School of Nursing

THE GEORGE WASHINGTON UNIVERSITY

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

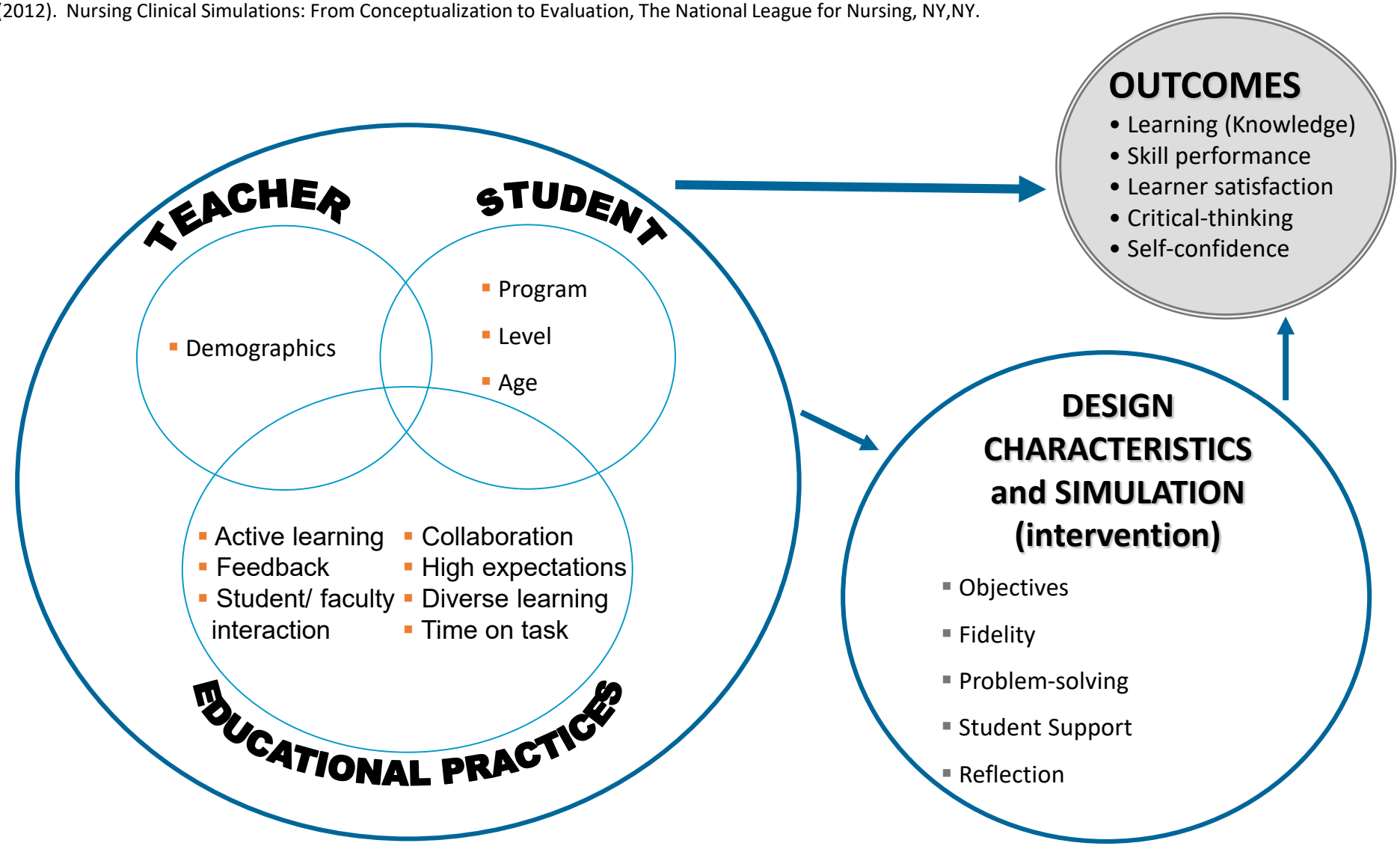
- High stakes simulations
- Interprofessional education

