The Delivery Room of the Future

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Dr. Henry C. Lee is Assistant Professor of Pediatrics at Stanford University and attending neonatologist at Lucile Packard Children’s Hospital. He grew up in the Chicagoland area and attended the University of Illinois for college and medical school. He completed his residency and fellowship training at Stanford and has worked in a variety of academic and community NICUs of various levels of care in California. His primary mentor during fellowship was Dr. Jeffrey Gould, Principal Investigator of the California Perinatal Quality Care Collaborative (CPQCC). Dr. Lee now serves as Director of Research for CPQCC, which currently encompasses 132 NICUs.

Dr. Lee, along with Dr. Lou Halamek at the Center for Advanced Perinatal & Pediatric Education at Stanford, is leading a study funded by the Agency for Healthcare Research & Quality called “Optimizing safety of mother and neonate in a mixed methods learning laboratory.” In this project, a multi-disciplinary group of clinicians, patient representatives, engineers, and design experts are working on designing the optimal delivery room for patient safety and quality of care.

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Wannasiri (Awe) Lapcharoensap is currently a third year Neonatology Fellow at Lucile Packard Children’s Hospital at Stanford University. She completed her BS in Neuroscience at Wellesley College in 2004 and received a MD from University of California San Diego in 2010. She finished her Pediatric Residency at Loma Linda University Children’s Hospital in 2013 and is a board certified in Pediatrics. She began her fellowship at Stanford in 2013 and she is now in her final year. Her main area of research during fellowship has been with the California Perinatal Quality Care Collaborative (CPQCC) specifically looking at variations in hospital rates of BPD, delivery room interventions, and associations between BPD with other morbidities. In the past year, she has developed an interest in delivery room interventions, studying the ergonomics of delayed cord clamping, and participated in activities with Henry Lee’s AHRQ research grant.

Annual Quality Congress Breakout Session, Saturday, October 3 and Sunday, October 4, 2015
The Delivery Room of the Future
Objectives: Envision the delivery room of the future that will support new and evolving evidence-based resuscitation practices and care teams to achieve ever-improving outcomes.
The Delivery Room of the Future

Wannasiri (Awe) Lapcharoensap MD / Henry C. Lee MD

The Delivery Room of the Future

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Disclosure

• Wannasiri (Awe) Lapcharoensap MD has nothing to disclose.
• Henry C. Lee MD has nothing to disclose.

What is the delivery room of the future?

• Introduction
• Goals
• Current problems / issues
• Design Synthesis
• Group breakout
• Group presentations
• Next steps

CPQCC Delivery room management QI

• Priorities
  – Thermoregulation
  – Appropriate respiratory support
  – Team composition
  – Communication

The Delivery Room of the Future...

  – Physical space
  – Integration of technology
  – Display
  – Human factors

Patient Safety Learning Laboratory

• Project 1: Neonatal Display
• Project 2: Maternal Display
• Project 3: OB-Safe – early identification of maternal clinical deterioration
• Project 4: Physical Design of Labor and Delivery Room Suite

October 3-4, 2015
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Delivery Room in the 1950’s

The Modern Day Delivery Room

The Future?

Goals of Redesigning Spaces
- Patient Safety (maternal / neonatal)
- Quality of care
- Family centered
- Healthcare team safety and morale

Design Approach

Observation / Identification of Problem
- Neonatal display
- Interface with mother / delivery / baby
- Communication
- Physical environment
- Protocols / processes
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Design Synthesis

Headline
Quote / Observation
Picture(s) or Sketch(es)
Needs / Insights
Point of View / Background
Opportunity Space
How might we...

NICU Parent: “I learned what good beeps sounded like... All the beeping and numbers gave me comfort. Right when I walked in the room, that's where I looked. I'd check the numbers—how are they doing? How are my babies doing?”

POV: Parents need a way to quickly understand the vital information about their children because information can make them feel reassured or alert them that help is needed.

How might we make the vitals monitor easier to read?
How might we lessen the amount of auditory stimuli?
How might we deliver critical information quickly and easily to parents?
How might we balance information presentation to serve both clinicians and laypersons?

Site Visit
Project 4: Jules Sherman
RN: Re: delayed cord clamping during a C-section

“What we really need is a sterile warm blanket that can wrap around the infant while we wait the 30 seconds. Someone just holds the baby before we pass him through the window.

POV: Physicians need to keep a neonate’s temperature up while waiting for the cord blood to empty because hypothermia is a possibility if the infant becomes too cold.

How might we implement skin-to-skin during delayed cord clamping no matter the baby’s weight, gestational age, birth setting or clinical condition?
How might we create a sterile warm surface for the baby while delaying cord clamping?
How might we design a sterile warming blanket?

Prototype:
Warm Sterile Surface for Delayed Cord Clamping

Delayed Cord Clamping Simulations during C-section and Vaginal Deliveries

Quotes:
“Positioning of the baby on this surface is not stable – the baby is on an angle that could contribute to complications.”
“Why do we repeatedly transfer a critically ill patient?”

Insight:
The surface needs to be flat and stable for resuscitation, and also be used for safe transport.

How might we:
Develop a "fetal transport unit" to better serve clinicians for this procedure?
# The Delivery Room of the Future

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<thead>
<tr>
<th>Small Groups</th>
<th>Looking Forward</th>
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<tbody>
<tr>
<td>• Can be realistic to do tomorrow – or can be future thinking</td>
<td>• Visit to the L&amp;D suite with a multi-disciplinary team (Parent, RN, OB, Neo, anesthesia, other staff)</td>
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<td>• Can be specific to institution or can be generalizable</td>
<td>• Focus groups: interview and discuss</td>
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<td>• Open invitations for improvement concepts</td>
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<td>• Any suggestions to test in simulation (locally or at CAPE)</td>
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