The Ohio Perinatal Quality Collaborative: Lessons from the 1st Five Years

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What Have We Learned in The First Five Years?

- Origins
- Goals
- Methods
- Funding
- Projects
  - Successes
  - Problems
  - Lessons
- Future
The Ohio Perinatal Quality Collaborative 2013

OBSTETRICS

39-Week Scheduled Deliveries without medical indication

ANCS for women at risk for preterm birth (24<sup>0/7</sup>-33<sup>6/7</sup>)

Increase Birth Data Accuracy & Online modules

Spread to all maternity hospitals in Ohio

NEONATAL

Blood Stream Infection
Highly reliable line maintenance bundle

Use of human milk in infants 22-29 weeks GA

Progesterone for Preterm Birth Risk

Pilot Neo Abstinence Syndrome
6 Children’s Hospitals
Origins of OPQC - 2007

- Ohio PTB 32\textsuperscript{nd} = 13.3\%
- Ohio Infant Mortality 36\textsuperscript{th} = 7.8\%
- 2007: Ohio VON Neonatologists Invite Ohio OB’s to Join
- 2008: Startup Grant $$ from CMS
  - All 24 of Ohio’s Level III NICUs
  - 20 of Ohio’s largest OB hospitals
  ~ Half of Ohio Births

March of Dimes’ Ohio PTB Grade: D \rightarrow F!
Original Participating OPQC Neo & OB Teams

**Toledo**
- Promedica Toledo Children’s Hospital (NEO)
- Promedica Toledo Hospital (OB)
- St. Vincent Mercy Medical Center (NEO & OB)

**Cleveland**
- Cleveland Clinic (NEO)
- Fairview Hospital (NEO & OB)
- Hillcrest Hospital (NEO & OB)
- MetroHealth Medical Center (NEO & OB)
- University Hospital - Case Medical Center – MacDonald Women’s Hospital (OB)
- University Hospital - Cleveland – Rainbow Babies (NEO)

**Akron**
- Akron Children’s Hospital (NEO & OB)
- Akron General Medical Center (OB)
- Summa Health System (NEO & OB)

**Youngstown**
- St. Elizabeth Health Center (NEO)
- Aultman Hospital (NEO & OB)

**Dayton**
- Dayton Children’s Medical Center (NEO)
- Miami Valley Hospital (OB)

**Canton**
- Mount Carmel East (NEO & OB)
- Mount Carmel St. Ann’s (NEO & OB)
- Mount Carmel West (NEO & OB)
- Nationwide Children’s Hospital (NEO)
- OhioHealth Doctor’s Hospital (NEO)
- OhioHealth Grant Hospital (NEO & OB)
- OhioHealth Riverside Methodist Hospital (NEO & OB)
- The Ohio State University Wexner Medical Center (NEO & OB)

**Columbus**
- Cincinnati Children’s Hospital Medical Center (NEO)
- Good Samaritan Hospital (NEO & OB)
- Mercy Anderson Hospital (OB)
- University Hospital – Cincinnati (NEO & OB)
Structure & Budget

- **Funding**
  - State, Federal Match, CDC, MoD, in-kind- $600,000/yr.
    - Leadership + Administration - 40%
    - Quality Improvement - 30%
    - Data Infrastructure & Reporting - 30%

- **Communication**
  - Weekly Leadership Conference Call
  - Monthly Executive Oversight Committee
    - Stakeholders: ODH, NICHQ, Medicaid, Regional Balance

- **Personnel**
  - Faculty leads, paid staff, regional clinical leaders, front line provider teams / in kind service

- **Support**
  - BEACON, Ohio Dept Health (Vital Stats), Medicaid, CDC, MoD, AAP, ACOG
OPQC Personnel

- Faculty Leads

- OPQC Central Staff @ CCHMC
  - Barbara Rose RN MPH
  - Quality Improvement Leads for NEO & OB
  - Project leads
  - Data managers**

- Regional Clinical Leaders

- Front line provider teams

- In kind service from many many people & sites

*John Besl OPQC and *John Paulson ODH
OPQC Method
The IHI Model for Improvement

- What are we trying to accomplish?
- How will we know that change = improvement?
- What can we measure?
- What can we change to make improvement?

