Welcome
A Difficult Delivery – A Simulation Experience

Sarah Sue Miller, RN
Educational Services Specialist

Agenda

- Review OB simulation
- Review difficult deliveries
- Discuss hybridized simulation
- Practice a “Full” OB simulation using multiple simulators
Course Objectives

Upon completion of this session, you will be able to:
- Participate in the development of a high risk scenario
- Participate in a high risk simulation exercise

Nursing Objectives:
- Identify three risk areas of Perinatology that benefit from simulation
- Discuss physiology of obstructed labor and identify three types of obstructed labor.
- Discuss preparation requirements of Perinatal Simulation.

Simulation

- Simulation has roots in prehistoric times, when it facilitated acquisition of hunting skills and prepared people for tribal games or warfare.

- The airline industry is known for incorporating simulation techniques into training programs for pilots and flight crews. The first airplane simulator was built in 1910, after the first fatal airplane crash in 1908.
**Goals of Simulation**

- Human Factors training
- Skill-based/Task training
- Team training
- Development of protocols and guidelines
- Cultural change
- Improved outcomes for our patients

**OB Simulation**

- Perinatal teams can practice handling emergencies without endangering patients or risking litigation
- Hospitals and insurers are taking notice


- **PPH:** Maslovitz S et al. Recurrent obstetric management mistakes identified by simulation. *Obstet Gynecol.* 2007 Jun;109(6):1295-300


OB Simulation

- Obstetric simulators designed to illustrate the process of childbirth and teach midwives how to manage complications have been dated to the 1600s

M du Coudray 1756

Challenges in Obstetrics

- Obstetric emergencies are “rare” events.
- Medico-legal climate limits ability for “hands-on” learning, especially during obstetric emergencies.
- Two patients in one (literally)
- Quickly changing census/acuity requires team to adapt quickly to become a high acuity/ED-like team when emergencies do occur.
- Multi-disciplinary Labor and Delivery team requires increased need for team communication and coordination.
Why We Do the Things We Do

- Normalization of deviance
- Lack of practice
  - Clinician
  - Team
  - System
- That never happens!

Product Overview

**Obstetrical Simulation**

- **SimMom** - an advanced full body birthing simulator for performing interventions during normal to complex birthing scenarios for mother and fetus
- **SimMom** - a joint venture between Laerdal and Limbs & Things Ltd. Leveraging the ALS Simulator platform and PROMPT components

“SimMom is a full scale obstetric patient simulator; it's an ALS Simulator for obstetric training”
In recognition of training needs for forces applied during delivery and especially shoulder dystocia, Limbs & Things has developed PROMPT hybrid simulator to create a better awareness amongst obstetric medical staff and trainees.

MamaNatalie – is a simulation tool kit with special focus on training in Post Partum Hemorrhage management and communication. Started as a training kit for underdeveloped countries has become an excellent "simple" alternative in the US and other developed countries.
First stage

The clinical accuracy of the simulator offers the ability to present the mother in multiple positions to simulate training in normal, difficult deliveries.

Second stage

Vacuum delivery

Urine bladder catheterization

Instruments: dilating forceps, speculum, suction cup. Suction tube will also be used.

Instruments: dilating forceps, speculum, suction cup. Suction tube will also be used.

Instruments: dilating forceps, speculum, suction cup. Suction tube will also be used.

Instruments: dilating forceps, speculum, suction cup. Suction tube will also be used.
Third stage

Fourth stage
**Product Overview**

### Neonatal Simulation

- **SimNewB** was specifically designed to train the Neonatal Resuscitation Program, the American Association of Pediatrics standard for neonatal resuscitation.
- Focuses on team training for critical problems in the delivery room during the first 10 minutes of life.
- Designed for patient scenario training including observation of problem indicators, vital signs recognition, IV and IO drug and fluid administration, ECG recognition, heart and breath sounds recognition, and advanced airway management skills.

![](image1)

### Women’s Health Simulation

- **VitalSim Nursing Anne** is effective for targeting key skills for women’s health, obstetrics, post-partum care, wound assessment and care, and general patient care.
- Economical and efficient skills and scenario based trainer

![](image2)
Complications of Childbirth

• Maternal
  – Hemorrhage
  – Eclampsia
  – Sepsis
  – Thromboembolism
  – Obstructed Labor

• Infant
  – Shoulder Dystocia
  – Breech
  – Instrument Assisted
  – Cord Prolapse

Shoulder Dystocia

Delivery requiring additional obstetrical maneuvers following failure of gentle downward traction on the fetal head to effect delivery of the shoulders

• Incidence: 0.6 to 1.9 % of vaginal vertex deliveries

• Up to 50 % of cases occur in women with no risk factors
Shoulder Dystocia

• Although shoulder dystocia occurs in less than 1% of all births, it can lead to serious injury of the infant and mother. Potential fetal complications include death, permanent neurologic impairment, brachial plexus injury, and Erb’s palsy, while the mother may suffer vaginal and cervical lacerations, significant blood loss, or uterine rupture.

