

# Faculty Development When Initiating Simulation Programs: Lessons Learned From the National Simulation Study

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Nursing programs are seeking guidance from boards of nursing about how much simulation can be substituted for traditional clinical practice. To address this question and to assess educational outcomes when simulation is substituted for clinical time, the National Council of State Boards of Nursing (NCSBN) conducted a study using 10 nursing schools across the United States. This article focuses on the faculty development needed to maintain fidelity in the intervention, implementation, and evaluation processes of initiating simulation programs. Lessons learned from preparing faculty for the NCSBN simulation study are shared and may be applicable to schools seeking to educate faculty in teaching simulation.

Nursing programs are recognizing clinical experiences using simulation as an important component of nursing education. Because of increasing difficulties in obtaining high-quality clinical placement sites, some nursing programs are replacing a portion of the time spent in traditional clinical environments with simulation, and they want to replace more. Thus, programs are making substantial investments in equipment and dedicated laboratory space. However, faculty education for simulation is often underfunded or neglected (Kardong-Edgren, Willhaus, & Hayden, 2012; Wazonis, 2014).

As a result, these programs are seeking guidance from boards of nursing (BONs) about how much clinical time can be spent in clinical experiences using simulation. BONs, however, have valid questions about the apparently widespread and uncritical adoption of simulation. Oermann, Yarbrough, Saewert, Ard, and Charasika (2009) suggest that the “call for evidence in nursing education parallels the emphasis on evidence-based practice in nursing” (p. 64). Additionally, many BONs and schools of nursing are requesting information about best practices in simulation pedagogy and are also asking for guidance to develop faculty in the area of creating and implementing a simulation-based curriculum in their nursing program. Others ask which competencies are being measured by simulation and how they should be measured. BONs have requested data to help guide and support decisions regarding these important issues.

The National Council of State Boards of Nursing (NCSBN) conducted a study using 10 U.S. nursing schools that began in the fall of 2011. The National Simulation Study examined the educational outcomes of nursing knowledge, clinical competency, and students’ perception of how well learning needs were met. Prelicensure nursing students at each school were randomized to a

control group in which up to 10% of clinical time was replaced by simulation, a group in which 25% of clinical time was replaced by simulation, or a group in which 50% of clinical time was replaced by simulation. Students were followed throughout their nursing program and for up to 6 months after they began practice as new graduate nurses (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014).

Large multisite studies in nursing education are rare (Oermann et al., 2012) as are nursing faculty members experienced in conducting these types of studies. Thus, this large, multisite study required intervention fidelity. Faculty participants needed to be educated in the interventional pedagogy so the simulations would be presented in a consistent manner across the 10 sites. In the year before the study, extensive education following the principles of maintaining fidelity in educational and psychosocial interventions was conducted over three time periods. Faculty members from each participating school were instructed in the study design and the chosen models for conducting and debriefing the study simulations and the use of the assessment evaluations. This provided the rigor, fidelity, and integrity needed for a multisite study.

Translating these findings into a high-quality practice of teaching with simulation requires similar attention to training, rigor, and fidelity. This article focuses on the faculty development necessary to conduct and ensure the integrity of the National Simulation Study and provides guidance for developing faculty to implement a simulation-based curriculum into their nursing program. Faculty development in the study included creating instructional and reference materials for the study sites, presenting interactive educational sessions with participant demonstration and evaluation, using standardized protocols for facilitating

simulation scenarios, conducting debriefings using Dreifuerst's (2012) Debriefing for Meaningful Learning<sup>®</sup> (DML), evaluating student clinical performance using the Creighton Clinical Evaluation Instrument (CCEI), and evaluating debriefing effectiveness using the Debriefing Assessment for Simulation in Healthcare-Rater Version (DASH<sup>®</sup>-RV) instrument (Simon, Raemer, & Rudolph, 2011). To implement a similar design in a single school or program, similar decisions and protocols would be necessary; however, evaluation measures may need to be refined to address individualized desired program outcome data.