Sounds Hokey, Doesn’t It?
The Key Driver Diagram

What Do We Want?
Measurable Outcome

What Will Make It Happen?
Key Drivers

How Do We Change the Drivers?
Interventions

Still sounds weird but …
IHI Breakthrough Series™ Methods
Create & Sustain Change in Healthcare

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
OPQC Process

■ Simultaneous QI Neo & OB Projects
  - Site Teams = Physician + Nurse + Administrator + Birth Certificate
  - IHI QI Experts - Key Driver Diagrams & PDSA Cycles

■ Monthly Webinars & Conference Calls
  - Review Project Goal
  - Rapid Data Analysis & Return to Sites
  - Review Aggregate & Site Specific Data
    - Each site sees aggregate & its own data
  - Trouble-shoot Systemic & Local Issues w/ PDSA’s

■ Joint Learning Sessions
  - Interdisciplinary Review of Process & Goals
OPQC Culture
Is not about just working harder

• It’s About:
  • Making sure that the right thing happens for every patient every time: reliable health care
  • A preoccupation with failure
  • Empowering clinical and clerical staff at unit level as the first line of safety
  • Recognizing the importance of support from senior medical and administrative leadership
OPQC Initial Projects & Goals
Selected by Participating Teams

- **Neo**: 50% ↓ in late onset blood stream & CSF infections in infants 22-29 weeks within 1 year

- **OB**: 60% ↓ within 1 year in scheduled births at 36⁰ to 38⁶ weeks that lack a medical indication
The OPQC Scheduled Birth Project
Near Term Births → Preventable NICU Admissions

Elements of the Key Driver Diagram

■ What did we want to accomplish & when?
  • Scheduled births lacking a medical indication in 1 year by 60%

■ What had to change to reach our objective?
  □ Doctor, Nurse, Hospital & Consumer Behaviors

■ How could we measure & know that change is an actual improvement?
  □ OPQC hand collected data ≈ Ohio BC data
Targets to Reduce Inappropriate Scheduled Births at 36⁰ - 38⁶ Weeks

- Optimal Dating = Ultrasound before 20 Weeks

- Schedule births by ACOG criteria
  - No scheduled births < 39 weeks unless valid medical / obstetrical indication
  - Scheduled Delivery Form

- Confront Risks & Causes of Near-Term Birth
  - Brain Card, Brochures, Infant Morbidity vs. Stillbirth

- Complete and accurate care handoffs

- Develop a Culture of Safety
**Scheduled Delivery**

A scheduled delivery is when you and your doctor pick the day that you will be delivered, either by cesarean delivery or by inducing your labor. Most of the time a delivery is scheduled because of the medical needs of the mother or the baby. Some women may prefer to have their delivery scheduled even without medical need. A scheduled delivery may appeal to both the woman and the health care provider because it helps them plan their schedules.

The Ohio Perinatal Quality Collaborative recommends scheduled deliveries before 35 weeks should occur only when there is strong evidence that the health of the woman or baby is at risk if the pregnancy continues.

In the United States in 2005, labor was induced in 1 out of 4 term deliveries and 1 out of 3 women had a cesarean. Some health care providers believe that many scheduled deliveries are medically unnecessary.

**The Risk of a Near Term Birth**

Inductions may contribute to the growing number of babies who are born “near term,” between 36 and 38 weeks gestation. While babies born at this time are usually considered healthy, they are more likely to have medical problems than babies born a few weeks later at full term (39-40 weeks).

A baby’s lungs and brain mature late in pregnancy. Compared to a full-term baby, an infant born between 36 and 38 weeks gestation is:

- 2 to 3 times more likely to be admitted to intensive care. This will mean a longer and more difficult hospital stay for your baby. It may also make it harder for the two of you to breastfeed or bond.
- More likely to have trouble breathing and need to be connected to a breathing machine (ventilator) to help her breathe.
- More likely to have trouble maintaining body temperature and need to spend time in a warming area (incubator) to keep her body temperature stable.

