Clinical Simulations: The places we are going and will be going
Objectives of this Session:

The participant will be able to:

1. Describe major knowledge gaps related to simulation education
2. Identify future opportunities for research development.
3. Recognize future directions for incorporating simulation into all levels of healthcare education.
IOM Report Goal

Transform nursing field to prepare nurses to lead change and advance health for all Americans
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
Simulations Have Arrived...
Where are we?

• Simulations in Medicine
• Simulations in Nursing
• Next steps.....
Simulation-Based Medical Education

A critical review of simulation-based medical education research: 2003-2009

(McGahgie, 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
Technology-Enhanced Simulation: 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.
Nursing Research on the HPS

• State of the science in pre-licensure nursing education – for HPS
• 9 articles (2002- present) – focus on student perceptions, learner satisfaction/self efficacy, skill attainment, knowledge gains, knowledge transfer, and critical thinking
• Summary: Move simulation studies to the level of empirical research to determine if the HPS improves critical thinking and as a result, improves patient outcomes
• Carefully designed multi-site studies are needed

NLN Study (multi-site 2003-2006)

• In this study, several areas were explored, however the major contributions to the science of nursing education in the area of simulations include:

• The theoretically-based Simulation Framework (Jeffries, Rizzolo, 2004)

• The Development of two instruments: The Simulation Design Scale and the EPSS

• Identification of 5 key design features to include in the development of simulations
Changes/Issues in Nursing Education

• Regulatory Boards – watchfully monitoring – providing research funding
• Partnerships and Collaborations
• Faculty skill sets changing
• Need for better prepared students exiting nursing programs – Nurse residency programs
Regulatory Boards watchfully monitoring and calling for multi-site research

Innovations in Nursing Education and Clinical

Numerous questions center on the use of simulation in nursing education. How it can be used effectively and its role in clinical development of students is of major importance and of interest to both regulators and educators alike. In collaboration with Rush University, NCSBN embarked on a pilot project to evaluate the value and validity of simulation as an educational strategy. Results indicated further study is needed in this area and our research agenda includes a large-scale, multi-site study.

National Council of State Board of Nursing (NCSBN), www.ncsbn.org
Partnerships and Collaborations

• EcO 15 – 10 county consortium on improving healthcare – focus: developing regional sim centers and providing faculty development

• SPRING program – JHI and the new graduates

• IU SON and Clarian Health – partners to improve care
MFAST – Faculty Development Consortium

- 8 school consortium in Maryland to develop faculty in the area of developing and implementing clinical simulations
- Funded through an NSP II grant
- Development and multi-site research
- External advisory board

- Concept: Train the trainer
- Includes 1/3 of the nursing schools in Maryland
- Collegiality and collaboration established
- Partner website and shared resources
- A model that can be duplicated
The Evolution of the “new” Educator
Today

- Facilitators of learning
- Innovative, creative
- Technology-savvy or willing to learn
- Focus: student-centered learning
- Providing students with “real-world” experiences and examples
- Knowledge workers, creators, and designers
Clinical Learning Experiences

• Regulating clinical experiences are compounded by the complexity of actual nursing (Ebright, Patterson, Chalko, et al. 2004)

• A review of nursing curricula requirements and reports indicated little content related to workload management and managing complex healthcare environments (Speziale & Jacobsen, 2005)
Practice-Readiness defined in 6 general areas

• Clinical Knowledge
• Technical Skills
• Critical Thinking
• Communication
• Professionalism
• Management of Responsibilities
Next Steps

• Most of these competencies are directly related to ways students gain clinical experiences in the nursing program
• The report identified a “collaborative/partnering” (academe and practice) would help the gap
• Can the clinical model redesign also include simulations to help facilitate these practice-ready general areas?
• Are these being implemented in nurse residency programs?
**Robert Wood Johnson recommendation: Future of Nursing Education**

<table>
<thead>
<tr>
<th>Implement nurse residency programs</th>
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<tbody>
<tr>
<td>State boards of nursing, accrediting bodies, government and health care organizations should take actions to support nurses’ completion of a residency after they’ve completed a pre-licensure or advanced practice degree program or when they’re transitioning into new clinical practice areas</td>
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National and International Key Activities Involving Simulations

- NCSBN Study
- SSIH
  - Certification
  - Accreditation of Simulation Centers
- INACSL – Standards being reviewed for simulations
- High Stakes Simulations – preliminary development
- Intraprofessional Education – movement - expectations
- Healthcare Transformation – Affordable Care Act
NCSBN Conducting National Multi-Site Simulation Study

The NCSBN departments of Research and Regulatory Innovations are collaborating to conduct a landmark, national, multi-site study of simulation use in prelicensure nursing programs to:

- Highlight best practices in simulation use;
- Evaluate the learning occurring with various amounts of simulation substituting for clinical hours;
- Establish key simulation standards and learning experiences in each core clinical course; and
- Evaluate new graduates’ ability to translate simulation experiences into the workplace.

This large scale study is being led by NCSBN staff members Jennifer Hayden, MSN, RN, associate, Research; Kevin Kenward, PhD, director, Research; and Nancy Spector, PhD, RN, director, Regulatory Innovations, and two national experts in the area of simulation in nursing education: Pamela Joffries, DNSc, RN, FAAN, Johns Hopkins University; and Suzan Kardong-Edgren, PhD, RN, Washington State University. The study will follow a cohort of beginning prelicensure students throughout their January 2010 to every prelicensure nursing program in the U.S. Data collection is ongoing, with results expected this fall. The survey return due date was March 19, 2010.

