Complexity & the Challenge of Too Much Medicine

@neel_shah
United States Cesarean Delivery Rate (%)

Electronic fetal monitoring saturates market

Trial of labor after cesarean promoted

Healthy People 2000: 15% CD Rate
Trial of labor after cesarean promotedElectronic fetal monitoring saturates market

United States Cesarean Delivery Rate (%)

Healthy People 2000: 15% CD Rate
Cesarean Rates by Hospital Across the United States

# of hospitals with each CD Rate

CD Rate

7%

x 10

70%
The facility is a risk factor
Pressure Builds for a Delivery Decision

Vaginal Delivery
MANY hours of Clinical Attention

Cesarean Delivery
FEW hours of Clinical Attention
**Inputs:**

- 53 Hospitals
  - Delivery Volume
  - NICU Level
  - Insurance Mix
- 220,000 Patients
  - Age / Race
  - Hypertension
  - Diabetes
- 3 Management Areas
  - Nursing
  - Patient Flow
  - Culture

**Outputs:**

- Cesarean Risk
- Morbidity Risk
- Efficiency
Don’t Know

Inadequate education

Know

Intentionally err

Misaligned incentive

Unintentionally err

System complexity
Designer \textit{(n./ dih-zayhn-er)}

Anyone who devises courses of action aimed at changing existing situations into preferred ones.

Herbert Simon, 1996
Clarity

Baby’s safety

Mom’s safety

Best long term health for both
Clarity

Baby's safety

Mom's safety

Best long term health for both

fetal status

maternal status

progress
Laneless Highway

5% risk

32% risk
precision + reliability = accuracy
From Complexity to SIMPLE SOLUTIONS

**Evidence**
Is there strong and consistent evidence?

**Impact**
Is there a large target and effect magnitude?

**Simplicity**
Can the strategy be translated into a solution that simplifies the decision options for end users?

**Scalability**
How much does implementation depend on context?
<table>
<thead>
<tr>
<th>Category</th>
<th>Strategy</th>
<th>1) Evidence</th>
<th>2) Impact</th>
<th>3) Simplicity</th>
<th>4) Scalability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Strategies</td>
<td>Limiting Labor Dystocia Cesareans in the Latent Phase</td>
<td>Green</td>
<td>Green</td>
<td>Green</td>
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<tr>
<td></td>
<td>Limiting Labor Dystocia Cesareans in the Active Phase</td>
<td>Green</td>
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<tr>
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<td>Limiting Labor Dystocia Cesareans in the Second Stage</td>
<td>Green</td>
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<td></td>
<td>Delaying Admission for Spontaneous Labor</td>
<td>Green</td>
<td>Green</td>
<td>Green</td>
<td>Orange</td>
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<tr>
<td>Excluded Strategies</td>
<td>Restricting Elective Deliveries &lt;41 Weeks</td>
<td>Red</td>
<td>Red</td>
<td>Red</td>
<td>Orange</td>
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<td></td>
<td>Requiring a Second Opinion for Intrapartum Cesareans</td>
<td>Orange</td>
<td>Orange</td>
<td>Orange</td>
<td>Red</td>
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<tr>
<td></td>
<td>Increasing Use of Operative Vaginal Deliveries</td>
<td>Green</td>
<td>Green</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td></td>
<td>Increasing Use of ECVs for Breech Presentation</td>
<td>Orange</td>
<td>Orange</td>
<td>Orange</td>
<td>Red</td>
</tr>
<tr>
<td>Adjacent Strategies</td>
<td>Increasing Use of Intermittent Auscultation</td>
<td>Green</td>
<td>Green</td>
<td>Red</td>
<td>Red</td>
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<tr>
<td></td>
<td>Improving Category II Fetal Heart Tracing Interpretation</td>
<td>Orange</td>
<td>Orange</td>
<td>Orange</td>
<td>Red</td>
</tr>
</tbody>
</table>
Forcing Functions
## Decision Indication Frameworks

<table>
<thead>
<tr>
<th>Category</th>
<th>Clear Indications</th>
<th>Fuzzy Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERNAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FETAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROGRESS</td>
<td></td>
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</tr>
</tbody>
</table>
The case for team planning

professional support and/or nurse

mom (+ personal support)

midwife (+ obstetrician)
Team planning during labor: 4 elements

- Clarify team roles & co-equal responsibilities
- Distinguish care plans for the mother, the fetus, and labor progress
- Solicit preferences & integrate with objective data
- Set expectations for next assessment
Team planning during labor: 4 elements

**Shared Labor and Delivery Planning Board**

**Team:**
- Mom: Sarah
- OB: Dr. Aggarwal
- RN: Avery

**Preferences:**
- Stay mobile as long as possible

**Maternal:** nitrous oxide

**Fetal:** intermittent monitoring

**Progress:** amniotomy

**Next assessment:** 2 hr or when requested

- 7cm, 8:00 pm

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**Early Labor**

**Active Labor**

**Pushing**
**Decision Aids at Admission and Delivery**

**Delivery Decision Aid**

Use this tool to guide team discussion when considering operative delivery. All team members should be present.

**ASK ALOUD**

What is the reason for considering delivery?

**CONFIRM ALOUD**

Have the minimum criteria for that indication been met?

**ASK ALOUD**

Are there options to allow more time for labor?

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<table>
<thead>
<tr>
<th>Indication (Category)</th>
<th>Minimum Criteria</th>
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<tbody>
<tr>
<td>Fetal Intolerance of labor</td>
<td>Any of: - Bradycardia - Recurrent decelerations and absent variability - Recurrent decelerations that do not improve with resuscitation and remote from delivery - Tachycardia that does not improve with resuscitation and remote from delivery</td>
</tr>
<tr>
<td>Progress Failed induction of labor</td>
<td>Either: - Latent phase lasted &gt; 24 hours - Oxytocin administration ≥ 12 hours with ruptured membranes</td>
</tr>
<tr>
<td>Active phase arrest</td>
<td>No cervical change with ruptured membranes and ≤ 5 cm dilated... with either: - Adequate contractions (&gt;200 MVU) ≥ 4 hours - Oxytocin administration ≥ 6 hours</td>
</tr>
<tr>
<td>Second stage arrest</td>
<td>Either: - Multipeas and pushing ≥ 2 hours - Multipeas and pushing ≥ 3 hours</td>
</tr>
</tbody>
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Yes: Discuss options and make a plan.
No: Discuss risks and benefits of operative delivery and answer any questions.
The case for pessimism...

Total Healthcare Expenditures ($3 trillion)

- Hospital Care 32%
- Outpatient Care 26%
- Rehab/Home Care 8%
- Prescription Drugs & Other 34%

Hospital Care Expenditures ($1 trillion)

- Childbirth
- Cardiac Emergency
- Cardiac ICU
The case for optimism...

NOW: Some mothers, some places

GOAL: Every mother, Everywhere
The case for optimism...

NOW:
Some mothers, some places

GOAL:
Every mother, Everywhere
MARCH for MOMS
National Rally May 6, 2018
Washington D.C.