A baby’s brain at 35 weeks weighs only two-thirds of what it will weigh at 40 weeks.
What if the Doctors won’t do it?

- The only IT the Doctors have to do: Document
  - How dates were set – Scan < 20 wk or not
  - Reason for scheduling the delivery
  - Choices include “other __________”
    - Allowed if a reason is documented

- Hospital & Medical Staff make own rules
- OPQC & Ohio Birth Certificate track the rates
- Hard Stop vs. Soft Stop vs. Education only
Reduction in elective birth <39 weeks: 3 approaches to change

Clark SL, Frye DR, Meyers JA et al
Am J Obstet Gynecol 2010
A statewide initiative to reduce inappropriate scheduled births at 36\(^{0/7}\) – 38\(^{6/7}\) weeks’ gestation

The Ohio Perinatal Quality Collaborative Writing Committee

20 hospitals = 47% of Ohio births
18,384 births between 36\(^0\) \rightarrow 38\(^6\)
4780 (26%) scheduled
13,604 (74%) unscheduled

Project ran 9-1-08 \rightarrow 11-30-09
OPQC Sites
Ohio Birth Certificate Data
2006 → May 2011

Percent of Births at 360/7th to 380/7th Weeks Induced Without Medical or Obstetric Indication
Data from ODH Birth Certificate Records
Baseline: January, 2006 through December, 2007

The denominator is the number of births at 360/7th to 380/7th weeks for the specified month. The numerator is the number of inductions of labor without indication at 360/7th to 380/7th weeks gestation for that month.
Rates of labor induction without medical indication are overestimated when derived from birth certificate data

Jennifer L. Bailit, MD, MPH; for the Ohio Perinatal Quality Collaborative

BC Data Varies By:
- Hospital
- Maternal Dis
- Credentials
- State

Changes in the Indications for Scheduled Births to Reduce Nonmedically Indicated Deliveries Occurring Before 39 Weeks of Gestation

Jennifer L. Bailit, MD, MPH, Jay Iams, MD, Angela Silber, MD, Michael Krew, MD, David McKenna, MD, Michael Marcotte, MD, and Edward Donovan, MD, for the Ohio Perinatal Quality Collaborative

• Scheduled Births < 39 Weeks With Strong Medical or Obstetrical Indications Did Not Change
• Scheduled Births < 39 Weeks For Intermediate or Weak Indications Declined

Fig. 1. Category of delivery indications as a percentage of all deliveries.
Percent distribution of Ohio full-term and near-term births, by month
January 2006 to December 2012

Since OPQC inception, 30,000 expected near-term births statewide were delayed to full-term.

Baseline averages were calculated from the initial 24 months, January 2006 to December 2009.
Ohio births induced at 37-38 weeks with no apparent medical indication for early delivery, by month, January 2006 to February 2013

Ohio Birth Certificate Data

Points beyond the vertical dashed line are based on preliminary data and are likely to change.
Ohio births induced at 37-38 weeks with no apparent medical indication for early delivery, by OPQC member status and month, January 2006 to February 2013.

Ohio Birth Certificate Data

Points beyond the vertical dashed line are based on preliminary data and are likely to change.

Non-OPQC
Average, Non-OPQC
OPQC
Average, OPQC
Can You Do This In Your Hospital?

What Are The Keys to Success?

- Adopt ACOG Guidelines
- Use A Scheduled Birth Form (ACOG or Site Specific)
  - Document Pregnancy Dating Method
  - Document Reason for Scheduled Birth
- OPQC Is Not The Police = Soft Stop at 1st
- Rapid Data Turnaround
  - Frequent Group & Site PDSA’s
- Enthusiasm from Local Leaders
Initial Lessons From the Initial 39 Week Project

- Create A Culture of Change
- Learn From All Participants
  - Go to the Sites
- Improve Communication
  - Data Collectors, Data Users, Data Analysts
  - OPQC = Data for *You* to Use, Not the Police
- Birth Certificate = A Q.I. Instrument
  - Enhanced Training Needed
  - Use → Promotes Accuracy → Promotes Use
  - Rapid Turnaround Essential
OPQC Year 3 → OPQC + ODH + CDC Year 1

