Slide 1

School of Nursing
THE GEORGE WASHINGTON UNIVERSITY

State of Nursing Science in Simulations & Teaching with Simulations
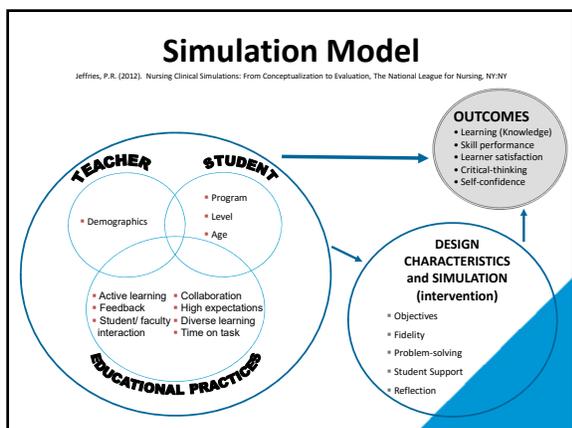
Pamela R. Jeffries PhD, RN, FAAN, ANEF
Dean and Professor
The George Washington University School of Nursing

Slide 2

Objectives

The participants will be able to:

- Review the state of Nursing Science in Simulation.

- Describe the components of the NLN Jeffries Simulation Theory.

- Examine salient points from key documents related to teaching with simulation.

- Identify challenges educators face in regards to developing competencies using simulation as a tool for teaching.

Slide 3

Simulation Model

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

TEACHER

Demographics

STUDENT
- Program
- Level
- Age

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

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

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

Simulation Design Features

Features found to be important in designing a quality simulation:

– Objectives/Information
– Fidelity
– Problem-Solving
– Student Support
– Reflection

**Simulation model moved 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.
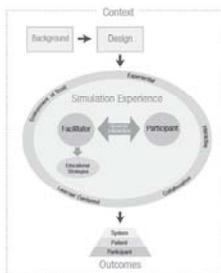
The NLN/Jeffries Simulation Theory

Context
Background
Design
Simulation Experience
Facilitator and Educational Experiences
Participant
Outcomes

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

Simulation Characteristics: Context

Contextual factors are the circumstances and setting impact every aspect of the simulation and are important staring points in designing or evaluating simulations, e.g. purpose of simulation

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Background

Within the context, the background includes the goal(s) of the simulation and specific expectations or benchmarks that influence the design of the simulation, .e.g. how the simulation fits within the curriculum, background informs the simulation design

---

Simulation Design

Outside of and preceding the actual simulation experience are specific elements that make up the simulation design. Some elements may change during the implementation, there are aspects of the design that need to be considered for preparation.

Design Features: Simulation Objectives

(For example, this will be a 20 minute simulation.)

The learner will be able to:

- Demonstrate how to assess for complications when caring for a post-thoracotomy patient.
- Implement priority nursing interventions when caring for a post-thoracotomy patient.

Simulation Design: Fidelity (Realism)

Simulations need to:

- Mimic reality
- Feel authentic
- Elements of physical and conceptual fidelity (equipment, moulage, and appropriate facilitator responses)

Simulation Experience

This is characterized by an environment that is experiential, interactive, collaborative, and learner-centered

Buying-in, suspending disbelief

Promotes engagement and psychological fidelity

Facilitator and Educational Strategies

- Dynamic interaction between the facilitator and participant
- Facilitator attributes include skill, educational techniques, and preparation
- The facilitator responds to participant needs in simulation by adjusting educational **strategies, cues, & debriefing**

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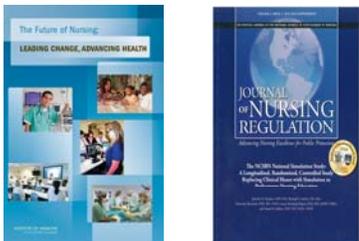_____
_____
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Participant

Participant attributes affect the simulation learning experience
Attributes include age, gender, level of anxiety, self-confidence, preparedness, & role assignment

_____
_____
_____
_____
_____
_____
_____

Outcomes

Three areas of outcomes

- Participant

- Patient (care recipient)

- System

_____
_____
_____
_____
_____
_____
_____

Influencing Drivers on Clinical Simulations Today

School of Nursing
THE GEORGE WASHINGTON UNIVERSITY

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; and
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.

