

# School of Nursing

THE GEORGE WASHINGTON UNIVERSITY

## State of Nursing Science in Clinical Simulations and Policy Implications for Nurse Educators

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Dean and Professor

The George Washington University School of Nursing



# Where we are with simulations now and in the future

## **State of the Science**

- Theory in simulation
- Identified best practices and standards
- Research – emerging

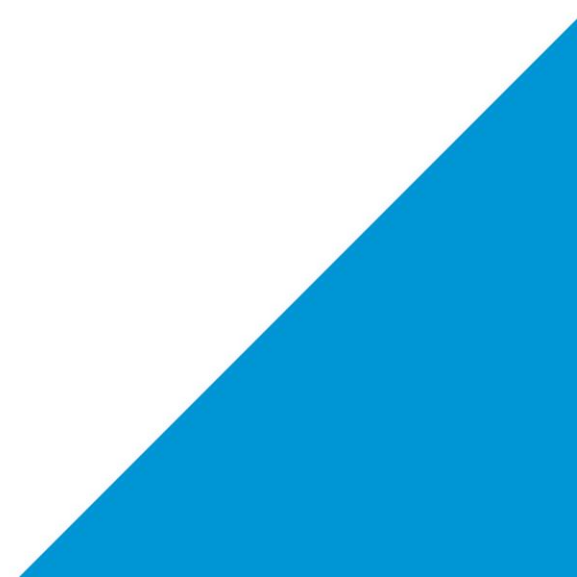
## **Concepts & activities promoting simulations and safe patient care**

- Certification CHSE
- Accreditation of Simulation Centers
- Research with BON policies and guidelines
- Partnerships and Collaborations

## **Educational Practices**

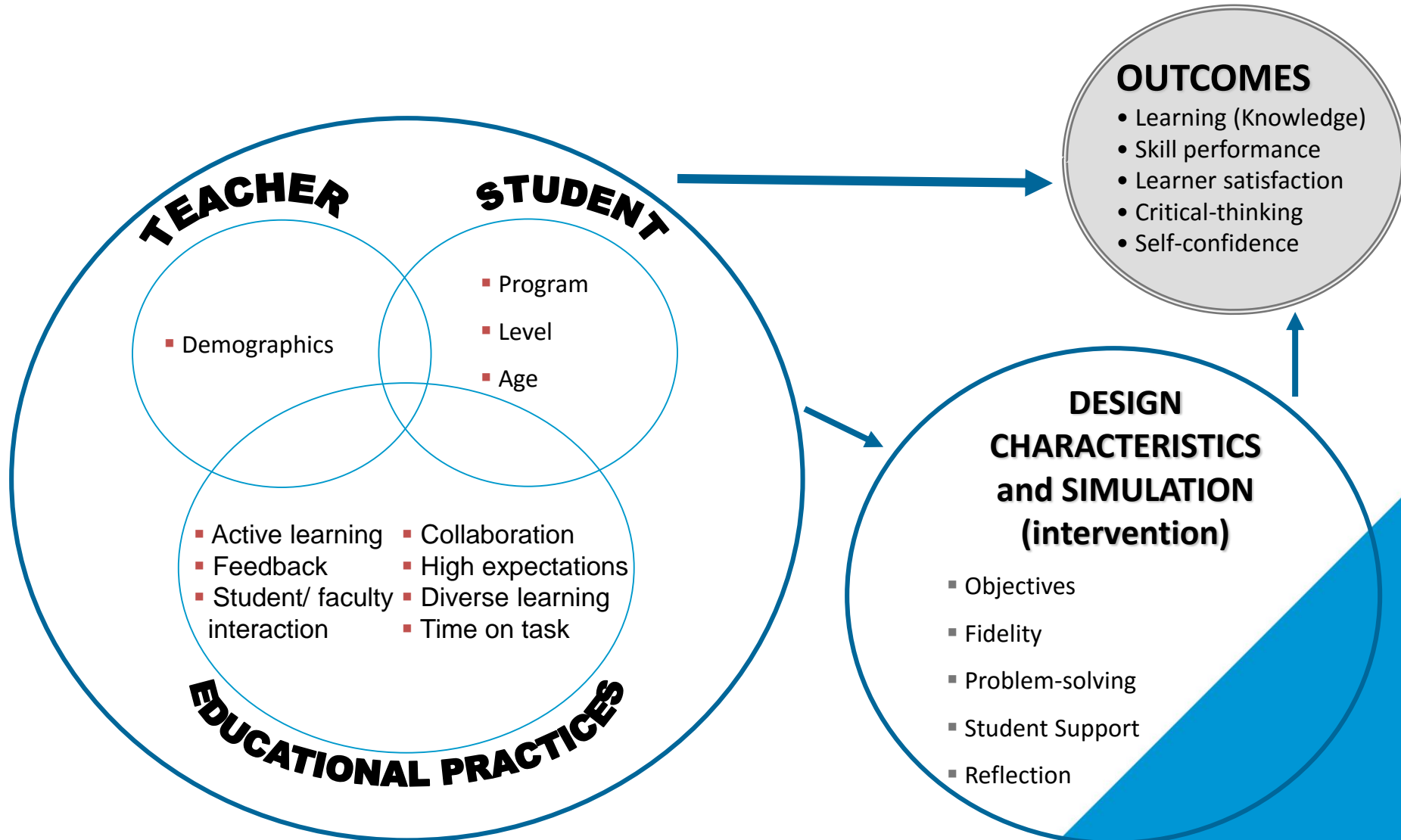
- Drivers of educational change
- High stakes simulations

# State of the Science

- Theory in simulation
  - Best practices and standards
  - Emerging research
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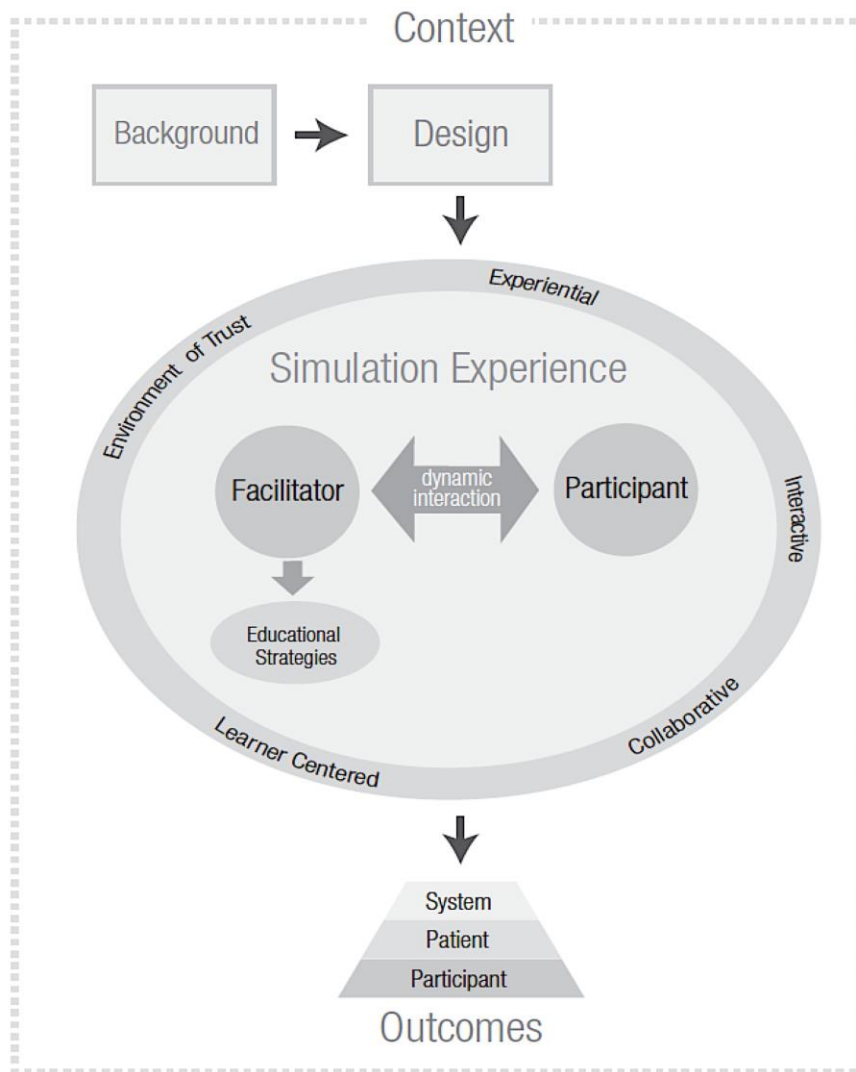
# Simulation Model

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.