State of the Science

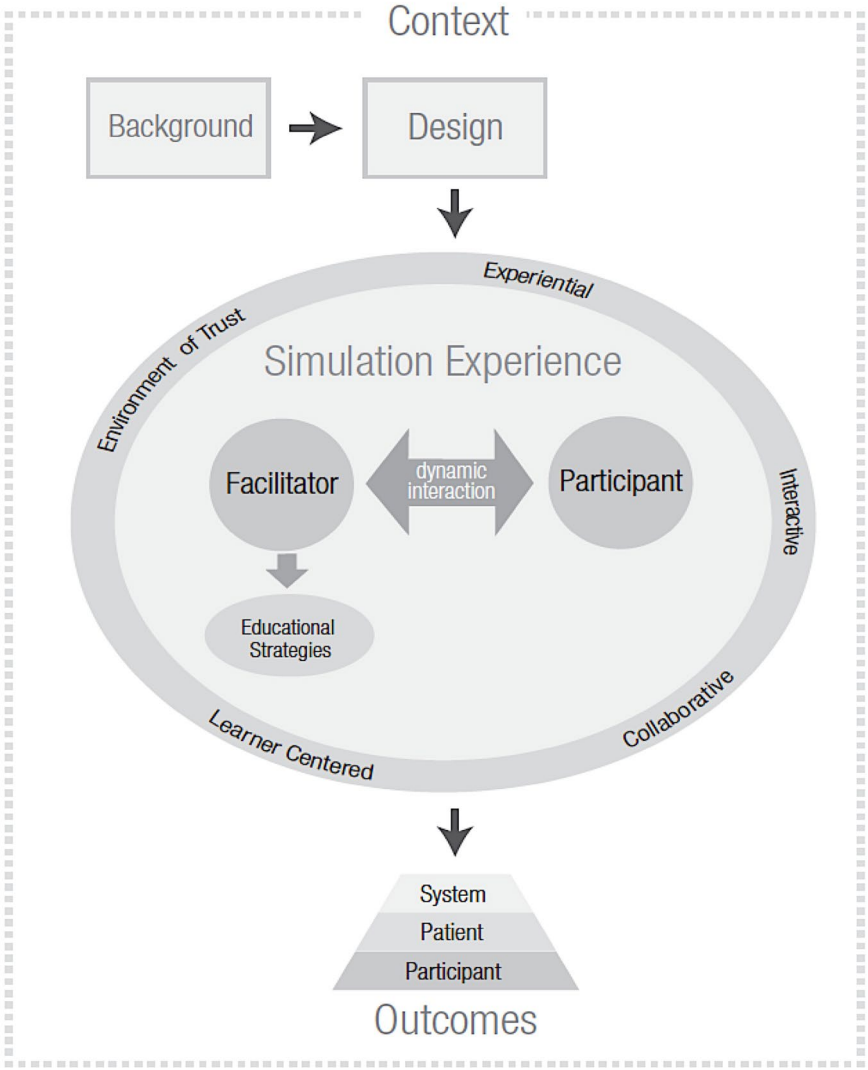
- Theory in simulation
- Best practices and standards
- Emerging research

Simulation Model

Jeffries, P.R. (2012). Nursing Clinical Simulations: From Conceptualization to Evaluation, The National League for Nursing, NY,NY.



Simulation Model transitioned to the NLN/Jeffries Simulation Theory



Jeffries, P. R. (2015). The NLN Jeffries Simulation Theory, The National League for Nursing and Wolters Kluwer, Philadelphia, PA.

