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Evaluation of Student Competence in Simulation Following a Prebriefing Activity: A Pilot Study

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EVALUATION OF STUDENT COMPETENCE IN SIMULATION FOLLOWING A PREBRIEFING ACTIVITY: A PILOT STUDY

by

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ABSTRACT

EVALUATION OF STUDENT COMPETENCE IN SIMULATION
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by

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Background: Simulation-based learning (SBL) shows promise to potentially improve clinical competence in nursing education. The efficacy of evidence-based prebriefing activities and valid and reliable systems to evaluate those strategies is a gap in the literature. Preliminary evidence shows that prebriefing can improve participant outcomes. The goal of this pilot study was to compare the outcome of clinical competence for prelicensure nursing students based on assignment to one of the following prebriefing activities: standard, careplan, or concept mapping.
Methods: This is a quasi-experimental double-blind, posttest only, comparison-group design, pilot study. The participants were from an associate degree professional nursing program. Out of a potential 30 students, 28 agreed to participate. The data collection occurred during two laboratory sessions of their medical-surgical course. The students were exposed to an assigned prebriefing activity and then engaged in a simulation scenario. Two faculty simulation evaluators (FSEs) watched the videoed performance and evaluated the students' clinical competence using the Creighton Competency Evaluation Instrument (C-CEI). Demographic data were used to analyze the homogeneity of the groups and to determine if other factors affected clinical competence. An ANOVA was used to answer the research questions.

Results: Based on the analysis, gender, age, course grade, race and ethnicity, the groups were similar. Interrater reliability of the C-CEI overall (Kappa=0.096 with p=0.02) and communication (Kappa=0.349 with p=0.01) scores between the FSEs were significantly different. Based on their Cronbach's alpha score (0.74) FSE Two's ratings were used for analysis. There were no significant changes in C-CEI scores based on the students' assigned prebriefing activity. There were significant differences between participant scores (communication 4.3(26), p = <0.001; Clinical Judgement 2.7(26), p = 0.011; Overall 2.8(26), p = 0.01) based on their scenario.

Conclusions: Issues with the FSFs and FSEs revealed ways to improved future simulation-based research. Ensuring scenario complexity is equivalent assures comparable participant performance. Measures to enhance FSE interrater reliability must be implemented.

Limitations: The sample size was inadequate to determine statistically significant data. A lack of randomization of assignment to groups is also a limitation. An FSF provided additional cueing which could have affected some student's C-CEI scores.

To

my ever supportive husband Matt Chapman;

my dedicated parents Nan and David Beman;

my most patient children Xander and Libby;

my mentor Meg Karraker;

my co-workers who cheered me on;

and my students who remind me to reach for the stars every day.

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LIST OF ABBREVIATIONS

Academic Electronic Health Record…AEHR

American Association of Colleges of Nursing…AACN

American Nurses Association…ANA

Analysis of Variance…ANOVA

Assessment…Asses

Clinical Judgement…CJ

Communication…Comm

Confidence Interval…CI

Consolidated Standards of Reporting Trials…CONSORT

Course Management System…CMS

Creighton Competency Evaluation Instrument…C-CEI

Creighton Simulation Evaluation Instrument…C-SEI

Cumulative Index of Nursing and Allied Health Literature…CINAHL

Degree of Freedom…*df*

Faculty Simulation Evaluators…FSE

Faculty Simulation Facilitator…FSF

Family Educational Rights and Privacy Act…FERPA

Group…GRP

Health Insurance Portability and Accountability Act…HIPAA

Information Technology…IT

Institute of Medicine…IOM

Institutional Review Board…IRB

International Nursing Association for Clinical Simulation and Learning…INACSL

Mean…M

National Council of State Boards of Nursing…NCSBN

National League for Nursing…NLN

Nursing Applied Learning Lab…NALL

Patient Safety…PS

Registered Nurse…RN

Simulation-Based Learning…SBL

Simulation-Based Research…SBR)

Simulation Day 1…SimD1

Simulation Day 2…SimD2

Simulation Lab Coordinator…SLC

Standard Deviation…SD

Strengthening the Reporting of Observational Studies in Epidemiology…STROBE)

Student Principal Investigator…SPI

United States…U.S.

United States Department of Commerce…USDoC

United States Department of Education…USDoE

United States Department of Health and Human Services…USDHHS

University of Wisconsin, Milwaukee…UWM

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Chapter I

The present chapter provides the background, theoretical underpinnings, and contextual factors for this pilot research dissertation. Included in this chapter are the problem statement, purpose, theoretical framework, research question, definition of terms, and assumptions. This chapter will provide the necessary background information for the dissertation.

Introduction

Healthcare delivery is transforming at a rapid rate USDHHS (22 March 2016). The changing United States (U.S.) population affects the needs of the people and the health care required to serve those people. The population is trending towards an increase in the number of individuals over age 65 (USDoC, n.d.). The present increase in those people over 65 years old in the U.S. population has a twofold effect on the current healthcare system (USDHHS, n.d.-a). There will be an increase in the need for more healthcare providers who will work with the growing older population, and roughly one-third of the nursing workforce is reaching retirement age (USDHHS, n.d.-b). The healthcare workforce demands will continue to increase into the foreseeable future. The healthcare educational system will need to replace those nurses who are retiring as well as expand the nursing workforce to meet the requirements for care of the aging population. Nurses focus on holistic care and their strength as managers in the care of patients with complex conditions make them ideal healthcare practitioners to facilitate the care of this growing group of patients.

Nursing education programs are the means by which the discipline's knowledge and science are transferred to those entering the profession. Recent reports regarding nursing education have suggested that current graduates of prelicensure nursing education programs are not adequately prepared for the rapidly changing healthcare environment (Benner, Sutphen,

Leonard, & Day, 2010). There continues to be a gap in the knowledge, skills, and abilities of prelicensure graduates immediately following graduation and the difference remains for six months to one year of practice (Benner et al., 2010; del Bueno, 2005; McNamara, Roat, & Kemper, 2012; Ruth-Sahd, 2014). Del Bueno (2005) found that 65% of inexperienced registered nurses (RN) did not meet entry-level expectations. Furthermore, new nurses felt stress from a lack of entry-level knowledge and are therefore at risk for leaving the profession (Clark & Springer, 2012). The healthcare environment has been changing rapidly, while nursing education has not kept pace with these developments (Benner et al., 2010; IOM, 2003, 2011; McNamara et al., 2012; Ruth-Sahd, 2014; Spector & Odom, 2012). Reports on healthcare and nursing education indicate that nursing programs must improve curriculum delivery and teaching methods (Benner et al., 2010; IOM, 2003, 2011; Spector, 2009; Tanner, 2010). Changes, required of nursing education programs, are needed to ensure prelicensure graduates are clinically competent and practice ready (Benner et al., 2010; Cronenwett et al., 2007; IOM, 2003, 2011; NCSBN, 2005).

Problem Statement

To meet the national demand for clinically ready prelicensure graduates, faculty of nursing education programs are exploring different pedagogical methods. Simulation-based learning (SBL) is one of the primary techniques which has received extensive attention in the literature, including the development of standards of best practice in simulation by the *International Nursing Association for Clinical Simulation and Learning (INACSL)* (Boese et al., 2013; S. Decker et al., 2013; S. I. Decker et al., 2015; A. E. Franklin et al., 2013; Gloe et al., 2013; J. Hayden, 2010; Jeffries, 2016; Lioce et al., 2015; Lioce et al., 2013; Meakim et al., 2013; Sando et al., 2013). Jeffries (2005, 2016) developed the first simulation model, which has been

further developed into a theory of SBL. *The National Council State Boards of Nursing (NCSBN)* and *The National League for Nursing (NLN)* have funded research to deepen the theoretical underpinnings and determine best educational practices in SBL for nursing education (Alexander et al., 2015; Gore & Schuessler, 2013; Groom, Henderson, & Sittner, 2012; Jeffries, 2016; Kardong-Edgren, 2015; Kardong-Edgren, Willhaus, Bennett, & Hayden, 2012). Debriefing, simulation fidelity, and outcome measurement have been foci of previous research (Dieckmann, Molin Friis, Lippert, & Ostergaard, 2009; Dreifuerst, 2009, 2012; Neill & Wotton, 2011; Paige & Morin, 2013; Shinnick, Woo, Horwich, & Steadman, 2011).

Educators and researchers have begun to address the need for evidence-based educational strategies through a growing body of nursing education research (Shultz, 2009). Simulation design is critical to the quality of the SBL experience. Developing SBL experiences using a foundation of educational theories and the *INACSL* (2015) *Standards of Best Practice: Simulation* will help educators to implement quality SBL. However, both the theories and standards require research, to better predict the outcomes of SBL. It is posited that prebriefing can improve student learning thus creating a more powerful SBL experience (Chamberlain, 2015; McDermott, 2016; Page-Cutrara, 2014, 2015). The concept of prebriefing for SBL is new in the literature and warrants further investigation.

Theoretical Frameworks

Nursing knowledge should uncover patterns and develop an understanding of the concepts and ideas that are meaningful to the discipline (Chinn & Kramer, 2011). Nursing theories and the theories of complementary fields allow nurses to predict the outcomes of our care. Thus theory guides research and practice (Walker & Avant, 2011). Smith and Liehr (2014)

explained the interconnection between metaparadigms, grand theories, middle range theories, research traditions, and practice traditions in nursing. A metaparadigm is defined as;

> a set of concepts and propositions that sets forth the phenomena with which a discipline is concerned. A metaparadigm is the most general statement of a discipline and functions as a framework in which the more restricted structures of conceptual models develop ("metaparadigm," n.d.).

A grand theory is defined as:

> A set of abstract ideas that together make a broad statement about human beings, the environment, health, or nursing. A grand theory is broad in scope. It is made up of concepts and propositions that are less abstract and general than the concepts and propositions of a conceptual model but are not as concrete and specific as the concepts and propositions of a middle-range theory. A grand theory sometimes is used in place of a conceptual model as a guide for research or practice ("grand-theory," n.d.).

Middle-range theories are described as "circumscribed, elaborating more concrete concepts and relationships such as uncertainty, self-efficacy, [and] meaning" (Smith & Liehr, 2014, p. 27). The practice tradition "encompasses protocols, guidance, and practice wisdom that emerges from these theories" (Smith & Liehr, 2014, p. 28). Finally, "research traditions are the associated methods, procedures, and empirical indicators that guide inquiry related to the theory" (Smith & Liehr, 2014, p. 28).

The pilot study logically weaves together aspects of *Essential IX of The Essentials of Baccalaureate Education for Professional Nursing Practice,* educational cognitive theory, and educational constructivist theory to help explain and predict portions of *The NLN Jeffries Simulation Theory* (see figure 1) (AACN, 2008; Ausubel, Novak, & Hanesian, 1978; Jeffries,

2016; Novak, 2012; Novak & Gowin, 1984). Through the exploration of different teaching/learning pedagogies, an evidence-based nursing education practice can evolve (Gresley, 2009).

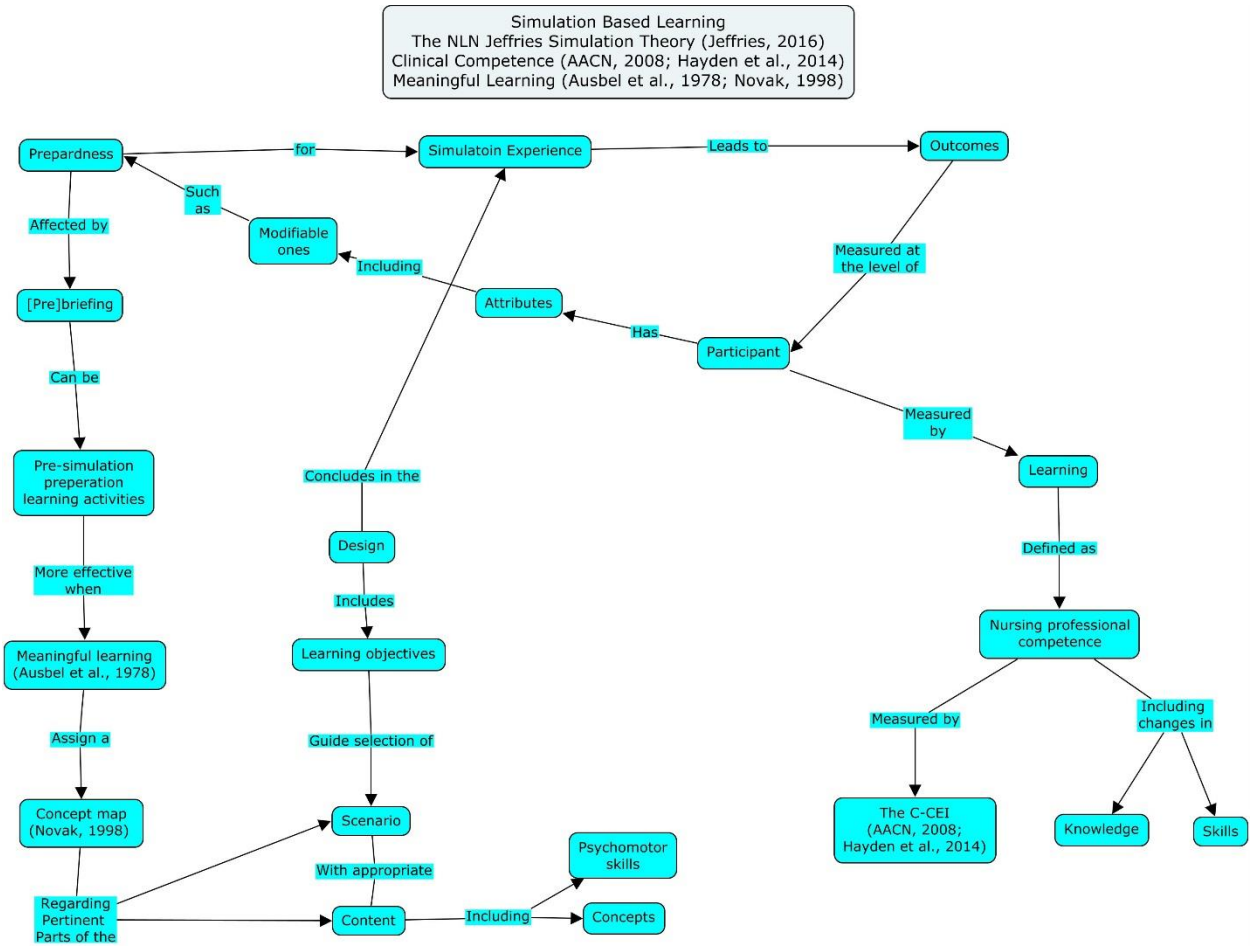

Figure 1.1 Diagram of Concept Map Prebriefing for SBL to Facilitate Meaningful Learning

Simulation Theory

SBL has been used, in various formats, in nursing education for more than 100 years (Jeffries, 2016). In the last decade, there has been an increase in the use of SBL in nursing education programs to address students' lack of clinical judgment skills (Dillard et al., 2009; A. Franklin, Sideras, Gubrud-Howe, & Lee, 2014; Lasater, 2007). The most current version of *The*

NLN Jeffries Simulation Theory provides guidance regarding the critical aspects of simulation, delineating relevant variables and allowing for SBL to be studied (Jeffries, 2016). As shown in Figure 1.2 of *The NLN Jeffries Simulation Theory*, the components of SBL are context, background, design, simulation experience, facilitator, educational strategies, participant, and outcomes (Jeffries, 2016, p. 40). The learner experience should include an environment of trust and be experiential, interactive in nature, learner-centered, and collaborative (Jeffries, 2016).

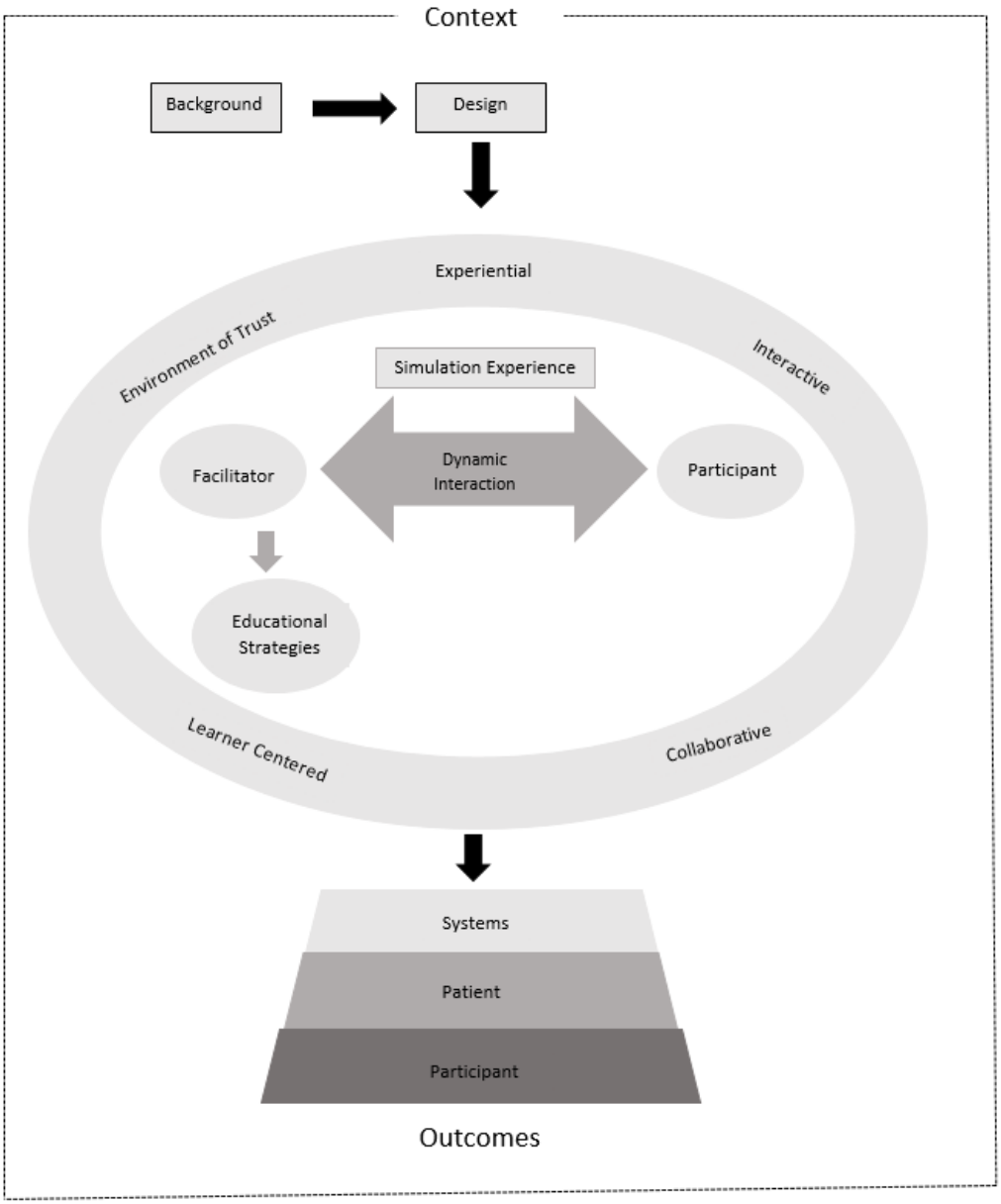

Figure 1.2 Jeffries Simulation-Based Learning Theory (2016)

Prebriefing

The NLN Jeffries Simulation Theory provides clarity regarding the variables of SBL and based on the framework all SBL experiences should include prebriefing as part of the design (Jeffries, 2016). Additionally, Jeffries (2016) explains that in any SBL experience the simulation participant has modifiable attributes, such as preparedness for simulation. Prebriefing activities provide the participant with an opportunity to prepare for the simulation before engagement in the scenario.

Outcome

The outcomes of SBL occur at the systems level, patient level, and participant level (Jeffries, 2016). Participant outcomes which have been written about in SBL literature include reaction, learning, and behavior. Participant reactions include satisfaction and self-confidence measures. Participant learning involves changes in knowledge, skills, and attitudes. Participant behavior consists of the transfer of learning to the clinical setting. Clinical competence can be measured as an outcome of participant behavior in SBL. One way to measure participant learning is through the assessment of clinical ability.

Clinical Competence

A graduate of a prelicensure nursing program should meet the learning outcomes in *The Essentials of Baccalaureate Education for Professional Nursing Practice*, such as practicing with clinical competence (AACN, 2008). Nurses demonstrate nursing clinical competence through assessment, communication, and clinical judgment skills, to provide safe patient care (AACN, 2008; Creighton, 2016; J. K. Hayden, Keegan, Kardong-Edgren, & Smiley, 2014). Assessment is defined as "Conduct[ing] comprehensive and focused physical, behavioral, psychological, spiritual, socioeconomic, and environmental assessments of health and illness parameters in patients, using developmentally and culturally appropriate approaches" (AACN, 2008, p. 31). Communication is defined as "following practices that minimize risks associated

with handoffs among providers and across transitions in care" and "choosing styles that diminish the risks associated with authority gradients among team members" (Cronenwett et al., 2007, p. 125). Clinical judgment is defined as "the outcomes of critical thinking in nursing practice. Clinical judgments begin with an end in mind. Judgments are about evidence, meaning, and outcomes achieved" (Pesut, 2001 as cited in AACN, 2008, p. 36). Beginning with the end in mind means the nurse knows the best outcome for the patient, as well as potential complications and is constantly evaluating and using their clinical judgment to assess their patient's status. Patient safety is defined as nursing care that "minimizes risk of harm to patients and providers through both system effectiveness and individual performance" (Cronenwett et al., 2007, p. 128). The *Creighton Competency Evaluation Instrument (C-CEI)* was developed to measure clinical competency using this framework (Todd et al., 2013).

Learning Theory

The NLN Jeffries Simulation Theory provided a structure within which to understand the constructs of SBL pertinent to the present pilot study (Jeffries, 2016). This pilot study of SBL will evaluate the effectiveness of prebriefing activities on the outcome of participants' clinical competence. The prebriefing activity will be developed utilizing appropriate pedagogy to engage SBL participants in efficacious inquiry. A prebriefing assignment developed using learning theory generates a stronger and more predictable educational intervention (Jeffries, 2016). Cognitive learning theory, including assimilation learning, provides the guiding framework for using concept mapping as a prebriefing assignment (Ausubel et al., 1978; Novak, 2012; Novak & Gowin, 1984).

Assimilation learning.

Ausubel et al.'s (1978) foundational text on a cognitive learning theory, explores different types of learning and their effectiveness. Learning is broken down into four main categories: rote, meaningful, reception, and discovery learning. Reception learning occurs through the presentation of the material that needs to be acquired, in its complete form, to the learner. For discovery learning to occur the student must uncover the information on their own, it cannot be provided to them. Both reception and discovery learning can be either rote or meaningful. Meaningful learning is achieved when "the learning task can be related in nonarbitrary, substantive (nonverbatim) fashion to what the learner already knows" (Ausubel et al., 1978, p. 27). Rote learning occurs when "the learning task consists of purely arbitrary associations" (Ausubel et al., 1978, p. 27). Rote, meaningful, or a combination of rote and meaningful learning can occur during reception or discovery learning.

Whether the learning is rote or meaningful is dependent on the learners' previous knowledge structures. According to Ausubel et al.'s (1978) theory, students can engage in meaningful receptive learning thus connecting the assigned material to their current cognitive structure. This type of learning is considered conceptual or propositional learning, where the student learns the meaning of a propositional phrase. The concept or propositional phrase integrates as a part of the student's current knowledge. Ausubel et al. (1978) explains that the concepts and propositions could assimilate into the students' cognitive structure. It is important to note that if the student can assimilate the ideas, not the exact words, into their cognitive structure, a significant amount of information can be learned and retained.

According to Ausubel et al. (1978), an individual's cognitive structure is hierarchical. The structural hierarchy allows for anchoring of new data within the structure in different ways.

Subsumption is the process of incorporating information into the cognitive fabric of the mind. The process of subsumption assists the mind in storing ideas as well as maintaining conceptual fidelity once stored. Concepts and propositions can be considered superordinate or subordinate. Combinatorial learning occurs through uniting previously learned ideas into new concepts. Derivative learning happens when the learner takes a currently understood concept and uses it to comprehend something new. Correlative learning occurs when the learner uses a new concept to extend, elaborate, modify, or qualify a previously learned proposition.

The student must have foundational knowledge in their cognitive structure to assimilate new information via meaningful learning. Learner readiness is essential, or meaningful learning of the propositions will not occur. Organizers, known as introductory information, provide the students with clues which encourage meaningful learning. An organizer helps link what the student knows to what they need to know. Evidence that meaningful learning has occurred and been retained by the student can be obtained through independent problem-solving activities.

Concept mapping.

The development of concept maps is a theoretically designed meaningful learning activity (Novak, 2012; Novak & Gowin, 1984). A concept map is a "schematic device for representing a set of concept meanings embedded in a framework of propositions" (Novak & Gowin, 1984, p. 15). Concept maps are developed using the same hierarchical structure that is explained by cognitive learning theory, and by doing so, the visual representation mirrors the cognitive learning process that has occurred. Novak and Gowin (1984) describe that concept map creation, completed in small groups, allows for the sharing of meaning through discussion and negotiation and a unified idea emerges from a joint concept mapping session. Concept

mapping enables the learner to externalize their knowledge regarding a particular topic, and for an educator to be able to see what the student is thinking.

Traditionally the nursing process has been taught via care plan development to nursing students (Oermann, Saewert, Charasika, & Yarbrough, 2009). Care plans provide a way to organize one's thoughts and ideas regarding the care of a particular patient (Maneval, Filburn, Deringer, & Lum, 2011; Sinatra-Wilhelm, 2012). Concept maps are a potential best practice educational intervention in nursing education (Burrell, 2014). Concept mapping has been proven to increase critical thinking more than care plans and problem-based learning (Huang, Chen, Yeh, & Chung, 2012; Lee et al., 2013; Orique & McCarthy, 2015; Samawi, Miller, & Haras, 2014; Sinatra-Wilhelm, 2012). Concept maps have been shown to enhance nursing student achievement of learning outcomes (Jaafarpour, Aazami, & Mozafari, 2016).

Concept maps are advanced organizers, allowing students to reflect on what they need to know before a simulated or real clinical situation, which can also help learners to assimilate material and improve learning. Nursing students have created concept maps, for more than twenty-five years, to work with the material to be learned and achieve learning outcomes (Daley, Morgan, & Beman, 2016). Creating a concept map of the content and skills in preparation for the SBL scenario has the potential to provide the participant with a stronger grasp of the required information needed to be successful in the SBL activity and eventual transfer to the actual clinical environment.

Definition of Terms

Having a shared list of theoretical and conceptual definitions provides clarity and a consistent point of reference. Some of the terminologies were previously explored in relation to the theoretical underpinnings. The operationalization of the definitions helps explain the

concepts in the context of the research study. The defined terms include simulation-based learning, clinical scenario, objective, participant, prebriefing, concept-mapping, competence, outcome, and measurement.

Simulation-Based Learning (SBL)

The proposed research study addresses aspects of SBL. SBL experiences are defined as:

> an array of structured activities that represent actual or potential situations in education and practice and allow participants to develop or enhance knowledge, skills, and attitudes or analyze and respond to realistic situations in a simulated environment or through an unfolding case study (Pilcher, Goodall, Jensen, Huwe, Jewell, Reynolds, & Karlson, 2012 as cited in Meakim et al., 2013, p. S9).

Clinical Scenario

The clinical scenario provides details for the faculty process of developing SBL experiences. The clinical scenario is defined as:

> The plan of an expected and potential course of events for a simulated clinical experience. The clinical scenario provides the context for the simulation and can vary in length and complexity, depending on the objectives. The clinical scenario design includes:
>
> - Participant preparations
> - Prebriefing
> - Patient information describing the situation to be managed
> - Participant objectives (Meakim et al., 2013, p. S4).

Objective.

Objectives are a critical part of the clinical scenario. Objective, in the clinical scenario, is defined as "statement(s) of specific measurable results that participant(s) is expected to achieve during a simulation-based learning experience" (Meakim et al., 2013, p. S7).

Participant.

Participants are defined as "One who engages in a simulation-based learning activity for the purpose of gaining or demonstrating mastery of knowledge, skills, and attitudes of professional practice" (Meakim et al., 2013, p. S7).

Prebriefing.

Prebriefing is one of the modifiable variables and a crucial part of the clinical scenario that the proposed study will be addressing. Prebriefing for the proposed pilot research study is defined as:

> an essential three phase process of planning, briefing, and facilitating that occurs prior to the SBL experience based upon the purpose/learning objectives of the scenario. Prebriefing should be planned and facilitated by a qualified simulation facilitator/educator who is familiar with characteristics of the SBL learner regarding level, program, and profession. Strategies should be employed to promote learner success and confidence in the simulated experience to encourage reflective practice in debriefing (McDermott, 2016, p. 226).

Concept Mapping

For the proposed study concept mapping will be considered the intervention prebriefing activity. Concept mapping is defined as:

> A teaching strategy or method of visualizing relationships among various concepts. It includes a branching, hierarchical diagram of concepts showing how they are connected using arrows and labels to identify interrelationships. In simulation-based learning experiences, concept mapping can be used in preparation to help participants organize patient data, see relationships, and

understand the clinical presentation of the patient or during debriefing (Rowles, 2012 as cited in Meakim et al., 2013, p. S5).

Competence

Competence is defined as a "standardized requirement for an individual to properly perform a specific role. It encompasses a combination of discrete and measurable knowledge, skills, and attitudes that are essential for patient safety and quality of patient care" (Meakim et al., 2013, p. S5).

Outcome

In this project, the variable of the participant outcome will be measured. Outcome is defined as "measurable results of the participants' progress toward meeting a set of objectives. Expected outcomes are the change in knowledge, skills, or attitudes as a result of the simulation experience" (Meakim et al., 2013, p. S7).

Measurement

Defining measurement as it relates to the educational setting is critical. Measurement is "the process of quantifying a participant's abilities related to knowledge, skills, or attitudes in the achievement of objectives" (Meakim et al., 2013, p. S7).

Assumptions

Certain assumptions were made during the development of this proposal. One assumption is that concept mapping as an active learning strategy will be an effectual prebriefing assignment which will facilitate senior level students' performance during simulation. Another assumption is that senior-level nursing students' level of competence will be similar and thus the measure of clinical competence will be sensitive enough to detect differences. Students have a range of abilities as shown by their differing levels of achievement on course assignments and

tests. It is possible that the clinical competence measure could be a reflection of the students' previous course preparation and that students with superior grades will also do better on their performance in the SBL experience. Using a valid and reliable tool to measure a particular outcome is crucial to a successful research study (Waltz, Strickland, & Lenz, 2010). Another assumption is that the Creighton Competency Evaluation Instrument (C-CEI) and the faculty development and training process for its use will allow for valid and reliable measurement of the student's clinical competence.

Research Question

In the context of SBL focused on the safe care of one patient during an advanced medical-surgical course: which prebriefing activity either usual, care plan, or concept-mapping, has greater efficacy, in improving nursing students clinical competence, assessment, communication, clinical judgement, and patient safety scores, measured as an outcome of their performed actions during a SBL scenario?

Outline of Remaining Chapters

This report has been developed to meet the requirements of a manuscript dissertation. Instead of writing chapters for a traditional dissertation, manuscript chapters will be produced for publication. For this pilot study chapter two includes a literature review of prebriefing assignments and the evaluation of prebriefing's effectiveness in aiding student learning. Chapter three describes the research methodology for the study. Chapter four includes the results of the research study. Chapter five contains the analysis of the results in relation to the goals and theoretical underpinnings of the research study.

Chapter Summary

A quantitative research study comparing prebriefing activities effectiveness in improving clinical competence can add to the evidence-based teaching-learning knowledge base for nursing education. Using well developed educational strategies with proven efficacy can improve student achievement of learning outcomes that include clinical competence. These well-prepared students become graduates who are better equipped to handle the rigors of nursing practice. This proposed study could also add to the growing literature regarding the evaluation of students during SBL and the usefulness of the C-CEI.

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Chapter II

Review of the Literature: Manuscript 1

Literature Review of the Evaluation of Prebriefing for Simulation-Based Learning

Abstract

Introduction: This paper explores the phenomenon of prebriefing as part of simulation-based learning (SBL) in nursing education, to gain an understanding of the use of prebriefing and evaluation methodologies. Prebriefing is a phase of SBL where participants are provided preparatory materials, oriented to the situation and supplies, and given a chance to clarify their roles (Chamberlain, 2015; Lioce et al., 2015; McDermott, 2016; Meakim et al., 2013; Page-Cutrara, 2014; Karin Page-Cutrara, 2015; Page-Cutrara & Turk, 2017).

Methods: This literature review was completed using the process, developed by Hammick, Dornan, and Steinert (2010) because it focuses on healthcare education. To complete the literature review CINAHL, Medline, and key healthcare simulation websites were searched with an analysis of the most current publications from February 1, 2012, to January 31, 2017. 23 articles were found searching using the keywords prebriefing, simulation student preparation, pre-simulation, and simulation briefing.

Results: The 23 identified articles provided the data needed to answer the questions posed for the literature review. The articles included concept analyses, literature reviews, and research reports. 10 articles described prebriefing while the others described the measurement of a student outcome after a prebriefing activity.

Synthesis and Implications: SBL is a critical aspect of nursing education and includes a focus area of prebriefing. Previous research explored concept mapping as a prebriefing activity for

improved student clinical competence. More research determining the effectiveness of concept mapping as a prebriefing activity is required.

Healthcare delivery is quickly shifting to meet today's demands (USDHHS, 22 March 2016). The number of older adults in of the country is growing, changing the demographics of the patient population as well as the makeup of the healthcare workforce (USDHHS, n.d.-a). By 2030, 20% of the patient population will be 65 years or older while an estimated one-third of nurses are reaching retirement age. Thus healthcare workforce needs will continue to rise (IOM, 2003; USDHHS, n.d.-b). Nursing education programs must be prepared to replace the nurses reaching retirement age in addition to meeting the requirements for care of the aging population.

To ensure graduates of nursing programs are practice-ready, nurse educators must design curricula grounded in evidence-based teaching-learning modalities (Shultz, 2009). Nursing education programs must make sure graduates are acquiring the requisite knowledge and can apply that knowledge in the clinical settings (AACN, 2008; Benner, Sutphen, Leonard, & Day, 2010; IOM, 2011; NLN, 2010). To develop competent entry-level nurses, a multitude of educational theories and strategies have been utilized and studied to improve nursing curricula (Billings & Halstead, 2009; Shultz, 2009). While the evidence for various nursing education designs, processes, and activities is growing, continued research is needed to address gaps in the literature and improve pre-licensure nursing education (Shultz, 2009). SBL is a common educational strategy used in nursing programs. To use SBL to its fullest extent, more research is needed to determine best practices.

Background

Nurse educators have embraced SBL as a method that allows students to engage in meaningful learning while practicing in a safe setting where mistakes can be made (INACSL, 2015; Jeffries, 2005, 2016). SBL experiences are defined as:

> An array of structured activities that represent actual or potential situations in education and practice and allow participants to develop or enhance knowledge, skills, and attitudes or analyze and respond to realistic situations in a simulated environment or through an unfolding case study (Pilcher et al., 2012 as cited in Meakim et al., 2013, p. S9).

The teaching-learning activity of simulation and debriefing has been researched extensively including a longitudinal, randomized, controlled study (Dreifuerst, 2009; Hayden, Keegan, Kardong-Edgren, & Smiley, 2014; Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014; INACSL, 2015; Jeffries, 2016). The *International Nursing Association for Clinical Simulation and Learning* (INACSL) developed evidence-based best practice standards in simulation to help guide the use of simulation in nursing education (Boese et al., 2013; S. Decker et al., 2013; S. I. Decker et al., 2015; Ashley E. Franklin et al., 2013; Gloe et al., 2013; Lioce et al., 2015; Lioce et al., 2013; Meakim et al., 2013; Sando et al., 2013).