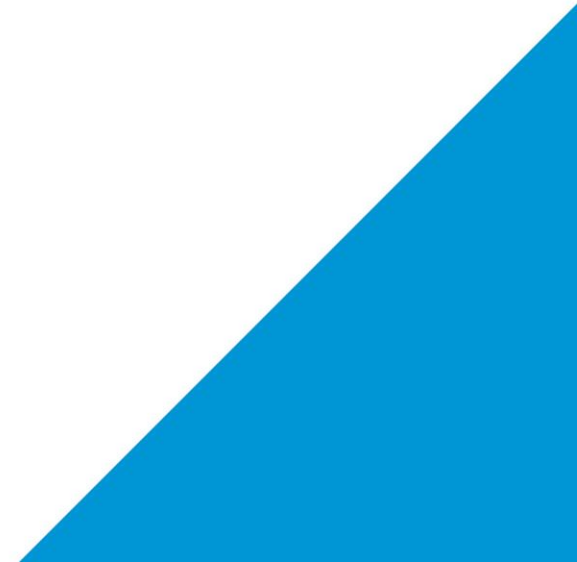


# Simulation-Based Medical Education

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

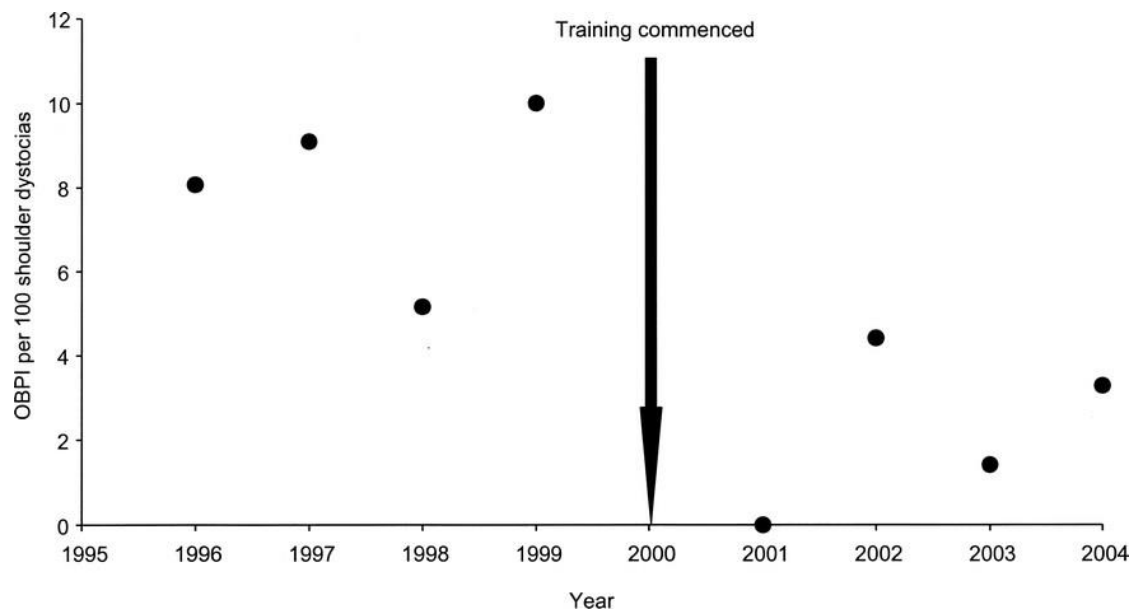
- From a pool of 10,903 articles, the researchers identified 609 studies for synthesis
- In comparison, with no intervention, technology-enhanced simulation training in health professions education is consistently associated with large effects for outcomes of knowledge, skills, and behaviors, and **moderate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

Cook, D., Hatala, R., 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?



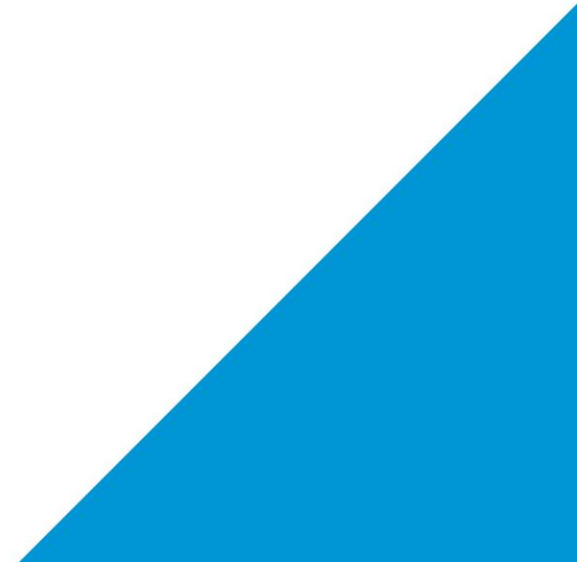
Draycott, 2008

**Table 4. Neonatal Morbidity Associated with Shoulder Dystocia**

	Incidence (%)		Relative Risk (95% CI)
	Pretraining (n=324)	Posttraining (n=262)	
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 with Board of Nursing policies and guidelines
  - Partnerships and Collaborations
  - Inter-professional Education and Practice
- 
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# 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 (CHSE)
- Certified Healthcare Simulation Educators-Advanced (CHSE-A) available, too



# 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



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# 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.

# Study Groups

## Control Group

- Traditional clinical experiences  
Up to 10% simulation

## 25% Group

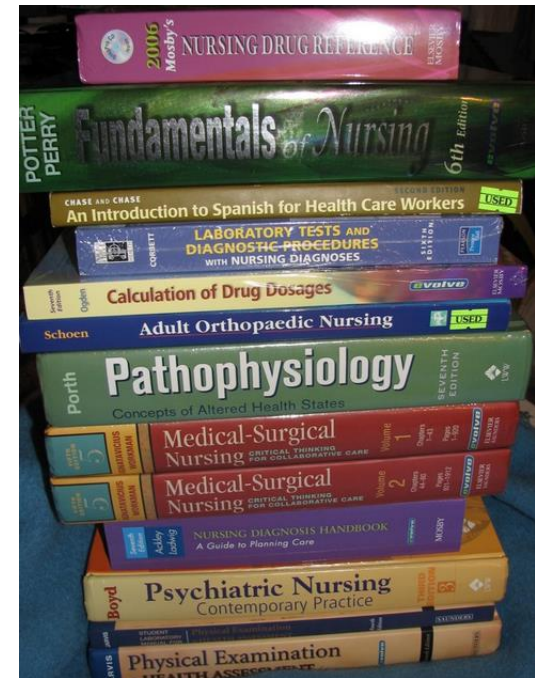
- 25% of clinical time spent in simulation
- 75% traditional clinical experience

## 50% Group

- 50% of clinical time spent in simulation
- 50% of time in traditional clinical experience