Aims

- Can simulation be effectively substituted in the undergraduate prelicensure curriculum?
- How much?
- What courses?
- Generalizable results
- Provide data for boards of nursing

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Research Questions - Part I

1. Does substituting clinical hours with 25% and 50% simulation impact educational outcomes (knowledge, clinical competency, critical thinking and readiness for practice) assessed at the end of the undergraduate nursing program?

2. Are there course by course differences in nursing knowledge, clinical competency, and perception of learning needs being met among undergraduate students when traditional clinical hours are substituted with 25% and 50% simulation?

3. Are there differences in first-time NCLEX pass rates between students that were randomized into a control group, 25% and 50% of traditional clinical substituted with simulation?

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Research Questions - Part II

1. Are there differences in clinical competency, critical thinking and readiness for practice among the new graduate nurses from the three study groups?

2. Are there differences among new graduates from the three study groups in acclimation to the role of the professional nurse?

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Fall 2011: 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

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Core Courses

- Fundamentals of Nursing
- Medical-Surgical Nursing
- Advanced Medical-Surgical Nursing
- Maternal-Newborn Nursing
- Pediatrics
- Mental Health Nursing
- Community Health Nursing
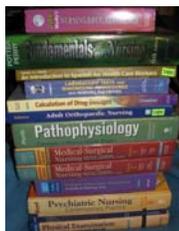
22

DATA COLLECTION

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Research Question 1

Does substituting clinical hours with 25% and 50% simulation impact educational outcomes (knowledge, clinical competency, critical thinking and readiness for practice) assessed at the end of the undergraduate nursing program?

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Knowledge:
Mean Scores-End of Program
ATI Comprehensive Predictor

p=0.478
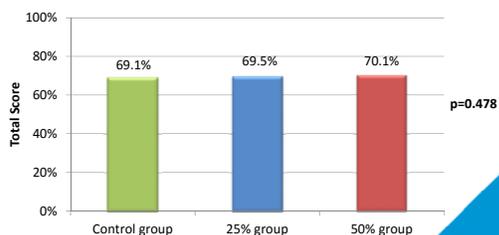
25

Clinical Competency:
End of Program Preceptor Ratings

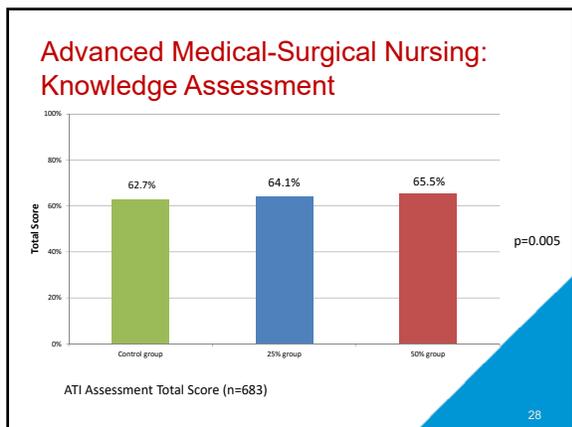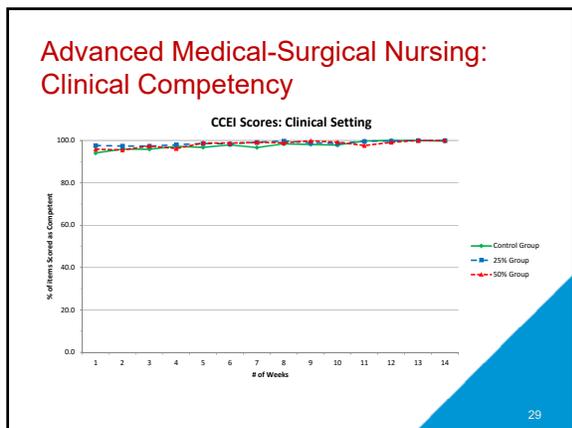| New Graduate Nurse Performance Survey (1-6 scale)								
	Control group (n=155)		25% group (n=171)		50% group (n=136)		Effect size	P value
	Mean	SD	Mean	SD	Mean	SD		
Clinical Knowledge	5.12	0.73	5.18	0.60	5.09	0.72	0.14	0.481
Technical Skills	5.06	0.76	5.09	0.64	5.01	0.86	0.11	0.659
Critical Thinking	5.11	0.72	5.06	0.71	5.03	0.88	0.10	0.668
Communication	5.30	0.65	5.34	0.65	5.24	0.87	0.13	0.478
Professionalism	5.38	0.69	5.47	0.61	5.39	0.85	0.14	0.432
Management of Responsibilities	5.22	0.71	5.20	0.70	5.17	0.85	0.06	0.849