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

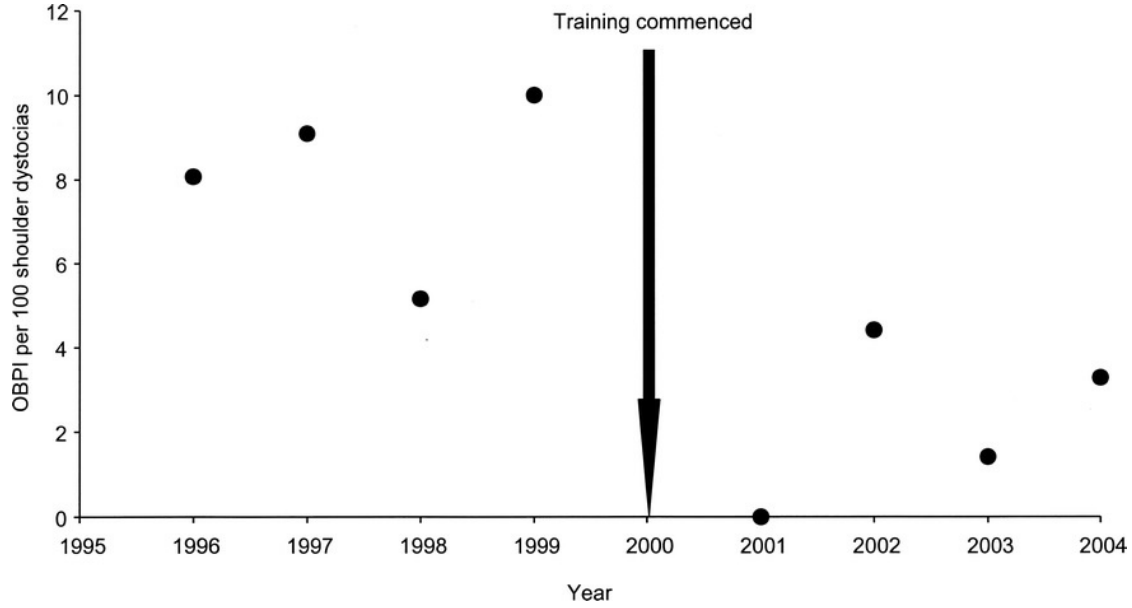
- From a pool of 10,903 articles, the researchers identified 609 studies for synthesis
- In comparison, with no intervention, technology-enhanced simulation training in health professions education is consistently associated with large effects for outcomes of knowledge, skills, and behaviors, and **moderate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

Cook, D., Hatala, Ro, Brydges, R. Szostek, J., Wang, A., Erwin, P., & Hamstra, S. (2011). *Technology-Enhanced Simulation for Health Professionals Education- A systematic review and meta-analysis*, JAMA, 306 (9), 978-988.

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.

Does Simulation work?



Draycott, 2008

Table 4. Neonatal Morbidity Associated with Shoulder Dystocia

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

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

CHSE High Level Blueprint

Domain	Weight
Display Professional Values and Capabilities	4%
Demonstrate Knowledge of Simulation Principles, Practice, and Methodology	34%
Educate and Assess Learners Using Simulation	52%
Manage Overall Simulation Resources and Environments	6%
Engage in Scholarly Activities	4%

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

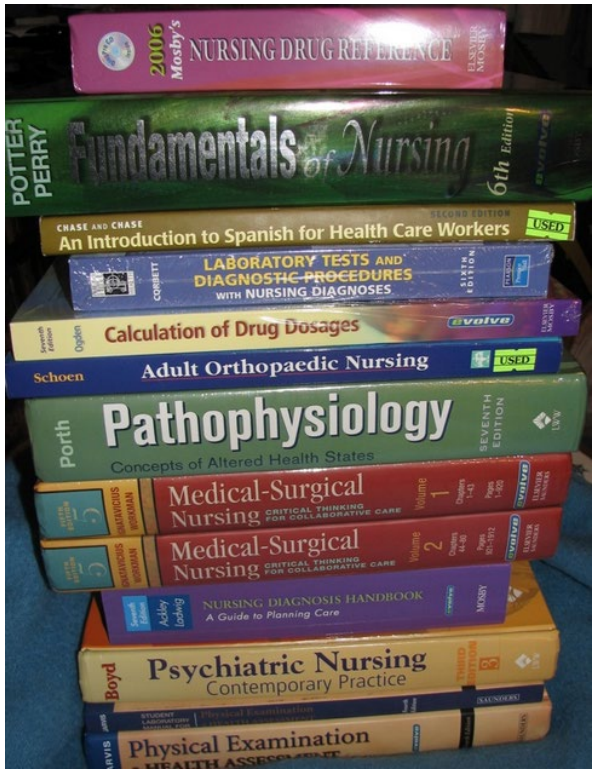
Hayden, J., Alexander, M.A., Smiley, R., Kardong-Edgren, S., & Jeffries, P. (2014). The NCSBN Study: a longitudinal randomized, controlled study: Replacing clinical hours with simulations in pre-licensure nursing programs, vol 5(2), supplement, s1-s64.