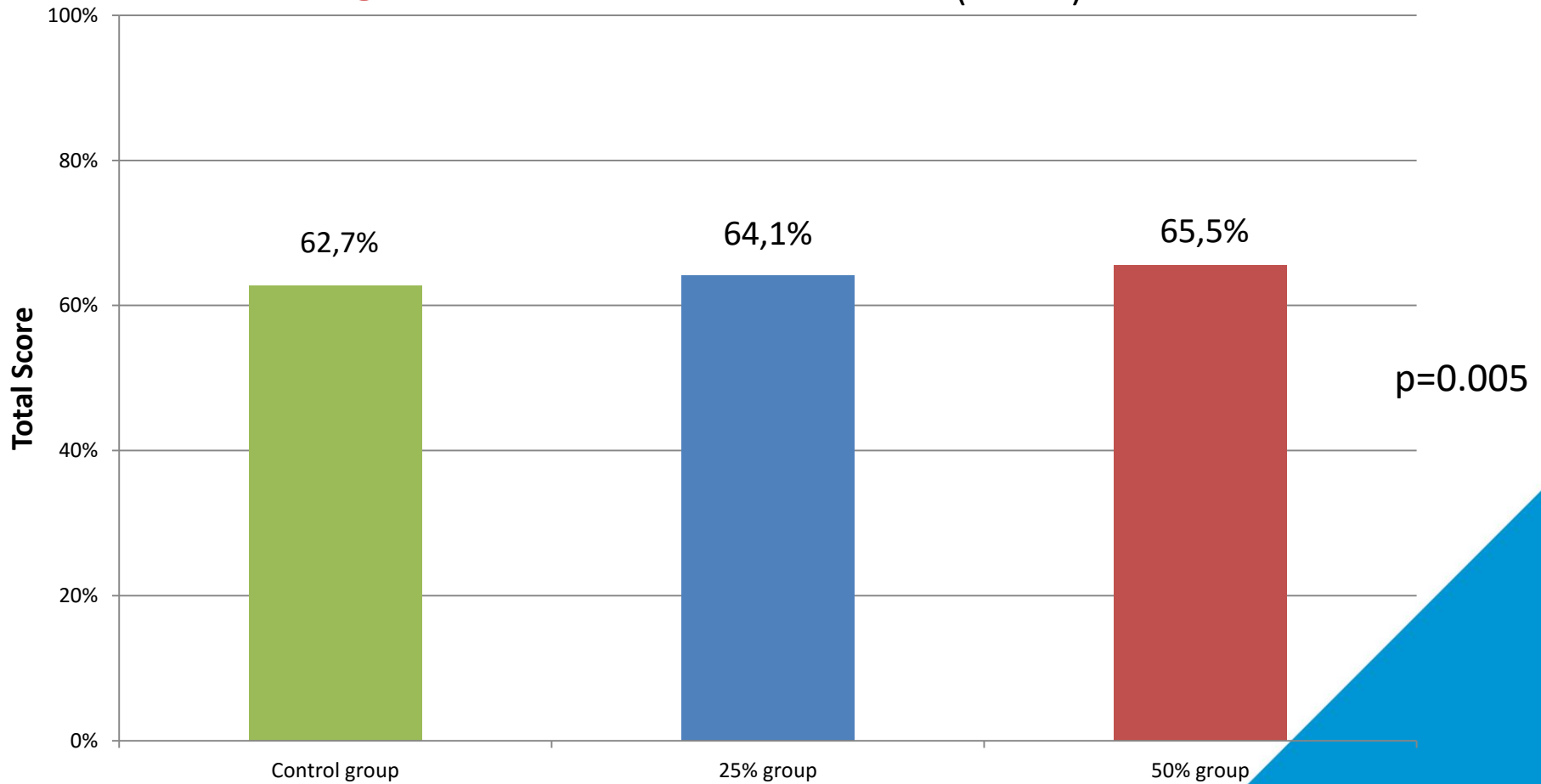
# Core Courses

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



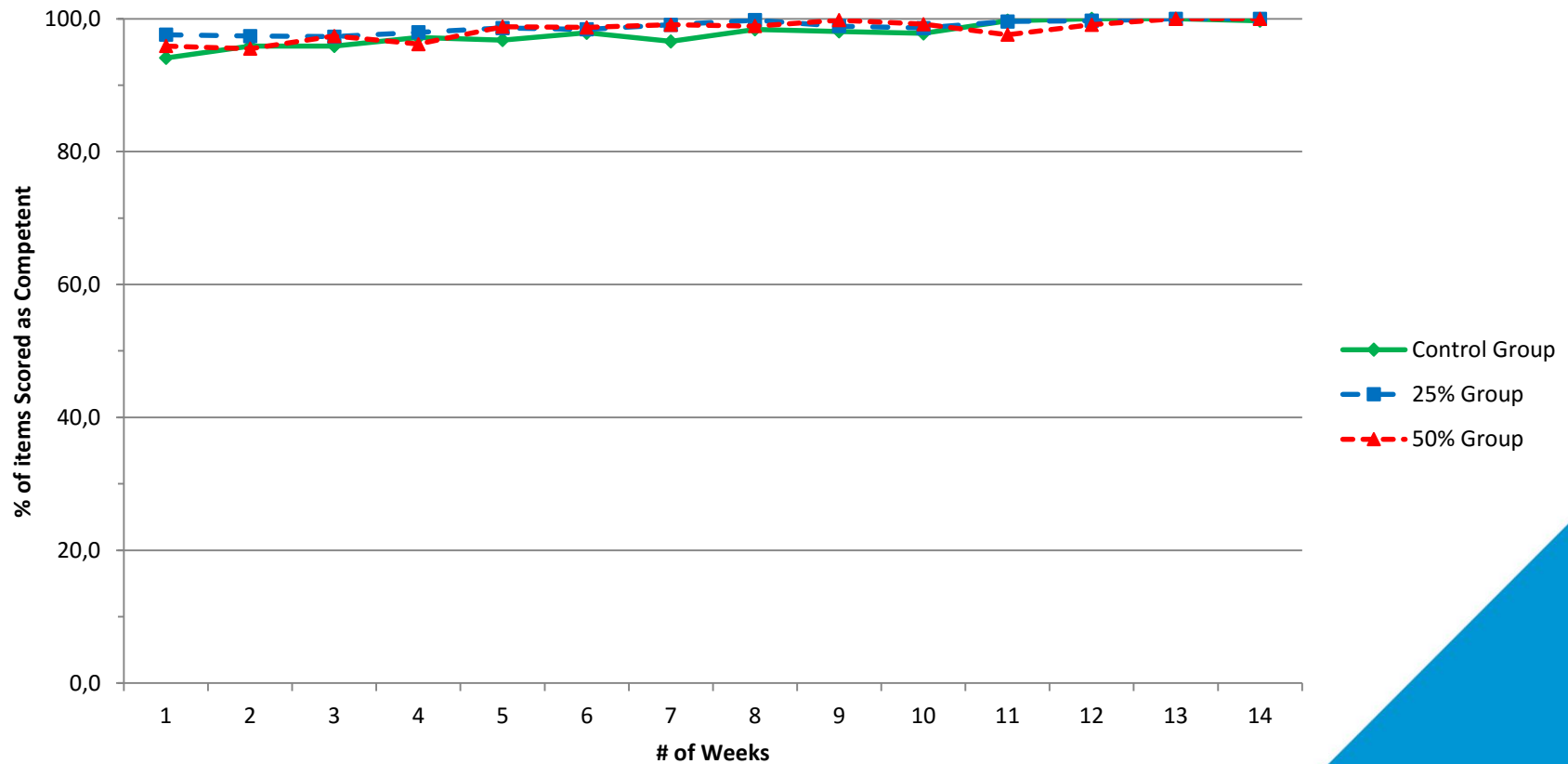
# Advanced Medical-Surgical Nursing: Knowledge Assessment

ATI Assessment Total Score (n=683)



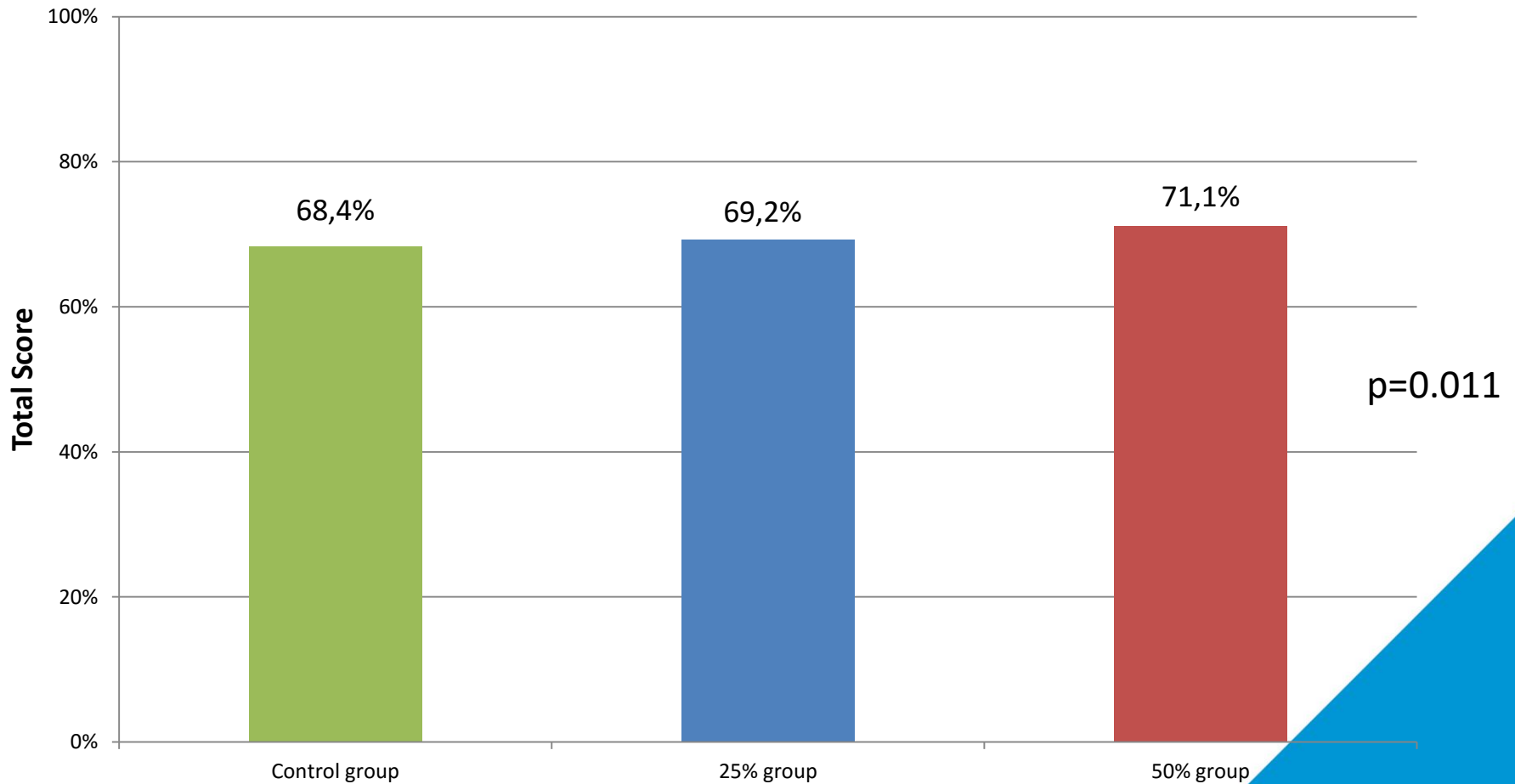
# Advanced Medical-Surgical Nursing: Clinical Competency