SBL prebriefing, as a learning strategy, is an emerging area of research for nursing education (Chamberlain, 2015; McDermott, 2016; Page-Cutrara, 2014; Karin Page-Cutrara, 2015). In the literature, surrogate terms for prebriefing included prescenario, prescenario huddle, presimulation preparation, briefing, presimulation briefing, and reflection-before-action (Chamberlain, 2015). In this paper, the term prebriefing will be used. Prebriefing occurs as the period before the simulation begins and can include a review of learning objectives, an orientation to the equipment and environment, simulation guidelines, and information or learning activities for the participant (Chamberlain, 2015; Ashley E. Franklin et al., 2013; Lioce et al., 2015; McDermott, 2016; Meakim et al., 2013; Page-Cutrara, 2014; Karin Page-Cutrara, 2015; Victor-Chmil, 2016). There have been attempts to provide conceptual clarity regarding prebriefing. However, confusion related to implementation and structure of prebriefing

continues. The need for best-practice evidence is required to improve student learning in simulated experiences (Boese et al., 2013; Chamberlain, 2015; Ashley E. Franklin et al., 2013; Jeffries, 2016; Lioce et al., 2015; Meakim et al., 2013; Page-Cutrara, 2014; Karin Page-Cutrara, 2015; Sando et al., 2013).

A systematic review of the literature was conducted to explore the state of the science for prebriefing. The next section describes the literature review process, including methods, questions, and the protocol.

Literature Review Methods

The method described by Hammick et al. (2010) was used to complete this literature review. They describe an evidence-based process to conduct a literature review for healthcare educational practices.

Review Question

A clear review question or set of questions helps guide a systematic review and is a critical step in the process (Hammick et al., 2010). The questions for this systematic review included:

1. What is the current evidence on using prebriefing for SBL?
2. What are the best practices in the evaluation of participant outcomes after a prebriefing assignment during SBL?

Review Protocol

Hammick et al. (2010) also detail the importance of a systematic process for the completion of the literature search, so that another investigator could reproduce the same process at a later date. The description of inclusion and exclusion criteria is necessary so the reader can grasp the search results and replicate if desired (Galvan, 2013; Hammick et al., 2010). The databases *The Cumulative Index of Nursing and Allied Health Literature (CINAHL)* and *Medline*

were searched looking for relevant articles on nursing education simulation. The first keyword in the searches was *simulation*, which was combined with the keyword *prebriefing* and then its synonyms *student preparation* and *briefing (*depiction of the search and elimination process, Figure 2). The use of simulation in nursing education has grown in the last fifteen years, and the concept of prebriefing is still in its infancy (Hayden, Smiley, et al., 2014). To capture the most current information on prebriefing in SBL the literature search was limited to articles published from February 1, 2012, to January 31, 2017, and written in English. The author reviewed *The National Council State Boards of Nursing* (NCSBN) and the INACSL websites for additional information and articles of interest. There was overlap between databases. However new materials were found with each search.

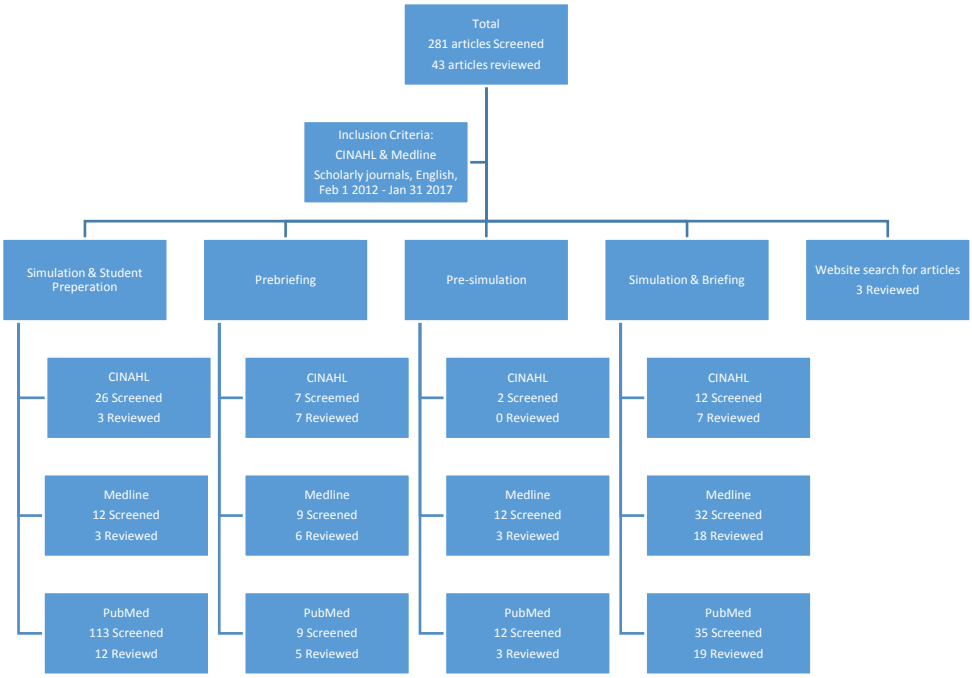

Figure 2.1 Process for Literature Search

After the completed search each citation's abstract was retrieved and read, to determine if the article addressed the questions guiding the literature review. One common reason for exclusion of articles from this literature review was an article's focus on the preparation of

simulation facilitators, not nursing student participants. Chosen articles focused on healthcare professionals, and excluded articles focused on other types of professions. In articles addressing nursing education, briefing was used synonymously with prebriefing for SBL activities. Another common definition of briefing is a written or oral summary of previously stated facts ("briefing," n.d.). Articles defining briefing in this manner were eliminated from the review as they were not synonymous with the concept of prebriefing. The remaining articles were read once and any pieces whose focus was not prebriefing, but some other aspect of simulation, were removed from the pool.

Literature Review Data Collection

When completing a literature review, the data must be sorted into a meaningful structure Evidence tables are an excellent strategy for organizing research studies (Galvan, 2013; Hammick et al., 2010). The final group of articles were reviewed in order of publication date, and divided into three thematic groups. The first group consisted of literature reviews, concept analyses, and descriptive articles that addressed the prebriefing aspect of SBL. The second and third groups were divided based on whether the learner outcome discussed student perceptions of prebriefing or a faculty measured outcome such as an evaluation of competence or time to completion of a skill in the SBL scenario. Grouping the articles helped to answer the questions posed for this literature review. Each group of articles was read as a group to analyze how their results address the literature review questions (Hammick et al., 2010). Information about each study was gathered and sorted into the evidence tables (see Table 2.1 for an example of the evidence table). The elements of information included in the evidence table were: author, date, learner outcome level, learner type and number, demographic data, methodology, analytical process, definitions, limitations, and results (see Appendix A for the literature review tables).

Table 2.1 Table of Evidence: Student Prebriefing for Simulation-Based Learning

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations

Note: systematic reviews, clinical practice guidelines, and qualitative research will not fit this quantitative single study reporting format, this type of information is reported in a narrative format.

Results

There are 23 articles in the three evidence tables and of those only thirteen evaluated the effects of prebriefing. Ten articles described the prebriefing activity used in the SBL experience. Six articles assessed the effectiveness of prebriefing using faculty measured outcomes. Some of these articles also asked students to complete some evaluation of their prebriefing as well. Seven articles focused on student perceptions of prebriefing activities prior to a SBL scenario. The participant outcome measures included self-efficacy, student satisfaction, clinical judgment, and professional competence. Most participants were undergraduate nursing students. However other groups included nurse practitioner students, medical students, medical residents, and pharmacy students. A majority of the participants in the different articles were from parts of the United States, but some were from Canada and Australia.

Question 1: Using Prebriefing

Jeffries (2005, 2016) began the development of a simulation model and continued to develop that model into a theory. One manipulatable variable of the SBL experience is prebriefing (Jeffries, 2016). Currently, there are two completed literature reviews and one literature review protocol regarding prebriefing (Page-Cutrara, 2014; Rudolph, Raemer, & Simon, 2014; Tyerman, Luctkar-Flude, Graham, Coffey, & Olsen-Lynch, 2016). Additionally, there are two published concept analyses of prebriefing (Chamberlain, 2015; Karin Page-Cutrara, 2015). In the concept analyses the following surrogate terms were identified; pre-scenario, pre-

simulation, preparation, briefing, pre-scenario huddle, pre-simulation briefing, and reflection-before-action (Chamberlain, 2015; Karin Page-Cutrara, 2015).

Prebriefing is used to describe many different activities that occur before the simulation scenario. These activities include a review of learner objectives, an orientation to the simulation space and any medical supplies or mannequin(s) that are to be used (Chamberlain, 2015; Ashley E. Franklin et al., 2013; Lioce et al., 2015; McDermott, 2016; Meakim et al., 2013; Page-Cutrara, 2014; Karin Page-Cutrara, 2015; Rudolph et al., 2014; Victor-Chmil, 2016). The simulation facilitator will also review processes for participant communication, simulation roles, the degree of confidentiality, level of evaluation, and encourage participants to suspend disbelief (Chamberlain, 2015; Lioce et al., 2015; McDermott, 2016; Page-Cutrara, 2014; Karin Page-Cutrara, 2015; Rudolph et al., 2014; Victor-Chmil, 2016). Strategies for conveying patient information have been used, including providing access to a simulated patient health record and giving a nursing shift report (Chamberlain, 2015; McDermott, 2016; Page-Cutrara, 2014; Karin Page-Cutrara, 2015). Different ways to support student preparation for SBL have been tried. These strategies include; mapping out care on a whiteboard before the scenario begins, practicing required skills, creating concept maps or nursing care plans for the assigned simulated patient, reading preparatory texts, or filling out preparatory worksheets (Chamberlain, 2015; Page-Cutrara, 2014; Karin Page-Cutrara, 2015; Rudolph et al., 2014; Victor-Chmil, 2016). Engaging in these prebriefing activities creates a safe place for learning and encourages the participant to engage in more in-depth learning. Prebriefing sets the stage for the scenario and effective debriefing once the simulation is complete (Chamberlain, 2015; Karin Page-Cutrara, 2015; Rudolph et al., 2014; Victor-Chmil, 2016). Without them the scenario participant may be

confused, hampering learning due to a less robust activity, and the learner may blame the facilitator for their negative experience (Rudolph et al., 2014).

Question 2: Evaluation of participant outcomes

The intervention prebriefing activities varied among the different research projects and included readings, lecture, a lab workshop, watching voice-over PowerPoint, watching expert modeling on video, online group discussions, and concept mapping. Some control groups had a prebriefing activity that required a similar level of participant effort, while others were offered less time consuming prebriefing activities. Atayee, Awdishu, and Namba (2016) provided all students the same prebriefing activity. Thus no comparison of control and intervention groups was available. A. Franklin, Sideras, Gubrud-Howe, and Lee (2014) provided an example of expert role modeling of competent care via video as the intervention SBL prebriefing exercise. While the control prebriefing activity was reading preparatory materials. A. Franklin et al. (2014) had a secondary intervention group who watched a voice-over PowerPoint for their prebriefing. Fernandez et al. (2013) also used voice-over PowerPoint that addressed best practices and implementation of teamwork as the intervention prebriefing, and the control group received a voice-over PowerPoint that talked about teamwork in healthcare settings as well as roles in simulation. The intervention group of Page-Cutrara and Turk (2017) engaged in a prebriefing activity, labeled the process concept mapping, which was completed with the usual prebriefing activities. The control group completed the usual activities but lacked a placebo treatment to replace the concept mapping exercise. To verify the fidelity of the concept mapping prebriefing a search of Page-Cutrara's (2015) dissertation revealed that the assignment more closely met a careplan worksheet process.

Jeffries (2016) explains that the outcome of SBL can occur at multiple levels. These changes can transpire at the participant, patient, or systems level. Through careful development of effective prebriefing activities, the simulation facilitator hopes to encourage better learning and improvement in practice at all levels. To evaluate the effectiveness of prebriefing the most direct path is to assess the participant outcomes. The prebriefing outcomes have been assessed in both qualitative and quantitative ways. The participant outcomes range from self-report of self-efficacy and self-confidence to faculty evaluations of competence and clinical judgment. Husebø, Friberg, Søreide, and Rystedt (2012) described a qualitative analysis of videotaped simulation scenarios after participants engaged in a rigorous and complete prebriefing. The learners struggled with particular portions of the SBL scenario even with the prebriefing process (Husebø et al., 2012). Rochester et al. (2012) determined through a qualitative analysis of focus group reactions to SBL that participants liked the prebriefing activities and felt the scenarios were better because of the preparation. Different Likert Scale tools have been used to measure participant's perceptions of prebriefing and SBL, ranging from confidence to self-efficacy (A. E. Franklin, Gubrud-Howe, Sideras, & Lee, 2015; Kable, Arthur, Levett-Jones, & Reid-Searl, 2013; Kelly, Hager, & Gallagher, 2014; Leighton, Ravert, Mudra, & Macintosh, 2015; Nevin, Neill, & Mulkerrins, 2014; Page-Cutrara & Turk, 2017). When simulation is used to assess participants' ability to complete a skill successfully, time-to-completion can be utilized as a measure of prebriefing effectiveness. It has been suggested that a prebriefing activity is productive if the participants successfully meet the requirements of the scenario more quickly than those who don't have the same prebriefing (Cheung et al., 2016; Fernandez et al., 2013).

Faculty measure competence and clinical judgment using rubrics and checklists. These observational ratings have been used as tools to assess the difference prebriefing can make for

participants' competence and clinical judgment (Atayee et al., 2016; Fernandez et al., 2013; A. Franklin et al., 2014; Page-Cutrara & Turk, 2017). Atayee et al. (2016); Fernandez et al. (2013) used self-made tools to measure competence, which lacked rigorous validity and reliability analyses. A. Franklin et al. (2014) utilized the *Creighton Simulation Evaluation Instrument* (C-SEI), which had been tested and was found to be a valid and reliable tool. The C-SEI was recently updated and now called the *Creighton Competency Evaluation Instrument* (C-CEI), which was utilized in a multi-site, multi-year study and continues to be a valid and reliable measurement tool (Hayden, Smiley, et al., 2014). Page-Cutrara and Turk (2017) used the newer C-CEI and its subscale the C-CEI-CJ to measure competence and clinical judgment.

There were times when the assigned prebriefing activity made a statistically significant difference in the participants' subsequent achievement during the SBL scenario. On other occasions, the results were statistically insignificant. Fernandez et al. (2013) found that their expertly designed voice-over PowerPoint made a statistically significant difference in the learners' teamwork behaviors as well as their patient care behaviors. A. Franklin et al. (2014) only had 20 participants and did not find a significant difference between C-SEI scores for either intervention group and the control group. Page-Cutrara and Turk (2017) had a total of 76 participants and found a statistically insignificant difference between the intervention and control group, C-CEI and C-CEI-CJ scores, even when controlling for students length in the program.

Conclusions

As depicted in this literature review of recent research, research is needed to determine the most effective prebriefing activities for particular nursing SBL experiences as well as the appropriate time or dose allotted for prebriefing activities (McDermott, 2016). Concept mapping can be a powerful tool for meaningful learning. Research to better understand concept

mapping as a prebriefing method and the related student outcomes are vital to improving practice-ready graduates of nursing programs (Daley, Morgan, & Beman, 2016; Page-Cutrara & Turk, 2017). While Page-Cutrara and Turk (2017) developed and implemented a well designed prebriefing study, there were some critical limitations. The sample size was small, and there may have been a high degree of selection bias as so few of the potential students opted to participate in the study. The theoretical underpinnings for concept mapping were not defined, and the intervention could have been implemented with a stronger theoretical basis. The control group and the intervention group were provided much of the same prebriefing activity. However, the control group did not get a placebo treatment. So any changes that did occur could merely be related to the increase in participant effort pertaining to creating concept maps. A study to address some of these issues and improve the understanding of prebriefing in SBL is warranted. Future research must explore patient and systems level outcomes from SBL delivered with concept-mapping prebriefing.

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Chapter III

Methods: Manuscript 2

A Novel Method for a Pilot Study to Evaluate the Effectiveness of Prebriefing Activities on Clinical Competence

Abstract

Nursing education is challenged to radically change to meet current workforce demands and the evolving healthcare needs of the population (Benner, Sutphen, Leonard, & Day, 2010; IOM, 2003, 2011). Students must engage in reflection-before-action and effective clinical reasoning in preparation for clinical practice after graduation. Prebriefing as a variable in simulation-based learning (SBL) provides students with an opportunity to organize their thinking and prepare for a simulated clinical situation. This paper will explain the design and implementation of the prebriefing for a simulation-based learning (SBL) research study. The study aimed to determine the effect different prebriefing assignments had on student performance during the subsequent SBL scenario. The performance outcome was the overall competence, assessment, communication, clinical judgement, and patient safety scores measured using the *Creighton Competency Evaluation Instrument* (C-CEI) and its subscales (Creighton, 2016a; J. K. Hayden, Keegan, Kardong-Edgren, & Smiley, 2014; J. K. Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014).

After the release of the IOM report *Health Professions Education: A Bridge to Quality*, nursing education programs have been tasked with ensuring their students acquire the knowledge, skills, and attitudes required to improve safe care for patients in increasingly complex healthcare settings (AACN, 2008; Benner et al., 2010; Cronenwett et al., 2007; IOM, 2003, 2011; NLN, 2010). In the ensuing years, there has been a dramatic increase in the use of SBL as a means of ensuring students exposure to common critical nursing situations (J. K. Hayden, Smiley, et al., 2014; Jeffries, 2016). SBL provides students with an opportunity to participate in typical nursing situations while practicing evidence-based care, with no risk to an actual patient (Meakim et al., 2013).

Problem and Significance to Nursing

Problem, Population of Concern and Prevalence

To fulfill the increasing need for nurses while also addressing the need to replace a retiring workforce, the estimated demand for new registered nurses (RNs) is 1.13 million in the U.S. (ANA, 2014; USDHHS, 2014). The number of graduates of nursing programs earning a license as a Registered Nurse (RN) has been steadily increasing since 2013 until now (see table 3.1) (NCSBN, 2014, 2015, 2016, 2017).

Table 3.1: Licensure Trend for 2013-2016

Year	**New licensees**
2013	190,224
2014	203,276
2015	206,170
2016	232,385

However, by 2025 a projected 1 million RNs will leave practice due to retirement or career changes (AACN, 2014; USDHHS, 2014). This attrition leaves fewer seasoned nurses to orient and mentor this growing group of new nurses. Evidence nationally regarding the delivery of healthcare has shown too frequent problems with the quality of care and patient safety, and

improvement of nursing education is part of the solution to this complex issue (IOM, 2003, 2011). Educators must adequately prepare students for the transition to practice in this highly demanding healthcare environment (Benner et al., 2010; IOM, 2011). Nursing education programs continue to evolve to meet the demands of the practice environment with a growing emphasis on evidence-based teaching and learning strategies (Benner et al., 2010; Billings & Halstead, 2009; IOM, 2011; Shultz, 2009). However, nurse educators are in need of valid and reliable teaching and evaluation strategies in this changing healthcare environment, to prepare graduates of nursing programs for the rigors of clinical practice (AACN, 2008; NLN, 2010; Shultz, 2009).

Problem.

With significant changes in the US healthcare system and educational teaching/learning methods, research is required to address gaps in the science of best practice in nursing education. One of the areas for further research is in the use of and best practice for nursing SBL. SBL experiences are defined as:

> An array of structured activities that represent actual or potential situations in education and practice and allow participants to develop or enhance knowledge, skills, and attitudes or analyze and respond to realistic situations in a simulated environment or through an unfolding case study (Pilcher et al., 2012 as cited in Meakim et al., 2013, p. S9).

This study will focus on one aspect of SBL, prebriefing. SBL experiences can lead to formative or summative evaluations and can engage the participant in simple to complex concepts, based on the desired learning objectives of the activity (Boese et al., 2013; S. Decker et al., 2013; S. I. Decker et al., 2015; Gloe et al., 2013; Lioce et al., 2015; Lioce et al., 2013; Meakim et al., 2013; Sando et al., 2013). Confusion remains regarding the amount, type, and quantity of prebriefing activities for nursing students in simulated clinical experiences.

Purpose

The goal of this pilot study was to compare the SBL outcomes of clinical competence for pre-licensure nursing students based on assignment to one of the following situations: standard simulation prebriefing, nursing care-plan prebriefing, or concept mapping prebriefing.

Hypotheses

The research hypotheses that will be evaluated in this study are:

1. A prebriefing activity of concept-mapping will improve nursing clinical competence scores more than a prebriefing care-plan activity or standard prebriefing orientation activities, as measured by the *Creighton Competency Evaluation Instrument* (C-CEI) scale.
2. A prebriefing activity of concept-mapping will improve nursing assessment scores more than a prebriefing care-plan activity or standard prebriefing orientation activities, as measured by the C-CEI-assessment subscale.
3. A prebriefing activity of concept-mapping will improve nursing communication scores more than a prebriefing care-plan activity or standard prebriefing orientation activities, as measured by the C-CEI-communication subscale.
4. A prebriefing activity of concept-mapping will improve nursing clinical judgment scores more than a prebriefing care-plan activity or standard prebriefing orientation activities, as measured by the C-CEI-clinical judgment subscale.
5. A prebriefing activity of concept-mapping will improve nursing patient safety scores more than a prebriefing care-plan activity or standard prebriefing orientation activities, as measured by the C-CEI-patient safety subscale.

Research Design

This pilot study used a quasi-experimental double-blind, posttest only, comparison group design. The course faculty chose the simulation scenarios because they are critical situations for students to encounter before graduation (see Appendix B). These simulated nursing situations require students' use of their knowledge and skills, to assess, communicate, make clinical judgments, and provide safe patient care. A measurable student outcome of a SBL experience is the provision of competent care and making correct clinical judgment decisions (Jeffries, 2016). These outcomes were measured using the C-CEI (Creighton, 2016a; J. K. Hayden, Keegan, et al., 2014; J. K. Hayden, Smiley, et al., 2014; Page-Cutrara & Turk, 2017).

Setting and Sample

Setting.

The setting was a medium-sized private, religiously affiliated, urban university, located in the Midwest, with a prelicensure nursing program that currently uses SBL as part of its laboratory learning activities. Onsite educators consisted of; a simulation lab coordinator and experienced faculty trained in teaching using SBL. The university provided a fully equipped simulation lab space dedicated to the nursing department. The setting choice was one of convenience as the Student Principal Investigator (SPI) has access to the site.

Sample size.

For this study, convenience sampling was used due to feasibility issues. Convenience sampling is a common choice when working with a particular student group (Grove, Burns, & Gray, 2013). While this is a pilot study, it is important to know what the sample size should be for the resultant final study.

A power analysis was completed using C-CEI data to determine the eventual sample size of a full study (J. K. Hayden, Smiley, et al., 2014). The data for the power analysis was chosen from Table 10 because those participants were in a medical/surgical course, and they most closely resemble this pilot study's nursing students in their final year of their program (J. K. Hayden, Smiley, et al., 2014, p. S21). The power analysis was computed to estimate levels of power that might be seen. Further, estimates were calculated across potential sample sizes varying from 48 to 45, 40, and 35 to reflect the realistic possibility of attrition. The results for a sample size of n=40 were reported in this text (see Appendix C for the other sample size scenarios). Table 10 in J. K. Hayden, Smiley, et al. (2014) reported a standard deviation (SD) of 6.0, which was used for the power analysis. The power analysis revealed that with an alpha of 0.05, an n=40 in each group, and a difference of five points in between group scores the power is very high at 0.993. If there is a difference of four points in between group scores the power is high at 0.838. (see graph 3.1 for the power analysis completed using *Pass 12* (Hintze, 2013). An adequate pilot size was determined to be 30 participants, 10 in each group, which is 25% of the intended participant groups.

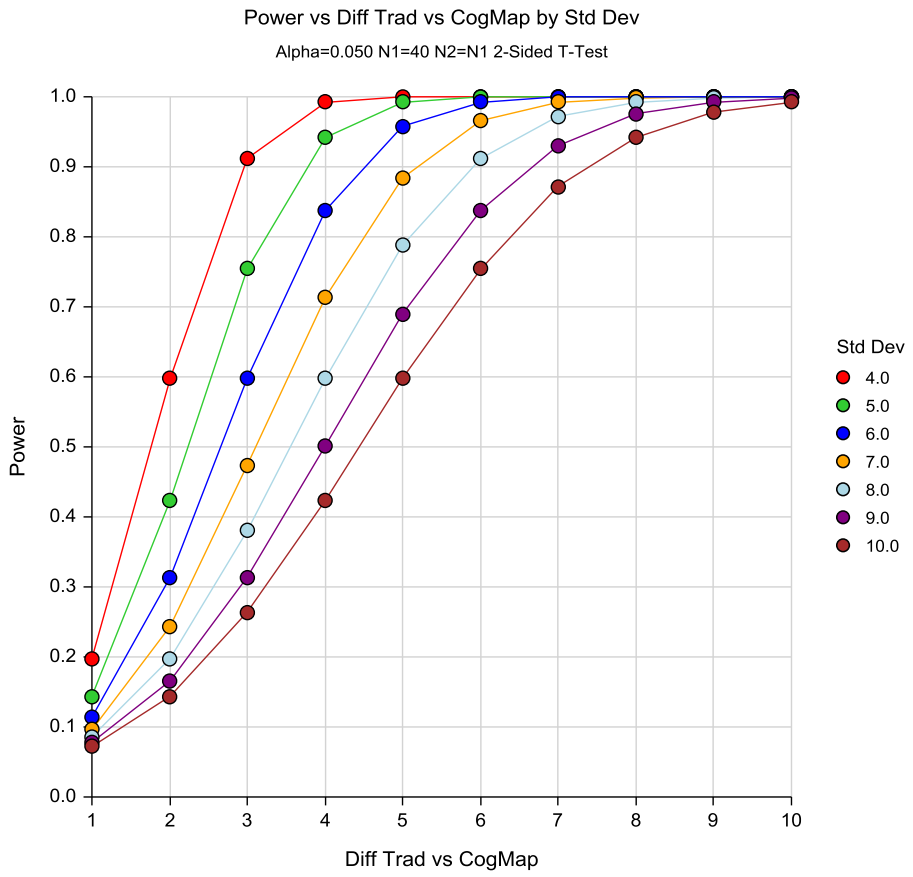


Figure 3.1 Power Analysis Graph

Subjects.

The subjects included nursing students in their final year of nursing education at a single associate degree prelicensure program in a large Midwestern city. All students participated in a complex medical/surgical course containing SBL experiences during some of their laboratory sessions. All students were required to take part in the simulation for the *Safe Care of One Patient*. The *Safe Care of One Patient* SBL event was designed to be a skills validation of clinical judgment and clinically competent care, so each student is evaluated independently as the primary nurse.

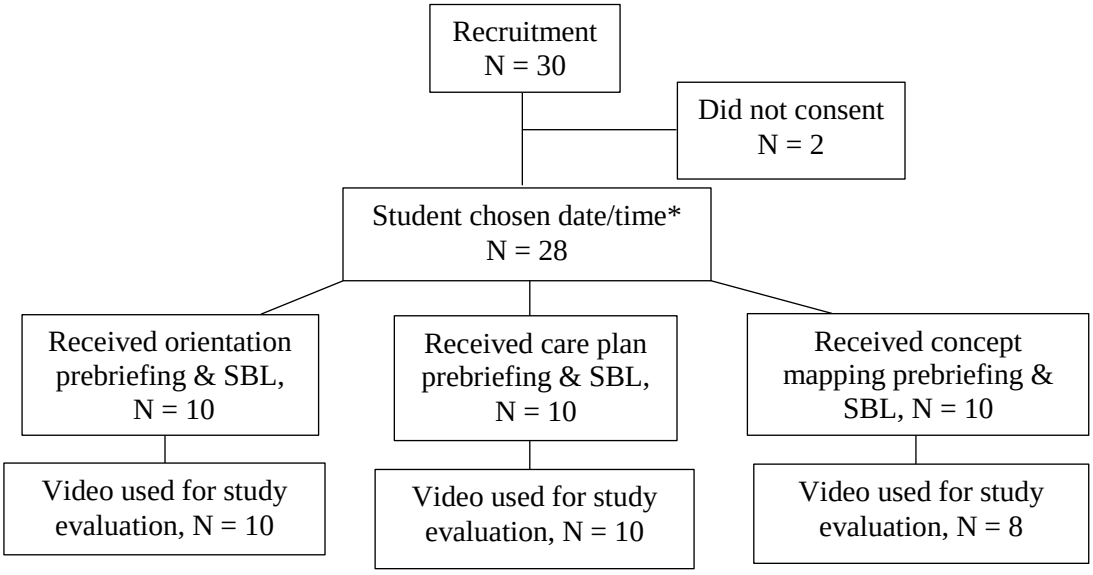
Recruitment.

The SPI posted an announcement on the course management system (CMS) site providing information regarding the study. This information included the day and time the SPI planned to explain the study to the students as well as a copy of the consent form. The SPI attended a classroom session on the prescribed day and explained the research project to the students. Each student received a copy of the consent form. The SPI answered any questions students had at that time. Students were encouraged to e-mail or call the SPI if they had further questions. The SPI explained that all students were required to complete the SBL activity, the research used only information gathered from their assigned lab activity, and their experiences would be video tapped regardless of their decision to participate in the study. Consent forms were collected on the day the research study was presented in the classroom and on the SBL day.

Assignment.

Scheduling students for SBL events can be complicated. Students can become frustrated if they feel assignments for SBL events are unfair. To limit student frustrations the teaching team posted an online calendar and students choose their simulation time slot before the introduction of the research study. The link to the calendaring system was sent to students with clear directions on how to access the schedule as well as the time the calendar system opened for students. Contamination of control and intervention groups in educational research can readily occur. The control and intervention groups were scheduled to combat the issue of participant contamination. The control group went first, the care plan group second, and the concept map group third. To reduce type 1 and type 2 errors, students will come from a single cohort, enrolled in the same nursing program. Minimizing the differences in the population provides for

a more uniform group allowing less variation to chance, which increases internal validity (Browner, Newman, & Hulley, 2013).



*Students choose the date and time of their SBL event before knowledge of the study and were blinded to the control and treatment assignments

Figure 3.2 Research Design

Instrument

For this study, the C-CEI and subscales were used to measure nursing clinical competence during students' SBL scenarios (J. K. Hayden, Keegan, et al., 2014; J. K. Hayden, Smiley, et al., 2014). Student self-evaluation of competence, while useful in encouraging a reflective practice, does not provide a professional evaluation of competence (Lasater, 2007). A faculty evaluation of students' nursing professional competence is needed. The C-CEI is a tool that allows faculty to evaluate for competence, and has been shown to be valid and reliable in previous studies (J. K. Hayden, Keegan, et al., 2014; J. K. Hayden, Smiley, et al., 2014; Page-Cutrara & Turk, 2017).

Creighton Competency Evaluation Instrument (C-CEI).

The original C-CEI instrument was known as the *Creighton Simulation Evaluation Instrument* (C-SEI) (Adamson et al., 2011; Parsons et al., 2012). The *National Council State Boards of Nursing* completed a multisite, longitudinal, randomized, controlled study to evaluate replacing clinical hours with simulation (J. Hayden, Jeffries, & Kardong-Edgren, 2012). To assess the difference in clinical competence between on-site clinical and simulation, the researchers needed a tool for both settings. The C-SEI was modified to become the C-CEI which could be used to evaluate student performance in simulation and on-site clinical rotations for both associate and baccalaureate degree students (Creighton, 2016a; J. K. Hayden, Keegan, et al., 2014; J. K. Hayden, Smiley, et al., 2014).

Scoring.

The C-CEI is made up of 23 evaluative statements across four different subscales including assessment, communication, clinical judgment, and patient safety (Creighton, 2016a). The tool is designed so that a faculty evaluator observes student performance, and rates the student on each competency statement (Creighton, 2016b). If the item does not apply to the situation, then the rater selects N/A and removes the item from the calculation. All pertinent competency statements must be scored as a zero or one. A rating of zero means the student has not achieved competency, whereas a score of one means the student attained competence. The final rating is divided by the total number of applicable items, and the final evaluation is reported as a percentage score. The same process may be completed for the subscales in the tool. (See Appendix D for an example)

Validity and Reliability.

J. K. Hayden, Keegan, et al. (2014) reviewed the previous validity and reliability testing for the C-SEI and completed more for the C-CEI for its eventual use in the NCSBN NSS. The pilot study of the C-SEI included content validity testing with a panel of experts (Todd, Manz, Hawkins, Parsons, & Hercinger, 2008). The inter-rater reliability agreement ranged from 84.4-89.1%, while individual items ranged from 62.5-100% (Todd et al., 2008). Adamson et al. (2011) found an intraclass correlation (2, 1) (95% CI) was 0.952 (0.697, 0.993) for interrater reliability. Additionally, interrater test-retest reliability was evaluated using intraclass correlation (3, 1) (95% CI) which was 0.883 (-0.001, 0.992) (Adamson et al., 2011). Internal consistency as a measure of validity and reliability of the C-SEI was reported with the Cronbach's alpha of 0.979 (Adamson et al., 2011).

For the C-CEI, J. K. Hayden, Keegan, et al. (2014) determined content validity by having faculty rate the competency statements on a four-point Likert scale, where 1=strongly disagree, and 4=strongly agree. The panel of faculty agreed that each behavior was a required element (M=3.89, SD=0.19), that the actions reflected their assigned category (M=3.86, SD=0.22), and the behaviors were understandable (M=3.78, SD=0.27) (J. K. Hayden, Keegan, et al., 2014). The C-CEI interrater reliability was reviewed in multiple ways. The overall agreement between the expert rater with the panel of raters was 79.4%, and the Cronbach's alphas were 0.974-0.979 (J. K. Hayden, Keegan, et al., 2014). Additionally, the Kappa scores suggested fair to moderate agreement of the rates, with a range of 0.316-0.453 (J. K. Hayden, Keegan, et al., 2014). A group of faculty 32, chosen because they used the C-CEI to evaluate students in both clinical and simulation, rated the tool on its usability using a four-point Likert scale where 1=strongly

disagree, and 4=strongly agree. The results were positive for usability in clinical (M=3.10, SD=0.25) and simulation (M=3.25, SD=0.38), however somewhat easier to use in simulation.

Faculty Facilitator and Evaluator

Each faculty simulation facilitator (FSF) viewed the training videos provided by *Creighton University* (Creighton, 2016b). Additionally, the FSFs followed all procedures laid out in the video to ensure a valid and reliable C-CEI rubric. The FSF team met to determine minimum competence for each item on the C-CEI as it related to the assigned SBL scenario (see Appendix E) (Creighton, 2016b). The FSF team used the blank facilitator discussion worksheet to discuss the required minimum competency and recorded the expectations on the worksheet (see Appendix F) (Creighton, 2016b). The FSF team decided to include the participant's answers from the debrief session when evaluating for the items on the C-CEI (Creighton, 2016b). The faculty simulation evaluators (FSEs) were blinded to the control and treatment groups.

Data Collection Procedures

All procedures will be outlined in an operations manual to reduce random and systematic error (Grady & Hulley, 2013). The significant steps for the study procedure will be completed in the following order:

1. Training of faculty who participate as data collectors for recruitment, consent, and data collection: It is crucial that data collectors carefully follow the study implementation guidelines to enhance the precision and accuracy of the data collected (Grady & Hulley, 2013).
2. Recruitment: The SPI alerted students to the study one week prior to recruitment introduction with a posting on the CMS announcement page including contact information (see Appendix G). The SPI attended a classroom session to provide a general explanation of the study, hand

out consent packet (see Appendix H), and offer to meet with any student who wants further information over the phone or in-person.

3. Confidentiality, informed consent, subject risk, and other ethical concerns are addressed in the section on IRB protocols at the end of this chapter.
4. During the two SBL lab activity days, the SPI provided a meal to all SBL participants regardless of participation in the study.
5. Eligibility: All students enrolled in the course were eligible to participate in the study.
6. Demographic data were collected both when consent was obtained and after final grades were submitted. The demographic data included age, gender, final medical/surgical course grade, race and ethnicity. This data helped to describe the sample. The forms were stored in a locked cabinet within a locked office, and electronic data was stored in a password-protected database.
7. *Creighton University Department of Nursing* (Creighton, 2016b) provides training modules on their website, for all evaluators using the C-CEI, free of charge. All faculty who participated as FSFs or FSEs watched the training videos and used the team developed simulation evaluation materials.
8. The SPI created and implemented both the care-plan prebriefing and the concept-map prebriefing intervention training and support materials, with support and feedback from the FSF at the university. The FSF provided the usual prebriefing that the students typically received (see Appendix I)
9. The students in the study had participated in SBL in every nursing course, so they were aware of simulation laboratory layout and had a working knowledge of the space. They had used the academic electronic health record (AEHR) for the duration of their nursing

coursework, and so were able to use this tool. The student's previous knowledge allowed for a shorter orientation time than if this was their first time in the simulation laboratory.