Goals & Outcomes of 2nd Project Cycle

- **Antenatal Steroid Project**
  - Goal > 90% of Eligible Infants Receive ANCS
  - Identify & Disseminate Best Practices

- **Disseminate the 39 Week Project to All Ohio**
  - 100% of Ohio Births in Project Sites
  - 60% ↓ in Inappropriate Scheduled Births

- **BSI - Human Milk Project: Milk Is Medicine!**
  - Increase Reliability of Catheter Care
  - 80% of 22-29 Week Infants Get HM < 72 hrs
  - ≥100 ml/kg/day of Human Milk < 21 days
OPQC ANCS Pilot Study Results in 473 Births at 24-34 wks

Hours From Arrival to Delivery in 47 Women Not Rx’d w/ ANCS

Half of Women Not Rx’d Delivered Within 2 hours of Arrival
Prospective Hand Collected Data from Births 24-34 Weeks

% of 2738 Eligible Rx’d w/ ANY Antenatal Corticosteroids

OPQC Project to Improve the Use of Antenatal Corticosteroids

Percent of women between 24 0/7 wks and 34 0/7 wks who received any ANCS prior to delivery

OPQC HAND COLLECTED DATA     October 2011 → October 2012
Births at 24-33 completed weeks receiving any antenatal steroids, by quarter Ohio

Source: Ohio Department of Health birth certificate file.
Note: Some data points may be suppressed per ODH disclosure limitation standard.
OPQC Prospective Data on ANCS Rx

- **October 2011** → **December 2012**
- **2738** Infants Born at **24^{0/7th} - 34^{0/7th}** Weeks at 19 OPQC Sites
  - **91.5%** Received At Least 1 Dose of Betamethasone
  - **80%** Received a Full Course - **20%** Received 1 Dose BMZ
  - **40%** Received 1\(^{st}\) Dose at a Referring Hospital
  - Mean Interval From Last Dose → Delivery ≈ 144 hrs (6 d.)
- **8.47% (232)** Did Not Receive ANCS Before Birth
  - **72%** Born ≤ 2 Hours After Maternity Hospital Admission
  - **11%** Admitted w/ Dx Not Expected to → Delivery < 14 d
  - **8%** Had Prenatally Detected Lethal Anomaly
- ✨ **Only 4%** Were Systems Errors {Not ordered or Not Given}
- ✨ Birth Certificate Documentation Lags Significantly
State Wide Dissemination of OPQC QI Projects

- Improve BC Data Quality
  - ODH vital statistics and hospital birth registrars

- Use Charter Neo & OB Sites As Models
  - Innovation Engines for evidence-informed projects

- Add Sites to Capture All Ohio Births
  - Design and pilot 39 Week Project in 16 hospitals
    - Geography, delivery volume, & # of Medicaid births
  - Use BC Data for Quality Improvement
  - Extend participation to all Ohio OB sites (n= 95)
Ohio Birth Certificate Information Flow

Hospital Medical Records → Birth Certificate → IPHIS Vital Statistics

Data Center

Data Warehouse

- Quality Division
- Reports to Hospitals
- Public Webpage
Engaging New Sites
Can You Do OPQC at Your Hospital?

- Ohio Birth Certificates = Data Collection
  - ODH & OPQC Want to Train Your Birth Certificate People

- OPQC Can Help You Troubleshoot Issues
  - Compliance, Documentation, Safety, Autonomy
  - Confidentiality
  - OPQC Is Not the Police

- Your Competitors Are Going to Do It

- Ohio Hospital Compare is Watching

- Recruit Local OB’s as Project Leaders
  - ACOG Involvement
Improving Accuracy of Ohio Birth Data

**Aim**
By Dec 2012, improve birth certificate accuracy and timeliness so that key variables** will be transmitted accurately in 95% of records within 10 days of birth (**gestational age, induction, ANCS use and breastfeeding at discharge)

