2013)

<table>
<thead>
<tr>
<th>Area</th>
<th>Under 19 (underweight)</th>
<th>19-25 (normal)</th>
<th>26-30 (overweight)</th>
<th>30-39 (obese)</th>
<th>40+ (morbid obese)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Hospital</td>
<td></td>
<td></td>
<td></td>
<td>31.9%</td>
<td>5%</td>
</tr>
<tr>
<td>Fresno County</td>
<td></td>
<td></td>
<td></td>
<td>29%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Community Medical Centers Systemwide</td>
<td></td>
<td></td>
<td></td>
<td>29%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Central San Joaquin Valley – Sierra Nevada Region</td>
<td></td>
<td></td>
<td></td>
<td>29.5%</td>
<td>4.9%</td>
</tr>
<tr>
<td>All Community Nurseries</td>
<td></td>
<td></td>
<td></td>
<td>22.6%</td>
<td>3.5%</td>
</tr>
<tr>
<td>California Statewide</td>
<td></td>
<td></td>
<td></td>
<td>22.7%</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

NTSV CS=25.9%
CMQCC Maternal Data Center:

- Supports QI collaboratives
  - Outcome and process measures (CDC funding)
  - Severe Maternal Morbidity Validation (HRSA/MCH-B)
- Release for public reporting: (CHCF funding)
  - First-Birth Cesarean, Episiotomy, VBAC rates (CHART)
    - Levels: Hospital, Medical Group, Health Plan
- Linkage to claims data (IHA funding)
- Linkage to Medi-Cal data sets (CMS / DHCS funding)
Timing for Treatment of Gravidas with sBP≥160 or dBp≥110

Sample hospital from CMQCC
Preeclampsia Collaborative 2013
### Data Quality Measures

**Sample Hospital 3**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Nov 2013 – Jan 2014 Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing / Inconsistent Delivery Method</td>
<td>0.3%</td>
</tr>
<tr>
<td>Missing / Inconsistent V27 (Outcome of Delivery)</td>
<td>0.1%</td>
</tr>
<tr>
<td>Missing / Inconsistent Fetal Presentation</td>
<td>2.7%</td>
</tr>
<tr>
<td>Inconsistent Mother's Date of Birth</td>
<td>0.5%</td>
</tr>
<tr>
<td>Inconsistent Parity</td>
<td>0.1%</td>
</tr>
<tr>
<td>Inconsistent Induction</td>
<td>11.9%</td>
</tr>
<tr>
<td>Missing Maternal Diabetes ICD9 Code</td>
<td>26.7%</td>
</tr>
<tr>
<td>Missing Maternal Hypertension ICD9 Code</td>
<td>36.4%</td>
</tr>
<tr>
<td>Unlinked Mothers</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
Large-Scale Implementation Projects

- Merck for Mothers
  - Implementation of hemorrhage and preeclampsia safety bundles in all California hospitals
  - Set up a state-wide implementation model

- Cal-SIM (maternity domain)
  - Consensus maternity performance measures
  - Incentives focused on identified metrics
  - CMQCC to do data collection and QI support
Merck for Mothers: Large-scale QI Model

- QI Mentors (paired MD and RN)
  - To support a group of 6-8 hospitals thru implementation of both bundles
  - Grouped by system, referral network, or size
  - Mentor training in early October (North and South)
- Identified metrics (CMDC capture and report)
- Comprehensive web support
- Key partners
  - California Hospital Association
  - Patient Safety First (Anthem Blue Cross)
  - ACOG, AWHONN, ACNM, RPPC
Cal-SIM: Model

- Partnering between purchasers, plans and providers around quality/value
- Identified metrics (CMDC capture and report)
  - NTSV (first-birth) CS, Episiotomy, VBAC rates
  - Unexpected Newborn Complications (balancing metric)
- Expand existing QI project and toolkit for NTSV Cesarean reduction (in collaboration with WA)
- Key partners
  - Purchasers: Calpers, Cover California, PBGH, DHCS
  - Health plans
  - ACOG, AWHONN, ACNM, RPPC
CMQCC: Transforming Maternity Care

CMQCC: Highlights

Maternal Mortality and Morbidity Reduction
- Hemorrhage
- Preeclampsia
- Cardiovascular
- VTE prevention
- Violent deaths
- Severe Morbidity

Large-Scale Implementation
- Merck for Mothers
- Cal-SIM

Maternal Data Center

Maternity Quality Measures
- EED
- NTSV CS
- Unexpected Neonatal Complications
- Preterm Birth Prevention

CMQCC: CMQCC — California Maternal Quality Care Collaborative

Merck for Mothers
Cal-SIM
EED
NTSV CS
Unexpected Neonatal Complications
Preterm Birth Prevention
A model for Rapid-cycle Improvement

- Maternity care has unusually large variation in care, even after risk adjustment

- Examine the drivers for successful projects:
  - multi-organization collaboration
  - alignment of goals

- Central role for data-driven QI / State-wide data system
  - Not just reporting hospital rates and provider rates
  - Multiple tools to allow intelligent analysis to allow providers to answer why their rate is high
Collaborative Action: Collective Impact

- OB Leaders
- Public Policy
- Quality measures
- Public Reporting
- Payment Incentives
- Evidence
- Data-driven QI
- Public advocates

CMQCC: Transforming Maternity Care
Thank You!

Main@CMQCC.org