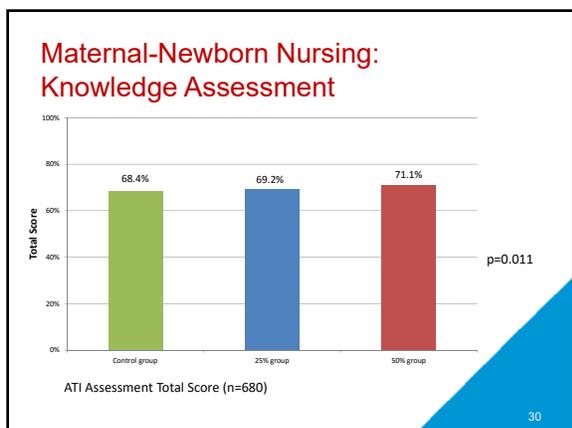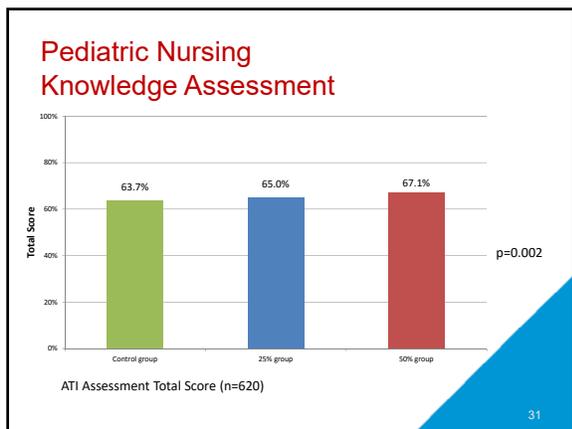1=lowest rating, 6=highest rating

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Research Question 2

Are there course by course differences in nursing knowledge, clinical competency, and perception of learning needs being met among undergraduate students when traditional clinical hours are substituted with 25% and 50% simulation?
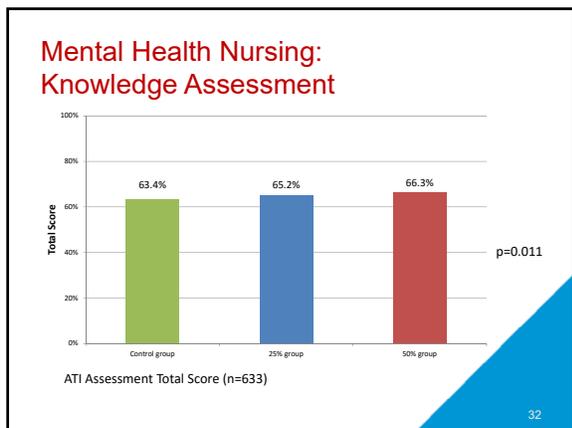
27

Advanced Medical-Surgical Nursing: Knowledge Assessment

62.7%   64.1%   65.5%

p=0.005

ATI Assessment Total Score (n=683)

28

Advanced Medical-Surgical Nursing: Clinical Competency

CCEI Scores: Clinical Setting

Control Group
25% Group
50% Group

29

Maternal-Newborn Nursing: Knowledge Assessment

68.4%   69.2%   71.1%

p=0.011

ATI Assessment Total Score (n=680)

30

Pediatric Nursing Knowledge Assessment

ATI Assessment Total Score (n=620)

p=0.002

31

Mental Health Nursing: Knowledge Assessment
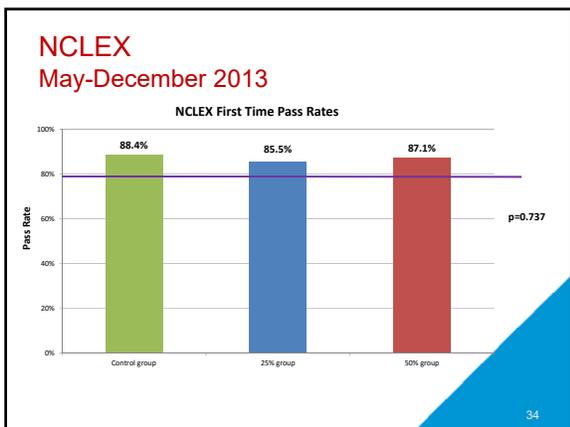