10. On the SBL lab day, all students were provided day-of-clinical preparation forms for the care of the assigned simulated patient. These forms are the forms used during the student's on-site clinical rotations with live patients (see Appendix I). Those students in the control group went directly to the simulation room at their assigned time. Once in the simulation room they were given an orientation to the simulation space, received a change-of-shift report on the simulated patient, and were provided 40 minutes to access the AEHR and plan their care of the patient.
11. Students in both intervention groups started their lab activity in a separate prebriefing lab room. The students watched a narrated PowerPoint on their assigned prebriefing activity for which they would be engaging to ensure consistent instruction (see Appendix J). They were given the day-of-clinical planning sheet, and the SPI read them the change-of-shift patient report. They were then provided access to the AEHR to review the simulated patient chart. These students were provided forty minutes to complete their assigned prebriefing activity before the SBL scenario and encouraged to work together and learn from one another. When the prebriefing session was completed, the students received the same orientation to the simulation space, as the control group, before beginning their simulated patient care. The assigned intervention prebriefing activity was completed in groups of two to three students. The SPI was available for student questions regarding the prebriefing activities.
12. The Careplan groups were provided with a worksheet that asked questions pertinent to planning the care of any patient while the concept-map groups were provided the same guiding questions in a list (see Appendix K & L). The Careplan groups worked

independently and then took the final 10 minutes to share their ideas and plans. The Concept-map groups took 10 minutes to individually explore the patient information and then worked together to develop a concept-map on the classroom whiteboard for the next 30 minutes. The use of the same questions allows for the evaluation of care-plan versus concept-map as a prebriefing assignment.

13. Sets of two to four students worked together in each of the intervention prebriefing groups. The care-plan groups completed their prebriefing worksheets and then discussed their plans during the final ten to fifteen minutes before their SBL activity. The students could then add or adjust their plan based on the discussion. In the concept-map groups, one student would volunteer to draw the concept-map on the whiteboard in the classroom. These students discussed all the questions and built the concept-map together. In the final ten minutes, the students edited their plans with the information discovered during the concept-mapping exercise.
14. Two FSEs, who were blinded to the participants' placement in the standard, care-plan, or concept map prebriefing intervention activity, evaluated all participants.
15. The SBL scenarios were videoed for the course. The videos allowed the FSEs to review the participants' simulation behaviors after the semester ended and helped to maintain their blinding to the group placement.

Data Management

A pretested plan for data management helps to ensure the correct data is collected and stored appropriately (Grady & Hulley, 2013). The SPI and the biostatistician implemented a data management plan. All paper forms which include any study data were kept in locked file cabinets in the SPI's locked office. A separate CMS site for storage of the participant videos was

created for the study. The CMS site was only accessible by the SPI, St. Catherine University simulation lab coordinator, the FSEs, and St. Catherine University IT administrators. The SPI entered the data into a password protected database on a work-issued hard drive accessed through a work-issued laptop. The work-issued laptop and hard drive meet both the *Family Educational Rights and Privacy Act* (FERPA) requirements as well as the *Health Insurance Portability and Accountability Act* (HIPAA) requirements (USDHHS, n.d.; USDoE, 2015).

Only the SPI, the Nursing Applied Learning Lab (NALL) Coordinator, FSEs, and the information technology administrators at St. Catherine University had access to the study data. The NALL Coordinator of the Nursing Learning Resource Center had data access to upload the videos to the CMS, which was then evaluated by the FSEs. It is typical for an information technology systems administrator to have access to any drives or databases as a technology support professional, however, they, like all employees of educational institutions, agree to and sign a commitment, to protect student and patient data. The study plan received Institutional Review Board (IRB) approval from the University of Wisconsin, Milwaukee (UWM) as the institution of record and at St. Catherine University as the study institution.

The SPI explained to all the students that their SBL experience would be videoed and explained that the only people who would access the videos were the SPI, the NALL coordinator, and the FSEs. The students were told that a systems administrator would only be called if there is a technical issue with the database systems. The CMS was needed to store the video recordings of the simulations. Another system was required to store the data gathered regarding the participants. The data management plan included the following steps:

1. To decrease the risk of lost data, all data that could be managed electronically was generated and stored via digital means.

2. Before the data analysis, the SPI and an FSE cleaned the data using a two-person, cross-checking technique. As an additional safeguard, the frequency distribution of all variables was checked before proceeding with the analysis.
3. Data were checked for sufficient variability in the dependent measure.
4. Every case included a C-CEI total score and the four subscale scores for the outcome variable.
5. Both FSEs noted that one FSF provided more guidance to the students. The FSEs were instructed to award points only if the participant completed the required behaviors before the unplanned cues by the FSF.
6. The SPI kept a log of all problems requiring modifications which included tracing the history and rationale for needed adjustments as required by IRB protocol.

Data Analysis Plan

The first step was to complete frequency, mean and standard deviation analyses of the demographic statistics and outcome variable with subscales for the study. The SPI then checked for skewness in the data, evaluated if the standard deviation was large or small, and verified that the data was normally distributed. For data severely skewed with an abnormal distribution, then the median and range results would be reported. Then non-parametric tests would be used to analyze the data, or a logarithmic transformation would need to be performed. To examine differences in groups with one dependent variable and no covariates and two independent variables, the ANOVA is used (Cronk, 2014; Polit & Beck, 2008).

Descriptive statistics were used to describe and summarize the cohort sample characteristics (Meyers, Gamst, & Guarino, 2013; Polit & Beck, 2008). The continuous variable of age was described using a mean and standard deviation. The categorical variables of gender,

course grade, race and ethnicity were described using frequencies, frequency distributions, and percentages (Meyers et al., 2013; Polit & Beck, 2008). Reliability was analyzed using Cronbach's Alpha (Meyers et al., 2013). Interrater reliability was examined using the Kappa statistic to determine uniformity among the two raters (Landis & Koch, 1977)

Table 3.2: Data Management and Analysis

Research Question	Is there a difference between nursing students' clinical competence and clinical judgment scores, measured as an outcome of their performed actions in an SBL scenario, based on their completed prebriefing assignment?
Subjects	Nursing students, taking a medical/ surgical course, in their final year of a prelicensure program.
Variable	IV: Placebo prebriefing assignment Or Treatment prebriefing careplan assignment Or Treatment prebriefing concept-map assignment
	DV: Professional nursing clinical competence 1. Total score 2. Subscales a. Assessment b. Communication c. Clinical Judgment d. Patient Safety
Measurement tool	C-CEI
	descriptive data - Self-report, retrieval from archived course grade
Level of Measurement	C-CEI: Interval 0 – 100
	Gender: Nominal Male, Female
	Scenario: Nominal Day one, Day two
	Age: Ordinal 1. 21 – 25 2. 26 – 30 3. 31 – 35 4. 36 – 40 5. 41 – 45 6. 46 – 50
	Medical/Surgical Course Grade: Ordinal 1. A 2. A- 3. B+

	4. B 5. B- 6. C+ 7. C 8. C- 9. D+ 10. D 11. D- 12. F
	Race/Ethnicity 0. None reported 1. African 2. African American 3. American Indian/Alaska Native 4. Asian/Pacific Islander 5. Hispanic/Latino 6. White 7. Multi-response
Statistical Test	Descriptive statistics of the three groups
	ANOVA
	Pearson chi Square
	Kappa
	Independent sample *t*-test
	Cronbach's alpha

Unit of analysis = one student's score on C-CEI measure

Ethical Considerations

This research project used human subjects, so approval from the IRB at the University of Wisconsin-Milwaukee and St. Catherine University was obtained. For IRB approval to be awarded, the SPI addressed the following criterion: risks were minimized, risks were reasonable, selection of participants was equitable, informed consent was obtained, and confidentiality was maintained (Lo & Grady, 2013). For this study, the SBL experience covered topics crucial to the course and was pertinent to the material the students were learning. Both types of educational intervention prebriefing assignments had the potential to help the students. Students receiving the usual prebriefing still participated in the SBL experience, so all students engaged in meaningful learning for the course. Additionally, concept-mapping is developed based on

theoretical knowledge of meaningful learning and can support students to reflect before, during, and after action (Daley, Beman, Morgan, Sheriff, & Kennedy, 2017; Daley, Morgan, & Beman, 2016; Lasater, 2007; Page-Cutrara & Turk, 2017). There was the possibility that some students preferred other learning activities rather than creating care plans, concept maps, and participating in simulation. However, this risk was no different than students engaging in any other assignments required for the course, which might not be the best match for a student's particular learning style. However, all learning activities provide an opportunity to engage in learning as did these prebriefing and SBL activities.

The data was kept confidential as part of the research study and because Federal guidelines require student information to be kept confidential (USDoE, 2015). All research information was kept in locked file cabinets or password protected databases maintained by the St. Catherine University. Only the SPI knows the password for computer and database space provided by St. Catherine University and holds the only key to the locked cabinet.

Students were provided precise information regarding the nature of the research project, the procedures, and the risks and benefits of the study (Lo & Grady, 2013). The SPI explained that this research is essential, and has the potential to improve nursing education. Equally important, the students were made aware that participation in this program will have no impact on their course grade and status in the program. The prebriefing activities were not used for grading purposes, and the FSEs were not grading course assignments for the students. Students were told that SBL experiences are meant to provide students with a chance to learn from their mistakes in a safe, risk-free environment (Rudolph, Raemer, & Simon, 2014). It was communicated that the students were able to withdraw from the study at any time. Information regarding the study was posted on the students' CMS news and information site. The SPI

attended one class session to explain the risks and benefits and gather the consent forms of those students who choose to participate. The students were told that all student information would be kept confidential either in a locked cabinet or a password protected databases maintained by the SPI's institution. These strategies ensured that selection of participants was fair and that informed consent was obtained.

Limitations

The use of the convenience sample for this study threatened generalizability and was chosen for feasibility reasons. Random sampling is costly, and in an academic setting students discuss experiences, so keeping the intervention and control group separate would be difficult if not impossible. These participant indicators make this a more homogeneous group. The other descriptive variables will allow for an analysis of the cohort groups to see if they are homogeneous or heterogeneous. Measurement error is always an issue and an operations manual which described quality control and must be guarded against with a clear operations manual including quality control tables and checklists (Grady & Hulley, 2013). While completing the research project the SPI was on a sabbatical, but is normally in a supervisory role. This could have swayed students and faculty to participate in the study. However, the faculty had offered to help when they learned of the research topic. There is no guarantee that the students were not influenced by the SPI's position in the program. During the recruitment phase the SPI repeatedly reminded the students that they did not need to participate and reassured the two who choose not to engage in the research study that was their choice and was respected.

Conclusions

The pilot study explored the usefulness of concept-mapping as a prebriefing activity for SBL. By comparing the students' nursing professional competency based on their completion of

the placebo care-plan prebriefing assignment versus the treatment concept-map prebriefing assignment, nursing education science is furthered and SBL is enhanced. The study will help inform nursing educators on best education practices for more effectively and efficiently developing students' clinical judgment and ability to maintain patient safety. Providing evidence-based education to nursing students is a fundamental requirement for any nursing education program. The pilot study should result in a stronger design for a future study providing more evidence for best practices in prebriefing during simulation. Additionally, the pilot study may also facilitate nursing faculty's ability to meet the expectation to provide education using evidence-based practices.

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Chapter IV

Results: Manuscript 3

Prebriefing for Simulation-Based Learning, Unintended Results of a Novel Pilot Study

Abstract

Introduction: This pilot study compared the simulation-based learning (SBL) outcome of clinical competence for pre-licensure nursing students, assigned to one of three prebriefing activities. The prebriefing activities included standard simulation prebriefing, nursing care-plan prebriefing, or concept mapping prebriefing.

Methods: The study was a quasi-experimental double-blind, posttest only, comparison group design. Of 30 potential participants, who were in a pre-licensure nursing program, 28 agreed to participate. The students, based on their group, engaged in their assigned prebriefing activity before their SBL scenario. The intervention prebriefing activity of concept-mapping has a strong theoretical basis. The scenario was videoed and the participant actions were evaluated using the Creighton Competency Evaluation Instrument (C-CEI). The evaluation was completed by nursing faculty with experience teaching and assessing student performance with simulation.

Results: There were no statistically significant changes in C-CEI scores based on students' participation in different prebriefing activities. Interrater reliability showed a statistically significant difference in C-CEI overall and communication scores between the two faculty simulation evaluators (FSE). There were statistically significant differences between participant scores based on the simulation scenario they encountered, showing a difference in the level of difficulty for different scenarios.

Conclusion: The pilot study provided critical information regarding the design of a SBL study of prebriefing. Issues with simulation facilitators and simulation evaluators provided crucial

information on improved design for future research including the use of standardized patients and improved evaluator training. Evaluation of participant performance will be more readily comparable by ensuring simulated patient scenario complexity is equivalent.

Introduction

The delivery of healthcare continues to shift rapidly in response to policy changes as well as the changing face of the United States (U.S.) population. Healthcare policy decision makers encouraged a focus on improved patient outcomes and coverage for all Americans. Alterations to the healthcare system change where and how healthcare is accessed and utilized (USDHHS, 22 March 2016). In particular, the elderly population is expanding creating a vacuum as healthcare workers retire and the demand for healthcare services by older adults with more complex health-related issues increases (USDHHS, n.d.-a, n.d.-b; USDoC, n.d.).

Employers have explored novice nurses' readiness for practice and have found new graduates require six months to one year of practice before they are ready to be independent practitioners on the healthcare team. Many new graduate registered nurses (RN) do not meet the expectations of entry-level practice (del Bueno, 2005). The dissonance between preparation and expectations leads to severe new employee stress which increases the risk that new nurses will leave the profession within their first year (Clark & Springer, 2012).

Pre-licensure nursing education programs must develop new nurses who are ready for the complexities of practice in today's fast-paced and ever-changing healthcare environment. To ease the effects of newly licensed nurses leaving practice, nurse educators must improve educational methods. Using evidenced-based educational processes will help to graduate clinically competent, practice-ready providers.

Problem Statement

Simulation-Based Learning (SBL)

A theoretical design of SBL has been generated from an analysis and synthesis of current research on the topic (Jeffries, 2016).

In addition, the *International Nursing Association for Clinical Simulation and Learning* (INACSL) developed standards of best practice for SBL (INACSL, 2015). Critical parts of a well prepared SBL event includes context, background, design, simulation experience, facilitator, educational strategies, participant, and outcomes (Jeffries, 2016; Meakim et al., 2013). The experience of the learner requires an environment of trust that is experiential, interactive, learner-centered, and collaborative (Jeffries, 2016; Lioce et al., 2015). Pilcher, Goodall, Jensen, Huwe, Jewell, Reynolds, & Karlson, 2012 as cited in Meakim et al. (2013, p. S9) defined SBL experiences as:

> an array of structured activities that represent actual or potential situations in education and practice and allow participants to develop or enhance knowledge, skills, and attitudes or analyze and respond to realistic situations in a simulated environment or through an unfolding case study.

While SBL has been the focus of nursing education research, more study is needed to continue improving the efficacy of nursing education in preparing practice-ready graduates. Great strides have been made in investigating different aspects of SBL, thus generating evidenced-based instructional methods (J. Hayden, Jeffries, & Kardong-Edgren, 2012; INACSL, 2015; Jeffries, 2016; Kardong-Edgren, Willhaus, Bennett, & Hayden, 2012).

Prebriefing

The current SBL literature describes prebriefing as a part of SBL and as a focus for nursing education research (Chamberlain, 2015; McDermott, 2016; Page-Cutrara, 2014, 2015; Victor-Chmil, 2016). McDermott (2016, p. 226) defines prebriefing as:

> an essential three phase process of planning, briefing, and facilitating that occurs prior to the SBL experience based upon the purpose/learning objectives of the scenario.

> Prebriefing should be planned and facilitated by a qualified simulation facilitator/educator who is familiar with characteristics of the SBL learner regarding level, program, and profession. Strategies should be employed to promote learner success and confidence in the simulated experience to encourage reflective practice in debriefing.

Prebriefing activities found in the literature include readings, lecture, lab workshop, voice-over PowerPoint instructions, expert modeling video of expected behaviors, group discussions, and concept mapping (Atayee, Awdishu, & Namba, 2016; Daley, Beman, Morgan, Sheriff, & Kennedy, 2017; R. Fernandez et al., 2013; A. Franklin, Sideras, Gubrud-Howe, & Lee, 2014; A. E. Franklin, Gubrud-Howe, Sideras, & Lee, 2015; Husebø, Friberg, Søreide, & Rystedt, 2012; Page-Cutrara & Turk, 2017).

Outcomes of SBL can occur at the systems, patient, or participant level and can be measured in different ways (Jeffries, 2016). The evaluation of various prebriefing activities included the participant outcomes of self-efficacy, self-confidence, participant perceptions, and most recently clinical competence (A. Franklin et al., 2014; A. E. Franklin et al., 2015; Husebø et al., 2012; Kable, Arthur, Levett-Jones, & Reid-Searl, 2013; Kelly, Hager, & Gallagher, 2014; Leighton, Ravert, Mudra, & Macintosh, 2015; Nevin, Neill, & Mulkerrins, 2014; Page-Cutrara & Turk, 2017; Rochester et al., 2012). The research regarding prebriefing for SBL is in its infancy and requires further investigation(Chamberlain, 2015; McDermott, 2016; Page-Cutrara, 2014, 2015).

Care Plans and Concept Mapping

Care plans and concept maps are two typical pre-clinical preparation activities assigned to nursing students. In a national survey regarding educational activities being used in pre-

licensure RN programs, Oermann, Saewert, Charasika, and Yarbrough (2009) found that, of the faculty that responded, many used care plans and concept maps in the evaluation of student learning in the cognitive domain. Care plans are the traditional method by which nursing students have been taught to engage in the nursing process in relation to a patient's diagnosis, medical treatment, and personal goals (Kern, Bush, & McCleish, 2006). Concept mapping has emerged as an alternative to care plans. This change can be attributed to the fact that concept maps are a theoretically based learning activity designed to support improved student engagement and critical thinking (Abel & Freeze, 2006; Daley, Morgan, & Beman, 2016; Kern et al., 2006). Both care plans and concept maps may be an excellent prebriefing activity to help students prepare for SBL. The students in the study had expereince creating concept maps during their first two semesters for their clinical rotations in long-term care and post-partum units. However, during their medical-surgical courses the clinical assignments were careplan based.

Purpose

As SBL is often considered a replacement or adjuvant to on-site clinical learning activities, it is reasonable to explore prebriefing's effect on student preparation for SBL. The purpose of this pilot study was to compare the SBL outcomes of clinical competence for pre-licensure nursing students, assigned to one of three prebriefing activities. The prebriefing activities included standard simulation prebriefing, nursing care-plan prebriefing, or concept mapping prebriefing.

Methodology

The research hypotheses that will be evaluated in this study are:

1. A prebriefing activity of concept-mapping will improve students' competent nursing care overall score more than a prebriefing care-plan activity or usual prebriefing orientation activities, as measured by the *Creighton Competency Evaluation Instrument* (C-CEI) scale.
2. A prebriefing activity of concept-mapping will improve students' nursing assessment scores more than a prebriefing care-plan activity or usual prebriefing orientation activities, as measured by the C-CEI-assessment subscale.
3. A prebriefing activity of concept-mapping will improve students' nursing communication scores more than a prebriefing care-plan activity or usual prebriefing orientation activities, as measured by the C-CEI-communication subscale.
4. A prebriefing activity of concept-mapping will improve students' nursing clinical judgment scores more than a prebriefing care-plan activity or usual prebriefing orientation activities, as measured by the C-CEI-clinical judgment subscale.
5. A prebriefing activity of concept-mapping will improve students' nursing patient safety scores more than a prebriefing care-plan activity or usual prebriefing orientation activities, as measured by the C-CEI-patient safety subscale.

Design

This pilot study was designed as a quasi-experimental double-blind, posttest only, comparison group design. The study was implemented at a medium-sized private urban university with a prelicensure nursing program that uses SBL during scheduled lab sessions. The SBL scenarios were chosen by the course faculty as critical situations that students experience during their time in the program. The university has a simulation lab coordinator, faculty trained in teaching using SBL, and a fully equipped simulation lab space.

Sampling

A convenience sample of prelicensure nursing students was readily accessible for the pilot study. All students from the medical/surgical course were potential study subjects and represented the total number of possible participants. Those who consented to participate represent the analytic sample. As this is a pilot study, a post hoc power analysis was completed to estimate the sample needed for future research. The analysis was computed to estimate levels of power that might be seen when the three groups (usual prebriefing, care-plan prebriefing, or concept-map prebriefing) are compared via an analysis of variance (ANOVA). Further, estimates were computed across potential sample sizes varying from 48 to 30 to reflect the realistic possibility of attrition. The power analysis revealed that with an alpha of 0.05, an n=42 in each group, and a large effect size of 0.6 the power is very high at 0.928. If the n=42 in each group and there is a medium effect size of 0.45 then the power is 0.710 (see Figure 6) The power analysis was completed using G*power (Faul, Erdfelder, Lang, & Buchner, 2007).

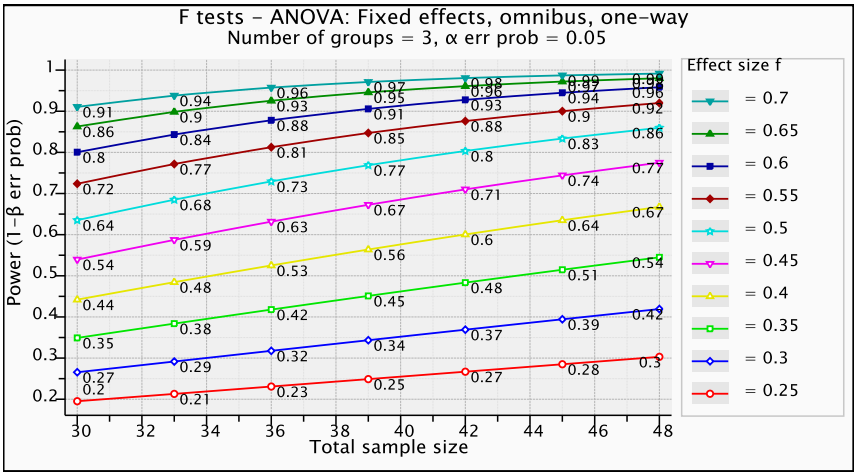

Figure 4.1: Power Analysis Graph

Data Collection

Recruitment and Assignment.

Prior to the announcement of the research study, the SBL time slots were posted on a web-based sign-up calendar, allowing students to choose a convenient date and time. Directions on how to sign up for a timeslot were emailed to the students by the simulation lab coordinator. The email included the link to the calendar and the date and time the calendar would be open and available. Before learning about the study, the students self-selected the date and time of their SBL activity and were unaware of their assignment in the control or treatment group. To ensure the three groups were homogeneous demographic data of the participants were collected via a self-report survey and analyzed. Once Institutional Review Board (IRB) approval was obtained, a flyer explaining the study was posted on the students' course management system (CMS) website. The Student Principal Investigator (SPI) then attended a class session and described the research study to the potential participants and handed out a copy of the consent form. During this time students had a chance to ask questions regarding the study and were able to turn in their consent form as well as the demographic data form. The students were able to complete and turn in the consent form during their SBL lab session.

Of the thirty possible students, twenty-eight chose to participate in the research study for a 93% participation rate. The participation rate is high and speaks to the students' comfort with the study and their interest in helping improve SBL. The 7% that did not participate expressed that SBL made them so nervous that they didn't want anyone else to watch the video of their performance. The students were divided into groups of 10, and each group received a prebriefing. The first group received the traditional prebriefing activities. The second group completed a care plan prebriefing along with the usual activities. The third group completed a

concept map prebriefing along with the usual activities. Over the course of two evenings, participated in a prebriefing and simulation scenario which lasted one hour and ten minutes (see Table 4.1).

Table 4.1 Prebriefing group distribution

Day/Time		*Careplan*	*Concept map*
SimDay 1	*Usual prebriefing**	*prebriefing*	*prebriefing*
Timeslot 1	3 Students		
Timeslot 2	3 Students		
Timeslot 3	3 Students		
Timeslot 4	1 Student		
Timeslot 5		2 Students	
Timeslot 6		3 Students	
Timeslot 7		3 Students	
SimDay 2			
Timeslot 8		2 Students	
Timeslot 9			3 Students
Timeslot 10			3 Students
Timeslot 11			2 Students
Timeslot 12			2 Students

*usual prebriefing was an independent activity and occurred in the simulation room

Creighton Competency Evaluation Instrument (C-CEI).

The C-CEI (previously the *Creighton Simulation Evaluation Instrument*) has been proven to be a valid and reliable tool when used to evaluate students in both the clinical and simulation setting (Adamson et al., 2011; J. Hayden et al., 2012; J. K. Hayden, Keegan, Kardong-Edgren, & Smiley, 2014; Parsons et al., 2012). The C-CEI includes 23 evaluative statements across the four subscales; assessment, communication, clinical judgment, and patient safety (Creighton, 2016a). The tool is freely available, and the Creighton University website provides training videos explaining the planning process and use of the C-CEI (Creighton, 2016b). Each time the C-CEI is used for simulation the faculty team must determine expected nursing behaviors for each statement prior to the SBL event. If there are no behaviors linked to a particular statement, then that statement is not included in the calculation of the final score. A simulation participant may

earn a score of zero or one depending on their successful engagement in the required behaviors for each statement during the simulation scenario and debriefing. The participants' earned points are divided by the possible points and reported as a percentage score to obtain a score for the total C-CEI and its subscales.

Faculty Facilitator and Evaluator.

Simulation requires a facilitator who acts as the patient's voice. The simulation facilitator can also evaluate the participant's actions and behaviors. For the pilot study, a separate simulation evaluator was needed so the evaluation of student competence could be completed after the semester was over and course grades were filed. All faculty simulation facilitators (FSF) and faculty simulation evaluators (FSE) viewed the C-CEI training videos. These videos provide instruction on how to use the C-CEI Planning Worksheet and the C-CEI itself. After viewing the instruction video, the faculty reviewed the simulation scenarios. During the review, the necessary behaviors required to care for each patient were discussed and recorded on the C-CEI Planning Worksheet. Using the C-CEI Planning Worksheet to review the simulations helped the faculty to ensure the details of the simulation were aligned and logical. Using different scenarios decreased the likelihood that students would share simulation information with each other and contaminate either the care plan or the concept map group. During the simulation planning meetings, the FSF and the lab coordinator decided to use a different simulation scenario for each simulation lab day. The FSFs and the lab coordinator collaborated in an attempt to ensure that each scenario was of similar complexity. Each FSF was provided a simulation script and assessment form for use during the SBL event that would guide their responses to student actions (see Appendix M). All student simulations were videoed and stored in a password-protected database only accessible by the SPI, lab coordinator, and FSEs. The

FSEs were then provided the list of students who choose to participate and were able to access the videos and evaluate student performance from the database site. The FSEs were blinded to the students' group placement.

Results

IBM SPSS Version 24.0 software was used for the quantitative analyses (IBM, 2016). The sample size was small with 28 participants. However this allowed for careful visual review of each subjects'data, all data were recorded, and no variables were missing.

Descriptive Data

The descriptive data gathered included gender, age, race/ethnicity, and course grade. The study group consisted of women; there were no men in the cohort. See table 4.2 for a summary of the demographic data the study. There was no significant difference between groups or within groups related to age. Due to the small sample size of the pilot study, there were not many participants in most racial and ethnic groups. To address this issue during the evaluation of distribution across study groups, the variable of race and ethnicity was modified to represent white and non-white. However, no significant difference between groups was found in relation to race and ethnicity. There wasn't a statistically significant difference between intervention groups in relation to course grade. Other than gender all intervention groups were normally distributed.

Table 4.2: Sample Description

	GRP 1	GRP 2	GRP 3	Total	Pearson Chi square	
Demographic	*n(%)*	*n(%)*	*n(%)*	*n(%)*	*df*	*p*
Total	10(35.7%)	10(35.7%)	8(28.6%)	28(100.0%)		
Gender					a	a
Female	10(100.0%)	10(100.0%)	8(100.0%)	28(100.0%)		
Male	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)		
Age					10	.187
21-25	3(30.0%)	0(0.0%)	2(25.0%)	5(17.9%)		
26-30	2(20.0%)	4(40.0%)	3(37.5%)	9(32.1%)		
31-35	2(20.0%)	0(0.0%)	2(25.0%)	4(14.3%)		
36-40	2(20.0%)	3(30.0%)	1(12.5%)	6(21.4%)		
41-45	1(10.0%)	0(0.0%)	0(0.0%)	1(3.6%)		
46-50	0(0.0%)	3(30.0%)	0(0.0%)	3(10.7%)		
Race/Ethnicity					2	.587
White	8(80.0%)	6(60.0%)	5(62.5%)	19(67.9%)		
Other[b]	2(20.0%)	4(40.0%)	3(37.5%)	9(32.1%)		
Course grade					6	.422
A-	1(10.0%)	3(30.0%)	1(12.5%)	5(17.9%)		
B+	5(50.0%)	1(10.0%)	3(37.5%)	9(32.1%)		
B	3(30.0%)	4(40.0%)	4(50.0%)	11(39.3%)		
B-	1(10.0%)	2(20.0%)	0(0.0%)	3(10.7%)		

a. No statistics are computed because Gender is a constant

b. Due to the small sample size the racial and ethnic groups other than white ranged between 1-4 participants, the category of other includes all participants other than white. This grouping was created the statistical analysis.

The instrument scores of student competence for each prebriefing approach were examined. Descriptive data for FSE One and FSE Two's C-CEI and subscale scores are presented (see Table 4.3).

Table 4.3: Descriptive results by Group for C-CEI and Subscales of FSE One and FSE Two

Instrument/ Subscales	*Assess*	*Comm*	*C.J.*	*P.S.*	*Overall*
FSE One					
GRP 1 (n=10)					
Mean	65.0%	86.7%	76.0%	90.0%	80.7%
SD	24.2%	23.3%	22.7%	12.9%	14.3%
95% CI (L, U)	(47.7%, 2.2%)	(70.0%, 103.3%)	(59.8%, 92.2%)	(80.8%, 99.2%)	(70.5%, 90.9%)
GRP 2 (n=10)					
Mean	70.0%	80.0%	84.0%	85.0%	82.6%
SD	25.8%	23.3%	15.8%	12.9%	10.8%
95% CI (L, U)	(51.5%, 88.5%)	(63.3%, 96.7%)	(72.7%, 95.3%)	(75.8%, 94.2%)	(74.8%, 90.3%)
GRP 3 (n=8)					
Mean	93.8%	75.0%	82.5%	79.2%	81.7%
SD	17.7%	23.6%	16.7%	24.8%	15.4%
95% CI (L, U)	(79.0%, 108.5%)	(55.3%, 94.7%)	(68.5%, 96.4%)	(58.4%, 99.9%)	(68.9%, 94.6%)
Total (n=28)					
Mean	75.0%	81.0%	80.7%	85.1%	81.7%
SD	25.5%	23.0%	18.4%	17.0%	13.0%
95% CI (L, U)	(65.1%, 84.9%)	(72.0%, 89.9%)	(73.6%, 87.9%)	(78.5%, 91.7%)	(76.6%, 86.7%)
FSE Two					
GRP 1 (n=10)					
Mean	45.0%	86.7%	82.0%	47.5%	67.1%
SD	36.9%	5.4%	25.7%	24.9%	13.1%
95% CI (L, U)	(18.6%, 71.4%)	(75.4%, 99.0%)	(63.6%, 100.4%)	(29.7%, 65.3%)	(57.8%, 73.5%)
GRP 2 (n=10)					
Mean	50.0%	76.7%	80.0%	41.7%	64.0%
SD	33.3%	11.2%	31.3%	33.1%	26.7%
95% CI (L, U)	(26.2%, 73.9%)	(51.4%, 101.9%)	(57.6%, 102.4%)	(18.0%, 65.4%)	(44.8%, 83.9%)
GRP 3 (n=8)					
Mean	62.5%	58.3%	67.5%	29.2%	55.8%
SD	35.4%	10.5%	26.1%	21.4%	19.2%
95% CI (L, U)	(32.9%, 92.1%)	(33.6%, 83.1%)	(45.7%, 89.3%)	(11.3%, 47.0%)	(39.7%, 71.8%)
Total (n=28)					
Mean	51.8%	75.0%	77.1%	40.2%	62.8%
SD	6.6%	5.6%	27.6%	27.3%	20.3%
95% CI (L, U)	(38.4%, 65.2%)	(63.5%, 86.5%)	(66.4%, 87.9%)	(29.6%, 50.8%)	(54.9%, 70.6%)

Reliability Testing

Two separate FSEs evaluated all participants' video performance using the C-CEI. The FSEs completed their evaluations of the participants' behaviors independently. The Cronbach's alpha for FSE Two was acceptable at < .7 (see Table 4.4) (Field, 2013). However, interrater reliability for the raters was found to be poor (see Table 4.5 and Figure 4.2). After discussing the ratings with each FSE, it was determined that FSE Two had a better Cronbach's alpha and had followed the C-CEI directions more carefully. Based on these factors the hypotheses were tested using FSE Two's scoring.

Table 4.4: Cronbach's alpha

	FSE One	FSE Two
Cronbach's alpha	.639	.739

Table 4.5 Interrater Reliablity

C-CEI Score	Kappa	*p*
Assessment	0.118	0.368
Communication*	0.349	0.012
Clinical Judgement	-0.075	0.511
Patient Safety	0.014	0.776
Overall*	0.096	0.021

Statistical significance $p < 0.05$

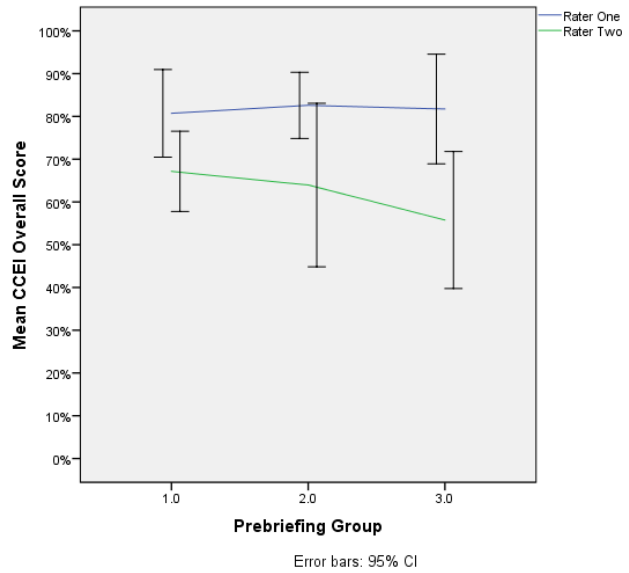

Figure 4.2 Mean C-CEI Overall Percent Score by Rater

In an effort to decrease contamination between groups the teaching team chose to use a different scenario each day because typically some students share simulation details with their peers. Each simulated patient had a different medical diagnosis and a different health alteration the student needed to find during an assessment. Once the participant found the health alteration a clinical decision regarding care would need to be made. It was important to see if there was a statistically significant difference in the C-CEI scores between students who participated on Simulation Day 1 (SimD1) or Simulation Day 2 (SimD2). The independent samples *t*-test comparing mean C-CEI scores for SimD1 and SimD2 found a statistically significant difference between the mean scores for communication, clinical judgment, and overall (See Table 4.6). The independent samples *t*-test comparing means of SimD1 and SimD2 found no statistically significant difference between the mean scores for assessment and patient safety (See Table 4.6).

Table 4.6 Independent-samples *t*-test Simulation Day 1 and Simulation Day 2

C-CEI Score	*t*	*df*	*p*
Assessment	-0.360	26	0.722
Communication*	4.266	26	<0.001
Clinical Judgement*	2.726	26	0.011
Patient Safety	1.504	26	0.145
Overall*	2.763	26	0.010

*significant <0.05

The literature suggests that healthcare or simulation experience can be a factor in SBL participant success (G. L. Fernandez et al., 2010). The student group in this study have all been through the same coursework and exposed to the same amount of SBL during their program of study. Students who have higher grades may do better in SBL because they have better command of the content required to perform. An ANOVA analysis was completed to see if course grades helped predict success in the SBL activity as measured by the C-CEI and its subscales. There were no statistically significant differences in the students' scores when grouped by course grade.