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



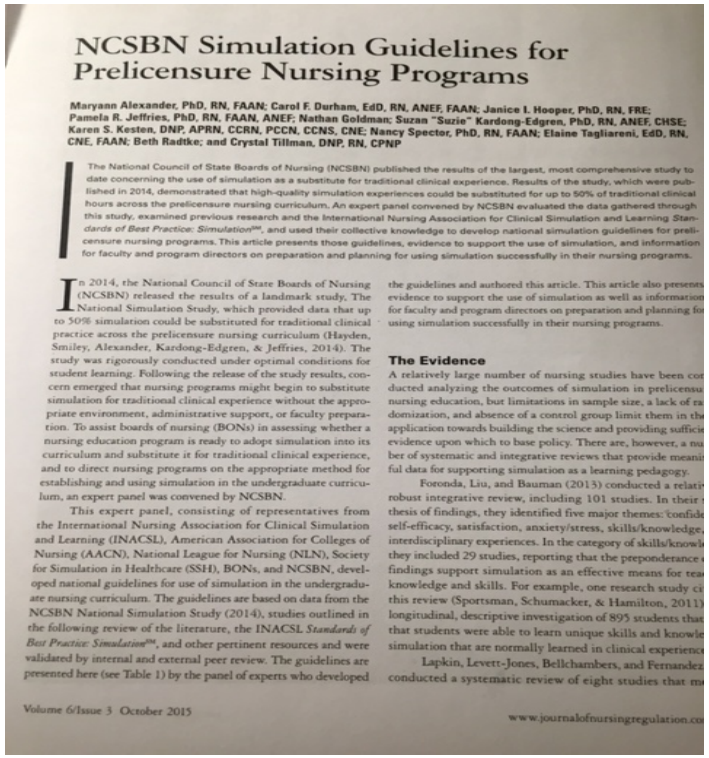
Conclusions

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

National Council State Board of Nursing Guidelines for Simulations and Policy Implications



NCSBN Simulation Guidelines for Prelicensure Nursing Programs

Maryann Alexander, PhD, RN, FAAN; Carol F. Durham, EdD, RN, ANEF, FAAN; Janice I. Hooper, PhD, RN, FRE; Pamela R. Jeffries, PhD, RN, FAAN, ANEF; Nathan Goldman; Suzan "Suzie" Kardong-Edgren, PhD, RN, ANEF, CHSE; Karen S. Kesten, DNP, APRN, CCRN, PCCN, CCNS, CNE; Nancy Spector, PhD, RN, FAAN; Elaine Tagliareni, EdD, RN, CNE, FAAN; Beth Radtke; and Crystal Tillman, DNP, RN, CPNP

The National Council of State Boards of Nursing (NCSBN) published the results of the largest, most comprehensive study to date concerning the use of simulation as a substitute for traditional clinical experience. Results of the study, which were published in 2014, demonstrated that high-quality simulation experiences could be substituted for up to 50% of traditional clinical hours across the prelicensure nursing curriculum. An expert panel convened by NCSBN evaluated the data gathered through this study, examined previous research and the International Nursing Association for Clinical Simulation and Learning *Standards of Best Practice: Simulation*℠, and used their collective knowledge to develop national simulation guidelines for prelicensure nursing programs. This article presents those guidelines, evidence to support the use of simulation, and information for faculty and program directors on preparation and planning for using simulation successfully in their nursing programs.

In 2014, the National Council of State Boards of Nursing (NCSBN) released the results of a landmark study, The National Simulation Study, which provided data that up to 50% simulation could be substituted for traditional clinical practice across the prelicensure nursing curriculum (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014). The study was rigorously conducted under optimal conditions for student learning. Following the release of the study results, concern emerged that nursing programs might begin to substitute simulation for traditional clinical experience without the appropriate environment, administrative support, or faculty preparation. To assist boards of nursing (BONs) in assessing whether a nursing education program is ready to adopt simulation into its curriculum and substitute it for traditional clinical experience, and to direct nursing programs on the appropriate method for establishing and using simulation in the undergraduate curriculum, an expert panel was convened by NCSBN.