• Obstetric brachial plexus injury (OBPI) is a serious neonatal complication of shoulder dystocia which may be associated with excessive traction applied during delivery.
Maternal Complications Of Shoulder Dystocia

- Postpartum hemorrhage 11 %
- 4th degree lacerations 4 %
- Risk of emergency surgery
- Emotional trauma

Gherman, Am J Obstet Gynecol 1997; 176:656

Neonatal Complications Of Shoulder Dystocia

- Brachial Plexus Injury 4 - 40 %
  - Permanent Injury <10 %
  - Risk with C-section 4 %
  - % cases with no Shoulder Dystocia 34 - 47 %
- Clavicle fracture 0.5 %
- Humeral fracture
- Hypoxic ischemic encephalopathy/death
Management Of Shoulder Dystocia

• Be Prepared:
  – Educate staff on policy
  – Team drills
  – Practice maneuvers with manikin
  – Proper equipment (stepstool)
  – Proper positioning to avoid staff injury

• Remember: Can Happen With Any Delivery

Points To Remember!

• Call Time At Head Out/Note on Strip
• No Fundal Pressure!
• Have Time Called Out By Minute
• Call For Help
• Exert any pressure axially not laterally
• Maneuvers
Timing of Maneuvers

- Consider waiting until next contraction before exerting any traction on head
- During this time attempt to sweep a finger along the dorsal aspect of the trunk to adjust orientation of fetal shoulders anterior to posterior
- This may allow time for natural rotation of shoulders to oblique diameter of pelvis in precipitous deliveries

McRobert’s Maneuver

- Hyperflex the thighs & abduct hips
- Flattens lumbar spine
- Cephalad rotation of symphysis pubis
- Accomplishes delivery in 42% cases
Rotational Maneuvers

- Rotational maneuvers expand the space available by about 2 cm by use of the oblique diameter

Delivery Posterior Arm

- Insert hand posteriorly & sweep arm across the chest and into vagina
- Rotate shoulders obliquely to deliver anterior shoulder
- Have RN stop suprapubic pressure first!
Effect of Maneuvers

- Delivery of the posterior arm increases available space by 2 cm


Suprapubic Pressure

- Assistant using stepstool
- Pushes shoulder below symphysis
- Direct vs. Lateral pressure: Note head position
Gaskin Maneuver

- Patient in all fours position on hands and knees
- Should have no significant motor blockade
- Described by Ida May Gaskin, The Farm Midwifery Center in Tennessee

Zavanelli Maneuver

- Reversal of cardinal labor movements by manually flexing and replacing head into uterus
- Give SQ terbutaline
- Deliver by C-section
- Risk of decortication and death
- 91% Success

Episiotomy & Shoulder Dystocia

- 2 retrospective studies:
  - 141 cases shoulder dystocia defined by clinician
  - 242 cases of severe shoulder dystocia

- Episiotomy increased the risk for anal sphincter laceration without improving outcome of shoulder dystocia

Youssef, BJOG 2005; 112:941

Additional Maneuvers

- Subcutaneous symphysiotomy
- Partial cephalic replacement, shoulder rotation, and vaginal delivery
- Cleidotomy: Cutting of clavicle
- Abdominal hysterotomy, rotation of shoulder, and vaginal delivery
Begin with the End in Mind

When preparing to teach using a simulation the instructor should review...

- the learning objectives.
- the learner’s expected behavior.
- the simulation’s debriefing points.

### Step 1: Review Learning Objectives

**Review**

- Identified: Identify goals and objectives for the training.
- Updated: Keep the learning objectives updated to reflect changes in the program.

**Objectives**

- **48 Shoulder Dystocia**
  - **Description**
    - A high-risk pregnancy with complications during delivery. A baby's head is not fully descended into the birth canal. The instructor may use different scenarios to reflect different complications and outcomes.
  - **Scenarios**
    - **Scenario 1**: Baby's head is stuck in the birth canal. The instructor demonstrates different techniques to manage the situation.
    - **Scenario 2**: Baby's heart rate is dropping. The instructor guides the learner through the steps to intervene.