Hypothesis Testing

The five hypotheses all posited that a concept mapping prebriefing would improve students' C-CEI overall and subscale scores more than the usual prebriefing activities or care plan prebriefing. The evaluation scores were based on the students' behaviors during a SBL event. The hypotheses were explored using an ANOVA. The data revealed that, on average, C-CEI and subscale scores between the traditional, care plan, and concept mapping groups were not statistically significantly different (see table 4.7).

Table 4.7: ANOVA results by Group for C-CEI and Subscales

Instrument/ Subscales	*Asses*	*Comm*	*C.J.*	*P.S.*	*Overall*
ANOVA	(F(2,25) = 0.57, p=.57)	(F(2,25) = 2.58, p=.13)	(F(2,25) = 0.68, p=.52)	(F(2,25) = 1.03, p=.37)	(F(2,25) = 0.71, p>.50)
GRP 1 (n=10)					
Mean	45.0%	86.7%	82.0%	47.5%	67.1%
SD	36.9%	17.2%	25.7%	24.9%	13.1%
GRP 2 (n=10)					
Mean	50.0%	76.7%	80.0%	41.7%	64.0%
SD	33.3%	35.3%	31.3%	33.1%	26.7%
GRP 3 (n=8)					
Mean	62.5%	58.3%	67.5%	29.2%	55.8%
SD	35.4%	29.6%	26.1%	21.4%	19.2%
Total (n=28)					
Mean	51.8%	75.0%	77.1%	40.2%	62.8%
SD	34.7%	29.6%	27.6%	27.3%	20.3%

Significant p =/< .05

Discussion and Implications

The discrepancies in the interrater reliability of the two FSEs in this study warrant closer attention. While the FSFs and FSEs both used the training videos on the Creighton University website during the preparation of the SBL scenarios, it was evident during implementation that there were still some challenges. The SPI discussed any issues or complications with the FSEs and advised them to follow the predetermined guidelines for the use of the C-CEI. The FSEs noted as they watched the videos of the students' performance that one FSFs strayed from the

simulation scenario script. This particular FSF cued students leading them to appropriate actions with information other students did not receive. The raters agreed to only give credit for behaviors based on the prescribed actions, but this issue could have caused some of the differences in interrater reliability. In the future, it will be important to check in with FSFs the day of the SBL event to ensure they are staying on script. Using standardized patient actors instead of FSFs could prevent this type of problem from occurring.

Interrater and intrarater reliability, using observational instruments such as the C-CEI, to score student performance for high stakes testing of simulated patient scenarios, has proven challenging (Kardong-Edgren, Oermann, Rizzolo, & Odom-Maryon, 2017). There is recent literature on best practices in preparing raters for high stakes testing using simulation. These guidelines were published during the implementation of this pilot study. In the future, it will be vital to implement these steps to improve and ensure inter- and intrarater reliability. One essential step is to have the raters practice scoring student performance with sample video scenarios so questions and clarifications can occur as a group (Kardong-Edgren et al., 2017). Practice scoring of FSEs provides a baseline from which the raters can work which could enhance interrater reliability.

Based on the data from this pilot study there is no statistically significant difference in C-CEI and subscale scores of the students in the different prebriefing groups. These results are different than previous findings in the literature. A. Franklin et al. (2014) studied the concept of prebriefing. However, the usual prebriefing was assigned reading, the first intervention was a voice-over PowerPoint lecture, and the second intervention was a video with faculty role-modeling expert care of multiple patients in a simulated environment. In this study, they found that the two intervention groups achieved higher C-CEI scores than the control group. Page-

Cutrara and Turk (2017) also studied the effect prebriefing had on student performance in a SBL scenario, where nursing competence was measured using the C-CEI. The structured prebriefing, which included a care plan worksheet affected the students' competency scores ($F(1, 73) = 59.9$, $p < 0.001$) (Page-Cutrara & Turk, 2017). The difference in results between the studies is concerning. There are aspects of the pilot study design that may have affected the results. As this was a pilot study, the sample size was inadequate, as was shown based on the post hoc power analysis. Additionally, the strength of the intervention did not overcome the differences in the difficulty of the scenario. These dilemmas could be addressed in future research.

Another issue that arose from this pilot was the difference in student scores based on the simulation scenario they encountered (see Figure 4.3). The FSEs both expressed that they perceived a difference in difficulty between the two scenarios. The felt that the SimD2 was more complicated than SimD1. The complexity of one situation over another could be part of the reason the difference in scores was not statistically significant. In the future, it will be paramount to use one SBL scenario. If different versions of the SBL scenario are needed to prevent contamination, the same simulated patient case could be utilized, and changes in the patient details would provide adequate distinction.

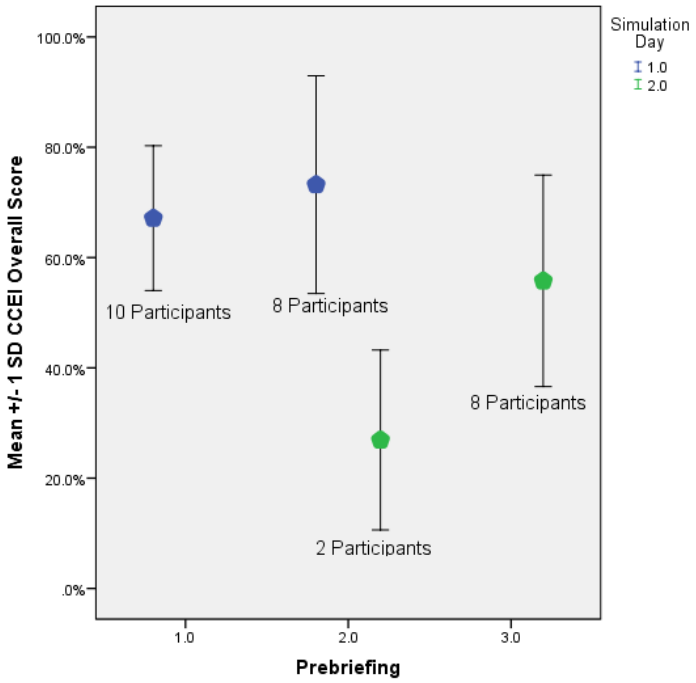

Figure 4.3 Mean C-CEI Overall Percent Score by Simulation Day

Limitations

Limitations of the study include the small sample size and the fact that the sample was one of convenience. To have statistically significant data, the sample size must meet the requirements of the power analysis. To garner the goodwill of the students, they were allowed to select their simulation date and time. This prevented the random assignment of students to the control or intervention groups, which is a limitation. While not randomized, the control and intervention groups appeared homogeneous, and the double-blind design adds strength.

As noted in the discussion and implications, the FSFs could have negatively impacted the study by changing student behaviors. In the future, it would be better to used standardized patient actors to prevent this from occurring. Also noted were the issues with interrater reliability. Raters should be required to practice the evaluation of six sample student SBL videos and discuss those ratings together. Rater training should improve subsequent interrater reliability scores.

Conclusion

This chapter describes a pilot study using a quasi-experimental double-blind, posttest only, comparison group design. Twenty-eight out of thirty possible students elected to participate in the study. The results did not support the hypotheses. However, unforeseen complexities of the simulation scenarios as well as differences in FSFs and FSEs created issues in the analysis that could not be overcome due to the small sample size. Future research can address some of these design and implementation issues. Despite the limitations, this study describes a rigorous process by which excellence in prebriefing for SBL can be explored.

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Chapter V

Nursing education is in the midst of change in order to better prepare graduates for nursing practice. One of the significant transformational strategies being used to prepare nursing students is simulation based learning (SBL) (Benner, Sutphen, Leonard, & Day, 2010; Jeffries, 2016). Research into the design and debriefing of SBL provides evidence-based teaching strategies for pre-licensure education (INACSL, 2015; Jeffries, 2016). Prebriefing as a tool to support student learning and success, has only recently been addressed in the literature, and there is a need for research on the most effective simulation preparation strategies (Chamberlain, 2015; McDermott, 2016; Page-Cutrara, 2014, 2015). The participants in the pilot study were assigned to a prebrieing activty group. The designated prebriefing activities included standard simulation prebriefing, nursing care-plan prebriefing, or concept mapping prebriefing. This pilot study compared the SBL outcome of clinical competence for pre-licensure nursing students based on their assigned prebriefing activity. The following chapter of the dissertation consists of a synthesis of the manuscripts and a discussion of the implications of the pilot study.

Synthesis of Manuscripts

The first manuscript, a literature review addressed the problem outlined in chapter one pertaining to the need for innovative educational practices that help nursing students graduate as practitioners ready for the current complex healthcare environment. To meet these expectations, nurse educators must use evidence-based teaching and learning activities such as SBL. The review of the literature explored prebriefing for and ways to measure outcomes of SBL.

Using Hammick et al.'s (2010) systematic literature review guidelines provided a process focused on improving healthcare education. The literature review was undertaken, with the guidance of two questions, which helped determine the evidence available regarding prebriefing

for SBL[1]. The literature review included the databases CINAHL, Medline, and PubMed, as well as the websites *The International Nursing Association for Clinical Simulation and Learning* and *The National League for Nursing*. Evidence answering the questions posed for the literature review was found in 23 articles. Ten articles described the use of prebriefing and thirteen described the measurement of a type of SBL participant outcome after the use of prebriefing.

The systematic review provided clarity regarding the various aspects that makeup prebriefing for SBL. Prebriefing activities can include a review of learning objectives, an orientation to the simulation space and supplies, review of communication processes and participant roles, reminders of confidentiality and to suspend disbelief, and any potential evaluation measures (Chamberlain, 2015; A. E. Franklin et al., 2013; Lioce et al., 2015; McDermott, 2016; Page-Cutrara, 2014, 2015; Rudolph, Raemer, & Simon, 2014; Victor-Chmil, 2016). Prebriefing can be a time when the simulated patient scenario and condition are presented via access to a simulated health record and a verbal nursing change of shift report (Chamberlain, 2015; McDermott, 2016; Page-Cutrara, 2014, 2015). Some prebriefing activities were used to facilitate engagement with content related to the simulated patient scenario; which could include creating concept maps or care plans, writing a proposal for care of the patient on a whiteboard in the simulation room, reading texts of content related to the simulated patient condition, and answering worksheet questions regarding the assigned patient condition (Chamberlain, 2015; Page-Cutrara, 2015; Page-Cutrara & Turk, 2017; Rudolph et al., 2014; Victor-Chmil, 2016).

The review also synthesized information from studies for which prebriefing was evaluated by measuring participant outcomes. The different prebriefing activities included

[1]Review questions:
What is the current evidence on using prebriefing for SBL?
What are the best practices in the evaluation of participant outcomes after a prebriefing assignment during SBL?

readings, live or recorded lectures, a lab workshop, watching videos of experts role-modeling appropriate care, online discussion groups, and concept mapping. Based on *The NLN Jeffries Simulation Theory*, outcomes of SBL can occur at the participant, patient, or systems level (Jeffries, 2016). All the studies evaluated participant outcomes through qualitative or quantitative measures; such as personal perceptions, self-confidence ratings, self-efficacy ratings, time to completion, and competence rated via rubrics or checklists. One of the tools used to measure nursing clinical competence, which had been proven valid and reliable, was the *Creighton Simulation Evaluation Instrument* (C-SEI) (A. Franklin, Sideras, Gubrud-Howe, & Lee, 2014). The C-SEI was recently updated for use in both simulation and clinical settings and renamed the *Creighton Competency Evaluation Instrument* (C-CEI) (J. K. Hayden, Keegan, Kardong-Edgren, & Smiley, 2014). The C-CEI was used in a national multi-site study implemented by the *National Council State Boards of Nursing* (NCSBN) to evaluate students' clinical competence in both simulated and clinical settings, to determine if SBL could replace a portion of the students' onsite clinical rotations. The C-CEI was chosen for this study because it was designed to measure the outcome of clinical completence in simulation, has extensive validity and reliability testing, and was used in the national multi-site study.

The results of the systematic literature review uncovered a need for further investigation of the best prebriefing activities. The following pilot study was based on the findings of the review of the literature and structured using Jeffries' (2016) SBL theory and Ausubel, Novak, and Hanesian's (1978) cognitive learning theory (see Appendix N). The next manuscript was the description of the methods for the pilot study. With the changing nature of health care and the increasing demand for evidence-based teaching-learning methods utilized in nursing education programs, simulation research has grown in importance. A well-designed pilot study of

simulation provides the data needed to implement a robust study that can provide information on best-practices in SBL.

The *Consolidated Standards of Reporting Trials* (CONSORT) and the *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE) statements guide the development and reporting of well-designed research studies (Schulz, Altman, & Moher, 2010; von Elm et al., 2014). Cheng et al. (2016) provide CONSORT and STROBE statement extensions for healthcare simulation-based research (SBR). When reporting SBR, it is vital to include the theoretical and conceptual rationale for the design and intervention and to ensure the description of the methods be of sufficient detail to support replication (Cheng et al., 2016). Research reports must highlight whether the unit of analysis is at the individual, team, or systems level and describe the characteristics of the participants (Cheng et al., 2016).

The third manuscript describes the results of the pilot study, which was developed using a quasi-experimental double-blind, posttest only, comparison group design. The setting was a medium-sized private religiously affiliated urban university with a prelicensure nursing program on a campus with an adult education focus. The university provided a fully equipped simulation lab space dedicated to the nursing department.

The study subjects were all enrolled in their final year of their prelicensure nursing program taking an advanced medical-surgical course. The nursing program operates using a cohort model where the students take all their coursework together and progress at the same pace. All students in this course have had the same number of simulation activities, assigned readings, and educational experiences in the program. All students were required to participate in the *Safe Care of One Patient* simulation. This SBL activity was designed to be a skills validation of clinically competent care, so all students engage independently as the primary

nurse. All students taking the complex medical-surgical course were eligible to participate in the pilot study.

A power analysis was completed to show what a sample would need to be for a complete study. The power analysis was completed using C-CEI data reported in the national multi-site research study, conducted by the *National Council State Boards of Nursing* (NCSBN), regarding the replacement of up to 50% of clinical hours with simulation (J. K. Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014). The NCSBN results were reported by the type of course for which the students were enrolled. The results that were reported in table ten were of students enrolled in an advanced medical-surgical course (J. K. Hayden, Smiley, et al., 2014, p. S21). The group of students reported in table ten most closely resembled the students in the pilot study. The power analysis revealed the sample size would be adequate with an n=40 totaling 120 participants. The goal pilot sample size was determined to be n=10 per group. The sample size for the study would include 30 participants which is 25% of the desired sample size for any future study.

IRB approval was obtained from the educational institution of the Student Principal Investigator (SPI). Additionally IRB approval was obtained from the educational instituion where the pilot research was conducted. It is important to note that the SPI works as a faculty member and program director at the educational institution where the research study was completed. Two weeks prior to attending a class session to explain the pilot study and begin recruiting participants, the SPI posted an announcement on the course management system which described the study and included contact information. The SPI attended the class session on the stated date, provided consent forms to each student, and explained the study answering any questions the students asked. Consent and data collection forms were collected the day the

SPI attended a class session and on the laboratory simulation days. The final course grade was collected after the semester was completed.

Randomized assignment would have been superior to the quasi-experimental design (Shadish, Cook, & Campbell, 2002). However, the course faculty wanted students to have control over choosing their SBL timeslot, so true randomization could not occur. Each student was able to sign up for their own SBL timeslot, to limit student frustrations regarding the simulation schedule. Before the announcement of the pilot research study, the Simulation Lab Coordinator (SLC) generated an online sign-up calendar. The SLC emailed all the students a description of how to log onto the sign-up website, choose a SBL timeslot, including the time the sign-up would first be available. All the students chose their timeslot prior to the knowledge of the study. The students were not aware of their placement in either the control or one of the intervention groups and remained blinded to study placement through the study. To reduce contamination between groups; the control group went first, the care plan group went second, and the concept map group went third. Of the thirty possible participants twenty-eight, 93%, agreed to be a part of the study.

The instrument, chosen to measure clinical competence of the student's performance during the SBL scenario, was the C-CEI (Creighton, 2016a). The C-CEI has been used in other studies evaluating prebriefing, and had extensive reliability and validity testing (Adamson et al., 2011; J. Hayden, Jeffries, & Kardong-Edgren, 2012; J. K. Hayden, Keegan, et al., 2014; J. K. Hayden, Smiley, et al., 2014; Parsons et al., 2012). The *Creighton University* website provides video instructions and worksheets for the use of the C-CEI, which the SBL faculty facilitators and evaluators watched and used when preparing the simulation scenario (Creighton, 2016a, 2016b). The faculty simulation facilitators (FSFs) and faculty simulation evalautors (FSEs)

utilized the Creighton simulation scenario development process to help ensure the scenarios were leveled and of similar complexity.

The SBL scenario lab rotations occurred over two days. Students came to the Nursing Applied Learning Lab on the day and time they had selected on the online lab sign-up calendar. Each student attended their assigned prebriefing activity and completed their SBL scenario. Each scenario was videoed and loaded onto a course management system (CMS) database by the lab coordinator. The FSEs were then able to access the database once the semester had ended to evaluate the student's videoed performance. The results of the evaluation were recorded on the C-CEI forms based on the behaviors that had been agreed upon by the faculty team. The FSEs were blinded to the treatment as they were not present when the students participated in the prebriefing and no prebriefing was included in the videos.

The total sample size was a n=28 out of a potential 30 participants. Descriptive data regarding gender, age, race/ethnicity, and course grade were collected for the sample, and the groups were evenly distributed across all demographics except gender as there were only female participants. The nursing profession is predominantly comprised of women, so the fact that only women were in this study was not unusual.

Interrater reliability testing revealed that there were statistically significant differences between the two raters for the communication and overall C-CEI scores. The Cronbach's alpha for the FSE Two, at 0.739, was statistically an acceptable level and higher than FSE One. Upon discussions with the FSEs, the SPI noted that FSE Two followed the evaluation directions more closely than FSE One. Based on these facts the statistical analysis was completed using only the ratings from FSE Two.

At the beginning of SBL activities, students are reminded that "what happens in sim, stays in sim." With this reminder, it is hoped that students will not share the contents of the simulation between groups. The faculty, who participated in this pilot study, reported that students share the simulation scenario with their peers. To combat contamination between groups, the teaching team used differing scenarios for each SBL lab session date. The simulation development team followed the C-CEI planning process and attempted to assure both scenarios were equivalent in difficulty. An Independent-samples *t*-test of Simulation Day 1 (SimD1) and Simulation Day 2 (SimD2) found a statistically significant difference between groups for communication, clinical judgment, and overall C-CEI scores. In a post-simulation debrief the FSFs commented that the SimD2 scenario was significantly harder than SimD1. The differences in the scenarios' difficulty may have affected the results of the comparison between the control and intervention groups.

It has been reported in the literature that healthcare experience or experience with SBL can affect participant outcome results. This group of students had taken the same courses and had the same amount of clinical and simulation experience. However, differences in C-CEI scores could be explained by the participant's academic ability. End-of-semester grades were used as a measure of academic ability, and there was no statistically significant difference in students' scores when grouped by course grade.

The pilot study hypotheses were developed to test whether concept mapping prebriefing would improve students' overall and subscale C-CEI scores more than the usual or care plan prebriefing. There were no statistically significant differences between groups for their overall and subscale C-CEI scores. If the following issues; randomization, an increased N for each

intervention group, a controlled simulation scenairo, and enhanced FSE training to optimize interrater reliabity, then then future research may show a difference.

Study Conclusions

The research question asked, "which prebriefing activity either usual, care plan, or concept-mapping, has greater efficacy in improving senior level nursing students clinical competence, assessment, communication, clinical judgment, and patient safety scores, measured as an outcome of their performed actions during a SBL scenario?" The data did not support that there was a statistically significant difference in clinical competence based on the participants prebriefing activity. SBL has many different moving parts, and if one piece doesn't work correctly, it will affect the entire simulation experience. When engaging in SBR and one of the processes doesn't work as expected it can negatively impact the whole study. Although the results of the pilot study hypotheses were negative, information was garnered regarding the design of SBR.

The variation in the FSEs scores highlights the importance of clear evaluation guidelines. The process described on the Creighton University website for determining criteria and evaluating student performance was helpful. However the results suggest that the process wasn't adequate to ensure interrater reliability among the FSEs. Kardong-Edgren, Oermann, Rizzolo, and Odom-Maryon (2017) describe using frame-of-reference training to facilitate evaluators coming to a shared understanding of how to rate the expected behaviors for a given scenario. To reach a shared mental model for how to consistently evaluate student performance the team watched, scored, and discussed scoring of eleven student performances. Coming to a shared understanding for evaluation using the C-CEI would be an essential step in orienting FSEs in any

future research so that interrater reliability can be achieved. This process of coming to a shared understanding would also be important if simulation is being used to evaluate student learning.

The FSEs reported that one FSF provided additional cueing to students beyond those listed on the simulation guidance documents. The FSEs found it difficult to determine where the student's decision making stopped and the FSF's guidance caused a student to complete the required behaviors for clinical competence successfully. FSFs have an understanding of the program curriculum and expected actions of the students. Therefore, FSFs might be tempted to provide cues when acting as the simulated patient. These cues create different scenarios than expected and can create situations where students do not actually show competence. Instead of having FSFs it would be advisable to use standardized patient actors, who are provided a detailed yet flexible script. These actors are less likely to stray from the guidelines provided for their performance as the patient.

There was a significant difference in the performance of students based on their exposure the simulation scenario. The SPI and the FSFs attempted to ensure the scenarios were of similar difficulty. However once the scenarios were implemented, it was determined that a difference of complexity remained. Further research should be conducted with scenarios where the difficulty has been leveled and can be proven similar. All participants should ideally engage in their patient care scenario on the same day. A follow-up study would benefit from using only one patient scenario. If contamination is a concern, then the same patient could be used, but different changes in the patient condition could be simulated.

One limitation of a pilot study is the smaller sample size. In future research, a larger sample will be needed to meet the power requirements. While allowing the students to choose their own simulation time created positive feelings of control for the student, the students were

not randomly assigned to the control and treatment groups. While analysis showed each group was reasonably similar based on the demographic data, random assignment would make a future study stronger.

Implications

SBL has become increasingly significant to education of nurses (Alexander et al., 2015; Alinier, 2010; Dreifuerst, 2012; Gaba, 2004; J. Hayden et al., 2012; INACSL, 2015; Jeffries, 2016; Rutherford-Hemming, Lioce, Kardong-Edgren, Jeffries, & Sittner, 2016). SBL provides a way to teach, learn, and assess clinical judgment and higher-order thinking (Kardong-Edgren et al., 2017; Rutherford-Hemming, Kardong-Edgren, Gore, Ravert, & Rizzolo, 2014). Prebriefing has the potential to better prepare students to successfully demonstrate clinically competent care during SBL (Daley, Beman, Morgan, Sheriff, & Kennedy, 2017; A. Franklin et al., 2014; Page-Cutrara & Turk, 2017; Titzer, Swenty, & Hoehn, 2012). The results of this pilot study didn't determine which prebriefing activities were most useful in helping students to provide competent care during SBL. SBR is complicated as there are many different people and tasks involved in the enactment of SBL. The results from the pilot study did provide information on which factors may influence participant outcomes, such as clinical competence. These findings will inform the development of future SBR.

Students

Nursing students skills range from novice to advanced beginner, and as they approach program completion, there are times when they can provide competent care. A novice has no experience in the clinical situations for which they are now being exposed, and an advanced beginner demonstrates minimum acceptable behaviors. SBL offers students a space to engage in patient scenarios and gain nursing experience before their clinical encounters. These learning

opportunities can facilitate students growth through the levels of competence. A less effective process for SBL occurs when upon arrival students are provided minimal information regarding the SBL scenario for which they are going to engage. The bulk of the learning happens during the scenario and in the debriefing session. While this process provides ways for students to engage in learning, it does not give them a chance to reflect before they participate in the SBL scenario. Use of advanced organizers provides students with a process and structure to complete reflection-before-action, which is critical to successful clinical decision making (Ausubel et al., 1978; Benner, 1982; Lasater, 2007; Page-Cutrara & Turk, 2017; Tanner, 2006). Additionally, adequate reflection-before-action can increase the meaning students derive out of reflection-on-action (Page-Cutrara & Turk, 2017; Tanner, 2006). This pilot study provides two possible reflection-before-action prebriefing activities which could be easily implemented with most SBL activities to support student learning.

Faculty

Nurse educators are increasingly asked to develop and implement SBL experiences in their programs. Over the last 20 years, the guidelines for the planning and the execution of SBL experiences has improved. Not only did this pilot study provide two theoretically designed prebriefing activities but it also emphasized the importance of simulation design on the overall product. The key takeaways are listed below.

- Simulation scenarios must be leveled, so students are evaluated consistently and fairly, based on their knowledge and clinical judgement, and not the complexity of the presenting simulated patient.
- FSFs must have clear guidelines and explicit patient scripts to ensure exposure to the intended learning outcomes. Larew, Lessans, Spunt, Foster, and Covington (2006) use

Benner's theory as a way to organize the simulation scenario, so that as it unfolds cues are provided in greater and greater specificity. A student who is reaching the level of competent would react appropriately to vague signals, whereas the novice student needs more cues with greater specificity to trigger the same actions.

- If multiple faculty will be evaluating students in a high-stakes testing simulation, the evaluation team needs to meet ahead of time, determine essential behaviors, and evaluate six to eleven simulation performances together to create a cohesive shared understanding of the evaluation criteria.
- As FSEs scoring can vary having videos of the student performance is preferable. Videos allows for multiple evaluations if the performance is difficult to evaluate or there are questions regarding competence.

Administrators

SBL is still evolving as an educational tool to assist students in their formation into clinically competent registered nurses. To support faculty cultivating and utilizing SBL that is evidence-based and student-centered, administrators and policymakers must encourage continued growth and development of simulation expertise. Nursing programs should choose theories or frameworks that lend themselves to being used in SBL. Administrators must ensure there is an adequate budget for the support of simulation and the required technology. Without the proper video cameras, computers, and other simulation equipment the SBL experience can be negatively affected; students may not be able to fully engage if the scenario isn't well designed and faculty may struggle with facilitation and evaluation. Faculty require time and training to become competent SBL educators. Adequate time in nursing courses must be designated for SBL based on the current best evidence. Including pre-briefing, the scenario, and debriefing, the

pilot study SBL experience was seventy-five minutes. Depending on the focus and design more or less time may be needed for adequate prebriefing, scenario activity, and debriefing. Finally, research is time intensive and requires funding, so programs can have access to evidence-based educational processes. Allocation of funding for more SBR is critical to the development of best practices in SBL

This pilot study provides a frame of reference to develop more studies regarding SBR explicitly looking at the effects of prebriefing. To advance the knowledge of SBL more research in this area is needed.

Taking into consideration the limitations of this pilot study, a similar study with a larger sample size would provide a better analysis of the effects of prebriefing on student performance in SBL. Providing more orientation and training to FSFs or the use of standardized patients would reduce the chance that participants would receive inappropriate cueing. Improved training on evaluation using the C-CEI including a consensus process before assessment of the participants' performance can address issues of interrater reliability. Faculty will benefit from training in effective theoretically sound prebriefing methods, and this could reduce any impact an expert prebriefing facilitator might have on the study results. This study was originally completed with students in an advanced medical-surgical course. It will be important to research the effect of prebriefing in different SBL settings such as a fundamentals course, a pediatrics course, a mental health course, a community course, and SBL in the practice setting. It could be helpful to do a comparison group design with participants from different schools and the effect of different prebriefing methods in a time-series design. When researching the effectiveness of prebriefing for SBL with different settings or through the length of a nursing program, some

supporting qualitative data should be collected. Participants' experiences can further strengthen the research and resulting knowledge gained.

Chapter Summary

The purpose of this chapter was to synthesize the entire dissertation. Prebriefing as part of SBL was the focus of the pilot study. The literature review exposed the need for more research on effective models for prebriefing to support student development of clinical judgment and the performance of competent care. The methods chapter provides the details for implementing a novel approach to SBR. The results chapter contributes to the body of SBL knowledge as the factors that affected the participant outcomes were found. Those limitations may have potentially masked the effect of the different prebriefing activities on the participant outcomes. Concluding the chapter was the discussion of implications for students, educators, and administrators as well as ideas for future research.

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APPENDIX A

Table 1: Literature Review Results, Describes Concept of Prebriefing

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
Page-Cutrara (2014)	Level 4A Literature Review	The role of prebriefing in developing students' abilities to notice aspects of the clinical situation and to anticipate patient needs and an intentional focus on linking students' existing knowledge to participant objectives may be beneficial for forming essential competencies and outcomes. A review is warranted to explore further the presence of prebriefing in the literature and its role as seen by educators and experts. Any gaps revealed will be considered in the context of nursing education and student learning.	Databases • Medline • CINAHL • ProQuest Nursing & Allied Health Source • ERIC • PsycINFO • Academic Search Elite The journal – Clinical Simulation in Nursing (CSIN) also searched using the search terms Ten-year time frame: 2003 – 2013 Keyword search term and Boolean combinations of prebriefing, briefing, and pre-simulation were combined with nursing, education, and simulation Non-English titles were excluded	• Articles specifically mentioning prebriefing in the context of nurse or nursing student simulation experiences were included • Research, case study articles, and available full-text dissertations were considered.	• Database search – 10 articles • Journal database CSIN – 5 articles • Similar terms: prebriefing, briefing, pre-simulation • International Nursing Association for Clinical Simulation and Learning simulation standards terminology uses prebriefing and briefing. • Purpose: opportunity to clarify the process of the upcoming simulated scenario. Primarily, prebriefing seemed to involve a review of objectives, an orientation to the simulation manikin or environment, and general functional guidelines for the simulation activity, such as communication, roles, conduct, and confidentiality. • Alternate learning structures used: Use of nurses' oral shift report, use of a white board to map out a plan of care before the students engaging in a simulation scenario, video, demonstration of skills immediately before the scenario • Anxiety related to lack of knowing what to expect, students with prior experience valued and applied their existing knowledge when preparing for the simulated scenario	• Poster presentations and abstracts were found. However the full documents were unavailable, so they were not considered in this review. • Partial information can skew the data of the review.

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
					• Students identified the importance of knowing what to notice, interpret correctly, and respond to in a simulation, and these skills are challenging to pull together. • Prebriefing sets the methodology of simulation based learning, creates a framework for understanding • Students expressed the need for more prebriefing to be successful	
Rudolph, Reamer, Simon (2014)	Level 3	Literature review: practices that contribute to psychological safety in simulation based learning activities.	Systematic, non-protocolized review Read and hand searched through references Ask experts in debriefing, psychological counseling, organizational learning, clinical and general education, adult behavior change for 1 – 5 references relevant for creating the context for learning and change. Used these sources to develop key word and worked with social science librarians to search social science databases finding additional articles and books.	• Developed a behaviorally anchored rating scale on briefing and debriefing • Element 1 of 6-element Debriefing Assessment for Simulation in Healthcare (DASH) assess what instructors do or fail to do in a pre-simulation briefing to establish an engaging environment for learning; includes: • Clarifies course objectives, environment, confidentiality, roles, and expectations. • Establishes a "fiction contract" with participants • Attends to logistic details • Conveys a commitment to respecting learners and understanding their perspective	• 78 articles reviewed • Creating psychological safety – goal for simulation • When learners have a sense of control and clarity about what is expected of them and what to expect from those in authority, provided it is benign, they are more likely engaged. • Clarity about what is expected in a simulation and debriefing also increases learner' ability to meet those expectations. • Simulation etiquette, norms, and roles may be unfamiliar to learners, the instructor must clarify them. • Clarifying learning objectives, actively exploring learners' objectives, explaining/ demonstrating the properties of the simulators, explaining process and timing of the debriefing, creating shared agreements with learners regarding role of instructors and learners is helpful • Clarity regarding formative or summative assessment critical • Instructors can define the parameters of the learning environment and build trust by informing learners whether visitors, researchers, colleagues, patients, preceptors, or students will or will not be privy to their performance • Attempt to create a fictional environment engaging enough to draw people in • Make an explicit and collaborative agreement with participants, both instructors and learners have commitments. • Three types of fidelity: physical fidelity = degree to which the simulation elements are sensed as approximating visual, tactile, auditory, and olfactory reality. Conceptual fidelity = degree to	

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
					which simulation proceeds in a causally plausible manner. Emotional/experiential fidelity = degree to which the simulation generates feelings learners would expect in a similar real situation. Realism is a property of the learners' perception rather than a property of the simulation. • Instructor reveals own vulnerability in setting the fiction contract, by asking the learner to suspend belief and play along, when the learner feels they haven't done well, they are less likely to blame the instructor and will instead reflect on their practice. • Address how-to details; start and stop time, breaks, how to handle pages, texting, e-mail, social media, telephone calls, transportation, refreshments, and transit time to next class prevents worry and allows learners to focus on learning. • Learners construct meaning about the world around them, engage in experiences and make meaning of them, sense-making shapes how they perceive reality and act. • Instructors communicate by inquiring into their perspective, see learners as meaning makers, and show they value students' internal sense-making processes, helping learners to believe in their thoughts and emotional processes to improve.	
Chamberlain (2015)	Level 3	Provide a concept analysis of prebriefing utilizing the framework developed by Rodgers (1989)	Literature search, CINAHL database, between 2000-2015 Terms used: Prebriefing, pre-scenario, pre-simulation, simulation & phases, simulation & briefing	• Concept: planning activities, provide students with objectives and theoretical concepts for the scenario, role guidelines, and components of evaluation; orientation to the manikin and equipment to be used in simulation; student completion of preparatory work – reviewing knowledge and skills utilized during the simulation; informing participants of the upcoming components related to debriefing; suspension of disbelief; roles during the scenario; create a safe and trusting learning environment; identifying student expectations • Surrogate terms: pre-scenario, pre-simulation, preparation, briefing, pre-scenario huddle, pre-simulation briefing, reflection-before-action • Attributes: common uses of prebriefing categorized as either orientation or engagement activities that occur before the hands-on scenario phase of the simulation; acclimation/review of simulation equipment and supplies, review of behavioral expectations – suspension of disbelief and roles during the scenario; identification of learning and debriefing objectives; preparation assignments involving cognitive and/or psychomotor domains, scenario discussion and application of the nursing process, creation of a safe/trusting learning environment. • Antecedent: planning of a simulation, stimulated by a learning goal or objective an educator desires participants to achieve. • Consequences: outcomes of prebriefing include enhanced satisfaction, participation, and learning effectiveness of the simulation experience. • Related concepts: briefing and prebriefing are often found interchangeable; briefing = information being conveyed; prebriefing = information being acclimated		

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
				• Model Case: Educator plans preparation assignment including readings, worksheet, short video, provide appropriate equipment and devices for practice before sim. Orientation activities including review of manikin abilities, equipment for the scenario, review of simulation confidentiality policy and need to suspend disbelief, and identification of participants' roles. Plans collaborative learning engagement activities that will be scheduled before the simulation, includes discussion and collaboration among learners applying the nursing process, encouraging teamwork and providing cues to help guide learners in identifying appropriate plans of care. Definition • Prebriefing is an educator designed phase of simulation that is implemented at a designated time before the 'hands-on' scenario and includes both orientation tasks and learner engagement activities that will enhance learner satisfaction, participation, and effectiveness of the simulation experience.		
Page-Cutrara (2015)	Level 3	To provide a conceptual understanding of the use of prebriefing in simulation and to propose an expanded definition of this concept for nursing student education using Walker and Avant's process (2011)	Databases • Medline • CINAHL • ProQuest Nursing & Allied Health Source • ERIC • PsycINFO • Academic Search Elite Parameters • 10-year time frame 2004 – 2014, reflect time period significant evolution in the use of simulation in nursing education. • Exclude non-English titles, dissertations, presentation abstracts. • Keywords prebriefing, briefing combined with nursing, education, simulation	• 31 articles total, four reviews, five qualitative research, nine quantitative research, seven cases or projects, six reference/discussion papers • Use of the concept: prebriefing, briefing, and pre-simulation were used to refer to the phase of stimulation occurring immediately before the clinical scenario. • Prebriefing serves to assist learners in outlining scenario objectives, includes communication of the patient presentation, roles, tasks, time allotment, and orientation to equipment and the general environment. • The INACLS standards identify it as briefing – importance of providing clear information before the simulation, and that objectives should be tailored to the learners' knowledge and experience. • Learners asked to become familiar with the requirements of the simulation learning environment and the simulated nursing and patient context • Attribute: considering the situation, building meaningful learning environments, identifying the rationale for care, encouraging students to exhibit their understanding during the scenario, instructing students to talk aloud, discuss scenario significance, and introduce ways to focus on patient needs. • Perceiving the meaning of the scenario information during prebriefing, important for supporting student clinical learning and connecting prebriefing activities to the other phases of the simulation process such as debriefing. • Briefing defined as meeting or giving information or instruction or as the actual information or instructional material itself • Prebriefing involved preparation for the scenario topic while briefing involved familiarization with technology, equipment and the opportunities and limitations of the simulation scenario. • Pre-simulation defined as directly relating to the timing of activities that occur before the scenario • INACSL standards: prebriefing before the simulation; includes an opportunity for learners to plan, presentation of frameworks for communication or safety • Video prebriefing strategy, clarify what students could anticipate, evident in the literature. • Orientation describes introductory information and a review of available equipment, presenting functional/operational aspects of the environment and the patient state Model Case • Before arriving for the scheduled simulation, the learners review the simulation topic, relevant learning objectives, and a synopsis of a scenario. The learners are greeted by a nursing simulation facilitator who provides them with a copy of the scenario synopsis, learning objectives, a patient chart and recent nursing		

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				report, and role descriptions. Once the learners review this material together, the facilitator asks questions such as, "How are you feeling about your preparation for this scenario?", and "After reading about this patient, what stands out for you as important and why?" The learners are provided time to plan for how they could care for the patient and discuss the rationale for their decisions. The facilitator shows them the simulation environment and equipment required, and they are encouraged to ask questions as needed and to discuss feelings they have about participating. The facilitator brings prebriefing activity to a close by reminding learners of time frames, and that a debriefing will follow the scenario. The learners begin the scenario with a plan, rationale, or options for approaching the care of the patient. Also addressed a contrary case and a related case Antecedents • Understanding learner's level of knowledge and prior experience • Functional and operational information provided before a simulation is tailored to knowledge of the learner's readiness to learn with simulation as a tool • Presence of frameworks or specific prebriefing strategies when asking students to perceive meaning and plan for patient care Consequences • Learner's engagement in the scenario through the enactment of a plan • Readiness to receive cues embedded in the scenario • Reinforcement or revision of ways of thinking • Performance during the scenario and debriefing • Anxiety levels may be affected Definition • Information and activities that are provided to learners in consideration of their level of knowledge, learning needs, and prior experiences; structured for anticipatory reflection and planning; and facilitated by a qualified nursing simulation educator to support decision-making, psychological safety, and debriefing activities.		
Victor-Chmil (2016)	Discussion of prebriefing – No level	• Scientific method, nursing process, and experiential learning models all include phases for planning, action, and evaluation • Prebriefing should include an orientation to both the simulation environment and manikins used in enacting the case scenario, discussion of academic integrity and review of the fiction contract, identify roles of team members and provide an introduction to the case • In the nursing process planning includes the use of a care plan or concept map, this critical step in the nursing process is typically not included in prebriefing, making simulation-based learning experiences inconsistent with nursing process, scientific method, and experiential learning principles. • Prebriefing design should be rooted in experiential learning theory. It is most effective when the learner is engaged in structured activities that include abstract conceptualization, active experimentation, concrete experience, and reflective observation. • To be consistent with reality simulation-based learning experiences should replicate what is expected of the learner in the actual clinical setting and be modeled on the nursing process. This plan is shared with instructors before caring for patients in pre-conference, this processes could be replicated in prebriefing. • For learners to evaluate their performance, they need to identify their expected outcomes. A formal prebriefing that allows for structured planning provides the learner with this opportunity and facilitates the self-evaluation that is crucial in debriefing.				
Tyerman, Luctkar-Flude, Graham, Coffey, Olsen-Lynch (2016)	Level 4A Review protocol	Description of a best practices literature review of prebriefing	• The inclusion of all health professionals and/or health professional students participating in simulation using medium-fidelity, hybrid, high-fidelity, computerized manikin, or standardized patient. • Consider studies that evaluate characteristics/activities of pre-simulation preparation and/or pre-simulation briefing/prebriefing. • Comparators may include traditional lecture, alternate preparation or briefing, or no preparation and/or briefing activities. • Outcomes: following learner outcome measures: knowledge, attitudes, self-confidence, self-efficacy, anxiety and skill performance. Competency-based checklists, rubrics,			

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			and scales: including researcher developed tools to well-validated and reliable instruments. • Experimental, epidemiological, RCT, non-RCT, quasi-experimental, pre/post studies, prospective and retrospective cohort studies, case control studies, analytical cross-sectional studies, descriptive epidemiological study designs (case series, case report, descriptive cross sectional). • Medline, CINAHL, PsychINFO, ERIC, Web of Science, Cochrane Central Register of Controlled Trials as well as Dissertations, Google, Grey literature (OpenGrey, Grey Literature Report, Grey Source). • Keywords: simulation, prebrief$, brief$, prescenario, pre-scenario, presimulation, pretrain$, pre-train$, preparation, orientation, facilitation. • Assessed by two independent reviewers for methodological validity before inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI). Any disagreements will be resolved through discussion with a third reviewer. • Data extraction: Duration, content, a method of delivery, populations, study methods, and outcomes of significance. Any questions will be sent to original authors. Any disagreements will be resolved through discussion with a third reviewer. • Data Synthesis: All results will be subject to double entry, effect sizes expressed as an odds ratio (categorical data) weighted means (continuous data) 95% confidence intervals. Heterogeneity will be assessed.		