This expert panel, consisting of representatives from the International Nursing Association for Clinical Simulation and Learning (INACSL), American Association for Colleges of Nursing (AACN), National League for Nursing (NLN), Society for Simulation in Healthcare (SSH), BONs, and NCSBN, developed national guidelines for use of simulation in the undergraduate nursing curriculum. The guidelines are based on data from the NCSBN National Simulation Study (2014), studies outlined in the following review of the literature, the INACSL *Standards of Best Practice: Simulation*℠, and other pertinent resources and were validated by internal and external peer review. The guidelines are presented here (see Table 1) by the panel of experts who developed the guidelines and authored this article. This article also presents evidence to support the use of simulation as well as information for faculty and program directors on preparation and planning for using simulation successfully in their nursing programs.

The Evidence

A relatively large number of nursing studies have been conducted analyzing the outcomes of simulation in prelicensure nursing education, but limitations in sample size, a lack of randomization, and absence of a control group limit them in the application towards building the science and providing sufficient evidence upon which to base policy. There are, however, a number of systematic and integrative reviews that provide meaningful data for supporting simulation as a learning pedagogy.

Foronda, Liu, and Bauman (2013) conducted a relatively robust integrative review, including 101 studies. In their synthesis of findings, they identified five major themes: confidence/self-efficacy, satisfaction, anxiety/stress, skills/knowledge, interdisciplinary experiences. In the category of skills/knowledge they included 29 studies, reporting that the preponderance of findings support simulation as an effective means for teaching knowledge and skills. For example, one research study cited in this review (Sportsman, Schumacker, & Hamilton, 2011) was a longitudinal, descriptive investigation of 895 students that found that students were able to learn unique skills and knowledge in simulation that are normally learned in clinical experiences.

Lapkin, Levett-Jones, Bellchambers, and Fernandez conducted a systematic review of eight studies that met

- The evidence is discussed
- Simulation Guidelines
- Faculty Preparation Checklist
- Program Preparation Checklist

Alexander, M., Durham, C., Hooper, J., Jeffries, P., Goldman, S., Kardong-Edgren, S., Kesten, K., Spector, N., Tagliareni, E., Radtke, B., and Tillman, C. (2015) NCSBN Simulation Guidelines for Prelicensure Nursing Programs, Journal of Nursing Regulations, vol 6(3), pp. 39 – 42.

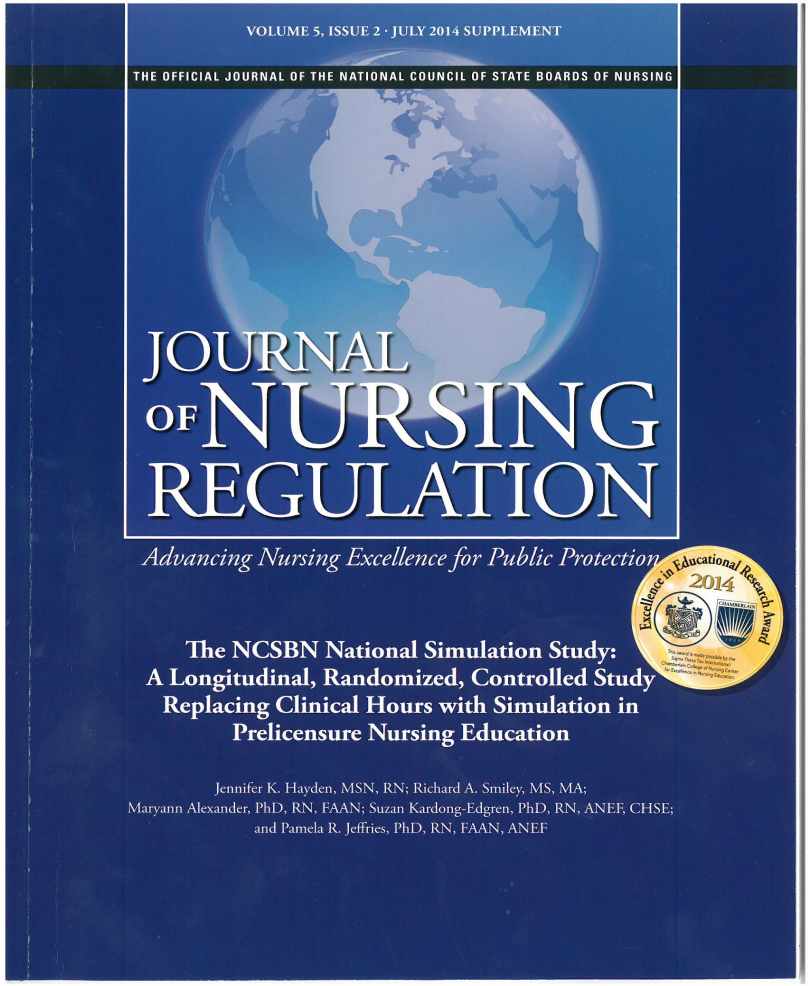
NCSBN Simulation Faculty Preparation Checklist