## CCEI Scores: Clinical Setting



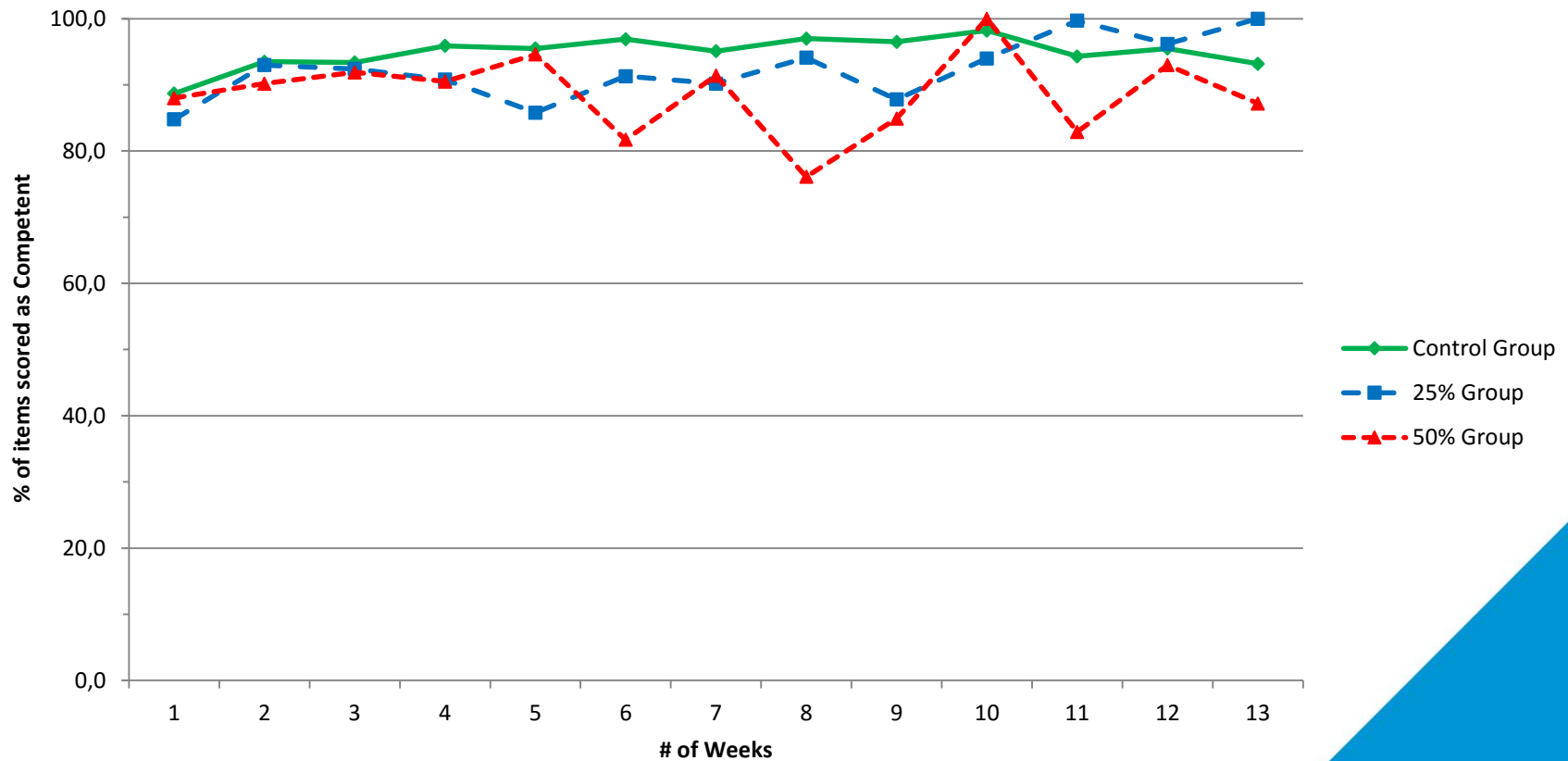
# Maternal-Newborn Nursing: Knowledge Assessment

ATI Assessment Total Score (n=680)



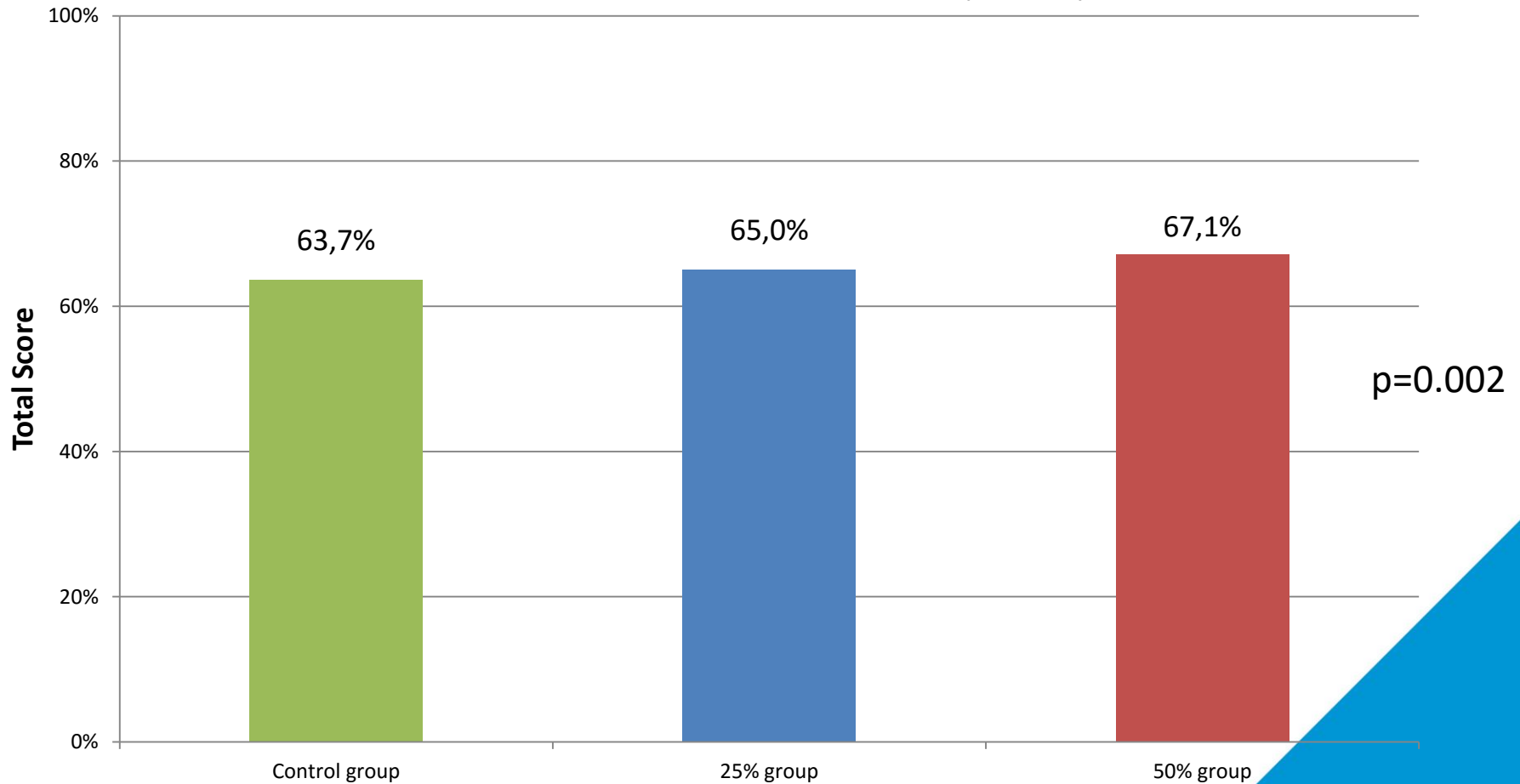
# Maternal-Newborn Nursing: Clinical Competency