- Phase two of the project will involve a randomized, controlled, multi-site, longitudinal study of three levels of simulation use in lieu of clinical hours. Students will be randomly assigned to a group where 25 percent of the time normally spent at clinical sites would be spent in simulation, a group where 50 percent of the time normally spent at clinical sites would be spent in simulation or a group where 100 percent of their time is spent at a clinical site. Substitution of simulation for experience at clinical sites will take place across the curriculum over a two- to three-year time span.

- Phase three will evaluate the translational outcomes of simulation into the workforce, heretofore the missing link that has never been studied in previous simulation studies. This longitudinal follow-up of graduates into their first year of practice will focus on retention of new nurses and clinical judgment after graduation will be evaluated in this phase of the study.
Certification through SSH

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

- Over 300 Certified Healthcare Simulation Educators

- Certified Healthcare Simulation Educators-Advanced (CHSE-A) opened this summer
# CHSE High Level Blueprint

<table>
<thead>
<tr>
<th>Domain</th>
<th>Weight</th>
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<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>
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</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
INACSL Standards for Simulations

- STANDARD: Professional Integrity Related to Simulation
- STANDARD: The Role of the Facilitator and Facilitation Methods
- Terminology – several definitions related to clinical simulation
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 will help 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
Educational Model

Traditional Model

• Student observers, not active, not work participant, listeners, readers

IPE Model

• Look at task from perspective of other profession, learn about knowledge, skills, attributes of other profession, planned intervention
Interdisciplinary Approach: Facility Design

- **Separate**
  - Medicine
  - Nursing
  - Allied Health
  - Pharmacy

- **Multidisciplinary**
  - Medicine
  - Nursing
  - Allied Health
  - Pharmacy

- **Interdisciplinary**
  - Medicine
  - Nursing
  - Allied Health
  - Pharmacy
Interprofessional Education Collaborative (IPEC) – Updated 2016

- Released core competencies for interprofessional collaborative practice
- Four domains of interprofessional practice reported
Domain 1: Values and Ethics

Work with individuals of other professions to maintain a climate of mutual respect and trust.
Domain 2: Specific Roles and Responsibilities

Use the knowledge of one’s own role and the roles of other professions to appropriately assess and address the health care needs of the patients and populations served.
Domain 3: Communication

Communicate with patients, families, communities, and other health professionals in a responsive and responsible manner that supports a team approach to maintaining health and treatment of disease
Domain 4: Team and Team-Based Care

Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan and deliver patient/ population-centered care that is safe, timely, efficient, effective, and equitable.
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
Does Simulation IPE work?

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.
Clinical simulations in the workplace

• On-Boarding/Orientation
• Competency Assessment
• Education/Staff Development
• Certification
• Continuing Education
On-Boarding:

• a retention strategy for new nurse orientation
• to reduce stress
• increase confidence
• lessen unmet expectations
• improve job satisfaction allows for an environment where patient outcomes are enhanced and errors are minimized.
• providing a safe and supportive environment, socialization and opportunities for role development fosters retention of new nurses
• The use of simulation in on boarding programs provides a rich environment to practice communication with healthcare providers (HCP).

(Ackerman, 2007)
Competency Assessment

• Competencies vary across professions although all have the primary focus on patient care and quality outcomes.

• The Quality and Safety Education for Nurses (QSEN) graduate level competencies include Quality Improvement (QI), Safety, Teamwork and Collaboration, Patient-centered Care, Evidence-Based Practice (EBP) and Informatics (American Association of Colleges of Nursing, 2013).

• The Accreditation Council for Graduate Medical Education (ACGME) expects residents to obtain competency in the following six areas to the level expected of a new practitioner.
Competencies

• Nursing competencies in the clinical practice arena are conducted onsite in a location on or near the unit and facilitated by a clinical educator, clinical nurse specialist or unit leadership.

• These competencies are based upon Nurse Sensitive Indicators (NSI’s) or low frequency high risk skills for a specific patient population.

• Competencies evaluations - a quarterly focus may include one unit or multiple units partnering together on common skills and practices.
• Regulatory agencies that accredit programs such as The Joint Commission and the American Heart Association (AHA) identify standards for institutions to meet on their journey to excellence.

• ST segment elevation myocardial infarction (STEMI) and the Primary Stroke Center are two examples where simulation is a component to assess competency of the RN staff.
Certifications

• Many health professionals are required to go through the Advanced Life Support (ALS) to provide care to patients in rapidly changing physiological states and environments.

• Current ALS programs including Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS) and Neonatal Resuscitation Programs (NRP) are well suited to the simulation environment.
Staff Professional Development

- Interprofessional/intraprofessional teamwork, using clinical simulations to practice and enhance these skills is very important.
- Clinical simulations are set-up to focus on teamwork, crisis management and communication skills.
- Professional competencies in high-risk, low volume settings among practicing nurses and high fidelity simulation should be considered as a strategy for staff development. (Merchant, 2012).
Barriers to Changing Education

- Sacred Cows
- Lack of Evidence
- Resources
- Funding/Dollars
- Time Commitment
- Administration Buy-in
Future Opportunities in Simulation

**Holoportation**
http://www.wired.com/2016/04/microsoft-holoportation-star-wars-hologram/?mbid=social_fb

**Robotic simulations**
You can read their blog here: http://nursing.duke.edu/news/duke-university-school-nursing-uses-robots-nursing-education or watch their case study video on YouTube: https://youtu.be/KOLcTKhPEhE
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.
Goal for Using Simulations: Optimal Student Learning for High Quality Patient Care
References


Questions & Answers