The Landscape of Perinatal Quality Improvement in the United States: Moving Beyond Early Elective Delivery

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Introduction

- Background and history of perinatal QI in the US
- Expansion of perinatal QI efforts
- Perinatal Quality Collaborative projects throughout the US
- New projects on the horizon and future opportunities for perinatal QI
International Infant Mortality Rates, 2010

Source: OECD Health Data (http://www.oecd.org/)
Infant Mortality Rates, United States. 1960-2011

Source: CDC/NCHS National Vital Statistics System
Preterm birth rates, by race and Hispanic origin of mother: United States, 1990-2012

Source: CDC/NCHS National Vital Statistics System
Estimated National Rates of Preterm Birth, 2010


*Note: Number of pregnancy-related deaths per 100,000 live births per year.

Source: CDC Pregnancy Mortality Surveillance System


History of the Quality Improvement Movement in Healthcare

- 1980’s – Fortune 500 companies strategy of the accountable health plan

- 1990’s – NCQA plays a role in Improving the quality of Health Care
  - HEDIS

Six Aims for Improvement

- SAFE
- EFFECTIVE
- PATIENT-CENTERED
- TIMELY
- EFFICIENT
- EQUITABLE
History of the Quality Improvement Movement in Healthcare

- 1999 - National Quality Forum (NQF) established
- Early 2000’s - The Joint Commission required all accredited hospitals to collect and report performance data.
- Late 2000’s Joint Commission and CMS expanded reporting requirements
National Quality Forum

- 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

- Private not-for-profit Multi-Stakeholder Organization

- CMS is Authorized by Congress to be able to adopt their measures without further review
NQF Endorsed Perinatal Measures, 2012

- **Obstetric**
  - Elective Delivery < 39 weeks
  - Incidence of Episiotomy
  - Cesarean Section for low risk births
  - Appropriate Prophylactic Antibiotic Received Within One Hour Prior to Surgical Incision—Cesarean Section
  - Appropriate DVT Prophylaxis in Women Undergoing Cesarean Delivery
  - Antenatal Steroids
  - Intrapartum Antibiotic Prophylaxis for Group B Streptococcus (GBS)
NQF Endorsed Perinatal Measures, 2012

- **Neonatal**
  - Hepatitis B Vaccine Coverage Among All Live Newborn Infants Prior to Hospital or Birthing Facility Discharge
  - Under 1500g infant Not Delivered at Appropriate Level of Care
  - Neonatal Blood Stream Infection Rate
  - Health Care-Associated Bloodstream Infections in Newborns
  - Late Sepsis or Meningitis in Very Low Birth Weight (VLBW) Neonates
  - Exclusive Breast Milk Feeding
  - Proportion of Infants 22 to 29 Weeks Gestation Screened for Retinopathy of Prematurity (Vermont Oxford Network)
History of the Quality Improvement Movement in Healthcare

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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.
Perinatal Care Core Measure Set

- 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

Evolution of Perinatal Quality Improvement Work: March of Dimes®

- Toward Improving the Outcome of Pregnancy:
  - TIOP I (1976) – Recommendations for the Regional Development of Maternal and Perinatal Health Services
  - TIOP II (1993) - The 90s and Beyond
  - TIOP III (2011)- Enhancing Perinatal Health Through Quality, Safety and Performance Initiatives

- Healthy Babies are Worth the Wait®
Evolution of Perinatal Quality Improvement Work: Vermont Oxford Network (VON)

- Non-profit voluntary collaboration of health care professionals dedicated to improving newborn care
- Network of over 900 NICUs around the world
- Established in 1988
- Conducted 1st neonatal quality improvement collaborative in 1995
- Since 1990, over 1 million infants added to database.
- Conducts intensive in-person (NICQ) and internet-based (iNICQ) collaboratives
Evolution of Perinatal Quality Improvement Work: Institute for Healthcare Improvement (IHI)

- Independent, nonprofit organization based in Cambridge, Massachusetts
- Focuses on motivating and building the will for change
  - Identifying and testing new models of care in partnership with both patients and health care professionals; and
  - Ensuring the broadest possible adoption of best practices and effective innovations
- Developed an Idealized Design of Perinatal Care
  - Model that focuses on comprehensive redesign to enable a care system to perform better than it’s present best.
Evolution of Perinatal Quality Improvement Work: Institute for Healthcare Improvement (IHI)

