Improving Obstetric Care: Quality Improvement and Implementation Science Tools

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The Team

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Learning Objectives

1 | Describe at least 3 Quality Improvement Tools

2 | Describe the 5-step Approach to Building an Implementation Plan

3 | List 3 Applications of QI and IS principles to Maternity Care

4 | List 3 Potential Next Steps at Your Hospital to Safely Lower the Cesarean Rate Among Low-Risk Women
Agenda

1 | Cesarean Birth in the US and MI: How Did We Get Here?

2 | Quality Improvement and Implementation Science: Applications to Safely Lowering the Cesarean Rate in Low Risk Women

3 | Cases

4 | Questions & Wrap Up
Cesarean Birth in the US and MI: How Did We Get Here?
Trends in U.S. Delivery Rate

Variability in Low Risk Cesarean Delivery Rates

US Hospitals, 2009

Michigan Value Collaborative Hospitals, 2012 - 2016
Low risk c-section rates on the rise in Michigan

Triple Aim

Patient Experience

Reduced Costs

Population Health

Source | Institute of Healthcare Improvement
“Achieving high value for patients must become the overarching goal of health care delivery, with value defined as the health outcomes achieved per dollar spent. This goal is what matters for patients and unites the interests of all actors in the system.”

-Michael E. Porter, PhD
Value in Maternity Care

US Health Expenditures ($3 trillion)

- Hospital Care: 32%
- Outpatient Care
- Rehab/Home Care
- Prescriptions

Childbirth
- Cardiac Emergency
- Cardiac ICU

Source: Delivery Decisions Initiative, Ariadne Labs, Boston, MA
Obstetrics Initiative

Safe Births. Healthy Moms & Babies.

OBI supports vaginal births and safely reducing cesarean deliveries for “low-risk” pregnancies in Michigan hospitals.

www.obstetricsinitiative.org
Quality Improvement

O I Approach

Obstetric Reports  Peer-to-Peer Mentorship  Facilitation  Quality Improvement
Quality Improvement and Implementation Science: Applications to Safely Lowering the Cesarean Rate
What is Quality in Health Care?

**Quality:** Degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current medical knowledge.

- **Safe:** Avoiding injuries to patients from the care that is intended to help them.
- **Timely:** Reducing waits and sometimes harmful delays for patients and providers.
- **Effective:** Providing the appropriate level of services based on scientific knowledge.
- **Efficient:** Avoiding waste, including waste of equipment, supplies, ideas, and energy.
- **Equitable:** Providing care that does not vary in quality because of personal characteristics.
- **Patient-Centered:** Providing care that is respectful of and responsive to individual patients.

What is Quality Improvement?

A systematic approach that uses specific techniques to improve quality

IHI Model for Improvement

- What are we trying to accomplish?
- How will we know a change is an improvement?
- What change can we make that will result in an improvement?

Act
Plan
Study
Do

Source | Institute of Healthcare Improvement (IHI)
QI Tools

Identifying opportunities

- Process Map
- Cause and Effect Diagram
- Pareto Chart

Evaluating progress

- Plan-Do-Check-Act (PDCA)
- Run Chart/Control Chart
Identifying Opportunities
Process Map (Flowchart)

Visual representation of steps in a process created by a team which aids in identifying issues, centering discussions and identifying resources

Source | Institute of Healthcare Improvement (IHI) QI Essentials Toolkit
Cause and Effect Diagram (Ishikawa or Fishbone Diagram)

Graphically depicts the relationship of causes to the effect and each other and thus allows the team to identify areas for improvement

Source | Institute of Healthcare Improvement (IHI) QI Essentials Toolkit
Pareto Chart

Based on the Pareto Principle that 80% of effects come from 20% of causes

Allows teams to identify causes for which improvement efforts will provide the largest impact

Source | Institute of Healthcare Improvement (IHI) QI Essentials Toolkit
Evaluating Progress
Plan-Do-Check-Act (PDCA) Cycles

Plan: plan the test, including plan for data collection

Do: Run the test on a small scale

Check: Analyze results and compare them to your predictions

Act: Use the information gained from the test to make a plan for the next step

Source | Institute of Healthcare Improvement (IHI) QI Essentials Toolkit
Run Chart
Graph of data over time
Helps evaluate if changes are leading to improvement

Control Chart
Graph of data over time with an upper and lower control limit
Helps identify success and whether success is maintained

Source | Institute of Healthcare Improvement (IHI) QI Essentials Toolkit
Implementation Science

The study of methods that influence the integration of evidence-based interventions into practice settings
Quality Improvement

Reactive >> Proactive
Empirical
Local

Implementation Science

Reactive or Proactive
Theory-based
Generalizable

Source | Slide adapted from Geoffrey Barnes, MD, MSc, Co-Director, Michigan Anticoagulation Quality Improvement Initiative (MAQI²)
Implementation Science Tools

Frameworks

- Process of change - Plan your work
- Determinants of practice - Design an implementation plan
- Evaluation of change - See if your efforts worked