## CCEI Scores: Clinical Setting



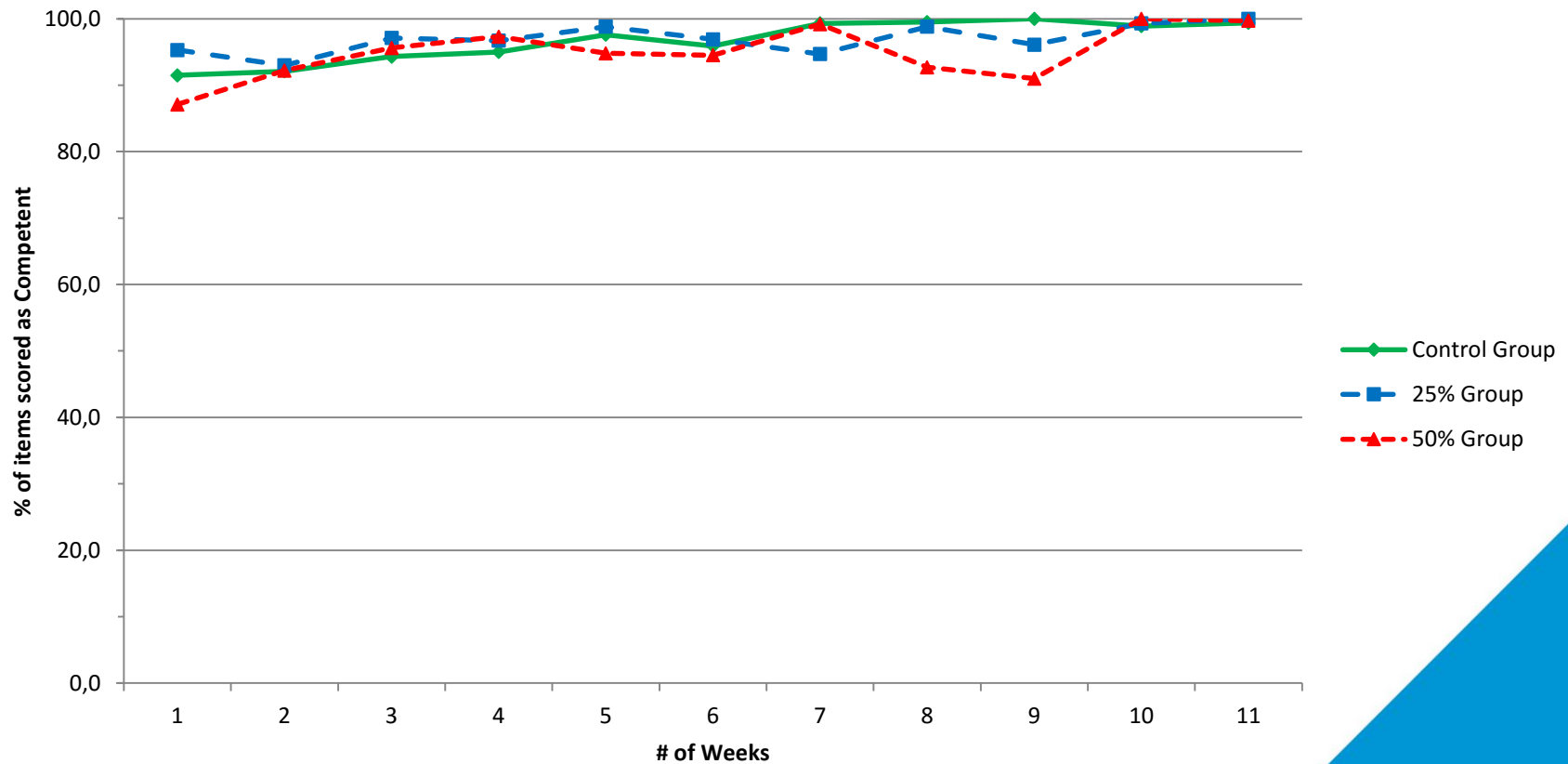
# Pediatric Nursing Knowledge Assessment

ATI Assessment Total Score (n=620)



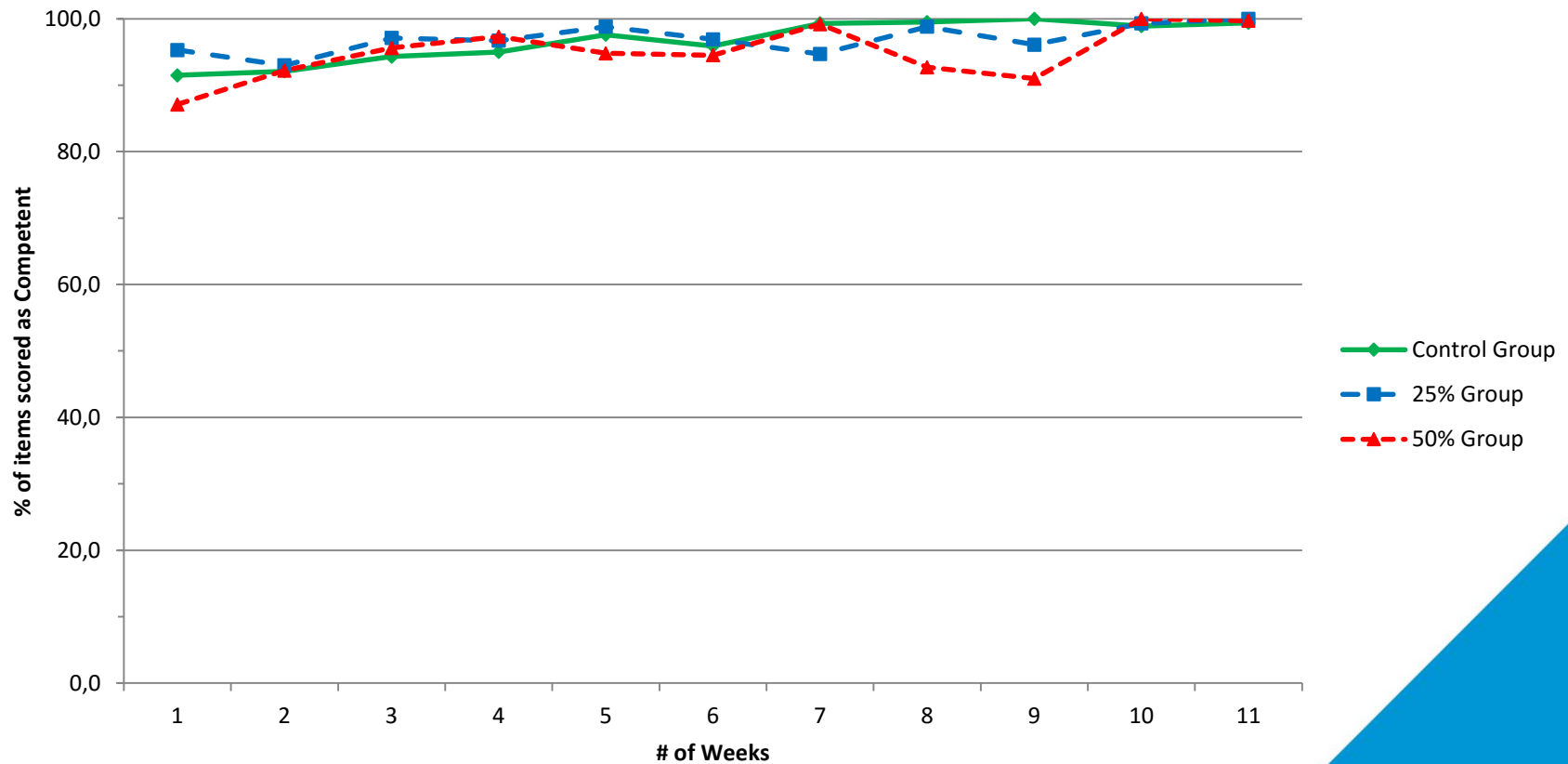
# Pediatric Nursing: Clinical Competency