## Literature Review

Results of studies reporting the outcomes of simulation education are favorable, but the literature is limited in its generalizability. There is variability in the way simulations are structured and conducted and variability in the way debriefing is conducted. The use of validated assessment instruments is nascent in the literature. The level of evidence needed by BONs and nurse educators to determine whether simulation can replace some of the time in traditional clinical experiences is still lacking.

The simulation literature in health-related disciplines has increased exponentially in the last 10 years. However, many early studies in the nursing simulation literature had small sample sizes, described the learning outcomes after exposure to a small number of simulation scenarios, tested simulation used in one course, or did not use a control group to compare learning outcomes. There are few large, multisite, longitudinal studies.

The maintenance of intervention fidelity in large multisite studies can be challenging but is fundamental to achieving valid outcomes and sound findings. Key factors in nursing and educational research fidelity include attention to consistencies in study design, training in the use of the intervention, implementation, and evaluation methods (Hulleman & Cordray, 2009; Santacrose, Maccarelli, & Grey, 2004). In this study, each was given careful consideration to ensure fidelity across sites and longitudinally over the 24 months of data collection.

Best practice standards for debriefing have been published (Decker et al., 2013); however, reports describing the actual faculty development methods for simulation training and debriefing education remain rare in the literature (Jones, Reese, & Shelton, 2014; Nehring, Wexler, Hughes, & Greenwell, 2013; Reese, 2014). In fact, most current simulation faculty members have had little formal simulation facilitator training (Wazonis, 2014). More faculty members have been trained by vendor representatives who sell simulation equipment than by trainers who have received formal education (Kardong-Edgren et al., 2012). Known best practices include debriefing by a facilitator educated in the debriefing process, using techniques that promote an open environment, confidentiality, self-reflection, assessment, and analysis. Debriefing should be conducted by someone who observed the simulation and be based on the objectives of the learning experi-

ence and a structured framework (Decker et al., 2013; Dreifuerst & Decker, 2012).

## Simulation Framework

One approach to organizing the consistency of variables in simulation scenario design and implementation is the The Nursing Education Simulation Framework, which was used in the National Simulation Study. This framework provided an empirically supported model to guide the simulation design and implementation of the simulations throughout the study. The framework was originally based on the insights gained from the theoretical and empirical literature related to simulations in nursing, medicine, and other health care disciplines as well as non-health care disciplines. The framework has been used and tested by various educational researchers, including master's and doctoral students (Jeffries et al., 2011; Reese, 2014).

The framework has five components, as shown in Figure 1. Each variable is operationalized through a number of other variables. The five components are facilitator, participant, educational practices that need to be incorporated into the simulation, simulation design characteristics, and expected participant outcomes. The framework is grounded in the theories focused on learner-centered practices, constructivism, and sociocultural collaboration among individuals with different sociocultural backgrounds (Jeffries, 2012).

