Quality Measures in Obstetrics

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Chair, Perinatal Community, IHI

Objectives

- At the end of this course, the learner should be able to:
  - Articulate the difficulty and limitations in measuring quality in medicine
  - Differentiate process measures from outcome measures
  - Establish quality measurements within their practice that can drive quality improvement
  - Identify perinatal care “bundles” as process measures that improve the outcome of obstetric care

Quality Care in Obstetrics


Quality Measures in Obstetrics

- Dr. Cherouny has no conflicts of interest requiring declaration

Quality Care in Obstetrics

Why is this important now

Prevent the preventable
Defend the unpreventable
We need useful data
Quality Measures in Obstetrics

- Why should we measure?
- What should we measure?

• Why should we measure?
  – Large numbers of admissions/yr (>4 million), TIMES
  – Relatively rare outcomes, EQUALS
  – Significant numbers
    \[ N \times R = \text{significance} \]
    ➢ And we have two patients in the same bed

2007
4,317,119 births in US

Birth trauma 6.3-7.3/1000
estimated 50-90% are preventable

What does that mean for US?

27,000-32,000 injured babies total
13,500-28,800 preventable

Quality Measures in Obstetrics

- Why should we measure?
  – We want a reliable Health Care System
  – If we don’t measure we have no idea how we’re doing
  – We will all be patients one day

• What do we mean by reliable?
  “Reliability is failure free operation over time.”

David Garvin
Harvard Business School
Quality Measures in Obstetrics

**Why should we measure?**
- Study of “Reliability” in our Health Care System
  - 439 indicators of clinical quality of care
  - Patients received 54.9% of scientifically indicated care for their condition
- Defect rate in the technical quality of our health care system is 45%


Quality Measures in Obstetrics

**Reasons for a Reliability Gap in Health Care**
- Current Improvement methods in healthcare are highly dependent on vigilance and hard work
- The focus on benchmarked outcomes tends to exaggerate the reliability within healthcare
- Permissive clinical autonomy creates and allows wide performance margins

Are we Reliable?

Induction Rate by Physician

Instrumented Delivery Rate by Physician

Quality Measures in Obstetrics

**Who wants your data?**
- Patients
- Insurers
- Administrative groups
- You should want your data
Quality Measures

• The 2006 Tax Relief and Health Care Act (TRHCA) (P.L. 109-432)
  – Established a physician quality reporting system
  – CMS implements PQR through an annual rulemaking process published in the Federal Register
  – Financial incentive for 2007 was 1.5 percent

Quality Measures in Obstetrics

• For many reasons we need to assess how we are doing;
  – We need to measure

• We also need to know if our changes lead to improvement
  – We need to measure

Quality Measures in Obstetrics

• What should we measure?
  – Now it gets tricky

Quality Measures in Obstetrics

• History of obstetric quality measures
  – Primarily focused on performance (outcome) measures
  – Focus on the individual

Quality Measures in Obstetrics

• History of obstetric quality measures
  – Recently begun seeing process measures
  – Focus on the system

Quality Measures in Obstetrics

• History of obstetric quality measures
  – Outcome measure
    - How many patients get postoperative infections
  – Process Measure
    - How many patients received prophylactic antibiotics
    - How many received the recommended meds, in appropriate doses, in the appropriate time period
Quality Measures in Obstetrics
Measure what?

- The Ideal Obstetric Quality Measure
  - Needs to be associated with meaningful outcomes
  - Requires a reasonable expectation that the outcome is influenced by the provider or the system
  - Must be applicable on a large scale
  - Must have acceptability as a marker of quality
  - Must be reliable and reproducible


The definition of insanity is continuing to do the same thing over and over again and expecting a different result.

-Albert Einstein

nullip, term, singleton, vertex section rate

Main EK, et al. Is there a useful cesarean birth measure? Assessment of the nulliparous term singleton vertex cesarean birth rate as a tool for obstetric quality improvement. AJOG 2006;194:1644
Quality Measures in Obstetrics
Measure what?

• Outcome quality data
  – Term IUP
  – Cephalic presentation
  – No contraindications for labor/vaginal delivery

Quality Measures in Obstetrics
Measure what?

• Outcome quality data
  – The Intention is to treat these women with vaginal delivery
  – How many patients are there?

Quality Measures in Obstetrics
Measure what?

• Outcome quality data
  – How many of our patients?
    ➢ 70% deliver vaginally 70%
    ➢ 70% of primary cesarean sections 21%
    ➢ have indications that did not preclude labor 91%
    (Failure to induce, dilate or descend elective cesarean)

Quality Measures in Obstetrics
Measure what?