## CCEI Scores: Clinical Setting



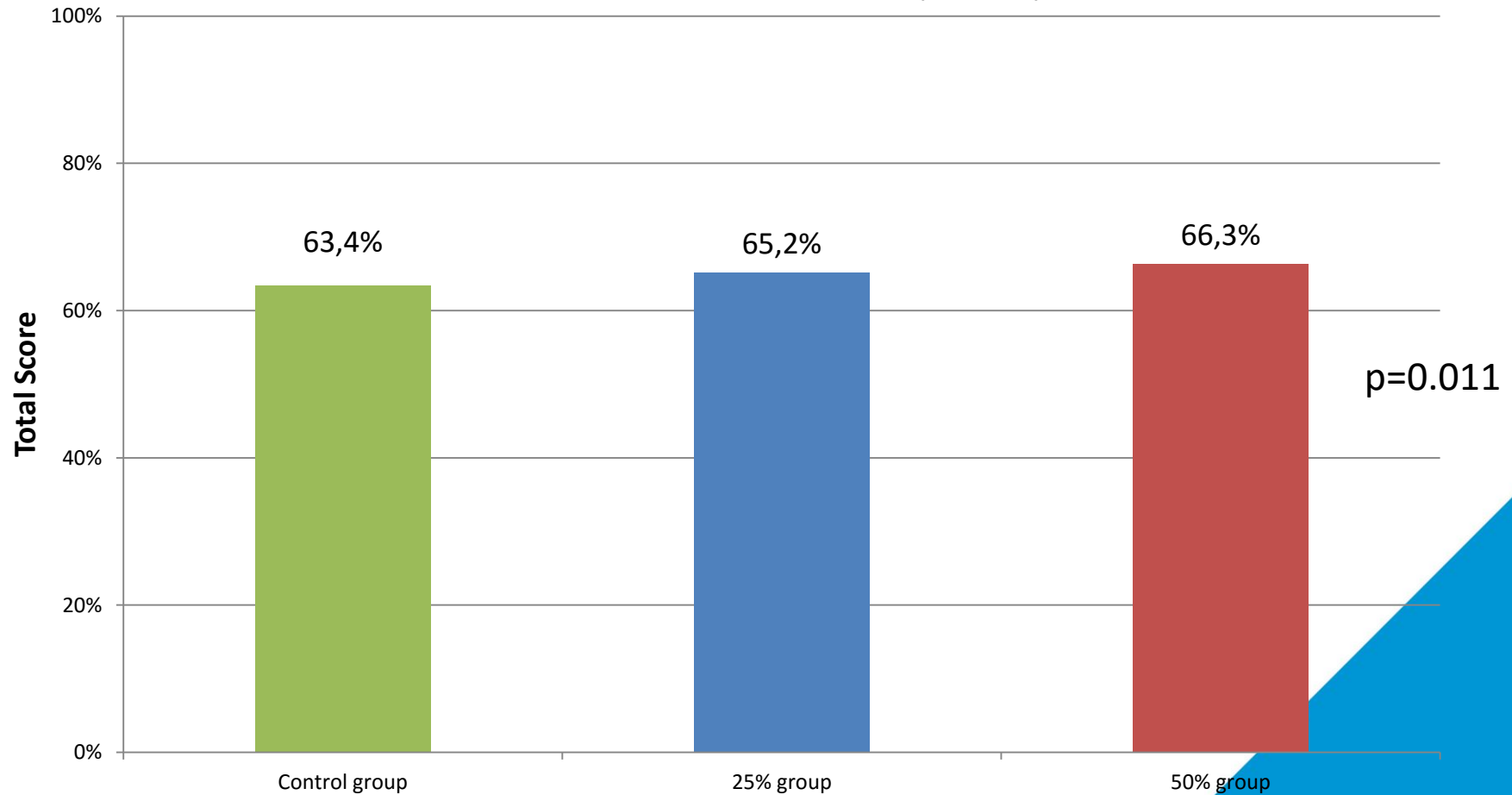
# Pediatric Nursing: Clinical Competency

## CCEI Scores: Clinical Setting



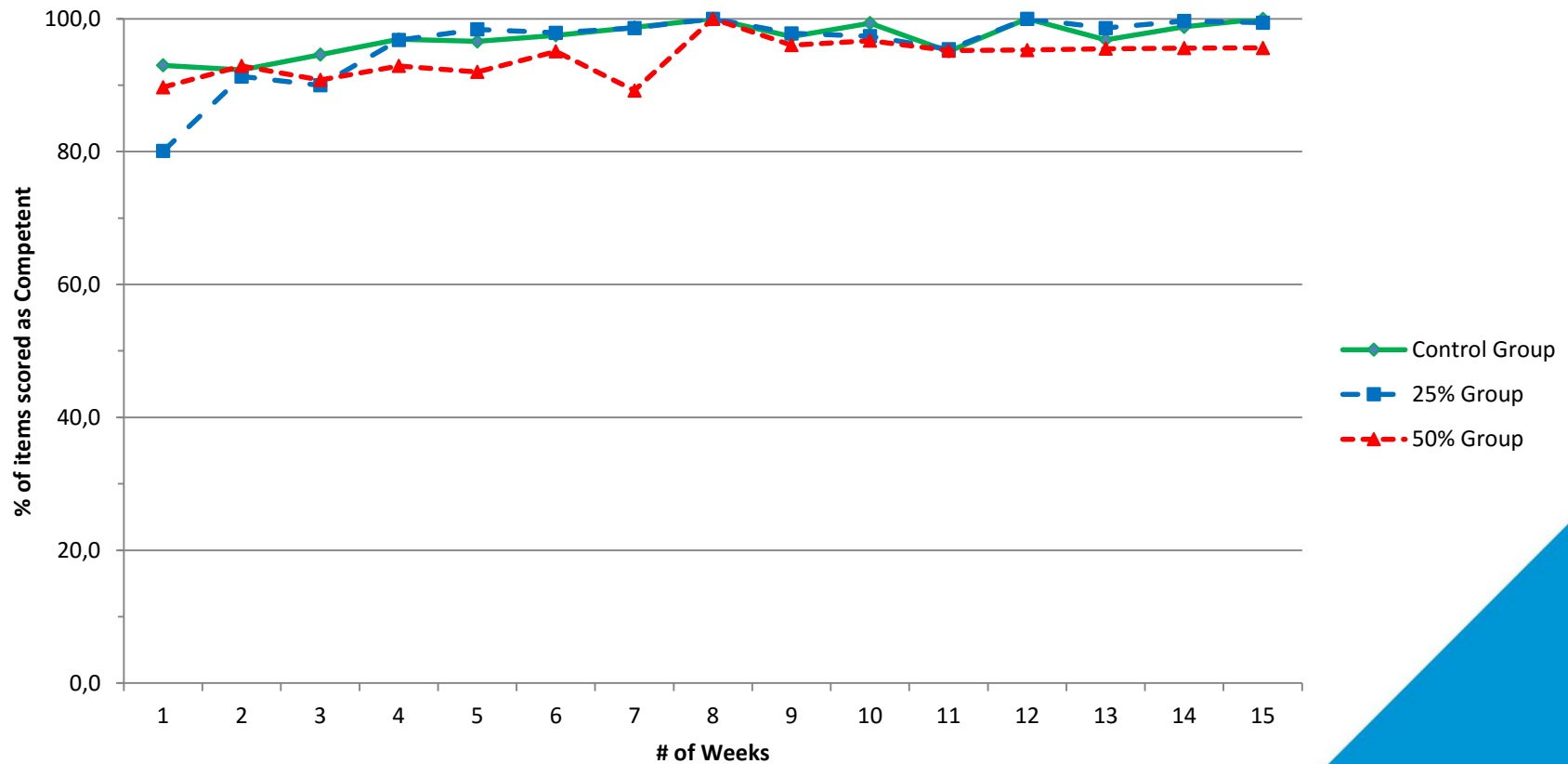
# Mental Health Nursing: Knowledge Assessment

ATI Assessment Total Score (n=633)



# Mental Health Nursing: Clinical Competency

## CCEI Scores: Clinical Setting



# 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.

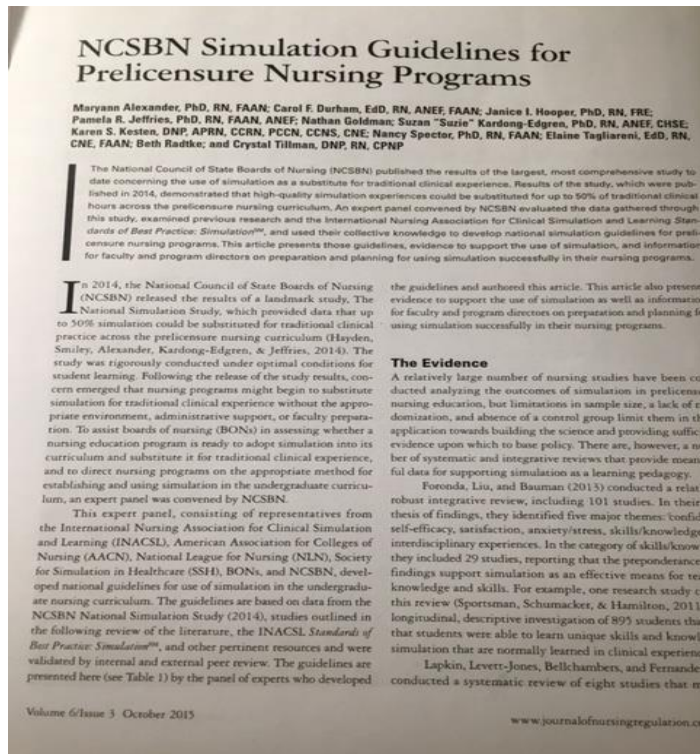
# Conclusions

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.