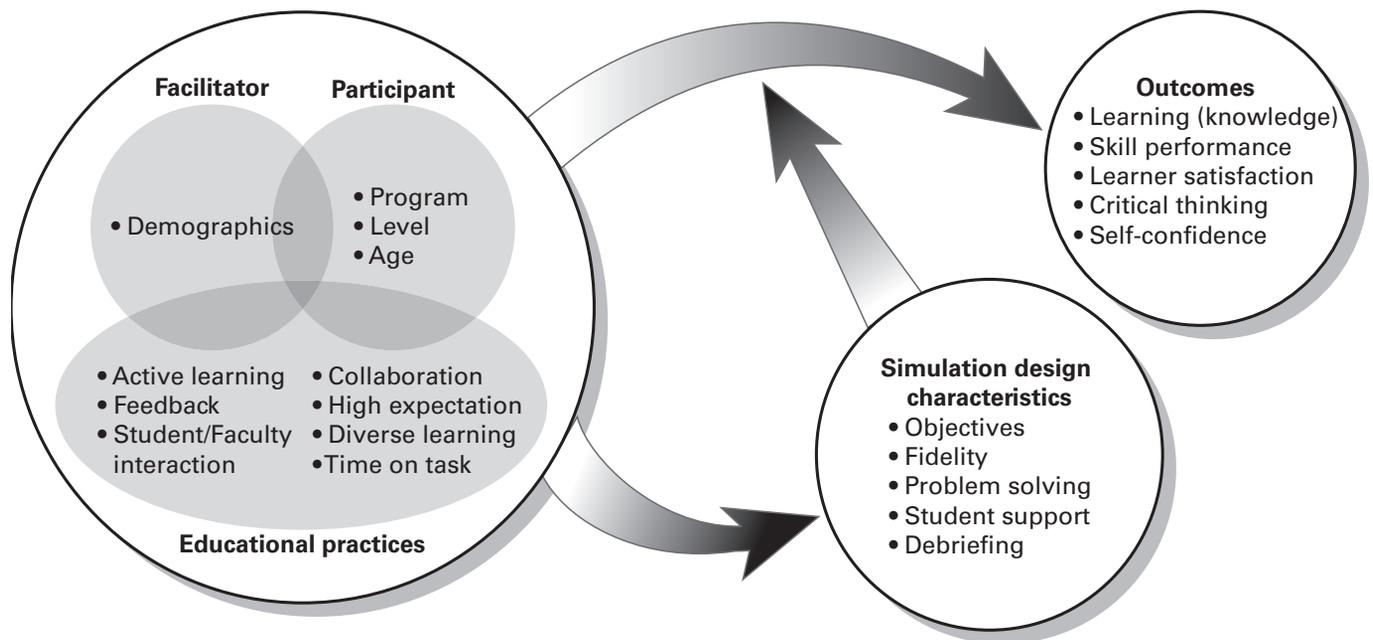
## Simulation Design

The selection of simulations is of utmost importance for positive student outcomes. When selecting simulations, faculty should keep in mind the activities and encounters that correspond to the objectives of the nursing curriculum that learners need to experience. In the national study, simulation was used as part of the clinical educational component in all nursing clinical courses except the capstone experience so that the simulations represented both depth and breadth of experiences throughout the curriculum. Individual programs may need to adapt this model to focus on particular courses or curricular concepts instead.

All simulations chosen for the study included five design characteristics: objectives, fidelity, problem solving, student support, and debriefing. The simulation topics in the study were based on a survey of faculty members (Kardong-Edgren, Jeffries, & Kamerer, 2014). Priority topics were determined by simulation faculty from the International Nursing Association of Clinical Simulation and Learning, and by members of the Simulation Innovation Resource Center, based on their own curricula, and course and program outcomes. Study faculty from the 10 schools then narrowed down the concepts and suggested scenarios based on their own experiences, courses, and program outcomes. Simulations were purchased from vendors and publish-

FIGURE 1

## The Nursing Education Simulation Framework



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ers; some were donated by experienced simulationists who had used a needed scenario multiple times to ensure its reliability.

### Developing and Educating Faculty for a Simulation-Based Curriculum

Development and education in simulation pedagogy are integral to translating study results into a successful simulation program. To ensure a quality outcome, the faculty has to be prepared and developed to use this type of experiential pedagogy.

For preparation to participate in the National Simulation Study, all participants came together for three, 2- to 3-day workshops in the 12 months before the fall of 2011, when the research was launched. These face-to-face workshops were designed to teach faculty members how to conduct simulations well, how to debrief learners in a consistent manner that fostered meaningful learning, and how to use the evaluation instruments that would be part of the study. Similar education is needed to prepare faculty for integrating clinical simulations into their own educational programs for optimal success. See Table 1 for an example of what to include.

Simulation experts, similar to those used in the National Simulation Study, are also needed to develop faculty in nursing programs. Many of the study participants had attended vendor-sponsored training or continuing education offerings in simulation; however, the immersion workshop experience with recognized simulation experts was still necessary to ensure a shared mental model for the study and to provide consistent imple-

mentation of the intervention. The use of simulation experts holds true for nursing programs seeking similar outcomes; faculty require preparation beyond what is commonly taught when equipment is purchased, particularly for debriefing (Nehring et al., 2013; Wazonis, 2014). The faculty development immersion workshops for the study included simulation implementation information, DML education, training on the CCEI, and the DASH-RV instrument.

