Clinical Simulations for now & the future: Innovating for better patient care

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Dean & Professor
Objectives:

Discuss the State of the Science in clinical simulations
• Theory in simulation
• Identified best practices and standards
• Research – emerging

Describe concepts & activities promoting simulations and safe patient care
• Certification CHSE
• Accreditation of Simulation Centers
• Research with BON policies and guidelines
• Partnerships and Collaborations

Define Educational Practices and Drivers of Change
• High stakes simulations
• Interprofessional education
State of the Science

• Theory in simulation

• Best practices and standards

• Emerging research
Simulation Model


DESIGN CHARACTERISTICS and SIMULATION (intervention)
- Objectives
- Fidelity
- Problem-solving
- Student Support
- Reflection

OUTCOMES
- Learning (Knowledge)
- Skill performance
- Learner satisfaction
- Critical-thinking
- Self-confidence

TEACHER
- Demographics
  - Program
  - Level
  - Age

STUDENT
- Active learning
  - Feedback
  - Student/faculty interaction
- Collaboration
  - High expectations
  - Diverse learning
  - Time on task

EDUCATIONAL PRACTICES
- Demographics
- Active learning
- Collaboration
- Program
- Level
- Age
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- Objectives
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Simulation Model transitioned to the NLN/Jeffries Simulation Theory

Simulation-Based Medical Education

A critical review of simulation-based medical education research: 2003-2009 (McGhagie, W., Issenberg, B., Petrusa, E., & Scalese)

New research, combined with historical record, allowed the authors to identify and discuss 12 features and best practices of SBME.
Features and Best Practices

1. Feedback
2. Deliberate Practice
3. Curriculum Integration
4. Outcome Measurement
5. Simulation Fidelity
6. Skill Acquisition and Maintenance
7. Mastery Learning
8. Transfer to Practice
9. Team Training
10. High Stakes Testing
11. Instructor Training
12. Educational and Professional Context
INACSL Standards

Simulation demonstrates a commitment to quality and implementation of rigorous evidence based practices in healthcare education to improve patient care by complying with practice standards in the following areas:

- Simulation Design
- Outcomes and Objectives
- Facilitation
- Debriefing
- Participant Evaluation
- Professional Integrity
- Simulation-Enhanced Interprofessional Education (Sim-IPE)
- Simulation Glossary
Research around patient outcomes:
A meta-analysis and systematic review

• From a pool of 10,903 articles, the researchers identified 609 studies for synthesis
• In comparison, with no intervention, technology-enhanced simulation training in health professions education is consistently associated with large effects for outcomes of knowledge, skills, and behaviors, and moderate effects for patient outcomes

Comments from the JAMA meta-analysis

• Important questions in the area of simulations are those that:
  • clarify when to use simulations
  • how to use simulation most effectively and cost efficiently

• Need for research in the area of theory-based comparison between different technology-based simulation designs that minimize bias, achieve appropriate power, and avoid confounding, as well as rigorous qualitative studies are necessary to clarify how and where to effectively use technology-enhanced simulations for training healthcare professionals.
Table 4. Neonatal Morbidity Associated with Shoulder Dystocia

<table>
<thead>
<tr>
<th>Incidence (%)</th>
<th>Pretraining (n=324)</th>
<th>Posttraining (n=262)</th>
<th>Relative Risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonatal injury at birth</td>
<td>30 (9.3)</td>
<td>6 (2.3)</td>
<td>0.25 (0.11-0.57)</td>
</tr>
<tr>
<td>Brachial plexus injury at birth</td>
<td>24 (7.4)</td>
<td>6 (2.3)</td>
<td>0.31 (0.13-0.72)</td>
</tr>
<tr>
<td>OBPI at 6 mo</td>
<td>9 (2.8)</td>
<td>2 (0.8)</td>
<td>0.28 (0.07-1.13)</td>
</tr>
<tr>
<td>OBPI at 12 mo</td>
<td>6 (1.9)</td>
<td>2 (0.8)</td>
<td>0.41 (0.1-1.77)</td>
</tr>
<tr>
<td>Fractured clavicle or humerus</td>
<td>6 (1.9)</td>
<td>2 (0.8)</td>
<td>0.41 (0.1-1.77)</td>
</tr>
<tr>
<td>Apgar score less than 7 at 5 min</td>
<td>12 (3.7)</td>
<td>6 (2.3)</td>
<td>0.61 (0.24-1.57)</td>
</tr>
</tbody>
</table>

