Use of Simulation to Improve Quality and Safety

May/June 2012 Conference

Connie M. Lopez, MSN, CNS, RNC-OB, CPHRM
National Leader, Patient Safety & Risk Management
About Kaiser Permanente

- We are the nation's largest not-for-profit health plan
- Based on an integrated health care delivery system
- Dedicated to care innovations, clinical research, health education and the support of community health
- Comprised of three divisions
  - Kaiser Foundation Health Plan
  - Kaiser Foundation Hospitals
  - Permanente Medical Groups
About Kaiser Permanente

- Serving 9 states and the District of Columbia
  - 8.9 million members
  - 14,000 physicians
  - 165,000 employees
- 37 hospitals and medical centers
- 430+ medical offices
My experience as a simulation educator is…

1. None
2. <1 year
3. 1 – 5 years
4. 6 – 10 years
5. >10 years
My simulations are focused mostly on...

1. Inpatient staff
2. Outpatient healthcare staff
3. Academic setting
4. Other
The Kaiser Permanente Experience
Why We Do Simulation Training
The Opportunity to Improve
Severity of Cases
The Burden of Birth Injuries

- Patient & Family: Physical, Emotional, Financial
- Health Care Staff: Emotional, Reputational
- Organization: Emotional, Reputational, Financial
Simulation Training in High-Risk Industries
Culture of Safety

Characteristics of Highly Reliable Organizations:

• Safety as the highest priority
• Preoccupation with what could fail
• Open environment to discuss error
• Everyone encouraged to speak up about hazards
• Rewards for safe actions
• Training for hazardous situations
“Highly reliable” units focus on patient safety and the prevention of patient injury.
Team Training Skills

Human Factors Skills

Briefing
Communication
Assertion
Situation Awareness
Teamwork
Critical Events Team Training (CETT)

The goal is to take a team of experts & create an expert team
Dream Team

World Of Hurt
Goals of Simulation

Teamwork

Communications

Test New Systems

Testing of systems and processes

Development of protocols and guidelines

Cultural change
Is the need for practice new?
Why Simulate?

How else would we practice and maintain our skills for high risk or critical events that occur infrequently?

How else could we practice and improve teamwork?

“See one, do one, teach one” is an effective and safe way to acquire and maintain skills and competencies...
Traditional Learning

Clinical

Course Objectives

Traditional Learning

Test

Lecture
Simulation-based Learning

- Learner Outcomes
- Modules
- Case Studies
- Close the Gap
- Clinical Experience

Simulation-based learning
Learning Pyramid

Based on average student retention rates

- 5% Lecture
- 10% Reading
- 20% Audiovisual
- 30% Demonstration
- 50% Discussion
- 75% Practice doing
- 90% Teach

Source: National Training Laboratories, Bethel, Maine
Experiential Learning

1. **Real Event / Simulation** (Concrete Experience)
2. **Debriefing** (Reflective Observation)
3. **What Will Be Done Differently** (Planning for Implementation)
4. **What Was Learned**
   - Abstract Conceptualization
5. **Changed Behavior**
   - (Active Experimentation)

Adapted from Kolb Learning Style Inventory
Our Journey...
One Year...at a Glance

- Memorandum of Understanding (MOU)
- Data collection and analysis
- Formation of PPSP Steering Committee and Team (PPST) at your medical center
- Trainings:
  - Human Factors Training
  - Critical Event Team Training (CETT)
  - Communication Training (SBAR)
  - Electronic Fetal Heart Monitoring Training
  - Responsible Reporting/Escalation Policy
- Accomplishments and learning shared between Medical Centers
<table>
<thead>
<tr>
<th>Medical Center</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>• SAQ</td>
<td>• Maternal and fetal</td>
</tr>
<tr>
<td>• Nursing retention</td>
<td>outcome data</td>
</tr>
<tr>
<td></td>
<td>• Lawsuits</td>
</tr>
</tbody>
</table>
Data Collection and Analysis
Safety Attitudes Questionnaire (SAQ)

- **Administration pre- & post-project implementation**
- **Elicits caregiver attitudes through the 6 factor analytically derived scales:**
  - Teamwork climate
  - Job satisfaction
  - Perceptions of management
  - Safety climate
  - Working conditions
  - Stress recognition
### Three Day CETT Train-the-Trainer Program

