Ob Simulation Training

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ACOG SIMULATIONS CONSORTIUM -2009

- To develop and implement unique simulation-based curricula to assist residency programs to teach and improve residents’ clinical performance
- 9 centers at present - Stanford the west coast center
- Each center to train 2-4 outside residents per year

Traditional teaching
“See one, do one, teach one”

- Emphasis on cognitive skills
  - Textbooks
  - Lectures
  - Evaluated by written exam
Traditional Training

- Technical skill acquisition
  - Low-fidelity
  - Skills in isolation
  - Experience dependent upon available opportunities

Disadvantages of the Traditional Model

- Primarily passive learning
- Practice on live patients
- Hands-on skills done in isolation
- Lack of team training
- Limited exposure to rare but potentially devastating events
  
  “See one (done wrong), do (100 wrong), teach (it wrong forever)”

Your Practice Domain:

- Stress
- Fatigue
- High stakes
- Time pressure
- Task saturation
- Auditory overload

- Two patients
- Language barrier
- High expectations
- Limited resources
- Multiple care teams
- Frantic spouses/family
To Err is Human

- Best athletes
- Best training
- Well-rested/fed
- Highly confident
- Highly motivated
- Even best in the field - all make errors

IOM Report

- 44,000 - 98,000 deaths each year
- $17 billion - $29 billion annually
- High rates with serious consequences
  - Intensive care units
  - Operating rooms  Labor and Delivery
  - Emergency Departments

What Other Industries Are Doing: Commercial Aviation

Figure 1.1 Primary causes of hull loss accidents (excluding military and sabotage): worldwide commercial jet fleet, 1959–1989. Data from Boeing Aircraft Company.
Crew Resource Management (CRM)

- Real-time experience
- In-depth review
- Repeat situations
- Safe environment
  - No loss of life
  - No loss of equipment


Key Behavioral Skills

- Know your environment
- Anticipate and plan
- Assume the leadership role
- Communicate effectively
- Distribute work load optimally
- Allocate attention wisely
- Utilize all available information
- Utilize all available resources
- Call for help early enough
- Maintain professional behavior

JCAHO 2004

- Sentinel Event Alert
  - 71 perinatal cases reviewed - Root causes
    - Communication (72%)
    - Safety culture (55%)
    - Staff competency (47%)
    - Orientation and training (40%)

http://www.jcaho.org
JCAHO Recommendations

- **Team training in perinatal areas** to promote teamwork and improve communications
- Clinical drills to help staff prepare for high-risk events
- Debriefings to evaluate team performance

_J Perinatol 2006:1-8_
http://www.jcaho.org

Types of Simulation

- **Mannequin-based high fidelity simulation**: A full body, computer-driven mannequin represents a patient and interacts with the trainee.
- **Labor and delivery drills**: uses a hybrid sim model emergencies are practiced on labor and delivery, **unmask systems errors in addition to human errors**.

- **Surgical technique training** also called part task trainer, : this is used to teach surgical technique ie laparoscopy.
- **Screen based computer case simulations**: the trainee proceeds through a computer written scenario viewing the results of their decisions on the computer as they progress.
Simulation-based Training

- Immersive, hands-on multidisciplinary team training in realistic environment
- Can be in a high fidelity simulation lab or on your unit
- Necessary components:
  - Simulator (space)
  - Scenarios (manikin or standardized patient, instructors, medical equipment)
  - Suspension of disbelief
  - Video equipment for debriefing

Simulation Room

- 400 square feet
- “Built to code”
- 6 pan tilt cameras
- Multiple microphones

Suspend disbelief: simulation artifact

“Patients”

- Neonatal
- Pediatric
- Obstetric
Debriefing: What IS it?

- Facilitated discussion
- Review of videotaped performance
- Discussion covers:
  - Cognitive skills
  - Technical skills
  - Behavioral skills (CRM)

Project Implementation

- Obstetrical trainees were assigned readings to complete and attended didactic lectures on a variety of obstetrical crisis situations including amniotic fluid embolus, shoulder dystocia, and postpartum hemorrhage.
- The trainees did not receive advance notification of the scenario they encountered during the simulation.
- Sessions began with a brief introduction to simulation-based training, discussion of the use of video for debriefing and orientation to the medical simulator.

Project Implementation

During the crisis simulation, the entire labor and delivery “team” was present including obstetrical residents, anesthesia residents, and labor and delivery nurses.

Two simulation scenarios were developed.

Scenario #1

- Epidural hypotension with mild fetal bradycardia
  - Knowledge of epidural complications
  - EFM interpretation
  - Management of epidural hypotension
Scenario #2

✓ **Amniotic Fluid Embolism**
  Fetal deceleration as **first** manifestations of acute maternal hypoxia followed by cardiopulmonary arrest
  ✓ Tests:
    ✓ Diagnostic skills
    ✓ Management of cardiopulmonary arrest
    ✓ 5 minute rule

Project Implementation

✓ Immediately following the scenario, trainees were **debriefed** by reviewing the videotape of the scenario.

✓ With guidance from the instructor and the use of open-ended questions, the trainees experienced a **supportive** environment where self-critique and active learning occurred. Simulator instructors facilitated (but did not monopolize) the debriefing process.

Project Implementation

**OB Trainee Evaluation**

Assessment of critical clinical and behavioral performance of the residents:

- **Knowledge**
- **Skill**
- **Behavioral Performance**
Knowledge and Skill

- Can the trainees **correctly identify** an emergency situation?
- Did the trainee respond in a **timely fashion**?
- Did the trainee show an **understanding of the differential diagnosis**, and exhibit dynamic decision-making abilities?

Behavioral Performance
(Crew Resource Management)

- Effective communication
- Calling for help early
- Anticipate plan
- Leadership and follow-ship
- Distribution of workload
- Allocation of attention wisely
- Use of all available information

And the winners…

1) Communication errors
   - Failure to close the loop
2) Workload distribution errors
   - Delivery by committee
3) Fund of knowledge deficits
   - Within their domain

Course Evaluation

- All the participants were asked to complete a subjective course evaluation at the conclusion of their course of training. This feedback was used to evaluate and improve the simulation scenario.
- A **5-point LIKERT scale** (Range: 1= poor to 5= excellent) was used for scoring.
Simulation for obstetric crisis training is sufficiently realistic to create a positive and safe learning environment. This training requires demonstration of technical ability and critical communication and behavioral skills.
Conclusion

The use of simulation may allow for focused teaching opportunities tailored to individual deficiencies. In addition, simulation may improve interactions with other members of the healthcare team.

In Situ Labor and Delivery Drills

Or as our British friends say “Fire Drills”

Consider In-Situ Drills For…

- Cardiac arrest
- Neonatal resuscitation
- Emergency cesarean
- New equipment, skills (SBAR communication)
- Precipitous delivery
- Replacement for skills day?

- Eclampsia
- Shoulder dystocia
- Hemorrhage
- Breaking bad news
- Maternal respiratory arrest
And the evidence is…..


And the evidence tells us…..


- Daniels, K., Arefeh J, Clark A, Waller S, Druzin M, Chueh J *Prospective Randomized Trial of Simulation versus Didactic Teaching for Obstetrical Emergencies* publication pending Simulation in Healthcare.

And the evidence tells us…..