Table 2: Literature Review Results, Qualitative Evaluation and Quantitative Evaluation of Participant Perceptions

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
Husebo, Friberg, Soreide, Rystedt (2012)	Level 4A	How do facilitators in and through instructions in the briefing make visible the practical skills necessary to act in the simulation scenario? How do students display their understanding of these skills, and how do facilitators make use of the student' understanding (or misunderstanding) for correcting the students' performance? In what ways can facilitators' instructions bridge the gap between the concrete conditions of the simulation and the correct	81 nursing students Age range 22 – 53 years 72 women 9 men Final semester of a three-year nursing program	Evaluation of 14 video recordings of the briefing sessions 3 step review process (Heath et al. 2010) 1. All video recordings viewed several times 2. Video recordings systematically reviewed with focus on the events in the interaction between the facilitator and the students and within the student group 3. Analytic review of the data corpus was undertaking – 11 briefings were chosen for this more intensive analysis, three	• Prebriefing activities included Before the briefing • 2-hour lecture on CPR, airway sizing, & defibrillation • 1-hour individual skills training session on BLS Briefing • 20-minute session (14-25 minutes), facilitators gave each group an introduction to the bed, patient simulator, and medical equipment in the sim room • The facilitator also introduced the participants to the learning objectives: the BSL algorithm, teamwork, and leadership. Results • Three types of tasks continually problematic for all students to understand and	• Limited to one group of students at one school • Limited to resuscitation training

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
		performance of resuscitation work in real-life conditions?		briefings were left out due to irregularities • Transcription of speech, gestures, bodily positions, and actions of each facilitator and student for the 11 briefings • Identification of recurrent patterns analyzed into interactional sequences, compared to see if it was representative of all briefings Three briefing sessions were chosen for an in-depth analysis of the way recurrent instructional problems emerge during demonstration of tasks	master, addressed in every briefing 1. Taking the correct position 2. Keeping airways open 3. Ventilating with a bag mask Even with previous BSL training, coordination of teamwork and medical equipment was new to students. • During briefing sessions important facilitator behaviors included: • Attentiveness to students' conduct to gauge their understanding • Facilitators seek evidence of participant understanding, through verbal communication and observing participant actions • Challenges included: • Students struggle differentiating between specific features of the simulation setting and clinical practice when engaging in simulation with a patient simulator, and without clarification, students make erroneous assumptions	
Rochester, Kelly, Disler, White, Forber, Matiuk (2012)	Level 1	• Student feedback on quality of the simulation • Impact simulation had on student learning and contribution of the experience of understanding the RN role	1st year BSN students at an Australian University, a convenience sample of 12 students who attend two tutorial groups. 11 students were female 1 male Median age 23	Exploratory focus group interview, audio recorded and transcribed, thematic analysis completed. Three researchers completed thematic analysis separately and then compared themes. The 3 found consensus on themes and were then confirmed by a panel of 3 expert educators experienced in simulation methods.	• The primary aim of this study was not to evaluate the effectiveness of prebriefing, however, during the focus groups the students provided feedback on the prebriefing • Theme: Knowing what to expect, having the scenario to read online before the simulation helped students understand what was to take place and saved time on the day. "You want to	• Small sample size at a single university • Didn't discuss the issues with focus group data

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
					prepare because it is different to a lab class because you know you will need to communicate and perform, the teacher will not do all the talking." Additional background reading helped to understand the patient and context. • Theme: Assuming roles for the simulation, skill review session before simulation beneficial – assisted students in assuming their role. Also, spending time with simulation participants in skills review helped generate relationships that facilitated a smoother simulation experience • Watching the preparation video before simulation participation was extremely helpful. Provided a visual image of their interdependent roles. They could model their responses off of the experienced nurses on the video. It helped the students feel more comfortable.	
Kable, Arthur, Levett-Jones, Reid-Searl (2013)	Level 1	Test the application of these evidence-based quality indicator statements as a useful guide for simulation design, implementation, and evaluation of undergraduate nursing programs.	2 Universities; 85 – 1st and 2nd year nursing students	17 Likert-type questions designed to test the extent to which students perceived the simulation activity to meet the requirements of quality in teaching and learning in simulation, based on quality measures statements. • Quality measures statement for student preparation and orientation	• The primary aim of this study was not to evaluate the effectiveness of prebriefing it was one part of the overall evaluation tool, overall the prebriefing scores were lower than scores for other areas of the survey. • Description of prebriefing by scenario for 1st university 1. 2-online clinical-reasoning scenarios based on postoperative fluid	• Reliability of the tool was not discussed. • There was not a control group, and the interventions were all very different so the numbers for each simulation are small and the N for each

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
				(addressed in 3 survey items) Structured orientation is provided for students prior to the simulation session, and depending on the students' prior exposure to simulation activities, includes an introduction and an opportunity to become familiar with the learning objectives, structure, timing and process of the session; the simulation environment, equipment, manikin, monitoring devices, and ICT (information communication technology) to be used. Adequate briefing before simulation sessions alleviates students' anxiety and improves learning. Additional preparation before simulation activity in the form of lectures learning packages, or skills training provides the scaffold that assists students to perform in simulated situations. Ten simulation sessions were evaluated.	and electrolyte disturbances, readings, and workbook preparatory questions, and skills laboratories in managing IV therapy and giving IV medications. 2. Reading types of cognitive impairment in the elderly, related workbook questions, and a skills laboratory immediately before the simulation focusing on cognitive assessment. 3. Readings from textbooks and articles, and laboratory session on conducting a mental status assessment and a suicide risk assessment immediately before the activity • Description of prebriefing by scenario for 2nd university All scenarios occurred during an all day workshop, preparation for the workshop day included textbook readings and workbook questions, and preparatory tutorials. • Prebriefing survey results • 71% of students felt well prepared theoretically before the simulation activity. Mask-Ed (KRS simulation) sessions felt significantly more prepared (82%) than other students (59%) ($p<0.001$) • 76% of students considered that they had the required clinical skills to complete their activity. Mask-Ed	simulation that was evaluated may not be adequate.

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
					(KRS simulation) sessions felt significantly more prepared than other students ($p<0.001$) • 84% of students felt orientation and briefing before the simulation activity was adequate by all students and 92% of 1st-year students ($p<0.001$) • Table 4 explored student preparation and orientation by type of clinical scenario.	
Kelly, Hager, Gallagher (2014)	Level 1	Investigate the contribution of 11 specific simulation components to the enhancement of clinical judgment for students from three study streams within an undergraduate nursing program.	Final semester students from 6 classes over two years (N = 102 of 150 possible participants) at one large Australian University 57% - 3-year nursing program students who have returned to school 25% - 2 year post-bacc students 18% - attended technical college, two-year completion students 82% female 68.9% 19-25 years 63% 2 or fewer years nursing experience 70% one or no previous simulation experience	Quantitative descriptive study of nursing students' ratings of simulation components that contributed to clinical judgment. • Tool pilot tested on 30 students, and five questions were modified. • Participants asked to rate each of 11 components of the simulation on the benefit the component had on applying clinical judgment using a 5-point Likert Scale • Frequencies and percentages for categorical data. • Means and standard deviations or median and range for continuous data • ANCOVA used to determine if year in program, program type, years of nursing experience, or	• The primary aim of this study was not to evaluate the effectiveness of prebriefing it was one part of the overall evaluation tool • Briefing and orientation to the simulation area statement: 3.48 (SD 1.19) • Patient care notes statement: 3.23 (SD 1.27) lowest rated statement	• 68% response rate could be better; there is some selection bias by those that choose to complete the survey. • Survey requires use in different populations to determine psychometric properties • Self-report as a single level of inquiry has limitations in reliability related to social desirability • Timing of the survey could affect the participant's reactions • A multi-site survey would provide more generalizable findings.

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
				gender influenced students' ratings		
Nevin, Neill, Mulkerrins (2014)	Level 1	Ascertain whether the nursing students perceived the simulated learning support package to be beneficial in preparing them for the responsibilities of managing care of an acutely ill patient; to determine the acceptability of the simulation package in comparison to more traditional classroom-based teaching methods; to identify if the students found this learning experience an opportunity to evaluate their clinical practice.	Piloted simulated learning support package with 134 3rd year nursing students, evaluated using a questionnaire, 87 responded. Step 3: Select priority problem and develop problem drawn from an actual clinical case(s) Information supplied about the various roles they would be expected to perform when caring for a patient post-op & related to previous lecture content Website addresses and video materials demonstrating how Simman can be utilized in a classroom setting were also provided for students	Student evaluation: Questionnaire tool distributed at the end of the teaching session, designed to elicit information on participants' views of the learning support package they received before the teaching session. 15 statements and three open-ended questions, asked to state their level of agreement with each statement 5-point Likert Scale, strongly agree to disagree strongly Support package views	• The primary aim of this study was not to evaluate the effectiveness of prebriefing, one part of the evaluation questionnaire addressed the learning support package provided before the simulation session to help prepare students for the problem-based learning simulation session. 1. The support materials I received before attending the simulation session prepared me for the session. Strongly agree or agree: 80.5% 2. The support materials I received were well structured and easy to follow. Strongly agree or agree: 89.6% 3. The website I accessed before I attended the simulation session was useful in preparing me for participating in the simulation session. Strongly agree or agree: 66.6% 4. I needed more support with the preparation for this session Neutral: 35.6%; Disagree, or Strongly disagree: 41.3%	• No way to verify if participants accessed and utilized the support package • No control group • Limited to a single site • Selection bias from those who choose to turn in the survey
Koo, Layson-Wolf, Brandt, Hammersla, Idzik, Rocafort, Tran, Wilkerson (2014)	Level 1	Evaluation of student perceptions of the interprofessional educational experience (IPE) for nurse practitioner (NP) and pharmacy students via qualitative data analysis.	30/46 Simulation participants engaged in focus groups, it was a mix of NP and pharmacy students	Qualitative analysis of focus group data.	• The primary aim of this study was not to evaluate the effectiveness of prebriefing, however, during the focus groups, the students provided feedback on the prebriefing and a need for more	• Lacked follow-up with the participants to verify that analysis of the focus group data was what the participant

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
					prebriefing in future IPE simulations. • Prebriefing included reviewing the educational objectives of the simulation experience and required readings • Students expressed a desire for a more comprehensive orientation during the focus groups. • Should have included orientation to the different technology being used during the simulation scenario	s meant during their discussions. • The coders were in the development and implementation of the simulation and may have unintentionally added bias to their analysis and coding.
Leighton, Ravert, Mudra, Macintosh (2015)	Level 4A	Revise the SET items to be more congruent with current simulation standards and practices and examine psychometric properties of the Simulation Effectiveness Tool-Modified (SET-M)	1288 students 13 campuses BSN Programs Gender 1003 – female 161 – male 124 – missing Ethnicity 532 – White 369 – Black/AA 161 – Latino 148 – Asian 32 – Native Hawaiian/Pacific Islander 10 – Native American/Alaska Native 36 – Missing Program Level 16 – 1st year 247 – 2nd year 581 – 3rd year 420 – 4th year 24 – missing NA work 736 – no 480 – yes 72 – missing Time at work 51 – none 87 – <1 year 153 – 1-2 years 113 – 3-4 years 133 – 5+ years	• SET-M completed online after simulation and debriefed. • Completed on the CMS site at one university and using Survey Monkey at another university Validity Exploratory factor analysis Reliability Internal consistency reliability for each subscale	The primary aim of this study was not to evaluate the effectiveness of prebriefing. However, it is a part of the SET-M Kaiser-Meyer-Olkin Test (KMO) = 0.936, means adequate sampling achieved. All items negatively skewed, unweighted least squares for factor extraction. • Factor 1 = confidence • Factor 2 = debriefing • Factor 3 = prebriefing • Factor 4 = learning Factor 3 statements Prebriefing increased my confidence Prebriefing was beneficial to my learning Reliability Prebriefing subscale consists of two items with an internal consistency reliability acceptable at 0.833.	•
Franklin, Gubrud-Howe,	Level 2A	Does expert modeling have greater efficacy in	20 senior nursing students of 48 chose to participate	NLN Student Satisfaction and	ANOVA results for relative change scores between groups were not	• Convenience sample size

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
Sideras, Lee (2015)		improving novice nurses' confidence than voice-over PowerPoint lectures or reading assignments used as simulation preparation?	from a nursing school, Pacific NW region of the U.S. Five weeks before simulation event, all students instructed to go to their CMS and review the prebriefing material at least four times. Intervention: 70 minutes of expert-modeling video; care of 1 post-op patient, technical and behavioral skills, using think aloud techniques, including seven related practice concepts. Active Control: 45 minute voice-over PowerPoint + 8 online activities Passive Control: Access to articles, policies, and procedures; estimated time to review 45 minutes	Self-Confidence in Learning Scale One-way ANOVA self-efficacy change scores from pre-post. Goal to generate effect size with Cohen's d and eta-nu squared Parametric and nonparametric correlations were used to examine the relationship between changes in competence and self-efficacy scores over time.	significant F (2, 17) = 2.37, p=0.124, eta-nu squared = 0.218. Relative change in self-efficacy scores was greater in the expert modeling group, Cohen's d = 1.068 and voice-over PowerPoint group d = 1.363 compared with the reading group. Because group effects were not significant combined the expert modeling and voice-over PowerPoint groups for further analysis as a comparison to the reading group. Significant t(18) = 3.08, p = 0.003, Cohen's d = 1.501 No association between change in competence scores and self-efficacy scores considering both the raw scores and relative change compared with baseline evaluation. Using linear regression to adjust for the intervention group, there was no relationship between change in competence and self-efficacy scores.	• Single university • May under-represent groups based on age, gender, or race, previous healthcare experience • Small sample size with limited power
Atayee, Awdishu, Namba (2016)	Level 1 Level 3	To determine the effect of a prescription review module on first-year pharmacy students ability to identify and correct prescribing and dispensing medication errors involving the top 100 medications	63 first year pharmacy students All students had the same intervention, no control group. Average age 22.2 38% male 83% have had some exposure to the practice of pharmacy before entering pharmacy school. 50% community pharmacy 22% hospital pharmacy	• Pre/Post knowledge and confidence survey; 7 MCQ of key concepts from top 100 drugs, pharmacy law, and calculations + 13 MCQ regarding pharmacy experience, preferred learning format, & self-assessment of prescription review skills • Individual and group grade for the correct review of prescriptions in simulation	• The primary aim of this study was not to evaluate the effectiveness of prebriefing. • Based on the description of the design description in fall quarter the students attended a 90-minute lecture. This was the prebriefing activity. Independent study was left up to the students. They participated in a simulation 4-weeks after the relevant lecture. • In winter quarter the students attended a 60-minute workshop expanding on the information in the fall lecture and simulation	• Lack of validated prescription review assessments for faculty use. • Timing of prebriefing not evaluated for effectiveness, not controlled for • No control group

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
					information. This was the pre-briefing activity. Independent study was left up to the students. They participated in a simulation 1-week after the relevant workshop. • Fall semester MCQ scores Pre-test 33.9% (SD 19.4) Post-test 49.3% (SD 19.6) Statistically significant P<0.000 • Simulation individual prescription checking scores Fall – 84.1% (SD 21.9) Winter – 86.4% (SD 13.9) Not statistically significant P=0.53 • Simulation group prescription checking scores Fall – 79.1% (SD 16.2) Winter – 98.6% (SD 4.7) Statistically significant p<0.001 Learning curve related to team roles.	
McDermott (2016)	Level 2A	Specific aims of Delphi study were to (a) determine expert simulation educators' perspectives of the prebriefing role to SBL and (b) develop guidelines for simulation educators in preparing participants for simulation learning.	Recruited from a database of Certified Healthcare Simulation Educators (CHSE) through the Society for Simulation in Healthcare from a pool of 400 members Due to need to send out each round of the survey researchers knew participants, the participants unknown to each other. Round 1 – 59/400 responses Round 2 – 37/59 responded, 36 provided their e-mail address for round 3	3 round Delphi Survey using Qualtrics Round 1: 8 open ended qualitative questions regarding simulation after a review of the literature. The consensus was set at 70% before sending out the surveys. Round 2: 5-point Likert Scale indicating the level of agreement with the statement. Round 3: provided feedback to participants, about the item statements that did not reach agreement in round 2, giving information about the group response for each item. Then asked to	Round 1: • Using QSR's NVivo to allow for categorizing items into themed nodes. • Findings verified with expert nurse educator • Three components/phases of prebriefing; planning, briefing, facilitating • 4th theme was the importance of prebriefing • 116 Item statements generated from answers to the questions in round 1 and verified by a CHSE member who was not part of the Delphi group. Round 2: • 68 items reached a consensus of >70% • All items that reach agreement or disagreement	• Delphi studies lack universal guidelines for conducting the study. • Qualitative questions could have skewed answers, only verified by one other expert. • Delphi techniques are time-consuming to the participant, recruitment and attrition are often an issue. • Personal interpretation of the

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	Outcome Measures	Significant Results * include p values	Limitations
			Round 3 – 30/37 responded	reevaluate those statements with the same 5-point Likert Scale. Were allowed to keep their same response or alter the response.	consensus were banked. • Items lacking consensus were those that reflected strategies to prepare learners for SBL, methods for delivering prebriefing, and whether to disclose specific versus general learning objectives. Round 3 • 15 items reached a consensus of >70% • 33 items never reached consensus, which included strategies for prebriefing and length of time for prebriefing • Many expressed that choosing the correct time and prebriefing strategies were partially dependent on the learning objectives. That was why they chose the neutral category for the strategies and times statements. Findings • Prebriefing should be considered as roles of the educator; planning, briefing, and facilitating • Learner objectives and characteristics should be used in planning for prebriefing • Learner objectives and SBL purpose guide the amount and type of prebriefing See Table 2, P225	statements might have led to biases or misunderstanding from the participants. Could have been improved with more attention to better content validity between rounds.

Table 3: Literature Review Results, Faculty Evaluation of Student Competence or Performance

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	1. Outcome Measures	Significant Results • * include p values	• Limitations
Fernandez, Pearce,	Level 2B	Evaluate the efficacy of a	N=231	2. Independent teamwork	• Because two scenarios were used,	• While more

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	1. Outcome Measures	Significant Results • * include p values	• Limitations
Grand, Rench, Jones, Chao, Kozlowski (2013)		computer-based teamwork process training (cTPT) intervention on medical emergency teamwork and patient care performance during simulated patient resuscitations.	4th-year medical students and 1st-, 2nd-, and 3rd-year emergency medicine residents as WSU Intervention = Computerized Team Process Training (cTPT) Control group = Placebo Training Covariate: Randomization occurred at the team instead of individual level: Control for the composite variable of medical skill level of education, # of resuscitations witnessed, participated in or led. Completed a factor analysis of the components to ensure the loaded under the same factor.	process and patient care behavioral checklist were developed for each scenario using evidence-based guidelines. 3. Time to completion 4. Behavior completed or not • Content validity by teamwork and clinical subject matter experts • Standardized data for comparisons • Teamwork coded by two doctoral psychology students blinded to assignment and hypothesis • Patient care behaviors coded by two emergency medicine MDs • Inter-rater reliability (IRR) for raters coding teamwork; Cohen's K = 0.66 (SD = 0.09) for categorical items and average correlation = 0.95 (SD = 0.12) for continuous items. • IRR for raters coding patient care behaviors; average Cohen's K = 0.97 (SD = 0.04) for categorical items and average correlation = 0.94 (SD = 0.09) for	ANCOVA was used to establish that the particular scenario used for assessment did not influence training outcomes. • ANCOVA to assess the effect of the training intervention on teamwork behaviors and patient care performance • After controlling for experience there was no significant effects of scenario participated in on teamwork behavior F(1, 40) = 0.06, p = not significant; or patient care F(1, 40) = 0.07, p = not significant • Scenario did not interact with CTPT to influence teamwork behavior, F(1, 40) 1.70 = 1.7, p = not significant; or patient care, F(1, 40) = 1.7, p = not significant • This supports generalizability of the training across two contexts related to resuscitation scenarios • Team size was also controlled for and did not have a significant effect so was removed as a covariate. • ANCOVA evaluate effects of cTPT on teamwork behaviors; experience composite treated as a covariate, training condition independent variable, teamwork dependent variable. • Experience covariate significantly related to teamwork, F (1, 42) = 8.14, p<0.01, teams with greater experience tended to engage in more teamwork behaviors.	participants than normal for simulation research, there are not enough numbers to supply enough power to detect effects in more complex models with more variables. • Limited to medical students and resident trainees • Evaluated the effects immediatel y after exposure to the interventio n, important to see how long the effects of training last. No evaluation for the decay of learning.

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	1. Outcome Measures	Significant Results • * include p values	• Limitations
				continuous items.	• When experience is controlled the effect of training condition on teamwork behaviors was significant F (1, 42) = 4.81, p<0.05, teams receiving cTPT intervention engaged in a greater number of appropriate teamwork behaviors during simulation than teams receiving placebo training. • ANCOVA evaluate effects of cTPT on patient care behaviors; experience composite treated as a covariate training condition independent variable, patient care behaviors dependent variable. • Experience covariate significantly related to patient care performance, F (1, 42) = 25.39, p<0.001, teams with greater experience tended to execute more appropriate patient care behaviors • When experience is controlled the effect of training condition on patient care behaviors was significant and moderate, F (1, 42) = 4.66, p<0.05, N^2_p = 10%, teams receiving cTPT intervention performed better with regard to standards for patient care than teams receiving placebo training	
Franklin, Sideras, Gubrud-Howe, Lee (2014)	Level 2B	Does expert modeling have greater efficacy in improving novice nurses' competence than voice-over PowerPoint	20 senior nursing students of 48 chose to participate from a nursing school, Pacific NW region of the U.S.	Randomized control trial 3-arm: Multi-patient scenario; students given 45 minutes to provide care	• Power analysis: equal group size 20, a power of 80%, alpha of 0.05, small standardized mean differences across groups (effect size 0.38) detectable	• Convenience sample size • Single university • May under-represent groups

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	1. Outcome Measures	Significant Results • * include p values	• Limitations
		lectures or reading assignments used as simulation preparation?	Five weeks before simulation event, all students instructed to go to their CMS and review the prebriefing material at least four times. Intervention: 70 minutes of expert-modeling video; care of 1 post-op patient, technical and behavioral skills, using think aloud techniques, including seven related practice concepts. Active Control: 45 minute voice-over PowerPoint + 8 online activities Passive Control: Access to articles, policies and procedures; estimated time to review 45 minutes	for 3 simulated patients single blind: two faculty blinded to the intervention were raters using the C-SEI 22-item rater-observation measure of competence, dichotomous response options, previous study improved interrater reliability by translating each item into a specific description 84-87%.	using standard F tests of equal means • Kappa for IRR of C-SEI = 0.811 • ANOVA results for raw change incompetence scores across groups were not significant; F (2, 17) = 0.29, p = 0.749, eta-squared = 0.033. • Change in competence scores was greater in the expert modeling group (d = 0.413) and voice-over PowerPoint group (d = 0.226) compared with the reading group. • Group effects weren't significant, combined expert modeling and voice-over PowerPoint and repeated ANOVA, also not significant F (1, 18) = 0.46, p = 0.507, eta-squared = 0.025. • Raw changes in the expert modeling versus voice-over PowerPoint were compared by t-test, not significant, t(12) = 0.39, p = 0.352, Cohen's d = 0.208	based on age, gender, or race, previous healthcare experience • Small sample size with limited power
Cheung, Koh, Brett, Bagli, Kapralos, Dubrowski (2016)	Level 3	Learners in the Web-based observational practice (OP) groups would achieve competency quicker than those preparing through reading materials only and would also demonstrate superior retention. Similarly, we hypothesized that learners engaging in the additional collaborative OP (COP) would outperform those doing so individually, which may be related to	30 University of Toronto undergraduate medical students w/out central venous catheterization (CVC) experience. 28 provided usable data) Preparatory materials, one week access after initial training: Control group – Reading materials only n = 10 Intervention 1 – Web-based, reading materials + individual OP n = 9	• Scheduled three sessions with 1-week spacing between following sessions, in-laboratory preparation session, one-on-one simulation based mastery learning (SBML) workshop in CVC and a retention test • Time to completion (TTC); beginning of physical practice trials	TTC • To conserve power, planned orthogonal contrasts were used to test the following two 1-tailed hypotheses for TTC measures • Mean (SD) RM: 62:19 (7:30) • OP: 51:30 (4:30) • COP: 47:04 (3:24) • Pooled OP: 49:10 (3:09) • Pooled OP is 13:09 minutes shorter than the RM group, t26 = -1.854, p = 0.038, d = 0.74; 21% reduction in TTC compared to RM group. • Comparison between OP and	• OP and COP groups had more preparatory materials, so time on task preparing might have been the causative factor. • Tracking of web-based prep materials may have been a causative factor • Pilot group, small N

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	1. Outcome Measures	Significant Results • * include p values	• Limitations
		differences in web site usage.	Intervention 2 – Web-based, reading materials + OP + collaborative OP n = 11	until participants achieved two perfect scores • Retention test performance; 1 week after the first SBML workshop video-recorded assessment of the skill. 2-raters blinded to group allocation assessed these recordings using the task-specific checklist and global-ratings scale (GRS). • Comparison of website behavior between OP and COP groups. • Self-report of preparation time.	COP non-significant t26 = -0.054, p = 0.3, d = 0.32 Retention test • An interclass correlation coefficient was calculated to ensure good inter-rater reliability. • Checklist = 0.99 • GRS = 0.821 • Comparison of retention test performances using 1-way ANOVA for checklist and GRS with Alpha value set at 0.05. • No significant difference between the 3 groups • Checklist: F (2, 26) = 0.436, p = 0.651 • GRS: F (2, 26) = 0.436, p = 0.697 Preparation and website usage • Independent student t-tests with 2-tailed alpha value set at 0.05. • Cohen d was calculated where relevant as a measure of effect size • COP spend significantly more time (t16 = -3.075, P<0.01); produced more elaborate answers, (t16 = -2.192, P=0.044), inferred from word count; non-significant, but identified more differences in the OP videos, (t16 = -1.66, p = 0.116); non-significant increase during the in-lab prep session (t17 = -1.558, p = 0.138). No difference in preparation time after the in-lab prep session F (2, 26) = 0.236, p = 0.792	• Control group interventio n didn't mimic the OP or COP group in length or complexity . What if the reading group did something similar to COP in an online discussion group?
Page-Cutrara, Turk (2017)	Level 2B	Is there a difference in competency	Large University Nursing Program in Canada – 379	Creighton Competency Evaluation	• Sample size of 128, determined in an a priori power analysis	• Small sample size, less

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	1. Outcome Measures	Significant Results • * include p values	• Limitations
		performance and clinical judgment during a clinical simulation scenario between students who participate in a structured prebriefing intervention and those who participate in traditional prebriefing strategies? Do students receiving a structured prebriefing intervention perceive the prebriefing experience differently than students receiving traditional prebriefing? For those students who participated in structured and traditional prebriefing activities, what is the relationship between competency performance and the students' perceived prebriefing experience, and between clinical judgment and their perceived prebriefing experience?	students attending their fall (7th) or winter (6th) enrolled in their 4th year medical-surgical Randomized based on a section of the course in each semester they are in. Fall 157 students, 38 consented and 31 completed. Winter 222 students, 65 consented and 45 completed. Total 76 participants. Control group 34 received the traditional prebriefing activity; including an orientation to equipment, environment, mannequin, roles, time allotment, objectives, and patient situation as outlined by INACSL Structured prebriefing intervention 42, included the traditional and structured prebriefing; worksheet using language consistent with Tanner's clinical judgment model and attributes of prebriefing.	Instrument (C-CEI) and the C-CEI-clinical judgment (CJ) scale. • 23 item dichotomous scale divided into four competency subscales (Assessment, Communication, Clinical Judgement, & Patient Safety) • Validity and reliability Cronbach's alpha was >0.9 Prebriefing Experience Scale (PES) • Adaptation of Reed's debriefing experience scale. • Analyzing thoughts and feelings, learning and making connections, facilitator skill in conducting prebriefing, appropriate facilitator guidance • 20 item Likert response scale • Pilot of the adapted PES, Cronbach's alpha = 0.94 Demographic data: • Gender 92% female • Age range 20 – 49 years, mean 26 • Post hoc power analyses conducted for each analysis, including assessment of normality and homogeneity, determine congruence with underlying assumptions	was not met (p = 0.05, power 80%, medium effect size of d = 0.5). • ANCOVA to examine C-CEI scores between experimental and control groups, controlling for covariate of semester of enrollment. Statistically significant t (57.5) = -7.7, p<0.001, large effect, d = 1.8. Post hoc power estimated at 1(alpha = 0.05); significant effect of group membership on the C-CEI scores F (1, 73) = 59.9, p<0.001, partial eta nu squared = 0.45, when controlling for effect of semester. Large effect noted (partial eta nu squared = 0.45). • Mann-Whitney U test was used to compare the distribution of scores on the C-CEI-CJ between experimental and control groups. ANCOVA used to control for the covariate of semester; U = 128.5, Z = -6.2, p<0.001. Statistically significant between group membership and C-CEI-CJ, F (1, 73) = 74, p<0.001, partial eta nu squared = 0.5 when controlling for the effect of semester. Observed power was 1 (alpha = 0.05). Homogeneity of regression violated. Therefore where preliminary analyses demonstrated statistically insignificant differences between semesters on mean CJ scores t (74) = 0.26, p = 0.79, and	than needed for power analysis. • Limited to students in their final year of nursing, may not be generalizable to other years. • Selection bias with volunteer participation that may have different traits than those who didn't volunteer. • PI as both rater and interventionist can be a source of bias. • More teaching is deemed better than less, so the unequal amount of prebriefing is a bias. • Completing the PES immediately after the simulation scenario and before debrief may be too early a time frame to get the most informative results.

Author(s). (Year)	Kirkpatrick evidence model level (Hammick, 2010, p.13)	Study Question(s) or Objective(s)	Subjects/ Interventions/ Control Groups	1. Outcome Measures	Significant Results • * include p values	• Limitations
				and the selection of inferential statistical tests. • Bootstrapping techniques were used to increase the robustness of the analyses. • A significance level of <0.05 was used for all analyses.	while large statistical difference was evident in clinical judgement between experimental and control, semester may have had a medium effect (partial eta nu squared = 0.06) for the participants clinical judgement. • 2nd question Mann-Whitney U test was used to compare the distribution of PES scores between the experimental and control groups. Greater for experimental group than control group U = 281.0, Z = -4.54, p<0.001. Large statistically significant difference is evident in the higher scoring of the perceived prebriefing experience by the experimental group. • 3rd question Spearman's Rho correlation coefficient was employed to examine the relationship between the experimental and control groups C-CEI and PES scores, the analysis was repeated with the C-CEI-CJscore. Non-significant within group correlations of PES scores with experimental group C-CEI scores (rs = 0.09, p = 0.56) and C-CEI-CJ (rs = 0.1, p = 0.54). Non-significant correlations of the PES scores with the control group C-CEI scores (rs = -0.18, p = 0.32) and C-CEI-CJ scores (rs = -0.32, p = 0.07). Post hoc revealed results with a small effect were underpowered.	