CI, confidence interval; OBPI, obstetric brachial plexus injury.
Concepts and activities promoting simulations and safe, patient care

- Certification CHSE
- Accreditation of Simulation Centers
- Research of Board of Nursing policies and guidelines
- Partnerships and Collaborations
- Inter-professional Education and Practice
Certification through SSH

• Certified Healthcare Simulation Educator (CHSE) is a formal professional recognition of specialized knowledge, skills, abilities & accomplishments in simulation education

• Hundreds of Certified Healthcare Simulation Educators

• Certified Healthcare Simulation Educators-Advanced (CHSE-A) are available
<table>
<thead>
<tr>
<th>Domain</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Professional Values and Capabilities</td>
<td>4%</td>
</tr>
<tr>
<td>Demonstrate Knowledge of Simulation Principles, Practice, and Methodology</td>
<td>34%</td>
</tr>
<tr>
<td>Educate and Assess Learners Using Simulation</td>
<td>52%</td>
</tr>
<tr>
<td>Manage Overall Simulation Resources and Environments</td>
<td>6%</td>
</tr>
<tr>
<td>Engage in Scholarly Activities</td>
<td>4%</td>
</tr>
</tbody>
</table>
SSH Accreditation for Simulation Centers

Programs are awarded accreditation in one or more of the following areas:

• Assessment
• Research
• Teaching/Education
• and/or Systems Integration
The NCSBN National Simulation Study

Jennifer Hayden, MSN, RN;
Richard Smiley, MS, MA;
Maryann Alexander, PhD, RN, FAAN;
Suzan Kardong-Edgren, PhD, RN, ANEF, CHSE;
Pamela Jeffries, PhD, RN, FAAN, ANEF

Study Groups

Control Group
- Traditional clinical experiences
- Up to 10% simulation

25% Group
- 25% of clinical time spent in simulation
- 75% traditional clinical experience

50% Group
- 50% of clinical time spent in simulation
- 50% of time in traditional clinical experience
Core Courses

- Fundamentals of Nursing
- Medical-Surgical Nursing
- Advanced Medical-Surgical Nursing
- Maternal-newborn Nursing
- Pediatrics
- Mental Health Nursing
- Community Health Nursing
Conclusions

1. Up to 50% simulation can be effectively substituted for traditional clinical experience in all core courses across the pre-licensure nursing curriculum.
2. 50% simulation can be effectively used in various program types, in different geographic areas in urban and rural settings with good educational outcomes.
3. NCLEX pass rates were unaffected by the substitution of simulation throughout the curriculum.
4. All three groups were equally prepared for entry into practice as a new graduate RN.
5. Policy decisions regarding the use and amount of simulation in nursing needs to be dependent upon the utilization of best practices in simulation.
Recommendations for Educators and Regulators

• Formally trained faculty in simulation pedagogy
• Use of theory-based debriefing methods using subject matter experts
• Adequate numbers of simulation faculty to support learners
• Equipment and supplies to create a realistic environment
The evidence is discussed

Simulation Guidelines

Faculty Preparation Checklist

Program Preparation Checklist

NCSBN Simulation Faculty Preparation Checklist

- The Simulation program is based on educational theories associated with simulation such as experiential learning theory
- The faculty are prepared by following the INACSL *Standards of Best Practice: Simulation*
- A tool for evaluating simulated-based learning experiences has been designed based on the INASCL *Standards of Best Practice: Simulation* evaluation methods
- The program curriculum sets clear objectives and expected outcomes for each simulation based experience, which are communicated to students prior to each simulation activity
Different State Regulations for Simulations