- 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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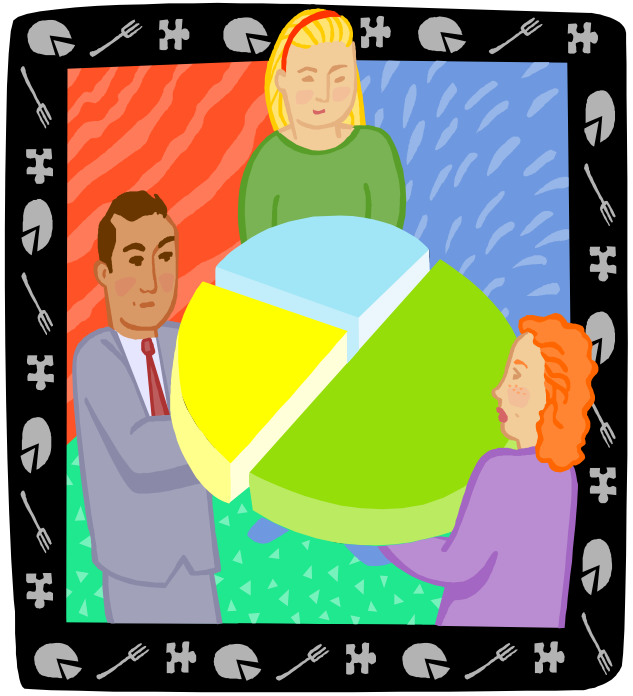
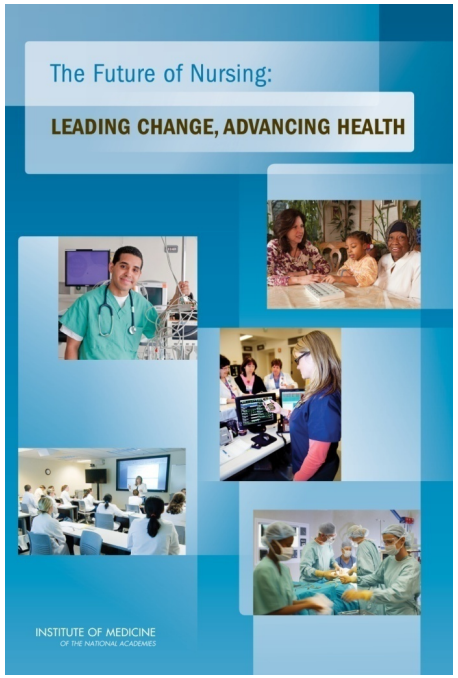
THE OFFICIAL JOURNAL OF THE NATIONAL COUNCIL OF STATE BOARDS OF NURSING
JOURNAL OF NURSING REGULATION
Advancing Nursing Excellence for Public Protection
Excellence in Educational Research Award 2014
The NCSBN National Simulation Study: A Longitudinal, Randomized, Controlled Study Replacing Clinical Hours with Simulation in Prelicensure Nursing Education
Jennifer K. Hayden, MSN, RN; Richard A. Smiley, MS, MA; Maryann Alexander, PhD, RN, FAAN; Suzan Kardong-Edgren, PhD, RN, ANEF, CHSE; and Pamela R. Jeffries, PhD, RN, FAAN, ANEF