# 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

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



- 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.

# 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

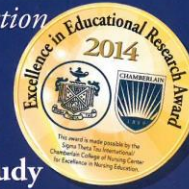


# JOURNAL OF NURSING REGULATION

*Advancing Nursing Excellence for Public Protection*

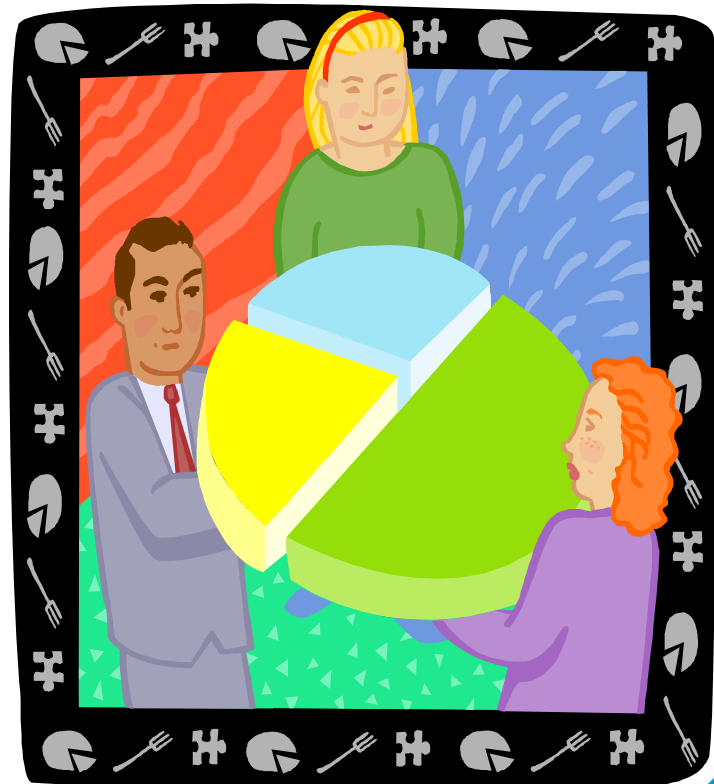
## **The NCSBN National Simulation Study: A Longitudinal, Randomized, Controlled Study Replacing Clinical Hours with Simulation in Prelicensure Nursing Education**

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 sim centers and providing faculty development
- SPRING program – JHI and the new graduates
- IU SON and Clarian Health – partners to improve care



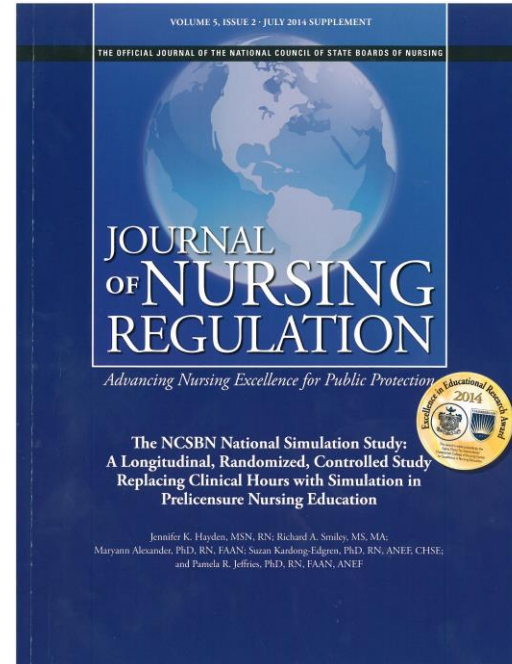
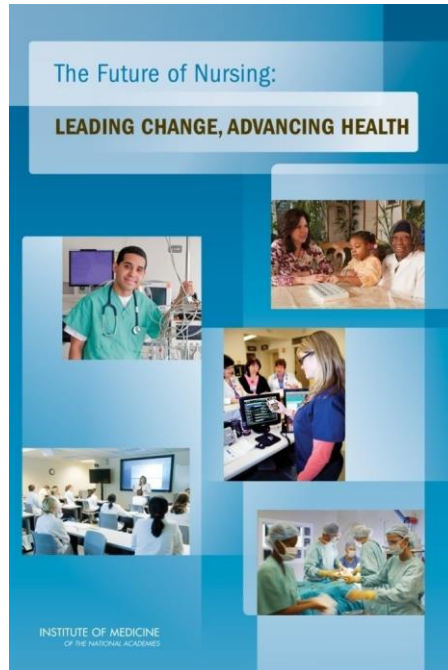
# **EDUCATIONAL PRACTICES**

**DRIVERS OF EDUCATIONAL CHANGE**

**HIGH STAKES SIMULATIONS**

**INTER-PROFESSIONAL EDUCATION AND  
TEAMWORK**

# 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
- 
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# The Nursing Executive Center of the Advisory Board

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

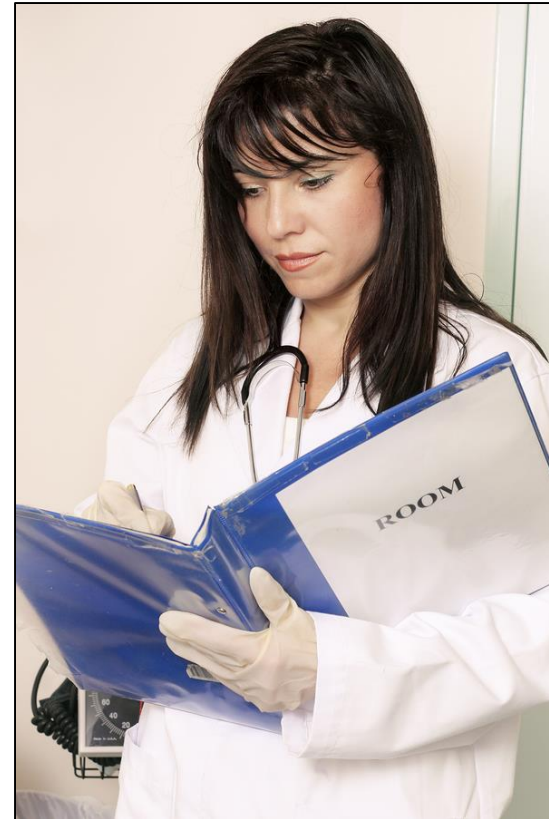
**A large preparation-practice gap exists!**

*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**



# 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

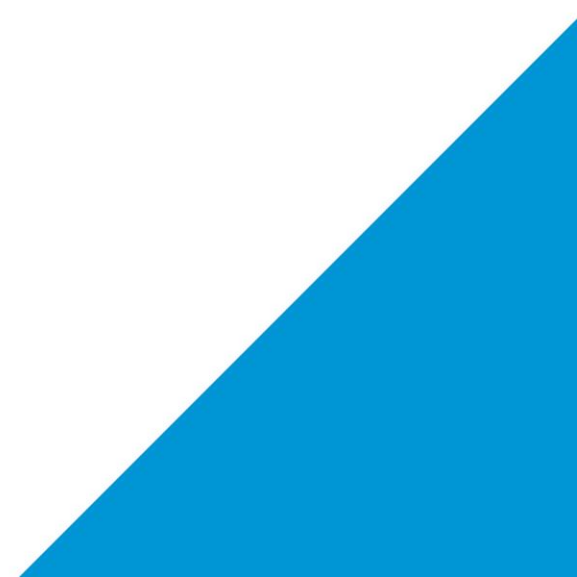
- ***Require nursing students to demonstrate comprehensive clinical performance competencies*** that encompass knowledge and skills needed to provide care across settings and lifespan