- Perinatal Improvement Community – An IHI Collaborative
  - Started in 2004
  - Significant unexplained variation in the system of care
  - Majority of errors are system driven
  - Communication failures drive patient risk
  - Lack of prospective quality assessment

- IHI triple Aim
  - Better health for individuals
  - Better outcomes for more of the population
  - Lower cost
Role of Regional Collaboratives

Regional collaboratives encourage:

- Taking on the responsibility of improving outcomes for the entire population of the region’s mothers and infants
- Understanding of one’s regional network of perinatal care
- Collaborating among teams from both the hospital and the community
- Comparison of performance to hospitals that are operating within similar demographic, economic, and health services context

Members of a regional quality improvement initiative represent a “community of change”

Role of regional collaboratives

- California Perinatal Quality Collaborative (CPQCC) (initiated in 1997) became 1st regional application of VON

- Goals of collaboratives include
  - Achieving sustainable change within a specific topic area
  - Achieving a new level of safer, more effective care
  - Minimizing risks to patients

- The structure of many collaboratives is based on the IHI Breakthrough Series™ model.

- Involves rapid collection and return of data to meet objectives to improve care
IHI Breakthrough Series™

Criteria for Project Selection

- Population Impact
- Clinician Enthusiasm
- Benchmark for Best Practice
- Solid Evidence for Intervention
- Documented Variation in Outcome
- Feasible to Implement & Measure
- Success Demonstrated Elsewhere

Source: IHI Breakthrough Series™ Methods to Create and Sustain Change in Healthcare
Reduction in Non-medically Indicated (Elective) Deliveries Before 39 Weeks Gestational Age

- Relatively common practice associated with
  - Significant newborn morbidity and
  - Increased rates of primary cesarean delivery

- ACOG issued Practice Bulletin discouraging the practice in 2009

- Included as a national perinatal quality benchmark in 2010 (NQF, TJC)

- Approaches have been demonstrated to reduce this practice

Reduction in Non-medically Indicated (Elective) Deliveries Before 39 Weeks Gestational Age

- Clinician Enthusiasm
- Benchmark for Best-Practice (ACOG)
- Solid evidence for intervention
  - Documentation of dating method/promotion of early U/S
  - Documentation of the reason for scheduled birth/peer review
  - No scheduled deliveries < 39 weeks allowed unless indicated
- Documented variation in outcome
  - Rapid receipt of data
- Feasible to implement and measure
  - Frequent group and site PDSA’s
- Success shown elsewhere
Reduction in Non-medically Indicated (Elective) Deliveries Before 39 Weeks Gestational Age

Increasing Elective Deliveries Before 39 Weeks of Gestation in an Integrated Health Care System

A Multistate Quality Improvement Program to Decrease Elective Deliveries Before 39 Weeks of Gestation

State Quality Collaboratives

Massachusetts Perinatal Quality Collaborative

CMQCC California Maternal Quality Care Collaborative

NNEPQIN

FPQC Florida Perinatal Quality Collaborative

OPQC Ohio Perinatal Quality Collaborative

New York State nyspQc Perinatal Quality Collaborative

ILPQC Illinois Perinatal Quality Collaborative

PQCNC

MHA Keystone Center
Reduction in Non-medically Indicated (Elective) Deliveries Before 39 Weeks Gestational Age

- Many hospital systems reporting <3% rates
- Multiple states are <5%
- Nationally, the Hospital Engagement Networks (HENs) report >80% drop (though not every state or every hospital)
- Leapfrog Group EED report
  - National average of 4.6% in 2013, down from 17% in 2010
Accounting for the Success in Reducing Elective Deliveries <39 weeks

- Leaders
- Public Advocates
- Data-driven QI
- Evidence
- Quality Measures
- Public Reporting
- Payment Reform
"Quality is not an act, it is a habit." ~Aristotle
CDC-State-based Perinatal Quality Collaborative Support

**Purpose:**
- Enhance the ability of established PQCs to collect timely data for providing feedback to improve perinatal care by sustaining current efforts
- Increase the proportion of PQC-participating hospitals in funded states, and
- Expand the range of neonatal and maternal health issues addressed by these PQCs

**Supported collaboratives include CPQCC/CMQCC, NYSPQC, and OPQC**
Goals of the PQC Cooperative Agreement

- Improve perinatal outcomes in the funded states
- Develop a guide for how state-based PQC\textsc{s} function
- Use the experiences and knowledge gained from successful PQC\textsc{\textsc{s}} to help other states
- Support the formation of a network of PQC\textsc{\textsc{s}}
Perinatal Quality Collaboratives

State Perinatal Quality Collaboratives (PQCs) are networks of perinatal care providers and public health professionals working to improve pregnancy outcomes for women and newborns by advancing evidence-based clinical practices and processes. PQCs include hospitals, pediatricians and neonatologists, obstetricians and perinatologists, midwives, nurses, and state health department staff.