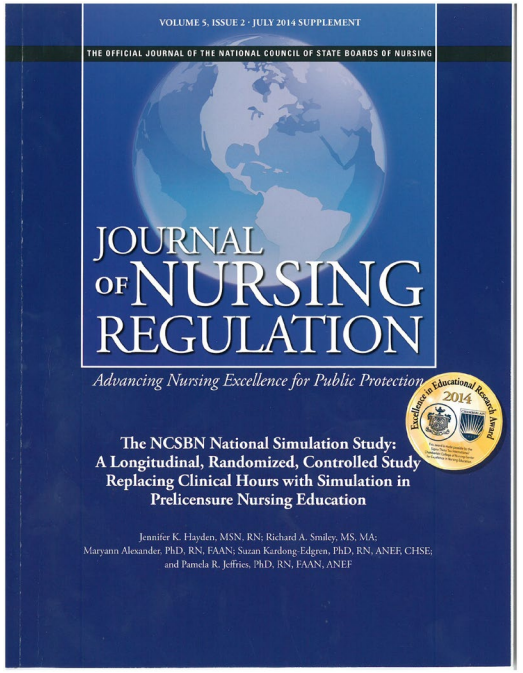
Partnerships and Collaborations

- 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

The Nursing Executive Center of the Advisory Board Company

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

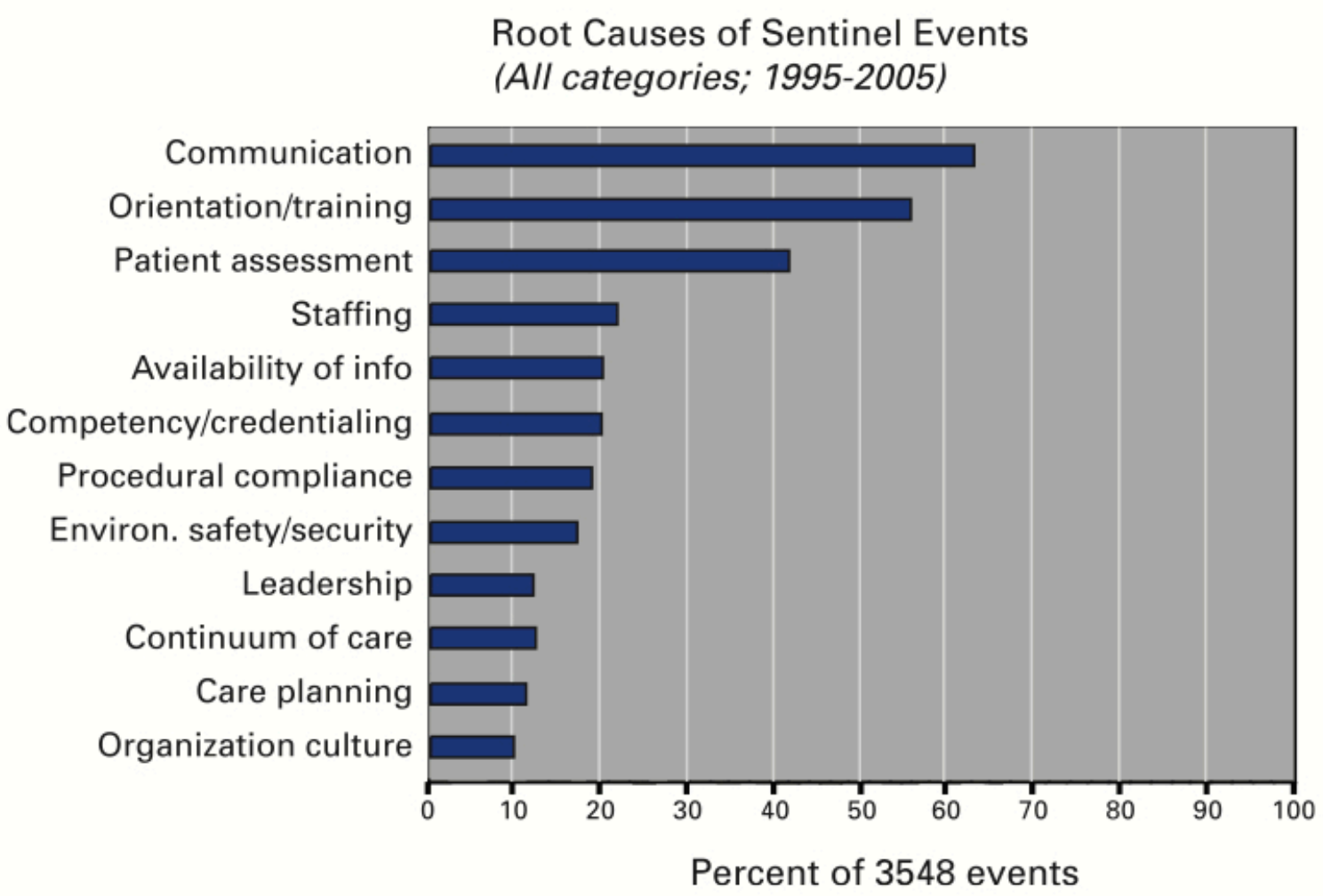
Interprofessional Education Collaborative (IPEC) - 2016