- Must use INACSL standards
- Simulation scenarios must be integrated in the nursing program’s curriculum
- Simulation facilitators must be prepared
- Students participating in simulations should have equal opportunity to perform the role of the nurse
- Adequate personnel and resources are needed to set up and break down simulations
- Specific objectives are needed for each simulation scenario
- Programs shall evaluate and revise simulations based on the evaluation plan

Arizona State Board of Nursing
Partnerships and Collaborations

- EcO 15 – 10 county consortium on improving healthcare
  - Focus: developing regional simulation centers and providing faculty development
- Residency program – hospital and the new graduates
- Academic institution and a healthcare organization partner to improve care
Influencing Drivers on Clinical Simulations Today
Opportunities for New Models of Clinical Education

Study conducted on clinical education concluded 4 themes indicating clinical education problem areas:

- Missing opportunities for learning in clinical settings
- Getting the work done as a measure of learning
- Failure to enact situation-specific pedagogies to foster clinical learning
- Failing to engage as part of the team

(McNelis, Ironside, Ebright, et al., 2014)
Need to “bridge the gap” between education and practice

- A gap exists between the academic preparation of nursing students and the needs of the clinical agency

- There is a growing concern among the frontline hospital leaders about the new graduates

- Clinical education is not currently working using only the traditional models we have used for decades
Of 135 nurse executives – 10% who responded to the survey stated new graduates were fully prepared for practice while 89.9% of the 362 nursing school leaders agreed

A large preparation-practice gap exists!
Practice-Readiness defined in 6 general areas

- Clinical knowledge
- Technical skills
- Critical thinking
- Communication
- Professionalism
- Management of responsibilities
High Stakes Clinical Simulations

Project led by Dr. Mary Anne Rizzolo

• This NLN sponsored invitational Presidential Task Force on High Stakes Testing was designed to develop policy guidelines for use of end of program testing

• These guidelines will incorporate NLN’s core values and strategic mission and consider multiple measures for competency evaluation

• This group helped the NLN to conceptualize recommendations for nursing faculty to implement when developing program testing practices and policies
RWJ Report: Ensure that Nurses Engage in Lifelong Learning

**Faculty**

- Partner with health care organizations to develop and prioritize competencies so curricula can be updated regularly to ensure that graduates at all levels are prepared to meet population’s current and future health care needs

**Commission on Collegiate Nursing Education and National League for Nursing Accrediting Commission**

- *Require nursing students to demonstrate comprehensive clinical performance competencies* that encompass knowledge and skills needed to provide care across settings and lifespan
Interprofessional Education Collaborative (IPEC) - 2016

• Released core competencies for interprofessional collaborative practice
• Four domains of interprofessional practice reported
Four Core Competencies of IPE

- Values/Ethics
- Specific Roles and Responsibilities
- Communication
- Team and Teamwork
Why IPE?

Root Causes of Sentinel Events
(All categories; 1995-2005)

- Communication
- Orientation/training
- Patient assessment
- Staffing
- Availability of info
- Competency/credentialing
- Procedural compliance
- Environ. safety/security
- Leadership
- Continuum of care
- Care planning
- Organization culture

Percent of 3548 events
What Comprises Team Performance?

- Knowledge
  - Cognitions
  - “Think”

- Skills
  - Behaviors
  - “Do”

- Attitudes
  - Affect
  - “Feel”

...team performance is a science...consequences of errors are great...
Outcomes of Team Competencies

Knowledge

• Shared Mental Model

Attitudes

• Mutual Trust
• Team Orientation

Performance

• Adaptability
• Accuracy
• Productivity
• Efficiency
• Safety
Simulation is here – the next generation of technologies will emerge!

The Future of Simulations

- The future for clinical is promising!
- Over time, more evidence will be disseminated on the use, implementation, and best practices of incorporating clinical simulation into a nursing curriculum
References


- Interprofessional Education and Practice Competencies (IPEC), https://www.ipecollaborative.org/resources.html


Goal for Using Simulations: Optimal Student Learning for High Quality Patient Care
Family Vacation to South Carolina!