For the study, each site had a designated study team consisting of a site coordinator (SC) and faculty or staff members who were involved in simulation or traditional clinical learning environments. The study team was responsible for conducting all the simulations and the debriefing sessions, with clinical faculty in attendance to serve as content experts when needed. Clinical faculty scored their own students as they participated in simulation scenarios, which differs from what commonly occurs in most nursing programs: frequently, individual faculty are responsible for running and debriefing simulations within their own courses or a dedicated simulation faculty member runs scenarios without the clinical faculty in attendance. Student performance information is often not shared with clinical faculty. The national study model for simulation demonstrated the efficacy of having clinical faculty present during simulation. Many clinical faculty members began adopting the debriefing techniques they witnessed during simulations.

All faculty simulation team members in a nursing program should be required to obtain education focused on selecting simulation scenarios. They could then work with course faculty

TABLE 1

## Simulation Education Concepts

Below are suggestions for what to consider when developing a simulation education program.

### Simulation Scenario Development and Implementation

- Use a simulation framework with a theoretical basis.
- Create or purchase simulation scenarios that correlate with course concepts and behaviors.
- Use a standardized simulation template when developing simulations for consistency across courses and nursing programs.
- Adopt a theoretically based debriefing approach/structure for training and implementation.
- Consider integrating major concepts in the simulation scenarios that cut across courses.

### Simulation Training/Skills Development

- Use simulation experts to conduct the initial core training to ensure quality and best practices.
- Set aside dedicated time for training/skills development; a 3- to 4-day workshop is ideal.
  - This gives faculty the opportunity to learn new roles, practices, and strategies when integrating simulations into the curriculum.
  - Educate all faculty (both clinical and simulation) on the evaluation tools that may be used in your simulation-based curriculum.
- Set education/training agenda outlining set competencies needed for the faculty, such as debriefing.

### Selection of Faculty or Individuals to Conduct the Simulations in Your Nursing Program

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

### Simulation Integration Into a Program

- Reframe simulation for all faculty as on campus vs. off campus clinical experience.
- Consider clinical workload for simulation faculty.
- Have clinical faculty attend simulation with their students.

to select or design simulation experiences to fit the particular curricular needs of the students and use a standardized debriefing method and outcome evaluation instruments to assess outcomes. In the National Simulation Study, simulation team members were responsible for modeling DML as a debriefing method, teach-

ing the clinical faculty to use the CCEI student performance evaluation instrument (Hayden, Keegan, Kardong-Edgren, & Smiley, 2014), and periodically conducting peer evaluation of each team member's debriefing effectiveness with the DASH-RV instrument. (Details of the study instrumentation are included in Hayden, Keegan, et al., 2014). Study teams were provided with workload credit for simulation time and faculty development at their institutions. The effectiveness of this strategy suggests it provided a strong foundation for simulation and should be considered by programs developing a robust simulation program.

Faculty may want to consider designating an SC to lead the school's simulation-based team, as was done in the National Simulation Study. The study team SC was responsible for ensuring the integrity of the overall study and day-to-day management at the site. A simulation program SC would be responsible for ensuring the simulation-based curriculum at the program level. Preparation is required for the simulation team selected and used at the school program level just as was required for the national study.

Multiple training sessions for SCs focused on selecting and facilitating simulations and coordinating the study site, including scheduling students for simulation time according to the protocol and randomization schedule, preparing the simulation laboratory and equipment for each scheduled simulation day, facilitating simulations, and ensuring data were collected and submitted according to the data collection schedule. Preparing the team, engaging in collaborative work with everyone involved with the simulations, and leading the evaluation and assessment of the outcomes were critical functions of the SCs; SCs should likewise oversee the overall simulation process and/or faculty effectiveness in delivering simulations across the courses for best outcomes in nursing programs. Faculty developed for the simulation team can serve as resources just as the study team served as a resource for students and other faculty and staff members involved in the study at each site.