- 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
0
10
20
30
40
50
60
70
80
90
100
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

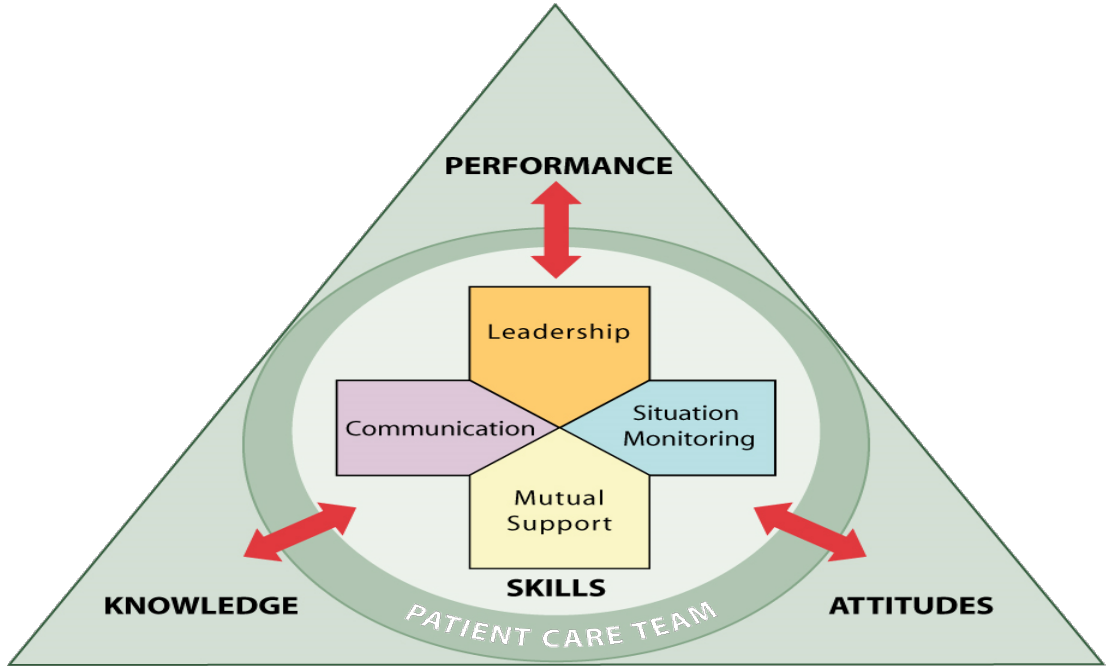
- Shared Mental Model

Attitudes

- Mutual Trust
- Team Orientation

Performance

- Adaptability
- Accuracy
- Productivity
- Efficiency
- Safety



Summary

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

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- Teamstepps – Agency for Healthcare and Quality (AHRQ), https://www.ahrq.gov/teamstepps/index.html

Goal for Using Simulations: Optimal Student Learning for High Quality Patient Care

Family Vacation to South Carolina!