Strategies for Change

- Expert Recommendations for Implementing Change (ERIC)
Frameworks
5 Step Process for Developing an Implementation Plan

Step 1: Identify Practice Gap

Step 2: Identify evidence-based intervention to reduce gap

Step 3: Assess barriers/facilitators to implementing evidence-based intervention

Step 4: Link barriers to evidence-based change techniques

Step 5: Design implementation plan to overcome barriers

Re-evaluate & repeat if necessary

Sources: Powell et al. | Richardson et al.
Determinants Framework: CFIR

<table>
<thead>
<tr>
<th>Characteristics of Intervention</th>
<th>Inner Setting</th>
<th>Outer Setting</th>
<th>Individuals</th>
<th>Implementation Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Evidence strength</td>
<td>● Networks</td>
<td>● Patient needs</td>
<td>● Beliefs about intervention</td>
<td>● Planning</td>
</tr>
<tr>
<td>● Relative advantage</td>
<td>● Culture</td>
<td>● External incentives</td>
<td>● Self efficacy</td>
<td>● Engaging</td>
</tr>
<tr>
<td>● Cost</td>
<td>● Structural characteristics</td>
<td>● Peer pressure</td>
<td></td>
<td>● Evaluating</td>
</tr>
</tbody>
</table>

Great For Organizational Change

Source: The Consolidated Framework for Implementation Research, cfirguide.org
Determinants Framework: TDF/COM-B

Evaluation Framework: RE-AIM

Source: http://hungertohealth.com/2013/02/
Strategies for Change
### ERIC Strategies (n=73)

<table>
<thead>
<tr>
<th>Individual Techniques</th>
<th>Organizational Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit &amp; Feedback</td>
<td>Build a coalition</td>
</tr>
<tr>
<td>Distribute educational</td>
<td>Identify and prepare</td>
</tr>
<tr>
<td>materials</td>
<td>champions</td>
</tr>
<tr>
<td>Remind clinicians</td>
<td>Stage implementation scale up</td>
</tr>
<tr>
<td>Mandate change</td>
<td></td>
</tr>
<tr>
<td>Create new incentives/disincentives</td>
<td></td>
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</table>
Cases
Case 1

Your hospital receives a notification from a major payer that your Labor & Delivery unit has the highest low risk cesarean delivery rate across three counties.

Your boss appoints you to investigate this issue.

Where do you start?
## Indications for C-section

<table>
<thead>
<tr>
<th>Category</th>
<th>Rate per 1000 eligible live births</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor arrest disorders</td>
<td>90.9</td>
<td>38.4</td>
</tr>
<tr>
<td>NRFHT</td>
<td>58</td>
<td>62.8</td>
</tr>
<tr>
<td>Malpresentation</td>
<td>32.3</td>
<td>76.5</td>
</tr>
<tr>
<td>Macrosomia</td>
<td>12.5</td>
<td>81.7</td>
</tr>
<tr>
<td>Multiple gestation</td>
<td>11.5</td>
<td>86.6</td>
</tr>
<tr>
<td>Other</td>
<td>10.4</td>
<td>91.0</td>
</tr>
<tr>
<td>Maternal-Fetal</td>
<td>9.7</td>
<td>95.1</td>
</tr>
<tr>
<td>Pre-eclampsia</td>
<td>8.4</td>
<td>98.6</td>
</tr>
<tr>
<td>Maternal Request</td>
<td>3.3</td>
<td>100</td>
</tr>
</tbody>
</table>

Pareto Chart

Vital Few

Useful Many

You are working on lowering the cesarean rate among low-risk women at your hospital. You notice that many cesareans are being done for inappropriate diagnoses of arrest disorders.

You identify 2 potential approaches that have worked in other hospitals:

- **Checklist** to help assess whether patient meets definition of arrest
- **Real-time case review** with another attending

How do you decide which approach to take?
Determinants Framework:

**Characteristics of Intervention**

Real-time review with another attending is complex and costly. Checklist is simple and free.

**Inner Setting**

Only 1 L&D attending in house at a given time, makes real-time review less feasible

**Individuals**

Attendings are very wary about someone “questioning” their medical decision-making

Source | The Consolidated Framework for Implementation Research, cfarguide.org
You have implemented a bundle of changes to reduce your low-risk cesarean rate. It includes a checklist for diagnosis of arrest disorders...

How do you know if it is working?
Evaluate Progress

**Quality Improvement approach:** Monitor CS rate over time (Run Chart)

**Implementation Science approach:** Evaluate process metrics (Eval Framework)

- # providers familiar with checklist
- Acceptability
- Fidelity
Reflection:

What Next Steps Will You Take At Your Hospital To Safely Lower the Cesarean Rate Among Low-Risk Women?
Questions?
• June 26, 4-4:30pm
  **OBI Maternal Outcomes & Maternal Utilization Reports**
  Daniel M. Morgan, MD

• July 13, 12-1pm
  **Normalizing Labor**
  Elizabeth Langen, MD

www.obstetricsinitiative.org
Thank You!

Keep In Touch

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