Other topics in the faculty development workshops for the study centered on the curriculum development for four semesters, the institutional review board process, the data safety monitoring process at NCSBN, expectations for on-site clinical faculty members, integration of simulations across the curriculum in the seven core clinical courses, and scheduling of the 25% or 50% simulations in parallel with the traditional clinical time allotted for the clinical courses. In nursing programs, the workshops or development time with faculty should include key topics needed to ensure the success of a simulation-based curriculum, such as identifying student outcome measures and emphasizing key curriculum concepts, including the Quality and Safety Education for Nurses competencies and specific communication rubrics. In addition to presenting the information, participants need an opportunity to practice the skills they are learning and have feedback.

Throughout the educational workshops and training sessions, simulation team members were developing their own learn-

ing community and supporting each other. Many participants built such strong working relationships and collaborative partnerships that they visited each other's sites and helped each other when needed. NCSBN set up a password-protected online learning site where the simulation team members could share ideas and ask questions. The site remained active throughout the study.

### **Using Debriefing for Meaningful Learning**

Debriefing is one of the most important aspects of simulations. Debriefing is a discussion using guided reflection on the experience. The participants and the debriefer revisit the events of the clinical experience and uncover the thinking underpinning the actions (Dreifuerst, 2009). "Although debriefing comes at the end of a simulated clinical experience, it is during this time when the learners begin to process the events of the simulation, and the real learning occurs" (Johnson-Russell & Bailey, 2010, p. 369). Two systematic reviews of the health care simulation literature and several research studies have concluded that debriefing is a key feature of simulation-based education when it is done deliberately using best practices for guiding reflective dialog and uncovering the thinking of the simulation participants (Dreifuerst, 2012; Issenberg, McGaghie, Petrusa, Gordon, & Scalese, 2005; McGaghie, Issenberg, Petrusa, & Scalese, 2010; Shinnick, Woo, Horwich, & Steadman, 2011). Debriefing requires a safe, trusting, and honest environment (Fanning & Gaba, 2007; Johnson-Russell & Bailey, 2010; Simon, Raemer, & Rudolph, 2009).

In the National Simulation Study, debriefing was accomplished and standardized across the 10 sites, using the DML method (Dreifuerst, 2010). In this method, a clinical teacher acts as a debriefing facilitator who guides a reflective discussion using Socratic questions that allow all participants to unpeel the thinking underpinning the decisions during the clinical experience. Grounded in educational theory, DML uses reflective learning as the foundation. Faculty members follow a structured process that involves a review of what occurred, including the emotional response to the events (reflection-in-action); an evaluation of the simulation integrating nursing knowledge, skills, and attitudes through the nursing process; reflection and analysis of key assessment and decision-making points in the simulation (reflection-on-action); correction of errors; summarization and conclusions to solidify the key points; and anticipation of how to respond next time in similar situations (reflection-beyond-action). The goal of DML is to teach students to be reflective and to think like nurses while developing clinical-reasoning skills.

Study team members learned to use the DML worksheets to consistently guide the debriefing process just as nursing program simulation team members need to be skilled in using the tools employed within the debriefing. This method begins with the participants identifying what went right, what went wrong, and what they would do differently and listing those responses and the associated emotions on designated areas of the worksheet. Then,

the facilitator begins the discussion with a recounting of what is known about the simulated patient, the primary focus of concern for the nurse, and the events of the simulation. Particular attention is paid to using Socratic questions to understand students' thinking and their associated actions in the context of patient care (Dreifuerst, 2012).

The educational sessions emphasized how to complete the debriefing with reflection-in-action, reflection-on-action, and reflection-beyond-action components specific to DML and how to actively teach thinking like a nurse during the debriefing process. Study participants first learned about the method, then observed Dr. Dreifuerst demonstrating it, and finally practiced it several times before demonstrating it themselves for evaluation and feedback. They then returned to their schools and continued to practice and refine their technique before using it with students. Study team members also participated in periodic observations and evaluations of their debriefing to ensure fidelity within and among the study sites and participants.