**Key Drivers**
- Strong communication between clinical team and birth data staff
- Site uses training plan for data collectors
- Implementation site data verification process
- Use of site audit process for data quality
- IPHIS (BC) fields include essential and specific information/definitions
- Identification and spread of best practices for data entry and verification

**Interventions**
- Identify key clinical contact for birth data team. Identify all sources of birth data. Clarify needs/process with practices
- Develop and use training materials Plan for training of new staff (if turnover)
- ODH and OPQC modules (TBD)
- Coaching/reinforcement by OPQC and state quality coordinators
- Use ODH quality feedback to identify gaps
- Clarify definitions and instructions
- Collaborative/Site visits by state quality coordinators to identify key changes
**OPQC OB Key Driver Diagram: 39 week scheduled delivery project**

**Goal:** Assure that all initiation of labor or caesarean sections on women who are not in labor occur only when obstetrically or medically indicated (cite ACOG)

**Project Aim:** In one year, reduce by 60%, the number of women in Ohio of 36.0 to 38.6 weeks gestation for whom initiation of labor or caesarean section is done in absence of appropriate medical or obstetric indication *(Scheduled delivery)*

**Key Drivers**

- Awareness of risks & expected benefit of near-term delivery by patients and consumers
- Dating criteria: optimal estimation of gestational age
- Hospital and physician practice policies that facilitate ACOG criteria
- Awareness of risks & expected benefit of near-term delivery by clinician
- Culture of safety and improvement

**Key Drivers Details**

- Inform consumers of risk/benefits of deliveries < 39 weeks
- Communicate to patient/clinic/hospital ultrasound results
- Promote need for early dating to practitioners and consumers
- Public awareness campaign

- Promote need for early dating to practitioners and consumers
- Promote sonography < 20 weeks to establish dates
- Document criteria used to establish EDC
- Appropriate use of fetal maturity testing
- Empower nurses/schedulers to require dating criteria
- Identify a specific contact for authorization dispute re: dating
- Provide patient with hard copy results of ultrasound

- Empower nurses/schedulers to require dating criteria
- Document rationale and risk/benefit for scheduled deliveries at 36.0 to 38.6 weeks gestation
- Document discussion with patient about the above
- Both patient and MD sign consent statement for scheduled delivery between 36.0 and 38.6 weeks
- Physician awareness campaign: what are the reason(s) for scheduled delivery?
- Maximize access to Delivery and OR for optimal scheduling
- Facilitate scheduling policies that respect ACOG criteria

- Prenatal caregivers receive feedback from postnatal caregivers about neonatal outcomes of scheduled deliveries
- Ensure complete and accurate handoffs OB/Ob and OB/Peds
- Document discussion with patient about risk/benefits of near-term delivery
- Promote need for early dating to practitioners and consumers

- Continuous monitoring of data & discussion of this effort in staff/division meetings.
- Project outcomes posted on units and websites.
- Develop ways to include staff and physician input about communications and handoffs
- Connect with organizational initiatives on safety and use existing approaches as possible
- Empower nurses/schedulers to require data criteria
Results of Phase 1
39 Week Dissemination Project

- Hospital Birth Certificate Staff Excited !!
- Major Misunderstandings on Major Outcomes
  - Determination of Gestational Age - Rounding Up!
  - Definition of Preeclampsia
  - Recognition of Antenatal Steroid Rx
  - Definition of Breast Feeding at Discharge
- Aggregate Rate Declined Significantly
- Significant Improvement in 10 of 15 Sites
Rates of Scheduled Birth Without Documented Indication in 15 Pilot Sites

Births induced at 36-38 weeks with no apparent medical indication for early delivery, by quarter, 2006-2012

Aggregate results for 15 pilot sites

Percent with no medical indication

Quarterly Percent  Baseline Average Percent  Control Limits
OPQC Key Steps

- Transparency
- Population Impact
  - Infant Mortality & Prematurity Goals, not “quality”
- VON Lesson: Keep Data Collection Simple
- Quality Improvement Experts
- Find and Support Regional Leaders
- Listen to the Participants
- Rapid Data Turnaround and Reporting
- OPQC = data collection, not the police
OPQC’s Assets & Issues