PQC members identify care processes that need to be improved and use the best available methods to make changes and improve outcomes. State PQCs include key leaders in private, public, and academic health care settings with expertise in evidence-based obstetric and neonatal care and quality improvement.

PQCs address a range of perinatal health issues including elective deliveries before 39 weeks gestation, antenatal steroid use, and hospital-acquired neonatal infections. Many states currently have active collaboratives and others are in development.

PQC Webinar Series

CDC funds statewide PQCs in California, New York, and Ohio and worked with these networks to sponsor a series of Webinars from October 2012 through August 2013. These Webinars were intended to help PQCs share knowledge and experiences, and teach other states how to start, maintain, and grow their own collaboratives.

Due to an overwhelming response, a second series of Webinars will be held every two months in 2013 – 2014, focusing on specific perinatal quality improvement initiatives. Webinars are available to participants in all states. The dates and topics of upcoming Webinars are listed below. To receive updates about future Webinars, sign up for email updates by entering your information on the upper-right side of this page, under "Get e-mail updates."

Next Webinar

Hypertensive Disorders of Pregnancy
Thursday, March 27, 2014, 2pm – 3:30pm Eastern Time

Marilyn A. Kacicia, MD, MPH
Medical Director, Division of Family Health, New York State Department of Health
Director, New York State Perinatal Quality Collaborative

Nancy Peterson RN, PNP, MSN, IBCLC
Perinatal Quality Collaboratives States

Alabama
Alabama Perinatal Excellence Collaborative

Alaska
Perinatal Health Progress
Statewide Collaborative Projects

- **Obstetric**
  - Dissemination of 39 week delivery projects
  - Progesterone for prevention of preterm birth
  - Improve appropriate use of antenatal steroids
  - Improve response to and management of obstetric hemorrhage
  - Improve response to and management of hypertensive disorders of pregnancy
  - Identify women at risk for cardiovascular disease in pregnancy or postpartum
  - Reducing perinatal HIV transmission (obstetric and neonatal)
Statewide Collaborative Projects

- **Neonatal**
  - Promotion of human milk for preterm infants
  - Promotion of breastfeeding
  - Optimization of early enteral nutrition in newborns
  - Reduction of central line-associated blood stream infections
  - Neonatal Abstinence Syndrome

- **Data quality improvement**
The Ohio Progesterone Project

- Goal: Reduce Ohio PTB & Related Infant Mortality
- Expand Use of Cervical Sonography
  - Expand and Train the Workforce
  - Create and Pay for Protocols
- Make it Easy to Get Progesterone
  - Create and Pay for Protocols
- Outcome Measures
  - Hand Collected Data
  - Medicaid and Private Insurers
  - Birth Registry Data – Births < 32, 35, 37 Weeks
  - Infant Mortality Rate
Current Obstacles to Progesterone Rx

- Uncertainty
  - Who, When, Which Agent?
- How to find women for Rx?
  - Transvaginal cervical ultrasound for all?
- How to write the Rx and get it to the patient?
- How to pay? Who will pay? and for what?
- Angst: FDA, Makena, & Compounding
- How to do It?
  - ACOG PB 130\textsuperscript{2012} & SMFM Guideline \textsuperscript{2012}
- A repetitive outpatient intervention
Starts with Singleton Pregnancies

Starts with Short Cervix
Merged Protocol starts with all patients at 1st Prenatal Visit

Initial Prenatal Visit
Comprehensive Obstetrical History
Ultrasound Confirmation of Dates and Plurality

Is There a History of Spontaneous Preterm Birth?
*Defined as a singleton live birth at 16 0/7-36 6/7 weeks or stillbirth before 24 weeks presenting as labor, ruptured membranes, or advanced cervical dilation or effacement