# Interprofessional Education Collaborative (IPEC) - 2016

- Released core competencies for interprofessional collaborative practice
- Four domains of interprofessional practice reported

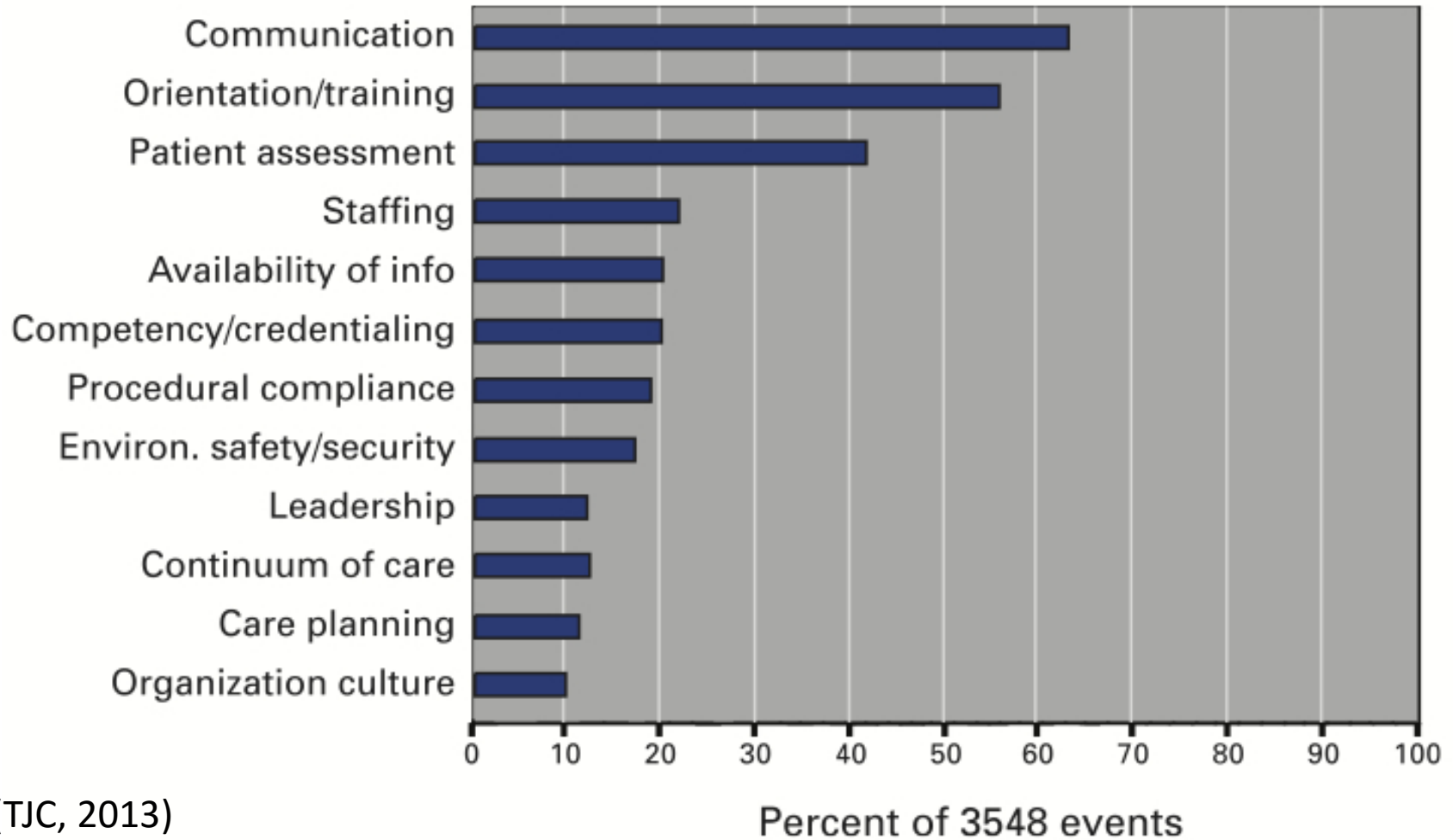


# Four Core Competencies of IPE

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

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



(TJC, 2013)



# *TeamSTEPPS*

Strategies and Tools to Enhance Performance  
and Patient Safety

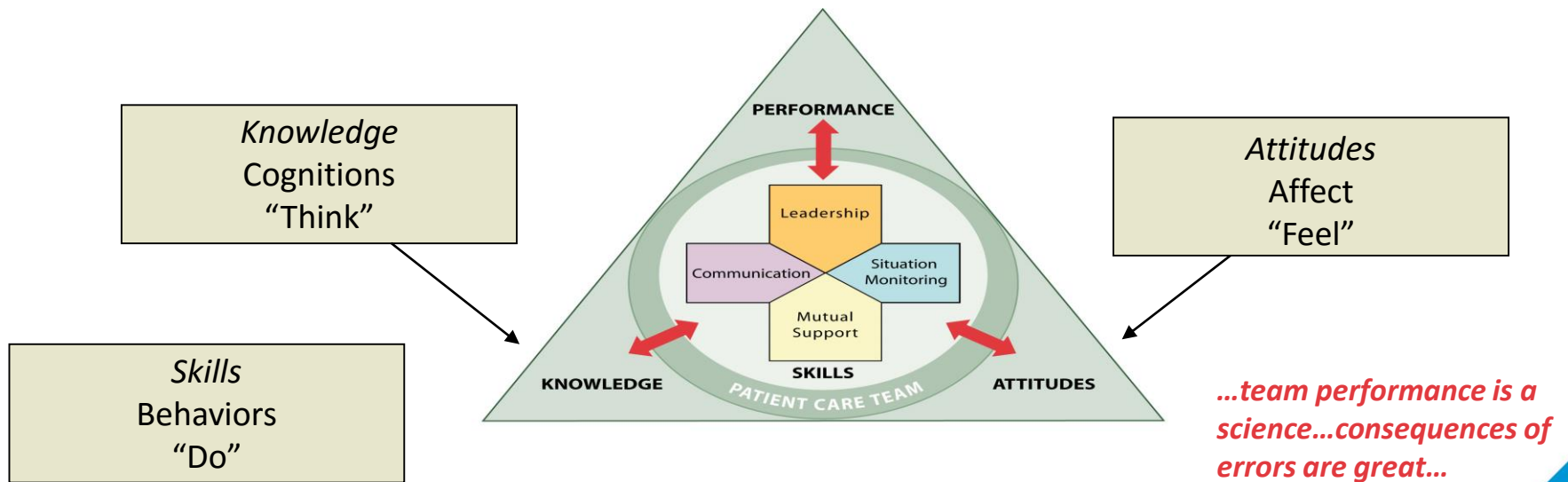


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PATIENT  
SAFETY



# What Comprises Team Performance?



# Outcomes of Team Competencies

- **Knowledge**
  - Shared Mental Model
- **Attitudes**
  - Mutual Trust
  - Team Orientation
- **Performance**
  - Adaptability
  - Accuracy
  - Productivity
  - Efficiency
  - Safety



# Summary

Simulation is here –  
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.

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



# Family Vacation to Denmark!



# References

Adelman-Mullally, T., Mulder, C., McCarter-Spalding, D., Hagler, D., Gaberson, K., Hanner, M., Oermann, M., Speakman, E., Yoder-Wise, P., & Young, P. (2013). *The clinical nurse leader*, Nursing Education in Practice, 13, 29-34.

M.A. Alexander; 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, NCSBN Simulation Guidelines For Prelicensure Nursing Programs, *Journal of Nursing Regulation*, 6(3), pp. 39-42.

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Gantt, L. (2012). Who's Driving? The Role and Training of the Human Patient Simulator, *CIN*, 30(11), 579-586.

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Jeffries, P.R., Dreifurest, K., Kardong-Edgren, S., & Hayden, J. (2014). Faculty Development When Initiating a Simulation Program: Lessons Learned from the NCSBN Study, *Journal of Nursing Regulation*, 5(30), p. 1-8.

Richardson, H., Goldsmat, L., Simmon, J., Gilmartin, M., & Jeffries, P. (2014). Increasing faculty capacity: findings from an evaluation of simulation clinical training, *Nursing Education Perspectives*, 35(5), 308-314.

Shellenburger, T. (2012). Nurse Educator Simulation: Preparing Faculty for clinical nurse educator roles, *Clinical Simulation in Nursing*, 8, e249-e255.

Questions?