<table>
<thead>
<tr>
<th>DAY 1</th>
<th>DAY 2</th>
<th>DAY 3</th>
</tr>
</thead>
</table>
| • Experience CETT as a participant  
• Human Factors revisited  
• Become familiar with simulation equipment | • Create scenarios  
• Debriefing skills taught  
• Practice, practice, practice!  
• Set up for Day 3 | • Conduct CETT with own staff  
• Debrief with new trainers |
Staff Critical Events Team Training (CETT)

FOUR HOUR TRAINING

Pre Training
- Human factors
- Orientation to simulator & simulation learning environment

In-situ simulation training
- Actual occurrences used as basis for scenarios
- Focus on apparent weaknesses in our system

Post training
- Debriefing
Contributions of CETT Skills

60% Human Factors Skills
- Teamwork
- Communication
- Assertion
- Briefing
- Situation Awareness

40% Technical Skills
Advantages of Simulation

- Offers a safe learning environment
- Reveals positive & negative communication patterns
- Reveals system design strengths and weaknesses
- Reveals the interplay of system design & teamwork/communication
Outcomes

Source: PPL
Shoulder Dystocia Program
Standardized Skill & Team-based Training

- Didactic
- Human Factors
- Expert Modeling
- Hands-on practice
- Simulation
- Debriefing
- Pre- and Post-Tests
- Outcomes measures
Clinical outcome measures – Shoulder Dystocia Program

- Incidence rate of brachial plexus injury
- Incidence rate of fractured clavical
- Incidence rate hypoxic encephalopathy
Birth Trauma (AHRQ Definition)
KPSC 2000-2008
Cases of birth trauma, injury to neonate, per 1,000 liveborn births excluding pre-term
Outcomes - Anecdotes

Improved teamwork & communication
- Malignant Hyperthermia case
- Perinatal Code case

Improved service & process (use of data from patient satisfaction survey)
- Use of real patients
Other data

Decrease in birth injuries one year after shoulder dystocia simulation-based training
- Brachial Plexus injuries went from 18% - 7%
- Clavicular fractures 0% for one year
- Decreased Hypoxic Ischemic Encephalopathy

Decrease in system wide mortality
- Sepsis
Planning & Scheduling a Critical Events Team Training (CETT)
Your Team
Your Planning Team

- Chief of Service
- Nursing Services Director
- Nurse Managers
- House Supervisors
- Nurse Educators/CNS
- NRP Instructor
- Patient Safety Team
## Sample List of Team Members

<table>
<thead>
<tr>
<th>TEAM MEMBERS</th>
<th>TEAM #1</th>
<th>TEAM #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesia/CRNA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstetrician</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L&amp;D RN #1 (Primary/Circulating)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L&amp;D RN #2 (Charge RN)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L&amp;D RN #3 (Scrub/Additional support)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OB Tech/Scrub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Assistant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatrician/Neonatologist/NNP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursery RN #1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursery RN #2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory Therapy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Innovations in Simulation
Innovations in Simulation

Simulation
Rapid prototyping
Technology testing
Product evaluation
Training
Innovations in Simulation
Designing Effective Simulation: Levels of Evaluation

- **Level 1**: Did the learners like the training? Self efficacy?
- **Level 2**: Did learners actually learn?
- **Level 3**: Did learners change their behavior after the training?
- **Level 4**: Did the training achieve its goals?
Next Steps for Use of Simulation

- Designing and providing education
- Education and maintenance of competence
- Privileging and credentialing
- Assessing and improving care systems
Why We Do It - Patient Safety & Simulation

**Mission**
Reduce adverse events
Improve patient safety

**Vision**
Practice simulation to improve patient safety

**Goal**
Create "highly reliable" teams
Connie M. Lopez,  MSN, CNS, RNC-OB, CPHRM  
National Leader, Patient Safety and Risk Management  
Kaiser Permanente Program Offices  
One Kaiser Plaza, Suite 18B  
Oakland, CA 94612  
Tel: (510) 271-2629  
email: connie.m.lopez@kp.org