- Yes
  - Rx 17-OHPC 250 milligrams IM weekly from 16 0/7-36 6/7 weeks of gestation
  - TV CL Q. 14 days between 16—24 weeks O. 7 days if CL < 30 mm
    - If TV CL ≤ 25 mm before 24 weeks, Consider Cerclage Suture, especially if prior SPTB < 28 weeks or visible membranes and Continue ²Progesterone Rx
  - Routine Prenatal Care

- No
  - Is this a singleton pregnancy?
    - Yes
      - Transvaginal CL Performed by Credentialed Sonographer
    - No
      - No This protocol is not applicable

Does the patient have
Signs + symptoms of parturition: Persistent pelvic pressure, cramps, spotting, &/or vaginal discharge

- Yes
  - Transvaginal CL Performed by Credentialed Sonographer

- No
  - Suggested Site-specific Screening Algorithms
    - Universal TV CL Screening at 18-24 weeks or
    - Universal TA CL Screening at 18-24 → CL < 35 mm or
    - Selective TV CL Screening of women w/ ⁴Risk Factors
      - Prior PTB < 34 weeks of ? Cause of or Twins; Rx GIU Infection; Conception with Fertility Rx; African American race/ethnicity; Cervical surgery; BMI < 19.6 or > 35; Periodontal disease

  - TV CL > 25 mm
    - Repeat x 1 in 7-14 days

  - TV CL 21-25 mm
    - ⁵TV CL ≤ 20 mm
      - Rx Vaginal Progesterone daily as 200 milligram capsules or suppositories or 90 milligrams vaginal gel until 36 weeks
National Partnership for Maternal Safety: Confluence of Multiple Efforts - May 2013 ACOG Annual Clinical Meeting

- CDC / ACOG Maternal Mortality Work Group
- SMFM--M back into MFM Work Group
- AWHONN: Safety Projects
- State Quality Collaboratives
- Merck for Mothers
- Maternal Child Health Branch—M back into MCH
  ….inspired by……..
- CDC: Maternal Mortality Reviews and Maternal Morbidity Projects
Editorial:

Maternal Mortality
Time for National Action

For many American obstetricians, maternal mortality has been considered a problem of the past, successfully put to bed, with asepsis and antibiotics conquering childbirth fever and blood transfusions saving mothers from hemorrhage. The impressive decline of U.S. maternal deaths from 850 per 100,000 live births in 1900 to 7.4 per 100,000 in 1986 would have supported that interpretation. However, during the past 20 years, the United States has seen a reversal in this trend. The U.S. maternal mortality ratio has doubled to 14.5, with rates among African American women reaching 37.7, which is threefold to fourfold higher than rates among white women. We do not fare well when compared with other high-resource countries, and some see this as evidence of serious problems in the American system of maternity care.

The study in this issue by Saucedo and colleagues (see page 752) examining French maternal deaths from 1998 to 2007 provides an opportunity for comparison. In their population, maternal deaths did not increase from the first 5-year period (8.8 per 100,000) to the last 5 years (8.4 per 100,000) despite an increase in prevalence of advanced maternal age, obesity, and cesarean delivery (though the rates of the last 2 years are still considerably lower than in the United States). This is important as Americans analyze their national statistics because the increase in maternal comorbidities often is blamed for the increase in mortality.

Counting maternal deaths on a population basis is, surprisingly, very difficult. The rarity and multiple potential locations of death beyond the obstetric service require the use of death certificates. However, careful studies have estimated that up to 38% of maternal deaths have been unidentified on death certificates. This under-reporting has led all juris-
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...
  - Incomplete or inappropriate management

Present in >95% of cases

Present in >90% of cases

Key OB Hemorrhage QI Toolkits: Full of Resources

www.CMQCC.org

ACOG District II Website (thru ACOG website)

www.pphproject.org

The AWHONN Postpartum Hemorrhage Project

A California Toolkit to Transform Maternity Care

Improving Health Care Response to Obstetric Hemorrhage

Optimizing Protocols in Obstetrics

MANAGEMENT of OBSTETRIC HEMORRHAGE

www.CMQCC.org

ACOG District II Website (thru ACOG website)

www.pphproject.org

The AWHONN Postpartum Hemorrhage Project
A California Toolkit to Transform Maternity Care