APPENDIX B

Greg Ross –Hemorrhagic Stroke
Instructor Guide

Student Level: Safe Care of One Patient
Pre-Brief Time: 10 minutes
Expected Simulation Run Time: 15 minutes
Guided Reflection Time: 10 minutes
Brief Description: ***"In a Nutshell"***
Students will complete care of one simulated patient in a 15 minute period. Preparation will include completion of organization sheet (similar to tool used in clinical rotations) with EMR (DocuCare). Patient assessments will be completed with faculty providing unfolding patient data. Student will be prepared to administer medications, implement ordered treatments and communicate with patient. SBAR will be used for communication to provider and other healthcare professionals.

Student Learner Outcomes and Criteria:

- Use understanding of contextual & environmental factors to promote safety, quality & teamwork in care of adults with common, unstable, chronic, acute health alterations. (Context & Environment)

1. *Effectively perform interventions that reflect priority problems while implementing best clinical practices.*

- Provide relationship-centered care to developmentally and culturally diverse adults with common, unstable, chronic, and acute health alterations using knowledge and evidence from nursing and other disciplines. (Relationship-Centered Care)

2. *Complete focused assessment of one patient accurately and in a timely manner.*
3. *Provide individualized teaching to the patient.*

- Integrate knowledge & science from nursing other disciplines to provide safe, quality, evidence-based nursing care to adults with common, unstable, chronic/acute health alterations. (Knowledge & Science)

4. *Performs medication administration (including oxygen) safely and accurately.*

- Use technology and information management systems to document nursing care and support decision making in the care of adults with common, unstable, chronic, and acute health alterations. (Quality and Safety)

5. *Utilize information technology to support patient care in completion of assessment.*
6. *Identify potential safety risks, implement safety measures for patient and self, and maintain a safety culture throughout simulation.*

- Function effectively and collaboratively as a member of intra- and interprofessional healthcare teams to provide care to adults with common, unstable, chronic, and acute health alterations. (Teamwork)

7. *Implement therapeutic communication with patient and healthcare team using the SBAR tool with healthcare professionals.*

Scenario-specific Student Learning Outcomes (for faculty use)

8. *Demonstrate assessment and data collection for a patient with hemorrhagic stroke including new neurological changes, vital sign changes, and possible seizure.*
9. *Demonstrate knowledge and critical thinking surrounding care of a patient with hemorrhagic stroke.*

Admission Date & Time: Today at 0900 **Simulation Start Time:** 1700 **Name: Greg Ross**	**Psychomotor Skills Required Prior to Simulation** • RAPS including focused neuro assessment • IV therapy skills

MRN: 6592103 **Gender:** Male **Age:** 47 years **Race:** Caucasian **DOB:** 7/9/19XX **Weight:** 154 lb 70 kg **Height:** 69 in **Religion:** **Major Support:** Significant Other: Sheila Ross, mother **Allergies:** NKDA **Immunizations:** current-influenza and pneumonia last fall **Attending Physician/Team:** Alvina Vang NP **Past Medical History:** History of deep venous thrombosis **History of Present Illness:** Admitted this morning after waking with the worst headache of his life **Social History:** Single Occupation: Over the Road Truck Driver **Primary Medical Diagnosis:** Hemorrhagic Stroke **Surgeries/Procedures & Dates:** **Nursing Diagnoses:**	**Cognitive Activities Required prior to Simulation** • Treatment and Nursing Interventions for a patient with neurologic conditions of hemorrhagic stroke and history of circulatory perfusion issues (deep venous thrombosis) • Therapeutic communication techniques • Knowledge of normal and abnormal neurovascular assessment findings **Concepts emphasized in this sim:** • Perfusion **Report Students Will Receive Before Simulation:** **S:** I'm here to give you report on Greg Ross. It is 1700, shift change. **B:** Greg Ross is a 47 year old male who was admitted early this morning with the worst headache of his life. He had a CT of his which showed a new hemorrhagic stroke. He is NPO and a fall risk. He has a history of deep vein thrombosis and takes daily aspirin at home. **A:** He has some slurred speech and a right facial droop. He has an IV in his right forearm and has normal saline infusing at 100 mL/hr. **R:**

Roles/Guidelines for Roles • Primary Nurse • Physician (Instructor)	
Lab Values: WBC: 7.3 Hgb: 13.3 (low) Hct: 36% (low) RBC: 4.3 (low) Platelets: 167 BUN: 16 Creatinine: 1.3 Glucose: 85 Serum Chloride: 105 Serum Potassium: 4.1 Serum Sodium: 142	**Physician Orders:** **Admission Orders:** LABS & DIAGNOSTICS: CBC, BMP, CT Head (Hemorrhagic Stroke) INTRAVENOUS FLUIDS: NS @ 100 mL/hr NUTRITION: NPO until swallow study completed (not yet done) MONITORING: Vital Signs and neuro checks q 1 hour and PRN; I&O q 8 hrs ACTIVITY: Fall risk, Up with assist only DISCHARGE PLANNING: Social Services referral for TCU RESPIRATORY CARE: Titrate oxygen to keep Sats >92%

Equipment/Environment	Medications
Setting: Med/Surg Unit **Pt ID Band:** Greg Ross DOB 7/9/19XX Age: 47 MRN 6592103 **Allergy Band:** NKDA (no band on) **Mannequin:** Mannequin **Bedside monitor:** not needed **Props:** • Peripheral IV in right forearm, Normal saline at 50 mL/hr (Incorrect rate) • Pyxis • Water glass and pitcher at bedside • NC available but not on patient **Embedded error: Incorrect IV rate**	**IV Fluids:** NS at 100 mL/hr **PO meds:** Aspirin 81 mg PO daily (due 1700) **IV Meds:** • Metoprolol 25 mg IV q4h PRN SBP>180 (not had any) (pre-filled syringe) • Diazepam 2mg IV q1h PRN seizures (not had any) **SQ:** Heparin 5,000 units SQ daily (due 0700)

Scenario Progression Outline

Today at 1700; At conclusion, student gives SBAR to instructor and debriefing begins

Timing (approximate)	Manikin Actions	Expected Nurse Interventions	May Use the following Cues
0-10 minutes (Part 1)	BP: 184/102 HR: 89 R: 14 T: 98.3 SpO2: 94% Lung Sounds: clear Heart rate: regular Heart Rhythm: NSR	Introduction, explanation of care Embedded errors: IV rate incorrectly set at 50 mL/hour. RAPS: General level of comfort, ability to respond to questions and directions Lung sounds, heart sounds, neurological assessment, Glascow Coma Scale, Presence of pain, headache (quality, location, relief measures taken/success) IV site/fluids Environment: NPO, no water/glass at bedside table	
10-15 minutes	Patient: "I really want to walk a bit, I have this pain in my head still." Patient tries to reach call light, right arm DOES have new weakness and lack of coordination "Don't I take my Aspirin soon-maybe	Review orders Due: Aspirin (should hold) Need to give Metoprolol to decrease BP (has assessed BP and apical pulse before administration) Call MD, update with RAPS and new right arm weakness complaints of headache and questions order for Aspirin Teaching:	MD: Asks for VS, overall status, presence of changes with neurologic status New Orders: • CT head – stat. Will re-evaluate pain following head CT • If student asks about aspirin,

	that will help this headache?" "Is there anything I can have for this pain?"	• Call for assistance to ambulate • Follow up with MD re: aspirin • Upcoming repeat CT of head.	State, "Hold aspirin."
15-20 minutes Metoprolol Given	BP: 168/92 HR: 78	Reassess neurological system, Reassess presence of headache Reassess BP and apical pulse Teaching: • Reason for head CT • Reason for holding ASA Provide support /offer to contact significant others	If metoprolol not given, patient headache worsens and BP: now 198/112 (if checked)

1. How did you feel throughout the simulation experience?
2. What is the first thing that comes to mind about the simulation experience?
3. What went well?
4. Describe the objectives that were achieved.
5. Which ones were not achieved?
6. What did the changes in neurological status indicate (new right arm weakness, increasing intensity of the headache)?
7. What assessment finding indicated potential complications? VS elevation, SpO2 decrease?
8. What was the rationale for the provider's orders? (Hold Aspirin, repeat CT of head, increase of oxygen rate)
9. What other interventions could have been implemented to promote patient centered care?

TOOL FOR DEBRIEFING AND GUIDED REFLECTION	**COURSE: NURS 2840 SPRING 2017**	**ACTIVITY: SOLO SIMULATION**
STUDENT:	**DATE:**	**TIME:**
FACULTY:		

Category/comments	*What worked well in your simulation?*	*What could be added to this care of 1 patient?*
Safety		
Collection and Interpretation of data		
Patient Assessment/Critical Thinking		

Clinical Decision Making		
Patient Teaching and Patient Communication		
Professional Communication		

Orig. 4/5/16

Gil Martin-Atrial Fibrillation & SOB

Instructor Guide

Student Level: NURS2840 Solo Sim
Pre-Brief Time: 10 minutes
Expected Simulation Run Time:
Guided Reflection Time:
Brief Description: ***"In a Nutshell"***
Students will complete care of one simulated patient in a 30 minute period. Preparation will include completion organization sheet (similar to tool used in clinical rotations) with EMR (DocuCare). Patient assessments will be completed with faculty providing unfolding patient data. Student will be prepared to administer medications, implement ordered treatments and communicate with patient. SBAR will be used for communication to providor and other healthcare professionals.

Student Learner Outcomes and Criteria:

- Use understanding of contextual & environmental factors to promote safety, quality & teamwork in care of adults with common, unstable, chronic, acute health alterations. (Context & Environment)

1. *Effectively perform interventions that reflect priority problems while implementing best clinical practices.*

- Provide relationship-centered care to developmentally and culturally diverse adults with common, unstable, chronic, and acute health alterations using knowledge and evidence from nursing and other disciplines. (Relationship-Centered Care)

2. *Complete focused assessment of one patient accurately and in a timely manner.*
3. *Provide individualized teaching to the patient.*

- Integrate knowledge & science from nursing other disciplines to provide safe, quality, evidence-based nursing care to adults with common, unstable, chronic/acute health alterations. (Knowledge & Science)

4. *Performs medication administration (including oxygen) safely and accurately.*

- Use technology and information management systems to document nursing care and support decision making in the care of adults with common, unstable, chronic, and acute health alterations. (Quality and Safety)

5. *Utilize information technology to support patient care in completion of assessment.*
6. *Identify potential safety risks, implement safety measures for patient and self, and maintain a safety culture throughout simulation.*

- Function effectively and collaboratively as a member of intra- and interprofessional healthcare teams to provide care to adults with common, unstable, chronic, and acute health alterations. (Teamwork)

7. *Implement therapeutic communication with patient and healthcare team using the SBAR tool with healthcare professionals.*

Scenario-specific Student Learning Outcomes (for faculty use)

8. *Demonstrate assessment and data collection for a patient with atrial fibrillation and shortness of breath including pulse rate changes, decreased oxygen saturation level, and dyspnea.*
9. *Demonstrate knowledge and critical thinking surrounding care of a patient with atrial fibrillation and shortness of breath.*

Admission Date & Time: Yesterday at 1700 (24 hours prior to start time)
Name: Gil Martin
DOB: 12/30/19XX
MRN: 6592103
Gender: Male **Age:** 54 years **Race:** African American
Weight: 203 lb **Height:** 74 in
Religion:
Major Support: spouse
Allergies: NKDA
Immunizations: current-influenza and pneumonia last fall
Attending Physician/Team: Eric Lund MD

Past Medical History: hypertension, atrial fibrillation, chronic kidney disease

History of Present Illness: He was at dialysis when he was found to have a heart rhythm of atrial fibrillation with rapid ventricular response. He was short of breath also. He completed his dialysis and was sent to the hospital.

Social History: Married, police officer
Primary Medical Diagnosis: Atrial fibrillation, SOB
Surgeries/Procedures & Dates:
Nursing Diagnoses:

Psychomotor Skills Required Prior to Simulation

Cognitive Activities Required prior to Simulation

- Treatment and Nursing Interventions for a patient with cardiac conditions of rhythm changes and related abnormal cardiovascular conditions
- Therapeutic communication techniques
- Knowledge of normal and abnormal cardiovascular assessment findings

Concepts emphasized in this sim:

- Perfusion

Psychomotor skills required prior to simulation

- RAPS including focused cardiac assessment
- IV therapy skills

Roles/Guidelines for Roles

- Primary Nurse
- Physician (Instructor)

Lab Values:

	Yesterday 1900	Today 0800
WBC	8.3	10.1
Hgb	14	13.8
Hct	41%	42%
RBC	4.5	4.4
Platelet Count	170	167
BUN	36	34
Creatinine	2.2	2.4
Glucose	119	95
Serum Chloride	104	105
Serum Potassium	4.3	3.5

Serum Sodium	139	142
INR		2.2

Physician Orders:
Admission Orders:
Admit to inpatient cardiac unit
Monitoring: Vital signs with spot check SpO2 q 4 hours
Measure and record I & 0
Accu check QID before meals and at bedtime
Continuous telemetry monitoring
Diet: Consistent carbohydrate diet
Insert IV, saline lock if taking adequate PO fluids
Activity: Bedrest with BRPs
Labs: CBC, BMP

Equipment/Environment

Setting: Med/Surg Unit
Pt ID Band: Gil Martin Age: 54
DOB 12/30/19XX
MRN 6592103
Mannequin: Mannequin
Bedside monitor: Vital signs; Heart rhythm strip: atrial fibrillation/slow rate < 60

Props:
- Peripheral IV in right forearm, saline locked
- Dialysis access device site
- Pyxis

Embedded error: Call light not within reach

Equipment available in room
- 02 delivery device (type: NC, mask)
- Suction
- Crash cart with airway devices and emergency medications

Medications

IV Fluids: none
PO meds:
- Lisinopril 20mg PO q HS (2100)
- Warfarin 2mg PO q 24 hours (1700)
- Digoxin 0.125mg PO q eve (hold for AP <60) (1700)

IV Meds: none
SQ: none
Other: none

Scenario Progression Outline

Part I: Today at 1800.
Report to 1st Student: Glad you're here. It is now 1700 and I'm going to give you report on Gil. Gil Martin is a 54 year old male with renal disease and atrial fibrillation who was admitted yesterday at 1700 for tachycardia and shortness of breath. He was at dialysis when he was found to have a heart rhythm of atrial fibrillation with rapid ventricular response. He completed his dialysis and was sent to the hospital. He got a bunch of meds to bring his heart rate down and they've worked. His last heart rate that I checked was in the 60s. He also has a history of hypertension. He is alert and oriented and has a saline lock in his right forearm.

Timing	Manikin Actions	Expected Nurse Interventions	May Use Following Cues

0-10 minutes	BP: 148/84 HR: 55 R: 16 T: 98.4 Sp02: 90 % Lung sound: clear Heart rate/rhythm: irregular, atrial fibrillation	Introduction, explanation of care **Embedded error: Call light not within reach**-Nurse moves call light within reach **RAPS**: General level of comfort; ease of breathing; pain level/discomfort **Assess**: Palpitations, dyspnea, peripheral pulses, edema **Auscultate** lung/heart sounds **Check** patency of peripheral IV and dialysis access site	
10-15 minutes	Patient "It is kind of hard to catch my breath. I'm sure glad that my heart isn't beating so fast anymore, though!"	Review orders Due: Digoxin Hold Digoxin and call MD: HR 55, O2 Sats at 90% **Teaching**: Follow up with MD re: pulse and O2 Sats. **Safety**: Student should ensure that patient has call light in reach when leaving to call the MD	MD: Asks for VS, overall status, presence of dyspnea, heart rhythm **New Orders:** Hold Digoxin, Oxygen via nasal cannula to maintain Oxygen Sats > 94%.
15-20 minutes	HR: 56 SpO2: 90% prior to oxygen Patient asks about heart medicine "Do I need to have more so the fast rhythm does not return?" "When can I get up for a walk?"	Informs patient of MD orders; Begin Oxygen at 1-2 L/min via NC **Teaching**: purpose of oxygen, how to adjust tubing in nares, when to notify nurse of dyspnea, activity precautions to consider (use of oxygen with activity) **Assess** for environment concerns prior to exiting patient room: bed/call light	
20 minutes Oxygen administered	BP: 140/78 HR: 56 RR 16 SpO2: 94% Patient "I'm starting to feel better."	Student will give SBAR report to faculty	
20 minutes Oxygen NOT administered	BP: 148/84 HR: 55 R: 16 T: 98.4 Sp02: 90 % Patient "It is hard to catch my breath, maybe I need some fresh air. Can I go for a walk outside?"	Student will give SBAR report to faculty	

Debriefing/Guided Reflection Questions: Solo Sim NURS 2840 Spring 2016
Date: _____ Student: _____ Faculty: _____

1. How did you feel throughout the simulation experience?

2. What is the first thing that comes to mind about the simulation experience?

3. What went well?

4. Describe the objectives that were achieved.

5. Which ones were not achieved?

6. What did the changes in vital signs (heart rate and O2 Sats) indicate?

7. What assessment findings indicated potential complications of cardiac rhythm changes (atrial fibrillation)?

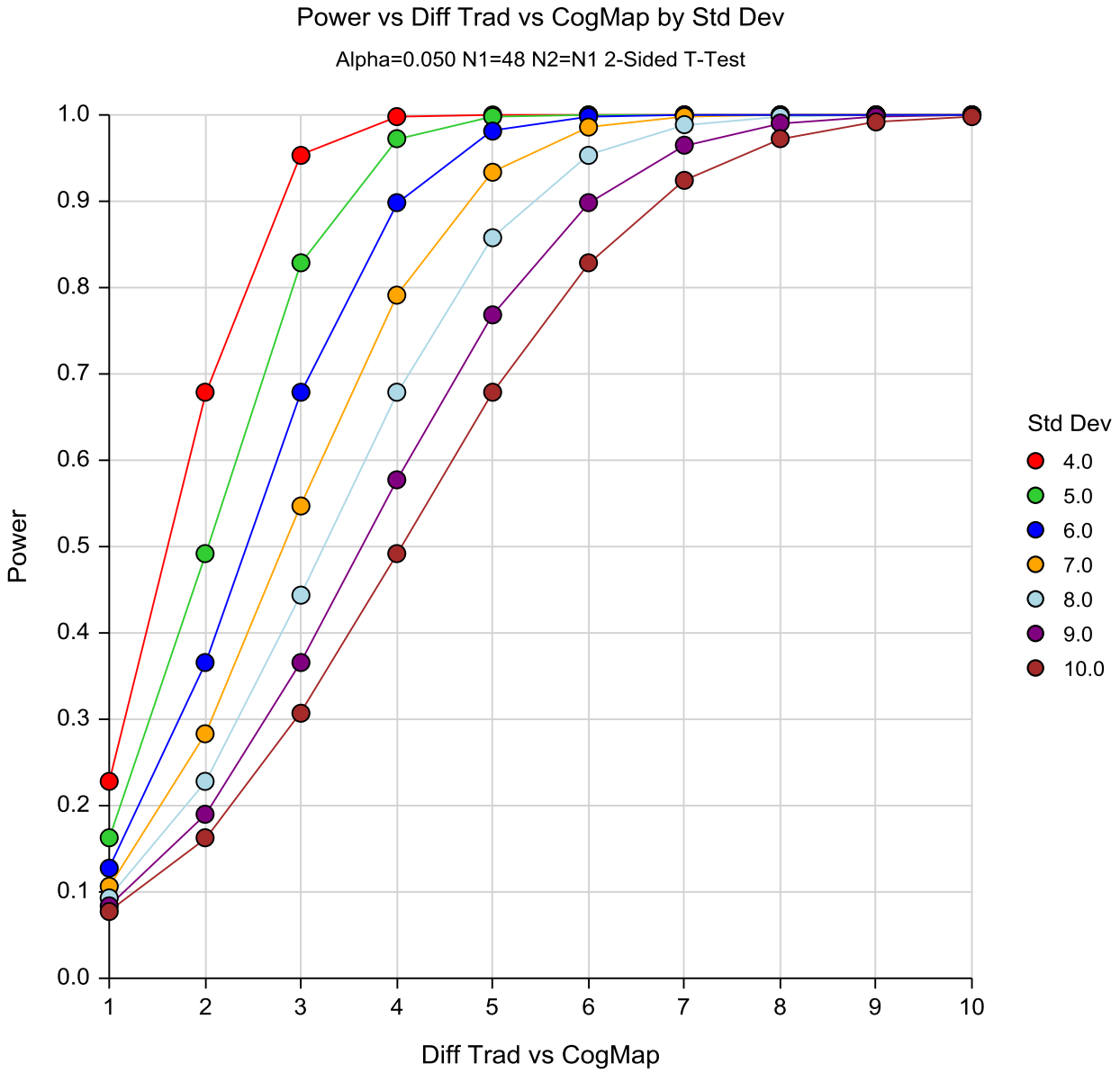
8. What was the rationale for the Provider orders:
   Hold digoxin
   Begin/titrate oxygen therapy?

9. What other interventions could have been implemented to promote patient centered care?

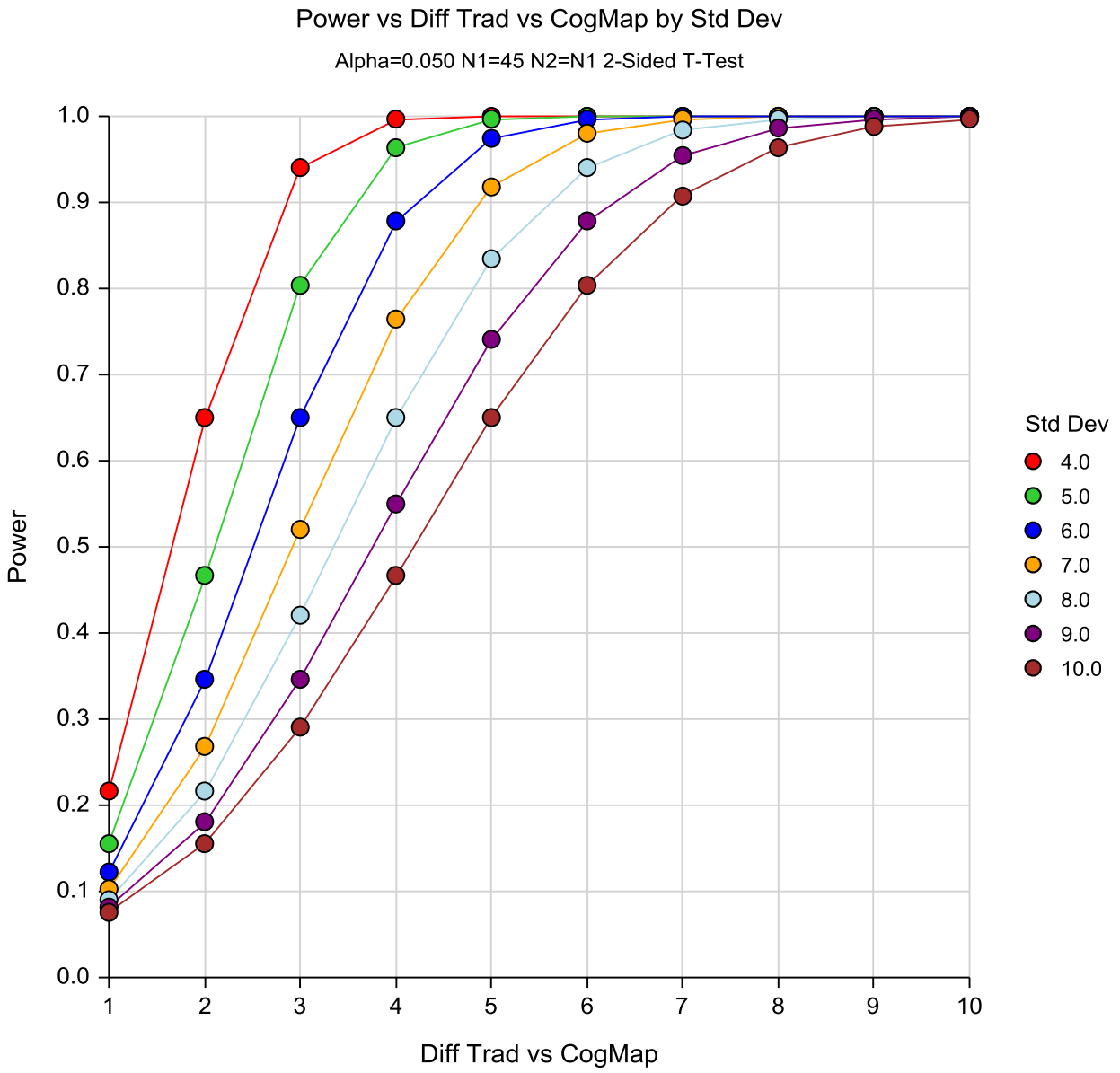
APPENDIX C

Results of Power Analysis

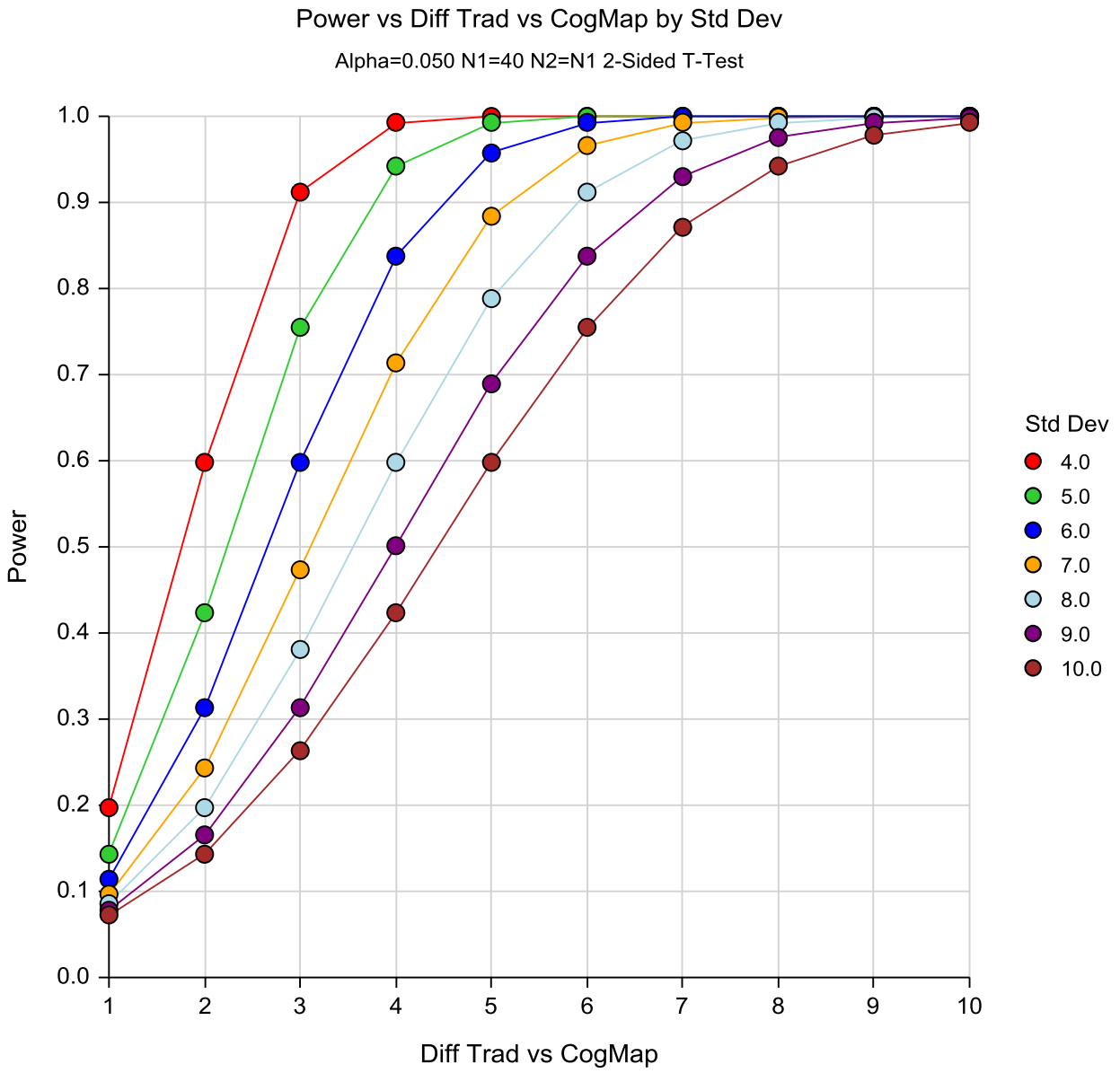
Estimating power for two-sample independent t-tests by combinations of mean difference, standard deviation by chosen sample size n=48



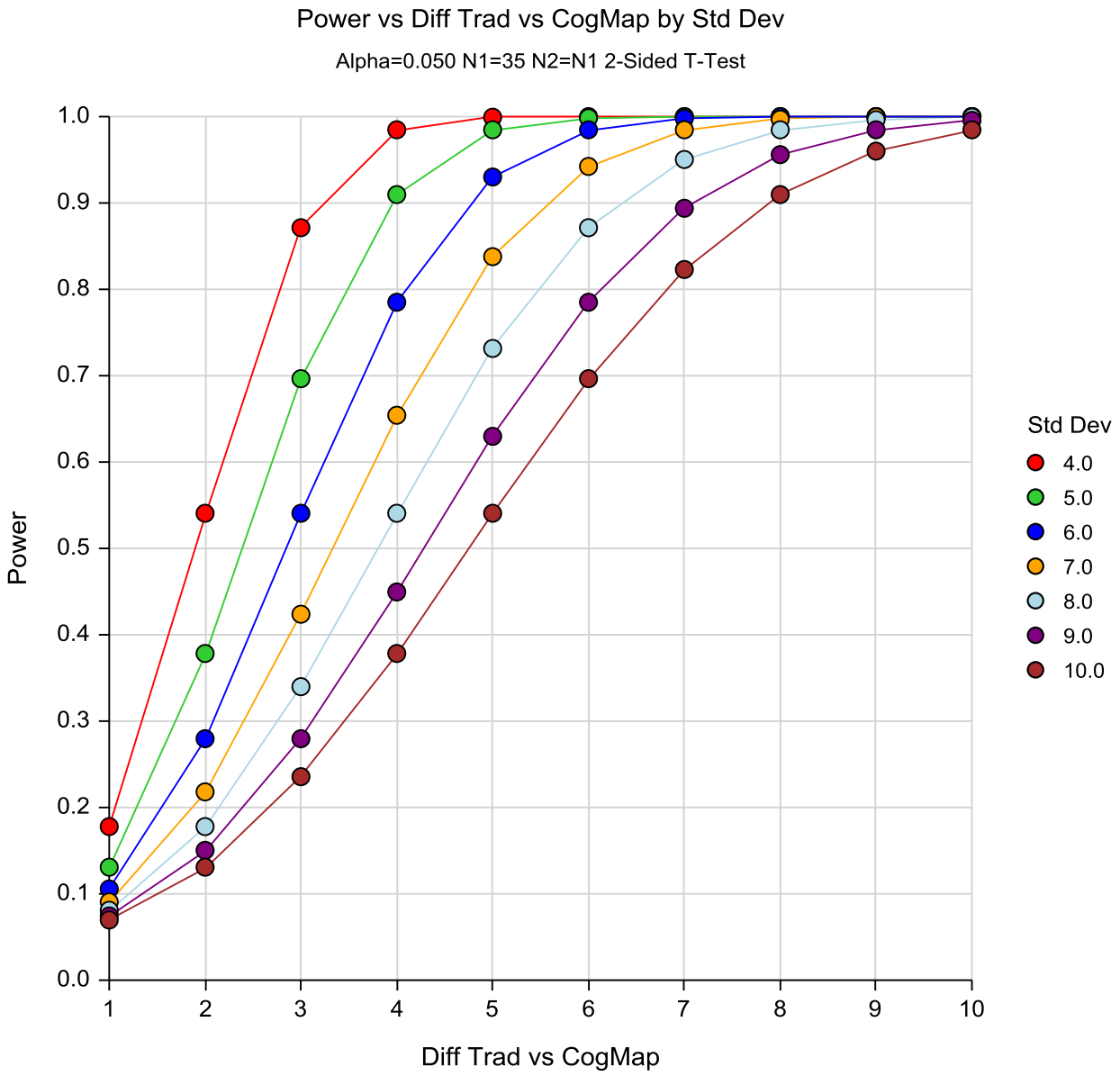
Estimating power for two-sample independent t-tests by combinations of mean difference, standard deviation by chosen sample size n=45



Estimating power for two-sample independent t-tests by combinations of mean difference, standard deviation by chosen sample size n=40



Estimating power for two-sample independent t-tests by combinations of mean difference, standard deviation by chosen sample size n=35



Estimating power for two-sample independent t-tests by combinations of mean difference, standard deviation by chosen sample size n=by chosen sample sizes

Numeric Results for Two-Sample T-Test Assuming Equal Variance
Alternative Hypothesis: δ ≠ 0

Power	N1	N2	δ	σ	Alpha	Beta
0.17787	35	35	1.0	4.0	0.050	0.82213
0.19718	40	40	1.0	4.0	0.050	0.80282
0.21650	45	45	1.0	4.0	0.050	0.78350
0.22807	48	48	1.0	4.0	0.050	0.77193
0.13085	35	35	1.0	5.0	0.050	0.86915
0.14308	40	40	1.0	5.0	0.050	0.85692
0.15536	45	45	1.0	5.0	0.050	0.84464
0.16275	48	48	1.0	5.0	0.050	0.83725
0.10564	35	35	1.0	6.0	0.050	0.89436
0.11403	40	40	1.0	6.0	0.050	0.88597
0.12245	45	45	1.0	6.0	0.050	0.87755
0.12752	48	48	1.0	6.0	0.050	0.87248
0.09063	35	35	1.0	7.0	0.050	0.90937
0.09672	40	40	1.0	7.0	0.050	0.90328
0.10284	45	45	1.0	7.0	0.050	0.89716
0.10653	48	48	1.0	7.0	0.050	0.89347
0.08097	35	35	1.0	8.0	0.050	0.91903
0.08560	40	40	1.0	8.0	0.050	0.91440
0.09024	45	45	1.0	8.0	0.050	0.90976
0.09304	48	48	1.0	8.0	0.050	0.90696
0.07439	35	35	1.0	9.0	0.050	0.92561
0.07802	40	40	1.0	9.0	0.050	0.92198
0.08167	45	45	1.0	9.0	0.050	0.91833
0.08386	48	48	1.0	9.0	0.050	0.91614
0.06971	35	35	1.0	10.0	0.050	0.93029
0.07264	40	40	1.0	10.0	0.050	0.92736
0.07558	45	45	1.0	10.0	0.050	0.92442
0.07734	48	48	1.0	10.0	0.050	0.92266
0.54069	35	35	2.0	4.0	0.050	0.45931
0.59815	40	40	2.0	4.0	0.050	0.40185
0.65019	45	45	2.0	4.0	0.050	0.34981
0.67884	48	48	2.0	4.0	0.050	0.32116
0.37833	35	35	2.0	5.0	0.050	0.62167
0.42352	40	40	2.0	5.0	0.050	0.57648
0.46686	45	45	2.0	5.0	0.050	0.53314
0.49191	48	48	2.0	5.0	0.050	0.50809
0.27964	35	35	2.0	6.0	0.050	0.72036
0.31322	40	40	2.0	6.0	0.050	0.68678
0.34624	45	45	2.0	6.0	0.050	0.65376
0.36573	48	48	2.0	6.0	0.050	0.63427
0.21808	35	35	2.0	7.0	0.050	0.78192
0.24325	40	40	2.0	7.0	0.050	0.75675
0.26828	45	45	2.0	7.0	0.050	0.73172
0.28321	48	48	2.0	7.0	0.050	0.71679
0.17787	35	35	2.0	8.0	0.050	0.82213
0.19718	40	40	2.0	8.0	0.050	0.80282
0.21650	45	45	2.0	8.0	0.050	0.78350
0.22807	48	48	2.0	8.0	0.050	0.77193
0.15039	35	35	2.0	9.0	0.050	0.84961
0.16558	40	40	2.0	9.0	0.050	0.83442

Two-Sample T-Tests Assuming Equal Variance

Estimating power by combinations of mean difference, standard deviation by chosen sample sizes