**Learning Objectives**

- Verify that objectives match the program's learning goals and the learner's current skill level.
- When learning objectives are revised, update the content areas that are inter-dependent such as the scenario file, props, and other cues, and debriefing points.
Review Learner’s Expected Behavior

- Review the correct treatment guidelines – determine what behavior the learner should demonstrate during the simulation.
- Remember, any changes made to this area must also be addressed in the learning objectives and other interdependent content areas.

Review Debriefing Points

- Debriefing topics are usually anchored to the scenario’s learning objectives and educational content.
- Instructors are encouraged to remain flexible when formulating debriefing topics. Unexpected events may occur during a case that warrants exploration during the debriefing.
Step 2  Test Run the Scenario

Practicing with the scenario prior to actual teaching is recommended.
- Practice with the equipment
- Select the scenario using the graphic user interface.
- Practice logging events.

Step 3  Prepare the Clinical Environment

"More hot water!"
Prepare the Clinical Environment

• Assemble Equipment and Medications.
  – Warming Unit
  – Monitor.
  – Stethoscope and BP cuff.
  – Chart.
  – Medications.

• Prepare the Environment.
  – Delivery or clinical setting.
  – Sounds (phones ringing, etc.).
  – People (assistants, physician, and technicians).

• Prepare the Simulator.
  – Dressed appropriately.
  – Moulaged as needed (blood, meconium, vernix etc.).
  – Props (suction bulb, towels, tape measure etc.).

Prepare the Learners

• Learners are more likely to succeed when they know what is expected of them. Examine the simulator prior to the simulation. Review features and capabilities (sounds, pulse points, drug administration, etc.)
  – Permit the learners to acclimate to the new learning environment.
  – Review learning objectives.
  – Report to Student
  – Discuss roles.
The Instructor’s Role During Simulation

- Welcome and brief the learners.
- Set expectations
- Permit learners to ask questions
- Direct the simulation
- Take notes in preparation for debriefing
- Conclude the simulation
- Transition to debriefing
- Plan opportunities for additional deliberate practice.

Let’s simulate!

1. Central Simulation, **need volunteers to role play**
   1. Primary Instructor (work with students)
   2. Secondary Instructor/Tech (work with computer)
   3. Primary Student Nurse
   4. Secondary Student Nurse
   5. Physician to deliver baby
   6. Crowd: Observers

2. Divide into groups and replicate same central simulation
   Prep/Run session ~10-15 min

3. Debrief as a group to share learning/discovery (repeat if time allows)
Reference Articles

- **The active components of effective training in obstetric emergencies** (D Siassakos, JF Crofts, C Winter, CP Weiner, TJ Draycott) May, 2009
- **Management of Shoulder Dystocia Skill Retention 6 and 12 Months After Training** (Joanna F. Crofts, BMBS, Christine Bartlett, RM, Denise Ellis, RM, Linda P. Hunt, PhD, Robert Fox, MB, and Timothy J. Draycott, MD) Nov., 2007
- **Improving Neonatal Outcome Through Practical Shoulder Dystocia Training** (Timothy J. Draycott, MD, Joanna F. Crofts, BMBS, Jonathan P. Ash, MBBS, Louise V. Wilson, MBCHB, Elaine Yard, RM, Thabani Sibanda, MSc, and Andrew Whitelaw, MD) July, 2008
- **How simulation can train, and refresh, physicians for critical OB events** (Robert Gherman, MD, Andrew Satin, MD, Roxane Gardner, MD, MPH) Sept., 2008

- Draycott et al (O&G 2008)
  - 50% reduction in Hypoxic Brain Injury
  - 70% reduction in Shoulder Dystocia Injury
- MacKenzie et al (O&G 2007)
  - Reported an increase in Shoulder Dystocia, Brachial Plexus Injury & Neonatal Asphyxia

Questions or Comments
Next Steps

- Practice....
- Set realistic goals
- Develop an action plan
- Faculty enrichment/Continuing Education/Staff Development
- Budget for formal training
  - Time: Hands-on time with Simulator
  - Financially: Custom training with Simulation Experts
- Networking
- Set time lines and realistic goals

Simulation User Network
http://simulation.laerdal.com
Laerdal Services

Sales and Support
customerservice@laerdal.com

Monday – Friday, 8:00am - 8:00pm EST
Saturday & Sunday, 10am - 6pm EST

877-LAERDAL (523-7325)
Fax: 1-800-227-1143

Please give us feedback...