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

THIS COLLABORATIVE PROJECT WAS DEVELOPED BY:
THE PREECLAMPSIA TASK FORCE
CALIFORNIA MATERNAL QUALITY CARE COLLABORATIVE
MATERNAL, CHILD AND ADOLESCENT HEALTH DIVISION, CENTER FOR FAMILY HEALTH
CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

ACOG D2 Toolkit will be coming out soon
4-Step Program: Improve Preeclampsia Outcomes

- Make the Right Diagnosis
  - New criteria for both Preeclampsia and Severe Preeclampsia
- Treat the BP! (≥160 systolic!)
- Deliver not too early, and not too late
- Early postpartum F/U for everyone who is NOT a “simple case” (formerly-known-as “mild”)
CMQCC Preeclampsia Quality Collaborative (2013-2014)

- 26 hospitals
- Goal: Reduce preeclampsia maternal morbidity
- Outcome measures:
  - Prolonged Postpartum LOS (≥4d vag; ≥6d CS)
  - CDC Severe Maternal Morbidity (ICD9 codes typical of an ICU admission)
- Process measures:
  - Severe HTN treated in under 60 min
  - Debriefs of all severe HTN cases
  - Outpatient F/U of all severe HTN women within 72hrs
Timing for Treatment of Gravidas with sBP≥160 or dBP≥110

Sample hospital from CMQCC Preeclampsia Collaborative 2013
Future Opportunities

- Reduction of Primary (NTSV) Cesarean Births
- Infant mortality CoIIN (HRSA/MCH-B) expansion
- Antenatal steroids (Time for ACTion)
- ReVITALize
- Disparities/Health Equity
Risk-adjusted NTSV Cesarean Rate

- AKA Low-risk first birth cesarean rate (Nulliparous, Term, Singleton, Vertex)
- ~60% of primary cesareans, great variation among hospitals, reflects labor management
- Accounts for ~60% of the increase in CS
- Widely endorsed/adopted
  - ACOG
  - Health People 2020
  - NQF, TJC, Leap Frog Group
  - CMS
NTSV Cesarean Rate is a National Issue

- NQF, Joint Commission, LeapFrog, and CMS all reporting NTSV CS
- Hospital Engagement Networks (HENs) will focus on Primary CS
- National Partnership for Patients: Maternity Action Team—NTSV CS Focus for 2014-2015
- CalSIM (payer and purchaser coalition)—Maternity and Cesarean focus for payment reform in CA: 2014-2015
Preventing the First Cesarean Delivery

Summary of a Joint Eunice Kennedy Shriver National Institute of Child Health and Human Development, Society for Maternal-Fetal Medicine, and American College of Obstetricians and Gynecologists Workshop

Catherine Y. Spong, MD, Vincenzo Berghella, MD, Katharine D. Wenstrom, MD, Brian M. Mercer, MD, and George R. Saade, MD

Safe Prevention of the Primary Cesarean Delivery
CoIIN to Reduce Infant Mortality

- Initiative led by HRSA/MCH-B
- Initially in Regions IV, V, and VI, now national
- 5 Priorities to reduce infant mortality and improve birth outcomes
  - Reduce elective delivery <39 wks by 33%
  - Expand access to inter-conception care through Medicaid
  - Reduce smoking among pregnant women by 3%
  - Increase infant safe sleep practices by 5%
  - Improve perinatal regionalization—increase the number of mothers delivering at appropriate facilities by 20%
Time for ACTion

- Upcoming initiative to address antenatal corticosteroid (ACT) use

- Goals of the Time for ACTion conference:
  - Improve the health of premature infants by stimulating new research, practice and policy
  - Development of comprehensive recommendations for ACT
  - Broaden ACT movement within the public health community
  - Foster recent advances in translational research
ReVITALize

Campaign by Women’s Health Registry Alliance to “revitalize” the obstetric data and vital statistics the nation already collects. Includes initiatives to:

- Standardize obstetric data definitions
- Educate and advocate for national implementation of the standardized obstetric data elements and definitions
- Increase and improve performance measurement and implementation of the national obstetric data standards and encourage data aggregation.
Opportunities to Reduce Disparities and Increase Health Equity

- Providing quality care and reducing costs
- Improving access to care
- Informing consumers of preventive health choices
“Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution; it represents the wise choice of many alternatives.”

~William A. Foster
For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov   Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.