Numeric Results for Two-Sample T-Test Assuming Equal Variance

Alternative Hypothesis: δ ≠ 0

Power	N1	N2	δ	σ	Alpha	Beta
0.18082	45	45	2.0	9.0	0.050	0.81918
0.18997	48	48	2.0	9.0	0.050	0.81003
0.13085	35	35	2.0	10.0	0.050	0.86915
0.14308	40	40	2.0	10.0	0.050	0.85692
0.15536	45	45	2.0	10.0	0.050	0.84464
0.16275	48	48	2.0	10.0	0.050	0.83725
0.87137	35	35	3.0	4.0	0.050	0.12863
0.91190	40	40	3.0	4.0	0.050	0.08810
0.94044	45	45	3.0	4.0	0.050	0.05956
0.95318	48	48	3.0	4.0	0.050	0.04682
0.69653	35	35	3.0	5.0	0.050	0.30347
0.75495	40	40	3.0	5.0	0.050	0.24505
0.80370	45	45	3.0	5.0	0.050	0.19630
0.82876	48	48	3.0	5.0	0.050	0.17124
0.54069	35	35	3.0	6.0	0.050	0.45931
0.59815	40	40	3.0	6.0	0.050	0.40185
0.65019	45	45	3.0	6.0	0.050	0.34981
0.67884	48	48	3.0	6.0	0.050	0.32116
0.42379	35	35	3.0	7.0	0.050	0.57621
0.47337	40	40	3.0	7.0	0.050	0.52663
0.52026	45	45	3.0	7.0	0.050	0.47974
0.54704	48	48	3.0	7.0	0.050	0.45296
0.33990	35	35	3.0	8.0	0.050	0.66010
0.38088	40	40	3.0	8.0	0.050	0.61912
0.42061	45	45	3.0	8.0	0.050	0.57939
0.44377	48	48	3.0	8.0	0.050	0.55623
0.27964	35	35	3.0	9.0	0.050	0.72036
0.31322	40	40	3.0	9.0	0.050	0.68678
0.34624	45	45	3.0	9.0	0.050	0.65376
0.36573	48	48	3.0	9.0	0.050	0.63427
0.23564	35	35	3.0	10.0	0.050	0.76436
0.26328	40	40	3.0	10.0	0.050	0.73672
0.29070	45	45	3.0	10.0	0.050	0.70930
0.30700	48	48	3.0	10.0	0.050	0.69300
0.98475	35	35	4.0	4.0	0.050	0.01525
0.99298	40	40	4.0	4.0	0.050	0.00702
0.99684	45	45	4.0	4.0	0.050	0.00316
0.99806	48	48	4.0	4.0	0.050	0.00194
0.90972	35	35	4.0	5.0	0.050	0.09028
0.94218	40	40	4.0	5.0	0.050	0.05782
0.96352	45	45	4.0	5.0	0.050	0.03648
0.97250	48	48	4.0	5.0	0.050	0.02750
0.78504	35	35	4.0	6.0	0.050	0.21496
0.83758	40	40	4.0	6.0	0.050	0.16242
0.87852	45	45	4.0	6.0	0.050	0.12148
0.89840	48	48	4.0	6.0	0.050	0.10160
0.65419	35	35	4.0	7.0	0.050	0.34581
0.71362	40	40	4.0	7.0	0.050	0.28638
0.76451	45	45	4.0	7.0	0.050	0.23549
0.79125	48	48	4.0	7.0	0.050	0.20875

Two-Sample T-Tests Assuming Equal Variance

Estimating power by combinations of mean difference, standard deviation by chosen sample sizes

Numeric Results for Two-Sample T-Test Assuming Equal Variance

Alternative Hypothesis: $\delta \neq 0$

Power	N1	N2	δ	σ	Alpha	Beta
0.54069	35	35	4.0	8.0	0.050	0.45931
0.59815	40	40	4.0	8.0	0.050	0.40185
0.65019	45	45	4.0	8.0	0.050	0.34981
0.67884	48	48	4.0	8.0	0.050	0.32116
0.44955	35	35	4.0	9.0	0.050	0.55045
0.50130	40	40	4.0	9.0	0.050	0.49870
0.54984	45	45	4.0	9.0	0.050	0.45016
0.57735	48	48	4.0	9.0	0.050	0.42265
0.37833	35	35	4.0	10.0	0.050	0.62167
0.42352	40	40	4.0	10.0	0.050	0.57648
0.46686	45	45	4.0	10.0	0.050	0.53314
0.49191	48	48	4.0	10.0	0.050	0.50809
0.99930	35	35	5.0	4.0	0.050	0.00070
0.99981	40	40	5.0	4.0	0.050	0.00019
0.99995	45	45	5.0	4.0	0.050	0.00005
0.99998	48	48	5.0	4.0	0.050	0.00002
0.98475	35	35	5.0	5.0	0.050	0.01525
0.99298	40	40	5.0	5.0	0.050	0.00702
0.99684	45	45	5.0	5.0	0.050	0.00316
0.99806	48	48	5.0	5.0	0.050	0.00194
0.93009	35	35	5.0	6.0	0.050	0.06991
0.95733	40	40	5.0	6.0	0.050	0.04267
0.97438	45	45	5.0	6.0	0.050	0.02562
0.98126	48	48	5.0	6.0	0.050	0.01874
0.83785	35	35	5.0	7.0	0.050	0.16215
0.88393	40	40	5.0	7.0	0.050	0.11607
0.91789	45	45	5.0	7.0	0.050	0.08211
0.93362	48	48	5.0	7.0	0.050	0.06638
0.73156	35	35	5.0	8.0	0.050	0.26844
0.78831	40	40	5.0	8.0	0.050	0.21169
0.83452	45	45	5.0	8.0	0.050	0.16548
0.85780	48	48	5.0	8.0	0.050	0.14220
0.62975	35	35	5.0	9.0	0.050	0.37025
0.68931	40	40	5.0	9.0	0.050	0.31069
0.74100	45	45	5.0	9.0	0.050	0.25900
0.76846	48	48	5.0	9.0	0.050	0.23154
0.54069	35	35	5.0	10.0	0.050	0.45931
0.59815	40	40	5.0	10.0	0.050	0.40185
0.65019	45	45	5.0	10.0	0.050	0.34981
0.67884	48	48	5.0	10.0	0.050	0.32116
0.99999	35	35	6.0	4.0	0.050	0.00001
1.00000	40	40	6.0	4.0	0.050	0.00000
1.00000	45	45	6.0	4.0	0.050	0.00000
1.00000	48	48	6.0	4.0	0.050	0.00000
0.99860	35	35	6.0	5.0	0.050	0.00140
0.99958	40	40	6.0	5.0	0.050	0.00042
0.99988	45	45	6.0	5.0	0.050	0.00012
0.99994	48	48	6.0	5.0	0.050	0.00006
0.98475	35	35	6.0	6.0	0.050	0.01525
0.99298	40	40	6.0	6.0	0.050	0.00702

Two-Sample T-Tests Assuming Equal Variance

Estimating power by combinations of mean difference, standard deviation by chosen sample sizes

Numeric Results for Two-Sample T-Test Assuming Equal Variance

Alternative Hypothesis: $\delta \neq 0$

Power	N1	N2	δ	σ	Alpha	Beta
0.99684	45	45	6.0	6.0	0.050	0.00316
0.99806	48	48	6.0	6.0	0.050	0.00194
0.94233	35	35	6.0	7.0	0.050	0.05767
0.96605	40	40	6.0	7.0	0.050	0.03395
0.98035	45	45	6.0	7.0	0.050	0.01965
0.98595	48	48	6.0	7.0	0.050	0.01405
0.87137	35	35	6.0	8.0	0.050	0.12863
0.91190	40	40	6.0	8.0	0.050	0.08810
0.94044	45	45	6.0	8.0	0.050	0.05956
0.95318	48	48	6.0	8.0	0.050	0.04682
0.78504	35	35	6.0	9.0	0.050	0.21496
0.83758	40	40	6.0	9.0	0.050	0.16242
0.87852	45	45	6.0	9.0	0.050	0.12148
0.89840	48	48	6.0	9.0	0.050	0.10160
0.69653	35	35	6.0	10.0	0.050	0.30347
0.75495	40	40	6.0	10.0	0.050	0.24505
0.80370	45	45	6.0	10.0	0.050	0.19630
0.82876	48	48	6.0	10.0	0.050	0.17124
1.00000	35	35	7.0	4.0	0.050	0.00000
1.00000	40	40	7.0	4.0	0.050	0.00000
1.00000	45	45	7.0	4.0	0.050	0.00000
1.00000	48	48	7.0	4.0	0.050	0.00000
0.99993	35	35	7.0	5.0	0.050	0.00007
0.99999	40	40	7.0	5.0	0.050	0.00001
1.00000	45	45	7.0	5.0	0.050	0.00000
1.00000	48	48	7.0	5.0	0.050	0.00000
0.99782	35	35	7.0	6.0	0.050	0.00218
0.99929	40	40	7.0	6.0	0.050	0.00071
0.99978	45	45	7.0	6.0	0.050	0.00022
0.99989	48	48	7.0	6.0	0.050	0.00011
0.98475	35	35	7.0	7.0	0.050	0.01525
0.99298	40	40	7.0	7.0	0.050	0.00702
0.99684	45	45	7.0	7.0	0.050	0.00316
0.99806	48	48	7.0	7.0	0.050	0.00194
0.95035	35	35	7.0	8.0	0.050	0.04965
0.97158	40	40	7.0	8.0	0.050	0.02842
0.98402	45	45	7.0	8.0	0.050	0.01598
0.98877	48	48	7.0	8.0	0.050	0.01123
0.89388	35	35	7.0	9.0	0.050	0.10612
0.92992	40	40	7.0	9.0	0.050	0.07008
0.95437	45	45	7.0	9.0	0.050	0.04563
0.96494	48	48	7.0	9.0	0.050	0.03506
0.82297	35	35	7.0	10.0	0.050	0.17703
0.87113	40	40	7.0	10.0	0.050	0.12887
0.90724	45	45	7.0	10.0	0.050	0.09276
0.92423	48	48	7.0	10.0	0.050	0.07577
1.00000	35	35	8.0	4.0	0.050	0.00000
1.00000	40	40	8.0	4.0	0.050	0.00000
1.00000	45	45	8.0	4.0	0.050	0.00000
1.00000	48	48	8.0	4.0	0.050	0.00000

Two-Sample T-Tests Assuming Equal Variance

Estimating power by combinations of mean difference, standard deviation by chosen sample sizes

Numeric Results for Two-Sample T-Test Assuming Equal Variance

Alternative Hypothesis: δ ≠ 0

Power	N1	N2	δ	σ	Alpha	Beta
1.00000	35	35	8.0	5.0	0.050	0.00000
1.00000	40	40	8.0	5.0	0.050	0.00000
1.00000	45	45	8.0	5.0	0.050	0.00000
1.00000	48	48	8.0	5.0	0.050	0.00000
0.99980	35	35	8.0	6.0	0.050	0.00020
0.99996	40	40	8.0	6.0	0.050	0.00004
0.99999	45	45	8.0	6.0	0.050	0.00001
1.00000	48	48	8.0	6.0	0.050	0.00000
0.99704	35	35	8.0	7.0	0.050	0.00296
0.99899	40	40	8.0	7.0	0.050	0.00101
0.99966	45	45	8.0	7.0	0.050	0.00034
0.99983	48	48	8.0	7.0	0.050	0.00017
0.98475	35	35	8.0	8.0	0.050	0.01525
0.99298	40	40	8.0	8.0	0.050	0.00702
0.99684	45	45	8.0	8.0	0.050	0.00316
0.99806	48	48	8.0	8.0	0.050	0.00194
0.95595	35	35	8.0	9.0	0.050	0.04405
0.97534	40	40	8.0	9.0	0.050	0.02466
0.98645	45	45	8.0	9.0	0.050	0.01355
0.99061	48	48	8.0	9.0	0.050	0.00939
0.90972	35	35	8.0	10.0	0.050	0.09028
0.94218	40	40	8.0	10.0	0.050	0.05782
0.96352	45	45	8.0	10.0	0.050	0.03648
0.97250	48	48	8.0	10.0	0.050	0.02750
1.00000	35	35	9.0	4.0	0.050	0.00000
1.00000	40	40	9.0	4.0	0.050	0.00000
1.00000	45	45	9.0	4.0	0.050	0.00000
1.00000	48	48	9.0	4.0	0.050	0.00000
1.00000	35	35	9.0	5.0	0.050	0.00000
1.00000	40	40	9.0	5.0	0.050	0.00000
1.00000	45	45	9.0	5.0	0.050	0.00000
1.00000	48	48	9.0	5.0	0.050	0.00000
0.99999	35	35	9.0	6.0	0.050	0.00001
1.00000	40	40	9.0	6.0	0.050	0.00000
1.00000	45	45	9.0	6.0	0.050	0.00000
1.00000	48	48	9.0	6.0	0.050	0.00000
0.99958	35	35	9.0	7.0	0.050	0.00042
0.99990	40	40	9.0	7.0	0.050	0.00010
0.99998	45	45	9.0	7.0	0.050	0.00002
0.99999	48	48	9.0	7.0	0.050	0.00001
0.99631	35	35	9.0	8.0	0.050	0.00369
0.99869	40	40	9.0	8.0	0.050	0.00131
0.99955	45	45	9.0	8.0	0.050	0.00045
0.99976	48	48	9.0	8.0	0.050	0.00024
0.98475	35	35	9.0	9.0	0.050	0.01525
0.99298	40	40	9.0	9.0	0.050	0.00702
0.99684	45	45	9.0	9.0	0.050	0.00316
0.99806	48	48	9.0	9.0	0.050	0.00194
0.96005	35	35	9.0	10.0	0.050	0.03995
0.97804	40	40	9.0	10.0	0.050	0.02196

Two-Sample T-Tests Assuming Equal Variance

Estimating power by combinations of mean difference, standard deviation by chosen sample sizes

Numeric Results for Two-Sample T-Test Assuming Equal Variance

Alternative Hypothesis: δ ≠ 0

Power	N1	N2	δ	σ	Alpha	Beta
0.98815	45	45	9.0	10.0	0.050	0.01185
0.99188	48	48	9.0	10.0	0.050	0.00812
1.00000	35	35	10.0	4.0	0.050	0.00000
1.00000	40	40	10.0	4.0	0.050	0.00000
1.00000	45	45	10.0	4.0	0.050	0.00000
1.00000	48	48	10.0	4.0	0.050	0.00000
1.00000	35	35	10.0	5.0	0.050	0.00000
1.00000	40	40	10.0	5.0	0.050	0.00000
1.00000	45	45	10.0	5.0	0.050	0.00000
1.00000	48	48	10.0	5.0	0.050	0.00000
1.00000	35	35	10.0	6.0	0.050	0.00000
1.00000	40	40	10.0	6.0	0.050	0.00000
1.00000	45	45	10.0	6.0	0.050	0.00000
1.00000	48	48	10.0	6.0	0.050	0.00000
0.99996	35	35	10.0	7.0	0.050	0.00004
0.99999	40	40	10.0	7.0	0.050	0.00001
1.00000	45	45	10.0	7.0	0.050	0.00000
1.00000	48	48	10.0	7.0	0.050	0.00000
0.99930	35	35	10.0	8.0	0.050	0.00070
0.99981	40	40	10.0	8.0	0.050	0.00019
0.99995	45	45	10.0	8.0	0.050	0.00005
0.99998	48	48	10.0	8.0	0.050	0.00002
0.99562	35	35	10.0	9.0	0.050	0.00438
0.99840	40	40	10.0	9.0	0.050	0.00160
0.99943	45	45	10.0	9.0	0.050	0.00057
0.99969	48	48	10.0	9.0	0.050	0.00031
0.98475	35	35	10.0	10.0	0.050	0.01525
0.99298	40	40	10.0	10.0	0.050	0.00702
0.99684	45	45	10.0	10.0	0.050	0.00316
0.99806	48	48	10.0	10.0	0.050	0.00194

Creighton Competency Evaluation Instrument (CCEI)

Student Name: _____
Staff Nurse Instructor Name: _____

0= Does not demonstrate competency
1= Demonstrates competency
NA= Not applicable

Date: ____/____/____
MM / DD / YYYY

	Circle Appropriate Score for all Applicable Criteria - If not applicable, circle NA		
ASSESSMENT			
1. Obtains Pertinent Data	0	1	NA
2. Performs Follow-Up Assessments as Needed	0	1	NA
3. Assesses the Environment in an Orderly Manner	0	1	NA
COMMUNICATION			
4. Communicates Effectively with Intra/Interprofessional Team (TeamSTEPPS, SBAR, Written Read Back Order)	0	1	NA
5. Communicates Effectively with Patient and Significant Other (verbal, nonverbal, teaching)	0	1	NA
6. Documents Clearly, Concisely, & Accurately	0	1	NA
7. Responds to Abnormal Findings Appropriately	0	1	NA
8. Promotes Professionalism	0	1	NA
CLINICAL JUDGMENT			
9. Interprets Vital Signs (T, P, R, BP, Pain)	0	1	NA
10. Interprets Lab Results	0	1	NA
11. Interprets Subjective/Objective Data (recognizes relevant from irrelevant data)	0	1	NA
12. Prioritizes Appropriately	0	1	NA
13. Performs Evidence Based Interventions	0	1	NA
14. Provides Evidence Based Rationale for Interventions	0	1	NA
15. Evaluates Evidence Based Interventions and Outcomes	0	1	NA
16. Reflects on Clinical Experience	0	1	NA
17. Delegates Appropriately	0	1	NA
PATIENT SAFETY			
18. Uses Patient Identifiers	0	1	NA
19. Utilizes Standardized Practices and Precautions Including Hand Washing	0	1	NA
20. Administers Medications Safely	0	1	NA
21. Manages Technology and Equipment	0	1	NA
22. Performs Procedures Correctly	0	1	NA
23. Reflects on Potential Hazards and Errors	0	1	NA

COMMENTS:

COMMENTS

Total: _____
Total Applicable Items: _____
Earned Score _____

Revised for DEU use 8/20/2013

RE: CCEI Use Request

Tracy, Mary E <MaryTracy@creighton.edu>

Mon 3/27/2017 10:23

To:Sarah Black Beman <sbbeman@uwm.edu>;

Yes, it has certainly been widely disseminated so that is fine.

Mary E. Tracy (Parsons), PhD, RN
Professor
DNP Program Chair
Creighton University, College of Nursing
2500 California Plaza
Omaha, NE 68178

402-280-2049
402-280-2045 (fax)

From: Sarah Black Beman [mailto:sbbeman@uwm.edu]
Sent: Friday, March 24, 2017 2:09 PM
To: Tracy, Mary E <MaryTracy@creighton.edu>
Subject: CCEI Use Request

Hello Dr. Tracy,

My name is Sarah Beman, and I am a Doctoral student in Nursing at the University of WI, Milwaukee as well as faculty at St. Catherine University in St. Paul, MN.

I am nearing defense of my proposal for my dissertation research study.

I have completed the online process for the use of the CCEI in my research. I will ensure all faculty using the tool also follow the outlined procedures on the Creighton University website.

Is it acceptable to have a copy of the tool in my final dissertation document?

Sincerely,

Sarah

Sarah Beman MA, RN, CNE, PHN
UWM Doctoral Student
sbbeman@uwm.edu
612.867.8112

APPENDIX E

C-CEI Development Worksheets

ASSESSMENT Discussion Worksheet
Obtains Pertinent Data • _____ • _____ • _____
Performs Follow-Up Assessments as Needed • _____ • _____ • _____
Assesses the Environment in an Orderly Manner • _____ • _____ • _____

COMMUNICATION Discussion Worksheet
Communicates Effectively with Intra/Interprofessional Team (TeamSTEPPS, SBAR, Written Read Back Order) • _____ • _____ • _____
Communicates Effectively with Patient and Significant Other (verbal, nonverbal, teaching) • _____ • _____ • _____
Documents Clearly, Concisely, & Accurately • _____ • _____ • _____
Responds to Abnormal Findings Appropriately • _____ • _____ • _____
Promotes Professionalism • _____

- _____
- _____

CRITICAL JUDGMENT Discussion Worksheet
Interprets Vital Signs (T, P, R, BP, Pain) • _____ • _____ • _____
Interprets Lab Results • _____ • _____ • _____
Interprets Subjective/Objective Data (recognizes relevant from irrelevant data) • _____ • _____ • _____
Prioritizes Appropriately • _____ • _____ • _____
Performs Evidence Based Interventions • _____ • _____ • _____
Performs Evidence Based Rationale for Interventions • _____ • _____ • _____
Evaluates Evidence Based Interventions and Outcomes • _____ • _____ • _____
Reflects on Clinical Experience • _____ • _____

- _____

Delegates Appropriately

- _____
- _____
- _____

PATIENT SAFETY Discussion Worksheet

Uses Patient Identifiers

- _____
- _____
- _____

Utilizes Standard Practices and Precautions Including Hand Washing

- _____
- _____
- _____

Administers Medications Safely

- _____
- _____
- _____

Manages Technology and Equipment

- _____
- _____
- _____

Performs Procedures Correctly

- _____
- _____
- _____

Reflects on Potential Hazards and Errors

- _____
- _____
- _____

APPENDIX F

CCEI: Simulation: Greg Ross

ASSESSMENT Discussion Worksheet
1. Obtains Pertinent Data • Checks vital signs, HR, BP, RR, Pa SO_2 • Neuro assessment, Glascow coma scale (GCS), alert and oriented X 3, pupil reaction, motion and sensation in extremities • Pain assessment, focused on headache, scale, location, and quality
2. Performs Follow-Up Assessments as Needed • N/A
3. Assesses the Environment in an Orderly Manner • Find wrong rate, running at 50 mL/hr should be 100 mL/hr
Communication Discussion Worksheet
4. Communicates Effectively with Intra/Interprofessional Team (TeamSTEPPS, SBAR, Written Read Back Order) • Call MD re: HA, elevated BP, new R arm weakness, question ASA, uses SBAR • Write down and read back orders, head CT and potential hold ASA
5. Communicates Effectively with Patient and Significant Other (verbal, nonverbal, teaching) • Introduces themselves • Uses 1 open ended question
6. Documents Clearly, Concisely, & Accurately • N/A
7. Responds to Abnormal Findings Appropriately • Communicates intervention and expected outcome o Reason for head CT o Reason for holding ASA
8. Promotes Professionalism • N/A
CLINICAL JUDGMENT Discussion Worksheet
9. Interprets Vital Signs (T, P, R, BP, Pain) • Find elevated BP • Find HA, Pain rating
10. Interprets Lab Results • N/A
11. Interprets Subjective/Objective Data (recognizes relevant from irrelevant data) • Acknowledge the weak R arm as change from previous
12. Prioritizes Appropriately • Give IV hydralazine and hold ASA • Call MD
13. Performs Evidence Based Interventions • Hold ASA • Call MD
14. Provides Evidence Based Rationale for Interventions • N/A
15. Evaluates Evidence Based Interventions and Outcomes • Recheck BP and pulse
16. Reflects on Clinical Experience

• N/A
17. Delegates Appropriately • N/A
PATIENT SAFETY Discussion Worksheet
18. Uses Patient Identifiers • Uses two patient identifiers, state your name, DOB (excluding year due to Docucare), MRN • Check armband with the chart
19. Utilizes Standard Practices and Precautions Including Hand Washing • Washes hands every time enter and leave the room
20. Administers Medications Safely • Verbalizes 5 rights o 2 checks at the cart o 1 check at the bedside against order in the computer
21. Manages Technology and Equipment • N/A
22. Performs Procedures Correctly • N/A
23. Reflects on Potential Hazards and Errors • N/A

CCEI: Simulation: Gill Martin

ASSESSMENT Discussion Worksheet
1. Obtains Pertinent Data • Checks vital signs, apical pulse, BP, RR, Pa SO_2 • Respiratory assessment, lung sounds, anterior, 4 total, 2L, 2R • Ask about subjective data, either respiratory or cardiac related question
2. Performs Follow-Up Assessments as Needed • N/A
3. Assesses the Environment in an Orderly Manner • Find call light missing/on floor
Communication Discussion Worksheet
4. Communicates Effectively with Intra/Interprofessional Team (TeamSTEPPS, SBAR, Written Read Back Order) • Call MD re: holding digoxin, uses SBAR • Write down and read back holding digoxin
5. Communicates Effectively with Patient and Significant Other (verbal, nonverbal, teaching) • Introduces themselves • Uses 1 open ended question
6. Documents Clearly, Concisely, & Accurately • N/A
7. Responds to Abnormal Findings Appropriately • Communicates intervention and expected outcome o Holding digoxin, low HR, HR above 60 o Administering O_2, maintain Sa O_2 > 95%
8. Promotes Professionalism • N/A
CLINICAL JUDGMENT Discussion Worksheet

9. Interprets Vital Signs (T, P, R, BP, Pain)
   - Pa O_2 is low, needs O_2
   - HR < 60, hold digoxin
10. Interprets Lab Results
   - Checks INR prior to administering ordered warfarin, OK to give
11. Interprets Subjective/Objective Data (recognizes relevant from irrelevant data)
   - N/A
12. Prioritizes Appropriately
   - Address Sa O_2 1^{st}
   - Hold digoxin 2^{nd}
   - Administer warfarin 3^{rd}
13. Performs Evidence Based Interventions
   - Administer O2 1 – 2 L via NC
   - Hold digoxin
14. Provides Evidence Based Rationale for Interventions
   - N/A
15. Evaluates Evidence Based Interventions and Outcomes
   - Rechecks Sa O^2
16. Reflects on Clinical Experience
   - N/A
17. Delegates Appropriately
   - N/A

PATIENT SAFETY Discussion Worksheet

18. Uses Patient Identifiers
   - Uses two patient identifiers, state your name, DOB (excluding year due to Docucare), MRN
   - Check armband with the chart
19. Utilizes Standard Practices and Precautions Including Hand Washing
   - Washes hands every time enter and leave the room
20. Administers Medications Safely
   - Verbalizes 5 rights
     - 2 checks at the cart
     - 1 check at the bedside
     - Against order in the computer
21. Manages Technology and Equipment
   - N/A
22. Performs Procedures Correctly
   - Places NC on face correctly
23. Reflects on Potential Hazards and Errors
   - N/A

APPENDIX G

Course Management System News Item Sample to post 4.19.2017

CMS New Item
Version: 1

UWM IRB Protocol Number: 17.291
UWM IRB Approval Date: 4.12.2017
St. Kate's Protocol Number: 850
St. Kate's Approval Date: 4.19.2017

Dear Students,

My name is Sarah Beman MA, RN, CNE, PHN and I am an assistant professor here at St. Catherine University as well as a doctoral student at the University of Wisconsin, Milwaukee. I am currently completing a simulation-based learning (SBL) research study using data from your courses *Safe Care of One Patient Simulation*. Everyone in your course will participate in the assigned SBL lab session. As a simulation participant, you will come during your assigned simulation time slot and engage in the prescribed SBL activities. If you consent to become a research participant, we will analyze the results of your SBL performance. You will also be asked to fill out a demographic questionnaire and allow me to access your final course grade. These data will be used for statistical analyses and will only be reported in aggregate. No one's individual data will be shared. We will be using data collected during the simulation including your performance during the SBL scenario to try and better understand the different components of simulation and how to most effectively prepare students for simulation and clinical practice.

I will be coming to class in on 4.26.2017 to explain the project further, and you can ask any questions you have while I am there. If you are uncomfortable asking questions in the large group, please feel free to contact me at sbbeman@stkate.edu. I have attached a copy of the informed consent form. I will have copies available for you when I come to your class.

This project will not affect your course grade, and the faculty involved in the data analysis are not evaluating you in your course. Additionally, we are taking multiple steps to secure the data and ensure your data is kept private. The research data will only be reported in aggregate format. All students are required to participate in the laboratory session. However, we will be using the data from this research to improve simulation delivery next fall and in the new nursing program. By consenting to share your simulation data with us for educational research, you can directly benefit from improved simulation delivery next fall. You also have the opportunity to help us improve nursing education practice for future nursing students.

As a bonus for your cohort, I will be providing dinner during both simulation lab days. I look forward to working with you this semester.

Sincerely,
Sarah Beman MA, RN, CNE, PHN
Assistant Professor
Doctoral Student
651.690.7718

APPENDIX H

Informed Consent
Version: 1

UWM IRB Protocol Number: 17.291
UWM IRB Approval Date: 4.12.2017
St. Kate's IRB Protocol Number: 850
St. Kate's IRB Approval Date: 4.19.2017

UNIVERSITY OF WISCONSIN – MILWAUKEE
CONSENT TO PARTICIPATE IN RESEARCH

1. General Information

Study title: EVALUATION OF STUDENT COMPETENCE IN SIMULATION FOLLOWING A PREBRIEFING ACTIVITY: A PILOT STUDY

Person in Charge of Study (Principal Investigator):
Kim Litwack Ph.D., RN, FAAN, APNP
Associate Professor and Interim Dean
University of Wisconsin – Milwaukee
College of Nursing
Cunningham Hall 767B
1921 E. Hartford Av
Milwaukee, WI 53201-0413
414.229.4189
litwack@uwm.edu

Student Principle Investigator (SPI)
Sarah Beman MA, RN, CNE, PHN
Doctoral Student
University of Wisconsin – Milwaukee
College of Nursing
Assistant Faculty
St. Catherine University
Henrietta Schmoll School of Health
College for Adults
EDU 751
601 25th Avenue South
Minneapolis, MN 55454
651.690.7718
sbbeman@stkate.edu or sbbeman@uwm.edu

2. Study Description

You are being asked to participate in a research study. Your participation is completely voluntary. You do not have to participate if you do not want to.

Study description:

The purpose of this pilot study is to investigate student outcomes during simulation based learning (SBL). This study is being done to understand the most effective ways to provide instruction for the development of clinical nursing. The goal of the study is to foster your development as a professional nurse. This study will be conducted in the Nursing Applied Learning Lab (NALL). All 30 students in NURS 2840 are invited to participate in this study. This research study is using data from the *Safe Care of One Patient Simulation* you are required to complete as part of this course.

3. Study Procedures

What will I be asked to do if I participate in the study?

All participants will be asked to complete the assigned activities in the *Safe Care of One Patient Simulation*. During this session, you will be asked to complete a prebriefing assignment and then participate in a SBL scenario. Your SBL scenario will be videoed for later evaluation after course grades are submitted. You will then participate in a debriefing session with your faculty facilitator. All participants will be asked to share some demographic data including age, gender, race or ethnicity, semesters in the program, and final course grade in NURS 2840. The SPI can obtain the final course grade as a report from the Registrar's Office at St. Catherine University. It is a requirement of the course that you participate in the SBL session.

4. Risks and Minimizing Risks

What risks will I face by participating in this study?
One risk you may face is that at times because of the realistic nature of the simulation, students experience high emotions surrounding the case. These feelings will be discussed during the debriefing session. The study results will not affect your course grade. Data analysis will not begin until after course grades are submitted on May 26th, 2017.

5. Benefits

Will I receive any benefit from my participation in this study?
- It is anticipated that you will benefit from enhanced clinical learning as a result of this study.
- It is anticipated that this research will provide evidence-based nursing education processes for simulation based learning.
- This knowledge will be used during your final course in the program of study, as well as for future research and use in nursing education programs.
- You will receive the altruistic benefit of knowing you are helping to improve nursing education through participation in the research study.

6. Study Costs and Compensation

Will I be charged anything for participating in this study?
You will not be responsible for any of the costs from taking part in this research study

Are subjects paid or given anything for being in the study?
The student principal investigator will provide pizza and salad for dinner on the simulation session days for all students and participating faculty facilitators.

7. Confidentiality

What happens to the information collected?
All information collected about you during the course of this study will be kept confidential to the extent permitted by law. We may decide to present what we find to others or publish our results in scientific journals or at scientific conferences. Information that identifies you personally will not be released. Only group results will be reported, and only the SPI, lab coordinator, and lab facilitator will have access to the information. However, the Institutional Review Board at UW-Milwaukee or appropriate federal agencies like the Office for Human Research Protections may review this study's records. If there are any technical difficulties the information technology support personnel at St. Catherine University may see data related to this study.

You will be assigned a number, and all data will be coded to your number. That list with names and numbers will be kept separate for all data being analyzed for the research study will be de-identified. At the beginning of your SBL performance, you will be asked to state your name. The evaluation data of your SBL performance will be de-identified for use in the study. All paper documentation will be stored in a locked file cabinet in a locked office for which only the SPI has the key. All digital documents will be stored on a St. Catherine University password protected server for which only the SPI and the IT systems administrator have access. The video files will be stored on a separate D2L course shell specifically for the purposes of the study. This D2L course shell is password protected. All St. Catherine University servers meet federal Family Educational Rights and Privacy Act (FERPA) requirements. All documents and files will be destroyed or deleted once the research study is completed.

8. Alternatives

Are there alternatives to participating in the study?
You must participate in the SBL lab session as it is part of the course. You may opt to have your data included in the research study or decline to have the data included. There are no known alternatives available to you.

9. Voluntary Participation and Withdrawal

What happens if I decide not to be in this study?
Your participation in this study is entirely voluntary. You may choose not to take part in this study. If you decide to take part, you can change your mind later and withdraw from the study. You are free to not answer any questions or withdraw at any time. Your decision will not change any present or future relationships with the University of Wisconsin Milwaukee or St. Catherine University.

If you choose to withdraw from the study, your data will be removed and destroyed.

The SPI distributing the consent forms will collect them and hold them in a locked file cabinet until the research study is completed. The PI, simulation lab coordinator, and simulation lab facilitator will know if you have agreed to participate in the research study. Other course faculty will not know if you have participated and will not have access to the study data. Choosing not to take part in the study will not affect your grade or class standing in anyway.

10. Questions

Who do I contact for questions about this study?
For more information about the study or the study procedures or treatments, or to withdraw from the study, contact:

Sarah Beman MA, RN, CNE, PHN
Doctoral Student
University of Wisconsin – Milwaukee
College of Nursing
Assistant Faculty
St. Catherine University
Henrietta Schmoll School of Health
College for Adults
EDU 751
601 25th Avenue South
Minneapolis, MN 55454
651.690.7718
sbbeman@stkate.edu or sbbeman@uwm.edu

Who do I contact for questions about my rights or complaints towards my treatment as a research subject?
The Institutional Review Board may ask your name, but all complaints are kept in confidence.

Institutional Review Board
Human Research Protection Program
Department of University Safety and Assurances
University of Wisconsin – Milwaukee
P.O. Box 413
Milwaukee, WI 53201
(414) 229-3173

11. Signatures

Research Subject's Consent to Participate in Research:
To voluntarily agree to take part in this study, you must sign on the line below. If you choose to take part in this study, you may withdraw at any time. You are not giving up any of your legal rights by signing this form. Your signature below indicates that you have read or had read to

you this entire consent form, including the risks and benefits, and have had all of your questions answered and that you are 18 years of age or older.

_____
Printed Name of Subject/ Legally Authorized Representative

_____ _____
Signature of Subject/Legally Authorized Representative Date

Research Subject's Consent to Audio/Video/Photo Recording:

It is okay to use my videoed performance of the SBL scenario while I am in this study and use my video data in the research.

Please initial: ____Yes ____No

Principal Investigator (or Designee)
I have given this research subject information on the study that is accurate and sufficient for the subject to fully understand the nature, risks, and benefits of the study.