• Outcome quality data
  – Remember
    ➢ The Intention is to treat these women with vaginal delivery
    ➢ This is relatively comparable across institutions

Quality Measures in Obstetrics
Measure what?

• Adverse Outcome Index (AOI)
  ➢ measure of the frequency of 10 adverse delivery outcomes divided by the total number of deliveries

• Weighted Adverse Outcomes Score (WAOS)
  ➢ captures the severity of these outcomes by weighting each outcome measure by a weight that represents the severity of the outcome; the sum divided by total deliveries.

AOI Measures

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal death</td>
<td>750</td>
</tr>
<tr>
<td>Intrapartum and neonatal death &gt;2,500g</td>
<td>400</td>
</tr>
<tr>
<td>Uterine rupture</td>
<td>100</td>
</tr>
<tr>
<td>Maternal admission to ICU</td>
<td>65</td>
</tr>
<tr>
<td>Birth trauma</td>
<td>60</td>
</tr>
<tr>
<td>Return to OR/L&amp;D</td>
<td>40</td>
</tr>
<tr>
<td>Admission to NICU &gt; 2,500 g</td>
<td>35</td>
</tr>
<tr>
<td>and for &gt; 24 hours</td>
<td></td>
</tr>
<tr>
<td>Apgar &lt;7 at 5 minutes</td>
<td>25</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>20</td>
</tr>
<tr>
<td>3rd or 4th perineal tear</td>
<td>5</td>
</tr>
</tbody>
</table>

Quality Measures in Obstetrics

Measure what?

- Outcome quality data
  - Severity Index (SI)
    - Total of the WAOS divided by the deliveries having an adverse outcome


Quality Measures in Obstetrics

Measure what?

- Outcome quality data
  - Number of elective deliveries under 39 weeks
  - Number of Statewide, Regional and National groups concentrating on this alone

The Ohio Perinatal Quality Collaborative writing committee. A statewide initiative to reduce inappropriate scheduled births at 36+0-38+6 weeks' gestation. 25% to <5%

Elective Deliveries <39 Weeks

Intermountain Healthcare

0%
5%
10%
15%
20%
25%
30%
35%

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2005

Month
Percent <39 Weeks

Quality Measures in Obstetrics

Measure what?

- Advantages
  - Available from administrative data sets
  - Weights adverse events
  - May direct further quality review

- Disadvantages
  - Dependent on the input administrative data sets
  - Most clinically significant bad outcomes are rare
  - Difficult to assess “cause”

Quality Measures in Obstetrics

Measure what?

- Fundamental understanding of systems
  - We need to go beyond outcome data
    - Outcome data is the final output of a very complicated system

Avedis Donabedian, MD, MPH

- Defined the interaction of the Structure, Process and Outcome of systems
Quality Measures in Obstetrics

**Measure what?**

- Fundamental understanding of systems
  - *Every system is perfectly designed to achieve exactly the results (outcomes) it gets*

- Structure
  - *The “What”*

- Process
  - *The “How”*

- Outcome
  - *The “Results”*

- Most system problems are not the result of human error
  - People are only a part of the system
  - Current Improvement methods in healthcare that are highly dependent on vigilance and hard work are not successful
  - People are just being vigilant and working hard within the same system

- We must accept human error as inevitable — and design around that fact.
  - Don Berwick

**Performance**

<table>
<thead>
<tr>
<th>Individual Autonomous</th>
<th>Collective</th>
<th>Safety reports &amp; good practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>115 in 55</td>
<td>85 in 55</td>
<td>65 in 55</td>
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**Very unsafe space**

- Forbidden by all
- Forbidden except in extreme circumstances

**Illegal-normal space**

- Forbidden behavior except under extreme circumstances

- 55% of staff
- 65% of staff
- 85% of staff
- 115% of staff

**Usual space**

- Legal space
- 5% of staff
- 5% of staff
- 50% of staff
- 80% of staff
- 100% percent of staff

**Individual pressures**

- Perceived vulnerability
- Belief in systems + guidelines

- <1% to 5% to 50% to 80% to 100% percent of staff

- Safety regulations & good practices
- Certification & accreditation standards

- Collective memory of experiences
- Forbidden behavior except under extreme circumstances
Quality Measures in Obstetrics

Measure what?