ATI Assessment Total Score (n=633)

p=0.011

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Research Question 3

Are there differences in first-time NCLEX pass rates between students that were randomized into a control group, 25% and 50% of traditional clinical substituted with simulation?

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NCLEX
May-December 2013

NCLEX First Time Pass Rates

88.4%   85.5%   87.1%

p=0.737

Control group   25% group   50% group

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PART II:
FOLLOW UP STUDY

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Part II
Research Question 1

Are there differences in clinical competency, critical thinking and readiness for practice among the new graduate nurses from the three study groups?

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Overall Clinical Competency: 6 Month Manager Ratings

Global assessment of clinical competency & readiness for practice (1-10 scale)							
	Control group (n=72)		25% group (n=86)		50% group (n=84)		Effect size	P value
	Mean	SD	Mean	SD	Mean	SD		
Overall rating	8.60	1.37	8.36	1.46	8.55	1.16	0.16	0.527

1=lowest rating, 10=highest rating

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Conclusions

1. Up to 50% simulation can be effectively substituted for traditional clinical experience in all core courses across the prelicensure 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.

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Conclusions

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.

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Qualifiers

These results were achieved using:

- INACSL Standards of Best Practice
- High quality simulations
- Debriefing method grounded in educational theory
- Trained and dedicated simulation faculty

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Implications for Schools of Nursing and Clinical Organizations

What implications from these findings are there for policy and guideline decisions from our regulators?

What standards or guidelines will be needed when integrating a simulation-based curriculum into your nursing or orientation program?

What are the considerations faculty/administrators need to address when integrating simulations into the nursing program or clinical program?

National Council State Board of Nursing Guidelines for Simulations
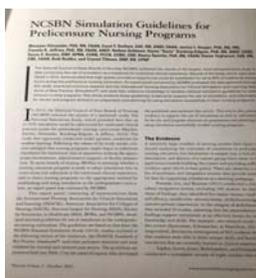
- The evidence is discussed

- Simulation Guidelines
  - Guidelines
  - Evidence
  - Resources

- 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.

Faculty Guidelines continued

- The faculty are prepared to create a learning environment that encourages active learning, repetitive practice, and reflection, and to provide appropriate support throughout each activity.

- The faculty are prepared to use facilitation methods congruent with simulation objectives/expected outcomes.

- The program utilizes a standardized method of debriefing observed simulation using a Socratic methodology.

- A rubric has been developed to evaluate the students' acquisition of KSAs (knowledge, skills and attitudes) throughout the program.

Faculty Guidelines continued

- The program has established a method of sharing student performance with clinical faculty.

- The program collects and retains evaluation data regarding the effectiveness of the facilitator.

- The program collects and retains evaluation data regarding the effectiveness of the simulation experience.

- The program provides a means for faculty to participate in simulation-related professional development such as webinars, conferences, journals, clubs, readings, certifications such as CHSE, participation in NLN Sim Leaders/ STTI NFLA with a focus on simulation

Different State Regulations for Simulations

Arizona State Board of Nursing

- 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

Ohio Board of Nursing
Definition of Simulations

(Y) The term "Patient simulation" means the replication of a real world patient in situ through accurate representations of patient cues and stimuli that a student is to observe, analyze, interact, and respond to with right nursing judgments and actions. The replication may be provided through the use or combination of low fidelity, mid or moderate fidelity, or high fidelity experiences.

Ohio BON: Faculty must be prepared

Programs that use high or mid or moderate fidelity patient simulation for the specific lifespan periods of obstetrics, immediate newborn care, and/or pediatrics [within any specific course] instead clinical experience for that specific lifespan period must have faculty or teaching assistants conducting the simulation who have demonstrated knowledge skills and abilities necessary to conduct the simulation obtained from a recognized body of knowledge relative to the simulation. The program must maintain the faculty and/or teaching assistants documentation of having obtained the knowledge and skills necessary to provide the simulation. In providing the simulation in this manner, the program must adhere to all requirements of paragraph (F)(8) of Rule 4723-5-13, OAC.