_____ _____
Printed Name of Person Obtaining Consent Study Role

_____ _____
Signature of Person Obtaining Consent Date

CODE STATUS: DNR DNI FULL CODE **Isolation:** Yes ☐ No ☐ reason: _____

(Client Initials) **RM**_____ **Allergies:** _____ **Dx:** _____ **Diet:** _____

Vitals: T_____ P_____ B/P_____ R_____ O2_____% **Time Taken** _____

Vitals: T_____ P_____ B/P_____ R_____ O2_____% **Time Taken** _____

IV Fluid: _____ **Rate:** _____

Time IV ✓d ☐ 0800 ☐ 0900 ☐ 1000 ☐ 1100 ☐ 1200 ☐ 1300

I & O			Blood Glucose Yes ☐ No ☐	
Time	**I**	**O**	**Time**	**Value**

Last BM: _____

Pain Scale 1 2 3 4 5 6 7 8 9 10
Time ✓d_____

Pain Scale 1 2 3 4 5 6 7 8 9 10
Time ✓d_____

Information from Report

ASSESSMENT INFORMATION

LOC: _____
Discomfort: _____
Skin/Temp: _____
Airway/Breathing:_____
Lung Sounds: _____
Heart Sounds/Rhythm:_____
Bowel Sounds: _____
Tender/Firm/Soft: _____
Bowel Function: _____
UE Pulses: _____
UE CMS: _____
LE Pulses: _____
LE CMS: _____
Edema: _____

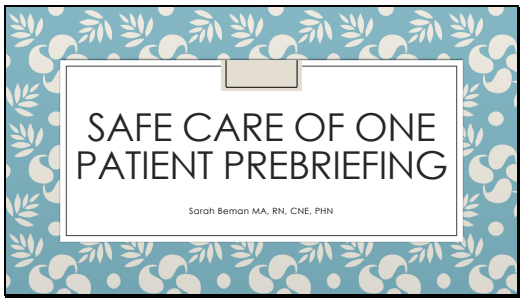
Test	Most Recent	Clinical Day #
Hgb 13.5 – 17.5 g/dL		
HCT 37.0 – 53 %		
RBC 4.30 – 5.90		
WBC 4.5 – 11 cells/mm^3		
INR PT 0.8 – 1.2		
Na 135 – 145 mEq/L		
K 3.5 5.1		
Cl 98 – 110 mEq/L		
BUN 10 – 20 mg/dL		
CR 0.50 – 1.30 mg/dl		
CA 8.5 – 10.5 mg/dL		
Other Pertinent		

0800 – 1000	1000 – 1200	1200 – 1400	Misc. Add-ons / Changes

Progress Notes: _____

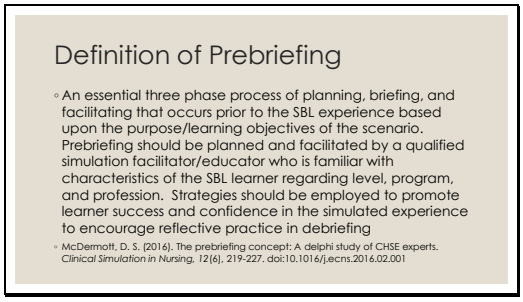
CarePlan Prebriefing PPT Slides and Notes

Slide 1



Welcome to your prebriefing activity

Slide 2



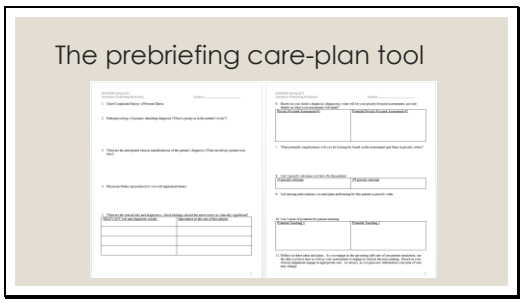
This is the definition of prebriefing and is an important part of the simulation-based learning activity. Good prebriefing can improve simulation performance as well as improve the effectiveness of debriefing afterwards.

Slide 3

Prebriefing includes key components

- Taking time to review the patient chart and listen to shift report so you can utilize the information to plan care for the clinical scenario you are about to encounter.
- Taking time to remind yourself that the more you engage in the scenario as a real event the more you can get out of it.
- Faculty take time to orient the student to the space and answer any questions about the who, what, where, and when details before the SBL scenario begin

Slide 4



This tool is similar to your clinical reasoning paper that you use in clinical. Please read and use this tool to generate a plan of care for your patient. This tool is to help you bring together your knowledge and begin to anticipate patient needs as well as prioritize care.

Slide 5

Feel free to collaborate with your teammates in the room. Prebriefing is part of simulation so what you learn and do here stays with sim. Please remember not to share with your peers so they can get the same experience you did.

Slide 6

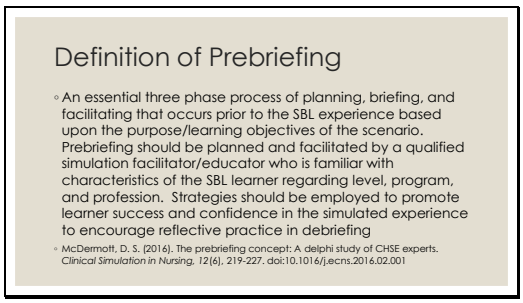
I am here for questions.

Concept Mapping Prebriefing PPT Slides and Notes

Slide 1

Welcome to your prebriefing activity

Slide 2



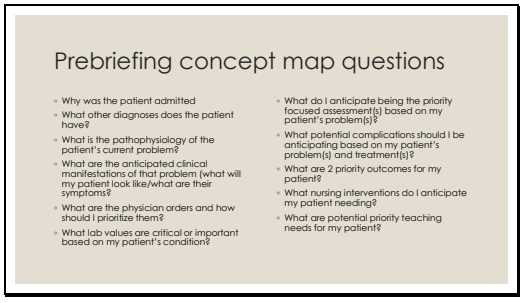
This is the definition of prebriefing and is an important part of the simulation-based learning activity. Good prebriefing can improve simulation performance as well as improve the effectiveness of debriefing afterwards.

Slide 3

Prebriefing includes key components

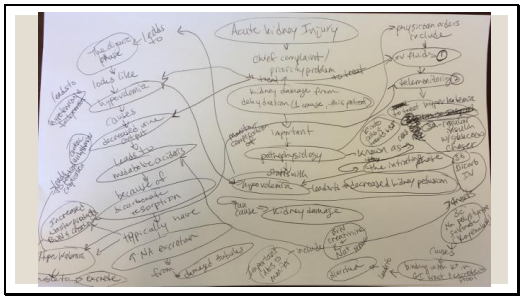
- Taking time to review the patient chart and listen to shift report so you can utilize the information to plan care for the clinical scenario you are about to encounter.
- Taking time to remind yourself that the more you engage in the scenario as a real event the more you can get out of it.
- Faculty take time to orient the student to the space and answer any questions about the who, what, where, and when details before the SBL scenario begin

Slide 4



I have a handout with these questions and open space for you to write.

Slide 5



This is an example of a concept map, they aren't always clean, but it is a good way to organize your thoughts.

Slide 6

Feel free to collaborate with your teammates in the room. Prebriefing is part of simulation so what you learn and do here stays with sim. Please remember not to share with your peers so they can get the same experience you did.

Slide 7

I am here for questions.

APPENDIX K

Simulation Prebriefing Worksheet Student_____

1. Chief Complaint/History of Present Illness

2. Pathophysiology of primary admitting diagnosis (What is going on in the patient's body?)

3. What are the anticipated clinical manifestations of the patient's diagnosis (What should my patient look like?)

4. Physician Orders (prioritize how you will implement them):

5. What are the critical labs and diagnostics, which findings should the nurse notice as clinically significant?

RELEVANT Lab and diagnostic results:	Importance in the care of this patient:

6. Based on your client's diagnosis (diagnoses), what will be your priority/focused assessments, provide details on what your assessment will entail?

Priority/Focused Assessment #1	Potential Priority/Focused Assessment #2

7. What potential complications will you be looking for based on the assessment (put them in priority order)?

8. List 2 priority outcomes you have for this patient

1st priority outcome	2nd priority outcome

9. List nursing interventions you anticipate performing for this patient in priority order.

10. List 2 areas of potential for patient teaching

Potential Teaching 1	Potential Teaching 2

11. Reflect on these ideas and plans. As you engage in the upcoming safe care of one patient simulation, use the data you have here as well as your assessments to engage in clinical decision making. Based on your clinical judgement engage in appropriate care. As always, as you gain new information your plan of care may change.

APPENDIX L

Simulation Prebriefing Concept Map

Questions to keep in mind as you create the map of your patient's care.

1. Why was the patient admitted
2. What other diagnoses does the patient have?
3. What is the pathophysiology of the patient's current problem?
4. What are the anticipated clinical manifestations of that problem (what will my patient look like/what are their symptoms?
5. What are the physician orders and how should I prioritize them?
6. What lab values are critical or important based on my patient's condition?
7. What do I anticipate being the priority focused assessment(s) based on my patient's problem(s)?
8. What potential complications should I be anticipating based on my patient's problem(s) and treatment(s)?
9. What are 2 priority outcomes for my patient?
10. What nursing interventions do I anticipate my patient needing?
11. What are potential priority teaching needs for my patient?

APPENDIX M

FSF Guided Responses

Greg Ross **DOB: 7/9/XX** **Allergies: NKDA** **Age: 47-years**
Primary Medical Diagnosis: Hemorrhagic Stroke **Past Medical History:** deep venous thrombosis

Report at 1700: I'm here to give you report on Greg Ross. It is 1700, shift change. Greg Ross is a 47 year old male who was admitted this morning at 0900 with the worst headache of his life. He had a CT of his head which showed a new hemorrhagic stroke. He is NPO and a fall risk. He has a history of deep vein thrombosis and takes daily aspirin at home. He has some slurred speech and a right facial droop. He has an IV in his right forearm and has normal saline infusing at 100 mL/hr.

Physician Orders	**Scenario Set up**	**New Data**	**Expected Intervention**
IV catheter insertion	IV right forearm	Dressing intact. No redness at insertion site.	Assess IV site.
NPO until after swallow study	Swallow study not yet completed. No food or drink at bedside.		
Venipuncture	**11:00am this morning**: CBC: within normal limits except RBC = 4.3 (low), Hgb = 13.3 (low), and Hct = 36 (low) BMP: within normal limits	Low findings are expected in hemorrhagic stroke.	
Neurologic assessment		New R arm weakness, unable to reach call light. "I can't reach the call light. My arm's not working."	Check GCS, orientation x 3, and pupil dilation/reaction. Call MD, "I'll order a head CT with contrast to be completed STAT."
O2 administration. Titrate oxygen to keep SpO2 > 92%	Patient on room air.		Continues on RA
Fall prevention			
Up with assist only			

Pulse oximetry. Spot check SpO2 q 1 hour with VS	Last SpO2 = 95% on RA at 16:13	SpO2 at 1700 = 94% on RA	
Vital signs q 1 hour	<u>VS at 1600</u>: BP: 176/88 HR: 93 RR: 12 Temp: 97.8 Pain: 6/10 HA, sharp	<u>VS at 1700</u>: BP: 184:102 HR: 89 RR: 14 Temp: 98.3 Pain: 9/10 HA, sharp	Reassess BP after hydralazine administration. *If hydralazine not administered, BP increases to 198/112 (if checked).* *Also, recheck HA after hydralazine is administered to see if decreased BP helps.*
I & O	Intake – Output = +160 since admission		
Aspirin 81 mg oral q 24 hours	Has not received	Due at 1700.	Hold aspirin, explain to patient why ASA held.
Hydralazine 20 mg IV for SBP > 180 PRN q 8 hours.	Has not received.	BP elevated.	Administer hydralazine, recheck BP 168/92, HA down to 6/10, still sharp
Diazepam 10 mg IV PRN seizures	Has not received.		
Normal Saline 100 mL/hour IV continuous infusion	Correct solution hung. Set at incorrect rate.	NS running at 50 mL/hr	Correct IV rate
CT scan - head	Completed at 0933. Findings consistent with an 3cm area of hemorrhagic stroke		New CT ordered, teach patient why CT ordered

Head: HA 9/10, sharp, all over but mainly in front, light/noise make it worse, not radiating "just hurts."
Eyes: eye opening to speech. Pupils round, 4 mm, and brisk reaction bilaterally.
Ears: intact, no redness, no drainage
Nose: intact, no drainage
Throat: no masses

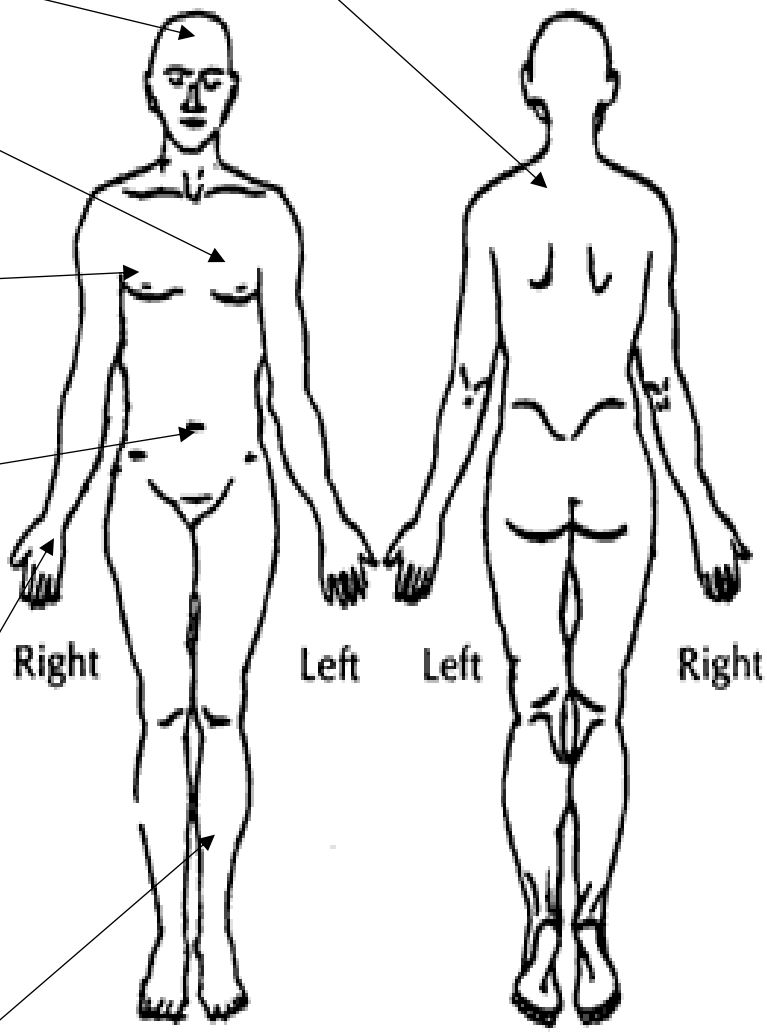
Skin: pink, no lesions. Warm and dry. Pinched skin returns < 2 seconds

Pain: HA 9/10. Sharp, all over but mainly in front. Light/noise make it worse. Not radiating, "just hurts."

Heart: regular rate and rhythm. S1 & S2 heard. No murmurs.

Lungs:
Lungs clear and equal, anterior & posterior. No complaints of SOB.

Abdomen: last BM yesterday morning, formed stool. Abdomen soft and flat. Normoactive bowel sounds. No nausea.



Upper Extremities: skin pink, no lesions. Warm to touch. Radial pulses palpable bilaterally. **Right arm weakness, unable to reach call light.** "I can't reach the call light. My arm's not working." PIV in right forearm, no redness or tenderness.
Able to move left hand and arm. Senses touch.

Lower Extremities: skin pink, no lesions. Warm to touch. Pedal pulses palpable bilaterally. Able to move legs and feet. Senses touch.

Neuro:
Eye opening to speech.
Motor response: localizes pain
Verbal response: oriented x 3

Environment: IV incorrect rate. Running at 50 mL /hour. Ordered for 100 mL/hour.

Gil Martin **DOB: 12/30/XX** **Allergies: NKDA** **Age: 54-years**
Primary Medical Diagnosis: Atrial fibrillation, SOB. **Past Medical History:** hypertension, A fibrillation, chronic kidney disease

Report today at 1700: It is now 1700. I have report on Gil Martin. Gil is a 54-year old male with renal disease and atrial fibrillation who was admitted yesterday at 1700 for tachycardia and shortness of breath. He was at dialysis when he was found to have a heart rhythm of atrial fibrillation with rapid ventricular response. He completed his dialysis and was sent to the hospital. Gil received medications to decrease his heart rate. His last heart rate that I checked was in the 60s. Gil has a history of hypertension. He is alert and oriented and has a saline lock in his right forearm.

Physician Orders	**Scenario Set up**	**New Data**	**Expected Intervention**
Renal diet	Pitcher and cup at bedside		
Venipuncture	**Today at 0800**: CBC: within normal limits BMP: within normal limits except BUN = 34 (high) and Cr = 2.4 (high)		
INR	Today at 0800: 2.2		
Titrate O2 to keep SpO2 > 92%	On RA	SpO2 = 90% on RA	Initiate O2 at 1-2 L
Bedrest with BR privileges			
Pulse oximetry: spot check SpO2 q 4 hours with VS	SpO2 at 1300 = 93% on RA	SpO2 = 90% on RA	Reassess SpO2 after O2 initiated
Admit to inpatient cardiac unit	Admitted yesterday at 1700		
VS q 4hours	**VS at 1300**: BP: 142/85 HR: 69 RR: 22 Temp: 97.9	**VS at 1700**: BP: 148/84 HR: 55 RR: 16 Temp: 98.4	
Intake and Output assessment	Intake – Output = +210 mL since admission	Last void 650cc at 1500.	

IV catheter insertion. Maintain saline lock. Flush q 8 hours and PRN	Last flushed at 1600	No redness at IV site. Dressing is clean, dry, and intact	
Lisinopril 20 mg oral q 24 hours	Administered yesterday at 2000	Due today at 2000	
Warfarin sodium 2 mg oral q 24 hours	Administered yesterday at 1700	Med due now	Check INR and Administer warfarin.
Digoxin 0.125 mg oral q 24 hours. Hold for AP < 60 and call MD	Last administered yesterday at 1700	Med due now	Hold Digoxin and call MD. State, ***"Hold the digoxin as directed. I'll be up to assess the patient in 30 minutes."***

Head:
- Eyes: pupils round and equal
- Ears: intact, no redness, no drainage
- Nose: intact, no drainage

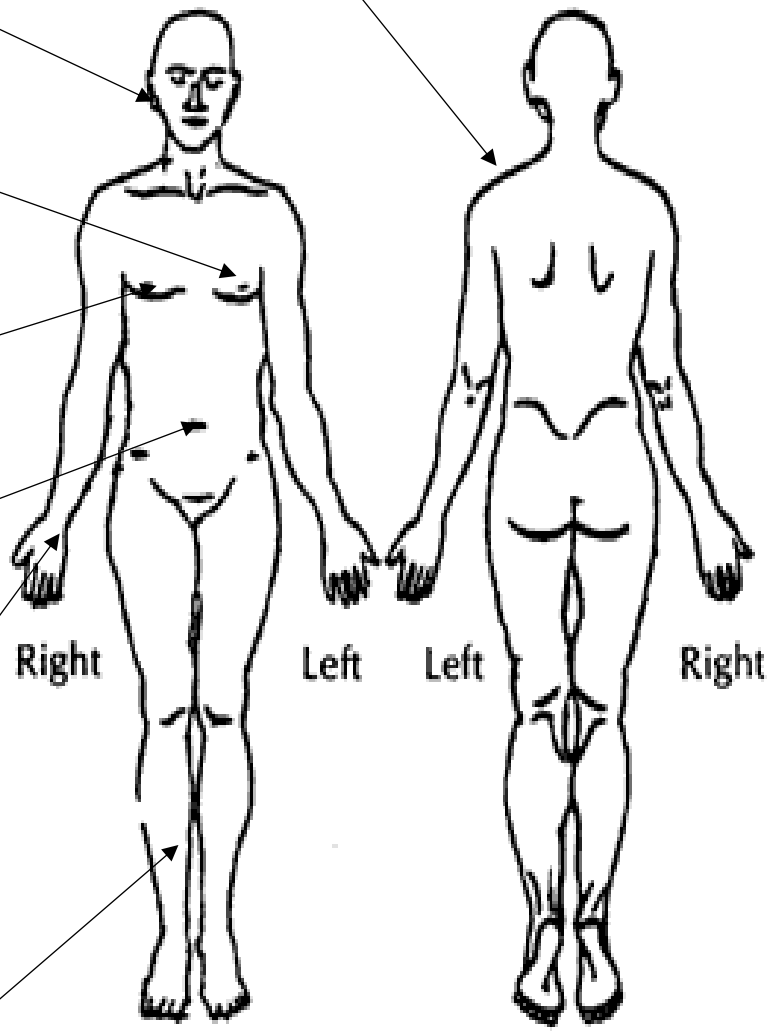
Skin: pink, no lesions. Warm and dry. Pinched skin returns < 2 seconds

Pain: no complaints of pain.

Heart:
Irregular rhythm
Normal HR

Lungs:
Lungs clear and equal, anterior & posterior. No complaints of SOB.

Abdomen: last BM yesterday morning, formed stool. Abdomen soft and flat. Normoactive bowel sounds. No nausea.

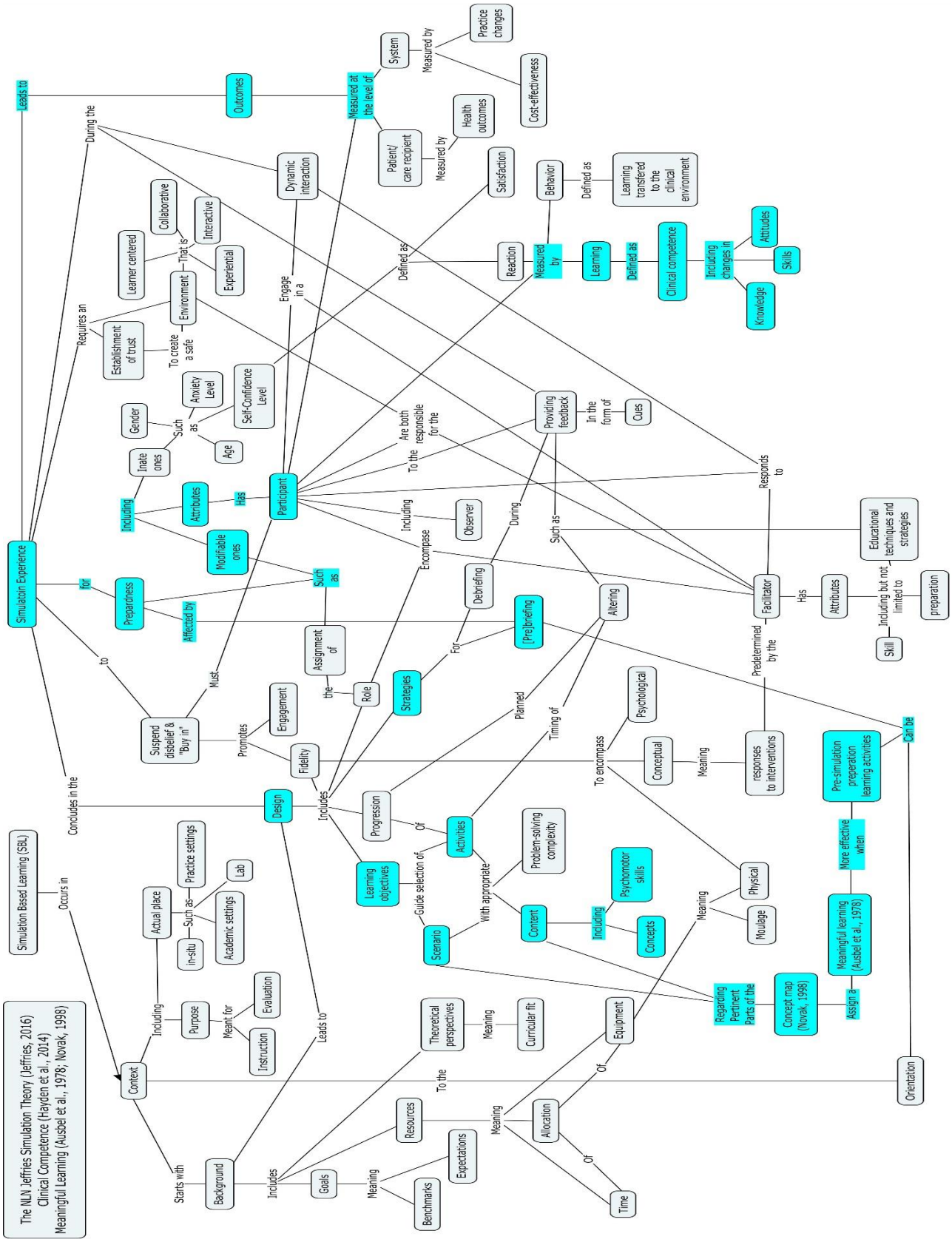


Upper Extremities: skin pink, no lesions. Warm to touch. Radial pulses palpable bilaterally. Able to move hands and arms. Senses touch. PIV in right forearm, no redness or tenderness.

Lower Extremities: skin pink, no lesions. Warm to touch. Pedal pulses palpable bilaterally. Able to move legs and feet. Senses touch.

Environment: Call light on floor.

APPENDIX N


The NLN Jeffries Simulation Theory (Jeffries, 2016)
Clinical Competence (Hayden et al., 2014)
Meaningful Learning (Ausbel et al., 1978; Novak, 1998)
Simulation Experience
Leads to
Outcomes
Measured at the level of
System
Practice changes
Cost-effectiveness
Patient/ care recipient
Health outcomes
Satisfaction
Reaction
Measured by
Behavior
Learning
Defined as
Learning transfered to the clinical environment
Clinical competence
Including changes in
Attitudes
Skills
Knowledge
During the
Dynamic interaction
Engage in a
Collaborative
Interactive
Experiential
That is
Learner centered
Environment
Requires an
Establishment of trust
To create a safe
Anxiety Level
Self-Confidence Level
Such as
Gender
Age
Inate ones
Including
Attributes
Has
Participant
Are both responsible for the
To the
Providing feedback
In the form of
Cues
Responds to
Observer
Encompase
Debriefing
During
Such as
Educational techniques and strategies
Facilitator
Has
Attributes
Including but not limited to
preparation
Skill
Predetermined by the
Altering
Modifiable ones
Such as
For
Preparedness
Affected by
Assignment of
the
Role
Must
Suspend disbelief & "Buy in"
Promotes
Engagement
Fidelity
Strategies
For
[Pre]briefing
Planned
Timing of
Psychological
Conceptual
To encompass
Meaning
responses to interventions
Can be
Pre-simulation preperation learning activities
More effective when
Meaningful learning (Ausbel et al., 1978)
Assign a
Concept map (Novak, 1998)
Regarding Pertinent Parts of the
Concludes in the
Design
Includes
Progression
Of
Activities
With appropriate
Problem-solving complexity
Content
Including
Psychomotor skills
Concepts
Physical
Moulage
Meaning
Learning objectives
Guide selection of
Scenario
Simulation Based Learning (SBL)
Occurs in
Actual place
Such as
Practice settings
Lab
Academic settings
In-situ
Including
Purpose
Meant for
Evaluation
Instruction
Context
Starts with
Background
Includes
Goals
Meaning
Benchmarks
Expectations
Resources
Meaning
Allocation
Of
Time
Equipment
Of
Theoretical perspectives
Meaning
Curricular fit
Leads to
To the
Orientation

CURRICULUM VITA

Sarah Beman Ph.D, RN, PHN, CNE
MN RN License 164872-0: Exp. 6.30.2018
WI RN License 187169-30: Exp. 2.28.2018

Education

2011	MA	Nursing Education, St. Catherine University
2006	BA	Nursing, College of St. Catherine
2004	AS	Nursing, North Hennepin Community College
1996	BA	Sociology and Women's Studies, Beloit College

Professional Experience

Fall 2013 – Present	Associate Degree Nursing, Program Director St. Catherine University
Fall 2012 – Present	Associate Degree Nursing, Assistant Professor St. Catherine University
July 2011 – Present	Lead Nurse
Summer position	YMCA Camp Icaghowan
Fall 2010 – Spring 2013	Associate Degree Nursing, Evening/Weekend Program Coordinator St. Catherine University
Fall 2006 – Spring 2012	Associate Degree Nursing, Instructor St. Catherine University
May 2006 – Oct 2006	New Born Intensive Care Unit, Staff Nurse Hennepin County Medical Center
June 2004 – May 2006	Cardiac Renal Unit & Cardiac Short Stay Unit, Staff Nurse Hennepin County Medical Center
Sept 2002 – July 2003	Unit 3000, Nursing Assistant Abbott Northwestern Hospital

Honors & Awards

Jun 2016	Certified Public Health Nurse
Aug 2012 – present	Certified Nurse Educator, Renew Dec 2017

Publications (peer reviewed)

1. Daley, B.J., **Beman, S.B.**, Morgan, S., Sheriff, M.M., & Kennedy, L. (2017). Concept maps: A tool to prepare for high fidelity simulation in nursing. *Journal of the Scholarship of Teaching and Learning, 17* (4), 17-30. Doi:10.14434/josotl.v17i4.21668

2. Daley, B.J., Morgan, S., & **Beman, S.B.** (2017). Concept Maps in Nursing Education: A Historical literature review and research directions. *Journal of Nursing Education*, *55*(11), 631-639, doi:10.3928/01484834-20161011-05

Theses & Reports

1. Beman, S.B. (2017). *Evaluation of student competence in simulation following a prebriefing activity: A pilot study* (Doctoral dissertation). University of Wisconsin – Milwaukee, Milwaukee, WI.
2. Beman, S.B. (2011). *Focus group initiative: increase student participation in program planning and evaluation.* (Master's Thesis and Presentation) St. Catherine University, St. Paul, MN.

Invited Textbook Submission

1. Beman, S**.** & Beman, N. (2012). "Systems Serving the Multi-problem Family." Box 2.4, p. 29-30 in *Families with futures: A survey of family studies into the 21st century.* 2nd ed., (Eds.) Karraker, M.W. & Grochowski, J.R. London: Routledge

Poster Presentations (peer reviewed)

1. Dols Finn, C., Perkins, J.B., Pearson, V., Davis, B.G., Beman, S.B., & Cunniff, E.A. (2017, October). *Educating entry level nursing students through a lens of unitary caring science: A Rogerian perspective unfolded in the creation of a holistic/multicultural andragogy.* TedTalk style poster session presented at the Rogerian Scholars Conference of the Society of Rogerian Scholars, Flagstaff, AZ.
2. Daley, B.J., Beman, S.B., Morgan, S., Kennedy, L., Sheriff, M. (2016, April). *Learning Outcomes in High Fidelity Simulation. Poster presented at Building Community in All Learning Environments.* Poster session presented at The Office of Professional and Instructional Development Spring Conference of the University of Wisconsin System, Green Lake, WI.

Teaching Responsibilities

St. Catherine University:

Fall 2017	NURS 2850: Classroom and Lab
Spring 2017	Sabbatical
Fall 2016	NURS 2850: Classroom and Lab
Spring 2016	No teaching, only program director duties
Fall 2015	NURS 2604: Nursing Internship
Summer 2015	NURS 2601: Nursing Internship
Spring 2015	No teaching, only program director duties
Fall 2014	NURS 2604: Nursing Internship
Spring 2014	No teaching, only program director duties
Fall 2013	NURS 1750: Classroom, Lab, and Clinical

Summer 2013	NURS 2540: Classroom and Lab
	NURS 2550: Classroom and Lab
Spring 2013	NURS 2250: Classroom and Lab
	NURS 2440: Classroom, Lab, and Clinical
	NURS 2540: Classroom, Lab, and Clinical
Fall 2012	NURS 2100: Classroom, Lab, and Clinical
	NURS 2200: Classroom, Lab, and Clinical
Spring 2012	NURS 2440: Classroom, Lab, and Clinical
	NURS 2540: Classroom, Lab, and Clinical
Fall 2011	NURS 2100: Classroom, Lab, and Clinical
	NURS 2200: Classroom, Lab, and Clinical
Spring 2011	NURS 2440: Classroom, Lab, and Clinical
	NURS 2540: Classroom, Lab, and Clinical
Fall 2010	NURS 2100: Classroom, Lab, and Clinical
	NURS 2200: Classroom, Lab, and Clinical
Spring 2010	NURS 2440: Classroom, Lab, and Clinical
	NURS 2540: Classroom, Lab, and Clinical
Fall 2009	NURS 2100: Classroom, Lab, and Clinical
	NURS 2200: Classroom, Lab, and Clinical
Spring 2009	NURS 2440: Classroom, Lab, and Clinical
	NURS 2540: Classroom, Lab, and Clinical
Fall 2008	NURS 2100: Classroom, Lab, and Clinical
	NURS 2200: Classroom, Lab, and Clinical
Spring 2008	NURS 2440: Classroom, Lab, and Clinical
	NURS 2540: Classroom, Lab, and Clinical
Fall 2007	NURS 2100: Classroom, Lab, and Clinical
	NURS 2200: Classroom, Lab, and Clinical
Spring 2007	NURS 2440: Classroom, Lab, and Clinical
	NURS 2540: Classroom, Lab, and Clinical
Fall 2006	NURS 2200: Classroom, Lab, and Clinical

Student Advising and Mentoring

St. Catherine University:

Fall 2017	2 Associate Degree Nursing Program Advisees
Summer 2017	All Associate Degree Nursing Program Advisees
Spring 2017	On Sabbatical
Fall 2016	2 Associate Degree Nursing Program advisees
Summer 2016	All Associate Degree Nursing Program Advisees
Spring 2016	2 Associate Degree Nursing Program Advisees
Fall 2015	3 Associate Degree Nursing Program Advisees

Summer 2015	All Associate Degree Nursing Program Advisees
Spring 2015	3 Associate Degree Nursing Program Advisees
Fall 2014	5 Associate Degree Nursing Program Advisees
Summer 2014	All Associate Degree Nursing Program Advisees
Spring 2014	8 Associate Degree Nursing Program Advisees
Fall 2013	10 Associate Degree Nursing Program Advisees
	Mentor: 1 Nurse Educator Masters Student
Summer 2013	All Associate Degree Nursing Program Advisees
Spring 2013	12 Associate Degree Nursing Program Advisees
	Mentor: 1 Nurse Educator Masters Student
Fall 2012	11 Associate Degree Nursing Program Advisees
	Mentor: 1 Nurse Educator Masters Student
Spring 2012	3 Associate Degree Pre-nursing Advisees
	8 Associate Degree Nursing Program Advisees
Fall 2011	14 Associate Degree Pre-nursing Advisees
	4 Associate Degree Nursing Program Advisees
Spring 2011	26 Associate Degree Pre-nursing Advisees
Fall 2010	30 Associate Degree Pre-nursing Advisees
Spring 2010	19 Associate Degree Nursing Program Advisees
Fall 2009	6 Associate Degree Nursing Program Advisees

Other Schools and Universities:

Summer 2013	Mentor: 1 Jacksonville University Nurse Educator Masters Student
Spring 2013	Mentor: 1 Walden University Nurse Educator Masters Student
2016 – 2017	Mentor: 1 William Carey University PhD Student

Membership to Professional Organizations

March 2014 – Present	Midwest Nurses Research Society
	Research interest group: Education
Oct 2006 – Present	National League for Nursing
May 2015 – Present	Sigma Theta Tau: Eta Nu Chapter
May 2006 – Present	& Chi at large Chapter
Sept 2013 – Dec 2017	MN Associate Degree/Practical Nurse Directors Group
Jun 2014 – May 2015	HMISS/TIGER VLE Subject Matter Expert

St. Catherine University Service

2010 – 2011	Course Management System Choice – search committee member (volunteer)

Henrietta Schmoll School of Health:

2017 – 2020	HSSH School Curriculum Committee (elected)
2013 – 2017	HSSH Chairs and Directors
2015 – 2016	Associate Degree Health Sciences Program Advisory Group
2009 – 2011	Academic Electronic Health Record Adoption Committee

College for Adults:

2013 – 2017	CFA Chairs and Directors

Department of Nursing

2017 – Present	Committee on Faculty, Equity, and Inclusion member
2014 – Present	Department Committee on Outcomes Member
Summer 2016 – Fall 2016	CFA BSN Development Team Lead
Spring 2015 – Spring 2016	CFA BSN Development Team Member
2014 – 2015	Planning and writing of the follow-up report for ACEN accreditation: member
2013 – Present	Department Administrative Team Member
2012 – Present	Lead St. Catherine University/YMCA Overnight Camp Nurse Internship Program: Includes Icaghowan, Iduhapi, and Warren
2012 – Present	Department of Nursing Advisory Council Representative
Fall 2011 – Spring 2013	AD Nursing: Student Advisory Council Facilitator
2011 – Dec 2017	AD Nursing: Department Assessment Lead
2011 – Dec 2017	AD Nursing: Committee on Curriculum
2011 – May 2016	AD Nursing: Committee on Faculty
2011 – 2013	Planning and writing the self-study report for the ACEN accreditation visit: Steering Committee Member
2009 – 2013	AD Nursing Curriculum Re-design Committee member
Fall 2013 – Dec 2017	AD Nursing: Committee on Students
Fall 2011 – Spring 2012	Co-chair
Fall 2010 – Spring 2011	Secretary
Fall 2008 – Spring 2010	Member

<u>Professional Service</u>

2011 - Present	YMCA Camp Icaghwan Health Services Coordinator
2015 – 2016	Midwest Nurses Research Society: Research Interest Group: Informatics: Student Lead

<u>Community Service</u>

Fall 2017 – Present	YMCA Camp Icaghowan: Board Member
2012 – 2015	Sarah's an Oasis for Women, Advisory Council Member