• What are process measures?
  – The “How” we do things
    ➢ More frequent than the rare bad outcomes
    ➢ Look at actual care; not the policy behind the care
    ➢ Need to be relative proxies for outcomes to have an improvement effect

Quality Measures in Obstetrics

Measure what?

• What are process measures?
  – How often antibiotics are given preoperatively
  – How often we chose the right antibiotics
  – How often we give recommended DVT prophylaxis

Quality Measures in Obstetrics

Measure what?

• What are process measures?
  – Trigger tool assessment
  – Clinical Bundle Compliance

Trigger Tool

• Computerized triggers for ADE identification and concurrent intervention
  – David Classen (1990)
• ADE review identifying 14 triggers accounting for majority of ADE’s
  – David Classen (1994)
• Adverse drug event trigger tool (1999)
• ICU Adverse event trigger tool (2002)
• Global Trigger Tool (2004)
• Perinatal Trigger Tool (2005)

Why Use Trigger Tools?

• Easily identifies events without complex technology
• Can be integrated into a good sampling methodology
• Changes the discussion from provider errors to patient harm

Harm vs Errors

Trigger Tool Evaluation
• Harm is the focus of discussion
• Looks at all unintended results
• Measurement with Trigger Tool is clear and direct
• Nothing is unpreventable

Traditional reporting
• Errors are the focus of discussion
• Tends to focus only on those outcomes felt to be related to error
• Measurement relies on self-reporting
• Many ADEs are seen as unpreventable
Perinatal Trigger Tool

- Designed to detect harm to mother and baby
- Designed to be easy to use
- Reliably collect harm information
- Detects harm not otherwise identified

Perinatal Trigger Tool

- Concepts
  - Trigger ≠ Adverse Event = Harm

Category of Harm

- E Temporary harm, intervention required
- F Temporary harm, initial or prolonged hospitalization
- G Permanent patient harm
- H Life sustaining intervention required
- I Contributing to Death

Adverse Events and Perinatal Harm

Perinatal Harm (adverse events removed)
Perinatal Harm >E (adverse events removed)

Perinatal Harm >F (adverse events removed)

Perinatal Trigger Tool

• Conclusion
  – Focuses the discussion on patient harm
  – Initially assumes all harm is preventable
  – Measures impact on system change

Quality Measures in Obstetrics
Bundle compliance as process measurement

The Reliability Design Strategy

• Prevent initial failure
  – intent and standardization function

• Identify failure (defects) and mitigate
  – Redundancy function

• Measure and then communicate learning from defects
  – Redesign function
What is a Clinical Bundle

- A group of clinical events that should happen every time a given process occurs
- Individual elements based on solid science
- Initial emphasis is on process rather than outcome

Quality Care in Obstetrics
Bundle compliance as process measurement

Prevention of Pitocin Related Trauma
- Identify large babies
- Don’t do midpelvic deliveries when macrosomia is suspected
- Limit vaginal breech delivery
- Identify and respond to tachysystole
- Avoid abnormal/excessive traction
- Interpret fetal monitor by consensus guidelines

Elective Labor Induction Bundle
- Gestational age > 39 weeks
- Category I EFM
- Absence of tachysystole with increases in pitocin/Response to tachysystole
- Pelvic assessment

Augmentation Bundle
- Estimated fetal weight
- Category I and some Category II EFM
- Absence of tachysystole with increases in pitocin/Response to tachysystole
- Pelvic assessment

Vacuum Bundle
- Alternative labor strategies considered
- Prepared patient
  - Informed consent discussed and documented
- High probability of success
  - EFW, fetal position and station known
- Maximum application time and number of pop-offs predetermined
- Exit strategy available
  - Cesarean and resuscitation team available

Quality Care in Obstetrics
Bundle compliance as process measurement

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Quality Care in Obstetrics
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- Interpret fetal monitor by consensus guidelines
• Absolute need to measure
  – Drive our own Quality Improvement
  – Third party demands
  – System change through process improvement
    > measure
    > measure

Quality Measures in Obstetrics

• Use of Outcome Data should be limited
  – Rare, untoward outcomes should be pursued
  – Elective deliveries at <39 weeks
  – Term, Cephalic, No contraindication for vaginal delivery cesarean section rate (NTSV rate per Main)
    – AOI, WAOS, SI

Quality Measures in Obstetrics

• Process management data is useful to drive system change
  – Perinatal Trigger Tool
  – Bundle Compliance Data

Quality Measures in Obstetrics

• Process management data is useful to drive system change
  – Oxytocin Deep Dive
  – Labor Deep Dive