### **Evaluation of Debriefing Effectiveness Using the DASH-RV Instrument**

Evaluation of debriefing was important for monitoring the effectiveness of faculty facilitating the debriefing and to ensure the overall quality of the simulations being implemented. Faculty members need to be trained using an evaluation instrument such as the DASH-RV, which was used in the National Simulation Study, to develop and maintain high-quality facilitator and debriefing standards throughout the study. The DASH-RV instrument is used by faculty observer peers to assess and measure six aspects in debriefing: setting the stage for the learning experience, maintaining an engaged context for learning, using a structured debriefing model, provoking in-depth discussions that lead learners to reflect on their performances, identifying ways the learners did well or poorly, and helping learners see how to improve or sustain good performance (Simon et al., 2009).

Participants in the study received a presentation on using the DASH-RV instrument followed by hands-on intensive use with students hired to serve as standardized students. After a simulation with the standardized students, faculty members practiced and demonstrated debriefing, using DML, and then used the DASH-RV instrument to evaluate each other. Study team members individually practiced orientation of students to the simulation rooms and manikins, scenario objectives, and debriefing, while being scored and then debriefed by the study consultants and their fellow site study team members.

During the study, the project coordinators used the DASH-RV instrument to assess the study team members twice each semester to ensure that high-quality debriefing techniques were maintained throughout the study. If a DASH-RV score fell below 5, the team member was required to complete additional training and be reassessed with the DASH-RV instrument before

TABLE 2

### Educational Resources in Simulation Development

This table provides examples of educational resources in simulation development where faculty can obtain formal training and education in creating and implementing clinical situations.

- Boise State University: <http://hs.boisestate.edu/simulation/sgcp/>
- Bryan Health Simulation Education: [www.bryanhealth.com/SimulationEducation](http://www.bryanhealth.com/SimulationEducation)
- California Simulation Alliance: [www.californiasimulationalliance.org/CSACourses.aspx](http://www.californiasimulationalliance.org/CSACourses.aspx)
- Drexel University MS in Medical and Healthcare Simulation: <http://catalog.drexel.edu/graduate/schoolofbiomedicalsciences/medicalhealthcaresimulation/>
- International Nursing Association of Clinical Simulation & Learning: [www.inacsl.org/i4a/pages/index.cfm?pageid=1](http://www.inacsl.org/i4a/pages/index.cfm?pageid=1)
- National League for Nursing Simulation Innovation Resource Center: <http://sirc.nln.org/>
- Robert Morris University Graduate Certificate in Simulation: [www.rmu.edu/Graduate/programs/SimulationLeadership](http://www.rmu.edu/Graduate/programs/SimulationLeadership)
- Rural Northern California Clinical Simulation Center: [www.csuchico.edu/nurs/SimCenter/events.htm](http://www.csuchico.edu/nurs/SimCenter/events.htm)
- Society for Simulation in Healthcare: <http://ssih.org/>
- University of San Francisco Master of Science in Healthcare Simulation: [www.usfca.edu/nursing/mshs/](http://www.usfca.edu/nursing/mshs/)
- University of Washington Center for Health Sciences, Interprofessional Education, Research and Practice: <http://collaborate.uw.edu/>

continuing with the study. This ongoing monitoring would also be helpful in simulation programs.

### Preparing Faculty to Evaluate Student Performance

Just as the study team members were instructed on how to prepare the course clinical faculty to evaluate student clinical performance, the simulation team and clinical faculty need to be educated on appropriate use of the evaluation tools within the course. One instrument available and used in the study to measure clinical competency in both the simulation and the clinical environment is the CCEI (Hayden, Keegan, et al., 2014). The CCEI was chosen for its ease of adaptability to any clinical setting and program. This one-page instrument is scored with a 1 or a 0 for each element based on the quality and safety in nursing standards. Study team members and SCs were taught to use the CCEI so they could train clinical faculty members using lecture and discussion, including examples and definitions of terms on the instrument intended to promote inter-rater reliability. The clinical outcomes for each course at each school served as the benchmarks for each item on the instrument.