Minnesota Board of Nursing

High-fidelity simulation may be used when:

- **equipment and resources**, including the number of nursing faculty to support student learning are sufficient;
- **nursing faculty with documented education and training** in the use of simulation develop, implement, and evaluate the simulation experience;
- the **design, implementation, and evaluation** of the simulation is based on nationally recognized evidence-based standards for simulation

Minnesota Board of Nursing

High-fidelity simulation may be used when:

- the simulation provides an opportunity for each student to **demonstrate clinical competence** while in the role of the nurse
- **prebriefing and debriefing** are conducted by nursing faculty with subject matter expertise and training in simulation using evidence-based techniques
- high-fidelity simulation is utilized for **no more than half of the time** designated for meeting clinical learning requirements.

Simulation Scenario Development/Implementation

- Use of a simulation framework using a theoretical basis
- Creation or purchase of simulation scenarios that correlate with course concepts and behaviors
- Use of a standardized simulation template when developing simulations for consistency across courses and nursing programs
- Adopt a theoretically-based debriefing approach/structure for training and implementation
- Consider integrating major concepts in the simulation scenarios that cut across courses, e.g. QSEN competencies, communication strategies, e.g. SBAR, cultural competencies, etc.

Simulation Training/Skills Development

- Use of simulation experts to conduct the initial core training to ensure quality and best practices
- Dedicated time set aside for training/skills development – (3-4 day workshop)
  - The opportunity for faculty to learn new roles, practices, and strategies when integrating simulations into the curriculum
  - Educate all faculty on the evaluation tools that may be used in your simulation-based curriculum (clinical and simulation faculty)
- Set education/training agenda outlining set competencies needed for the faculty, e.g. debriefing

Selection of Educators/Faculty to conduct Simulations

- Strongly encourage the development of a simulation team of individuals who are trained and enthusiast to implement simulations
- Designate a simulation coordinator/manager of the simulation team to ensure preparedness, communication with the simulation team, and to provide feedback to course faculty where simulations are integrated.
- Develop a simulation learning community, e.g. create an online platform, team meetings, etc. with the simulation team members, key faculty course coordinators, multimedia specialists, simulation technologists, etc. to facilitate communication, best practices, and to incorporate new innovations and processes

Simulation Integration into a program

- Reframe simulation for all faculty as on campus vs. off campus clinical

- Clinical workload for simulation faculty

- Clinical faculty attend simulation with their students

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 the learners

- Equipment and supplies to create a realistic environment

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VOLUME 5, ISSUE 2 · JULY 2014 SUPPLEMENT

THE OFFICIAL JOURNAL OF THE NATIONAL COUNCIL OF STATE BOARDS OF NURSING

JOURNAL
OF NURSING
REGULATION

Advancing Nursing Excellence for Public Protection

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

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CHANGES AND ISSUES IN NURSING EDUCATION

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Changes/Issues in Nursing Education

Regulatory Boards – watchfully monitoring and providing research funding

Partnerships and Collaborations

Faculty skill sets changing

Need for better prepared students exiting nursing programs – Nurse residency programs

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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

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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)*

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 Nurse Executive Center of the Advisory Board (2008)

Survey taken in 2008

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!

The Nursing Executive Center of the Advisory Board Company (2008)

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?

Robert Wood Johnson recommendation: Future of Nursing Education

Implement nurse residency programs

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

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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

Intra-professional Education – movement and expectations

Healthcare Transformation – Affordable Care Act

NCSBN Conducting National Multi-Site Simulation 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

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
- Systems Integration

INACSL Standards for Simulations

INACSL provides a detailed process for evaluating and improving simulation operating procedures and delivery methods that every simulation team will benefit from. Adoption of the INACSL Standards of Best Practice

STANDARD: Professional Integrity Related to Simulation

STANDARD: The Role of the Facilitator and Facilitation Methods

Terminology – several definitions related to clinical simulation

---

INACSL Standards

Simulation demonstrate 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

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

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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

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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

Summary

Simulation has emerged!

- 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

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Questions?