Assets
- Ed Donovan’s Vision
- Ohio VON model
- Vital Statistics
  - ODH and Sites
- Ohio’s Army of Leaders
  - Each Metro Area
- Some Helped
  - MoDimes, AAP & ACOG
  - Medicaid & Insurance Co’s
- Publications → Progress

Issues
- Bureaucracy & Oversight
- Q.I. vs. Research?
  - IRBs Highly Variable
- Some Watched
  - Ohio Hospital Association
- Rates of Progress Vary
  - 39 Wks vs. Blood Stream Infxn
- Funding
- Publication Policies
OPQC Future Challenges

- Secure Funding
  - Uncertain Funding ➔ Uncertain Employment for Key Staff
- Staff Turnover
  - At OPQC Central – Funding and Career Advancement
  - At Sites - Inevitable
- Maintenance of Successful Outcomes
  - 39 Week Project in the Original 20 Charter sites
  - Blood Stream Infection
- Still No Project for which an OB Intervention is Measured by a Neonatal Outcome
OPQC Goals 2013-14

- A Birth Certificate Based Perinatal Data and Quality Improvement System
- Sustain & Disseminate Gains in All OPQC Projects
  - 39 Week Scheduled Birth
  - BSI Infections including Human Milk
  - Antenatal Steroids
- New Projects
  - State Wide Progesterone Project
  - Antenatal and Peripartum Human Milk Promotion
  - Prenatal and Neonatal Care for Abstinence Syndrome
Ohio Perinatal Quality Collaborative
Criteria for Choosing Future Projects

- Prematurity related
- Variation in practice
- Existing benchmark
- Measurable outcome
- Population impact
- Prior success
- Enthusiasm by participants
- Enthusiasm by the public

✓ 39 Weeks
✓ Antenatal Steroids
- Breast Feeding
- MgSO4 Neuro Rx
- LBW Hypothermia
- Late Preterm 34-36
- Neonatal Abstinence
- Progesterone
Progesterone Prophylaxis of Preterm Birth

✓ Prematurity related - Definitely
✓ Variation in practice - High
✓ Existing benchmark – SMFM & ACOG
✓ Measurable outcome – PTB Rates + Inf Mort
✓ Population impact – No Doubt
✓ Prior success – Many RCT’s but ? population
✓ Enthusiasm by participants – Yes ...
✓ Enthusiasm by our supporters - YES
Goal: Reduce Ohio PTB by 10%

Recognition of Prior sPTB & Use of Cervical Sonography
  - Train the Workforce
  - Create and Pay for Protocols

Make it Easy to Get Progesterone
  - Create and Pay for Protocols

Outcome Measures
  - Hand Collected Data at The Big 20 Charter sites
  - Medicaid and Private Insurers
  - Birth Registry Data – Births < 32, 35, 37 Weeks
  - Infant Mortality Rate
Key Features of a Successful Statewide Perinatal Improvement Collaborative

- Well-connected, committed, **clinical leadership** in both obstetrics & pediatrics (≥ 25% effort)
- Population-based rapid-response data system
- Access to one or two years of **baseline data**
- Support by state agencies & professional groups
- Centralized **administrative infrastructure**
- Access to rigorous **improvement science expertise**
- Integration of **community and academic providers**
- Open to idea of **transparent sharing of results**
The Ohio Perinatal Quality Collaborative 2013

**OBSTETRICS**

- 39-Week Scheduled Deliveries without medical indication
- Increase Birth Data Accuracy & Online modules
- Spread to all maternity hospitals in Ohio
- ANCS for women at risk for preterm birth (240/7 - 336/7)

**NEONATAL**

- Blood Stream Infection Highly reliable line maintenance bundle
- Use of human milk in infants 22-29 weeks GA
- Progesterone for Preterm Birth Risk
- Pilot Neo Abstinence Syndrome 6 Children’s Hospitals