To benchmark the CCEI successfully for each course, SCs held a meeting at the beginning of each semester with all course clinical faculty members involved in the study. These clinical faculty members, lead teachers, and study faculty members clearly defined the expected course clinical outcomes and the expected student behaviors for scoring a 1 on each element of the CCEI by the end of the semester. Standardized and validated training videos of two students in a blood administration scenario performing at various stages of proficiency were made available to all clinical faculty members to practice scoring the CCEI.

Clinical faculty members accompanied their students to the simulation centers for all study simulation activities. They

observed and scored students in simulation and debriefing who were serving in the roles of nurse 1 or nurse 2, using the CCEI. Clinical faculty members also scored all students individually, using the CCEI for their work during the traditional clinical time each week.

### Summary

Overall, the faculty development and education were important components of the research design in the National Simulation Study to ensure standardized implementation, intervention, and assessment fidelity at the different sites. These elements are also important considerations when developing and implementing a simulation-based curriculum in nursing programs. All faculty members involved in implementing the simulation study took part in the simulation education and training and demonstrated competencies for implementing simulations and conducting debriefings before being allowed to be part of the simulation team. Fidelity in this study was necessary to ensure consistent outcomes from the use of simulation within the curriculum just as fidelity is important when implementing a simulation curriculum in a nursing program.

Many challenges are associated with requiring faculty members to learn simulation pedagogy. Ensuring they know how to implement clinical simulations across different courses and how to debrief using best practices may be difficult to operationalize, but is critical for a successful outcome. (See Table 2 for faculty development resources.) Therefore, BONs' policies determining the amount of clinical time that can be replaced by simulation will need to include similar parameters and quality initiatives that are attainable by faculty members and schools that wish to adopt these practices. Clearly, ensuring that faculty members who use simulation receive education and skills in simulation pedagogy and debriefing is essential for successful student outcomes.

## References

- Decker, S., Fey, M., Sideras, S., Caballero, S., Rockstraw, L., Boese, T., & Borum, J.C. (2013, June). Standards of best practice: Simulation standard VI: The debriefing process. *Clinical Simulation in Nursing*, 9, S27–S29.
- Dreifuerst, K. T. (2009). The essentials of debriefing in simulation learning: A concept analysis. *Nursing Education Perspectives*, 30(2), 109–114.
- Dreifuerst, K. T. (2010). *Debriefing for meaningful learning: Fostering development of clinical reasoning through simulation*. (Order No. 3617512, Indiana University). ProQuest Dissertations and Theses, 212. Retrieved from <http://search.proquest.com/docview/1527174151?accountid=7398>. (1527174151).
- Dreifuerst, K. T. (2012). Using debriefing for meaningful learning to foster development of clinical reasoning in simulation. *Journal of Nursing Education*, 51(6), 326–333. doi:10.3928/01484834-20120409-02.
- Dreifuerst, K. T., & Decker, S. (2012). Debriefing: An essential component for learning in simulation pedagogy. In P. J. Jeffries (Ed.), *Simulation in nursing education: From conceptualization to evaluation* (18th ed.). New York, NY: National League for Nursing.
- Fanning, R. M., & Gaba, D. M. (2007). The role of debriefing in simulation-based learning. *Simulation in Healthcare*, 2(2), 115–125. doi:10.1097/SIH.0b013e3180315539
- Hayden, J., Keegan, M., Kardong-Edgren, S., Smiley, R. (2014). Reliability and validity testing of the Creighton Competency Evaluation Instrument (CCEI) for use in the NCSBN National Simulation Study. *Nursing Education Perspectives*, 35(4), 244–252.
- Hayden, J., Smiley, R., Alexander, M. A., Kardong-Edgren, S., & Jeffries, P. (2014). The NCSBN National Simulation Study: A longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education. *Journal of Nursing Regulation*, 5(2, Supplement), S3–S40.
- Hulleman, C. S., & Cordray, D. S. (2009). Moving from the lab to the field: The role of fidelity and achieved relative intervention strength. *Journal of Research on Educational Effectiveness*, 2(1), 88–110.
- Issenberg, S. B., McGaghie, W. C., Petrusa, E. R., Gordon, D. L., & Scalese, R. J. (2005). Features and uses of high-fidelity medical simulations that lead to effective learning: A BEME systematic review. *Medical Teacher*, 27(1), 10–28.
- Jeffries, P. R. (2012). *Simulations in nursing education: From conceptualization to evaluation* (2nd ed.). New York, NY: National League for Nursing.
- Jeffries, P. R., Beach, M., Decker, S. I., Dlugasch, L., Groom, J., Settles, J., & O'Donnell, J. M. (2011). Multi-center development and testing of a simulation-based cardiovascular assessment curriculum for advanced practice nurses. *Nursing Education Perspectives*, 32(5), 316–323.
- Johnson-Russell, J., & Bailey, C. (2010). Facilitated debriefing. In W. Nehring & F. Lashley (Eds.), *High-fidelity patient simulation in nursing education* (pp. 369–384). Sudbury, MA: Jones and Bartlett.
- Jones, A., Reese, C. E., & Shelton, D. P. (2014). NLN/Jeffries Simulation Framework State of the Science Project: The teacher construct. *Clinical Simulation in Nursing*, 10(7), 353–362.
- Kardong-Edgren, S., Willhaus, J., Bennett, D., & Hayden, J. (2012). Results of the National Council of State Boards of Nursing National Simulation Survey: Part II. *Clinical Simulation in Nursing*, 8, e117–e123. Retrieved from [www.nursingsimulation.org/article/S1876-1399\(12\)00011-4/abstract](http://www.nursingsimulation.org/article/S1876-1399(12)00011-4/abstract)
- Kardong-Edgren, S., Jeffries, P.R., Kamerer, J. (2014). Assembling and standardizing the NCSBN Simulation Study scenarios. submitted manuscript.
- McGaghie, W. C., Issenberg, S. B., Petrusa, E. R., & Scalese, R. J. (2010). A critical review of simulation-based medical education research: 2003–2009. *Medical Education*, 44(1), 50–63.
- Nehring, W. M., Wexler, T., Hughes, F., & Greenwell, A. (2013). Faculty development for the use of high-fidelity patient simulation: A systematic review. *International Journal of Health Sciences Education*, 1(1), 4.
- Oermann, M. H., Hallmark, B. F., Haus, C., Kardong-Edgren, S., Keegan McColgan, J., & Rogers, N. (2012). Conducting multisite research studies in nursing education: Brief practice of CPR skills as an exemplar. *Journal of Nursing Education*, 51(1), 23–28.
- Oermann, M. H., Yarbrough, S. S., Saewert, K. J., Ard, N., & Charasika, M. (2009). Clinical evaluation and grading practices in schools of nursing: National survey findings part II. *Nursing Education Perspectives*, 30(6), 352–357.
- Reese, C. (2014). Evaluating teacher effectiveness when using simulation. In P. Jeffries (Ed.), *Clinical simulations in nursing education: Advanced concepts, trends, and opportunities* (pp. 101–112). Philadelphia, PA: Wolters Kluwer.
- Santacroce, S. J., Maccarelli, L. M., & Grey, M. (2004). Intervention fidelity. *Nursing Research*, 53(1), 63–66.
- Shinnick, M. A., Woo, M., Horwich, T. B., & Steadman, R. (2011). Debriefing: The Most important component in simulation? *Clinical Simulation in Nursing*, 7(3), e105–e111. doi:10.1016/j.ecns.2010.11.005
- Simon, R., Raemer, D. B., & Rudolph, J. W. (2009). *Debriefing Assessment for Simulation in Healthcare*®. Cambridge, MA: Center for Medical Simulation.
- Simon, R., Raemer, D. B., & Rudolph, J. W. (2011). *Debriefing Assessment for Simulation in Healthcare*®—Rater Version. Cambridge, MA: Center for Medical Simulation.
- Wazonis, A. R. (2014). Simulation debriefing practices in traditional baccalaureate nursing programs: National survey results. *Clinical Simulation in Nursing*. doi:10.1016/j.ecns.2014.10.002.

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