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Featured Article

Nursing Simulation Fellowships: An Innovative Approach for Developing Simulation Leaders

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Abstract

Background: Increasingly, nurse educators with expert simulation knowledge and strong leadership skills are needed to lead simulation program implementation and faculty development efforts. The skills necessary for simulation leadership are not all innate but need to be developed and nurtured. Nursing simulation fellowships aimed at developing expert simulation knowledge and leadership skills can be a viable pathway for developing simulation leaders to fill these roles.

Method: We developed a one-year long immersive nursing fellowship as a solution to meet the challenge. The program's structure includes four overall objectives and seven modules with specific learning activities aimed at developing simulation expertise and leadership skills.

Result: In a one-year period, the nursing fellow targeted nursing quality and patient safety by developing and implementing sustainable simulation-based programs, faculty development programs, and scholarly projects.

Conclusion: Nursing simulation fellowships provide a longitudinal guided experience for simulation expertise and leadership skill development. This approach can be a viable solution to meet the growing challenges in implementing simulation programs. This article provides a case exemplar for an innovative approach to developing simulation nurse leaders. Supporting theoretical frameworks, curriculum structure, outcome measures, and challenges are discussed.

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As simulation becomes more and more prevalent, nurse educators are increasingly recognizing the need for effective, high-quality simulation programs (Clapper, 2010; Cook et al., 2012, 2013). Effective simulation programs must include best practices, coupled with systematic faculty development (Berkowitz, Peyre, & Johnson, 2011; Clapper, 2011; Hayden, Smiley, Alexander, Kardong-Edgren, & Jefferies, 2014, 2008; Jefferies et al., 2013; Jeffries, Dreifuerst, Kardong-Edgren, & Hayden, 2015; National League for Nursing, 2015; Nehring, Wexler, Hughes, & Greenwell, 2013). Currently, however, both program implementation and faculty development in

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simulation remain largely unsystematic (Adamson, 2010; Anderson, Bond, Holmes, & Cason, 2012; King, Moseley, Hindenlang, & Kuritz, 2008), with lack of standardized curriculum, administrative support, access to expertise, time, and familiarity with technology cited as barriers (Cheng et al., 2015; Jefferies, 2008; Jones & Hegge, 2008; King et al., 2008; Nehring et al., 2013). Viable solutions to overcome these barriers are urgently needed.

Key Points

- To meet the growing need for high-quality simulation programs, nursing simulation fellowships provide a model for preparing nurse educators to assume leadership positions in simulation programs and centers.
- The nursing simulation fellowship is grounded in several key theories and models, including Watson's Theory of Human Caring, cognitive apprenticeship, Benner's Novice to Expert, and Ericsson's Expert Performance and Deliberate Practice Model.
- The fellowship program's structure includes four overall objectives and specific modules with learning activities which help the fellow to meet the objectives and guide the fellowship director in assessment and outcome measurement.

Transformational leaders for simulation have been identified as a strategic solution to the program implementation and faculty development challenges (Conrad, Guhde, Brown, Chronister, & Ross-Alaolmolki, 2011; Jefferies, 2008; Leigh & Hurst, 2008; Nehring et al., 2013). A key role of the simulation leader is to create and implement a formal simulation faculty development plan for the institution (Jefferies, 2008; Nehring et al., 2013) and serve as a source of motivation and support for those hesitant to engage with simulation (Leigh & Hurst, 2008). An effective simulation leader needs expert simulation knowledge, as well as courage and skills, to advocate for the resources necessary for effective change. However, leaders with such comprehensive qualities may not be readily found but instead need to be nurtured and developed (Rooke & Torbert, 2005). Currently, the ways to develop such leaders in simulation remain unexplored and pose a complex challenge.

We identified nursing simulation fellowships as a strategy for developing transformational leaders. Over the last year, we implemented a one-year nursing simulation fellowship at a large simulation center. In this article, we will discuss the supporting theories, content, and outcome measures of our nursing simulation fellowship program.

Background

Currently, pathways for formal simulation leadership development for nurse educators are limited. Since 2010, the National League for Nursing has spearheaded leadership development efforts by offering a year-long Leadership Development Program for Simulation Educators. However, complex problems often require diverse solutions, and simulation fellowships may be considered as an additional option, warranting closer consideration.

Typically, a fellowship refers to an advanced training program in a specialty area (Hayden & Gordon, 2013), and a fellow may refer to "a person appointed to a position granting a stipend and allowing for advanced study or research" (Merriam-Webster's online dictionary, n.d.). Although medical simulation fellowships have existed for approximately 10 years, as of this writing, to our knowledge, there have been no previous simulation fellowships exclusively for nurses (Hayden & Gordon, 2013; Kotal, Sivertson, Wolfe, Lammers, & Overton, 2015). Existing simulation fellowships also remain unstandardized; content, requirements, objectives, and participant qualifications have not been defined (Kotal et al., 2015). The lack of formalized definitions poses a challenge for those developing and managing simulation fellowships.

To design and implement a new nursing simulation fellowship, we operationally defined the fellowship as a 1-year, part-time funded program to develop transformational nursing leaders with expertise in the following key domains in simulation: technology, debriefing, course development, educational theory, faculty development, research, and leadership. The fellow works closely with the fellowship director, who is a simulation nurse leader accomplished in all the key domains and experienced in mentoring and professional development. With guidance, the fellow systematically implements at least one sustainable simulation program and participates in scholarly activities. The fellowship is both an expert apprenticeship and caring mentorship, grounded in nursing and learning theories.

Theoretical Frameworks

The underpinning nursing theory for this fellowship is Watson's Theory of Human Caring (Watson, 1979, 1985, 1999, 2007). Originally developed for patient care, Watson's theory has since been applied to nurse practice domains beyond the nurse–patient relationship to include the nurse educator–student relationship (Cook & Cullen, 2003; Sawatzky, Enns, Ashcroft, Davis, & Harder, 2009; Watson, 1999, 2007). Using Watson's theory as the ontological and philosophical foundation for the fellowship shifts the paradigm from a traditional skills training model to a caring, relational model. This is important because much of the teaching–learning activities in this fellowship

require a trusting relationship between the fellowship director and the fellow.

In the context of a fellowship, this theory provides a framework to guide relationship development and interactions in the fellowship director—fellow relationship. For example, when conflicts arise, Watson's *Caritas Processes* (Watson, 1979, 1985, 1999, 2007) guide the fellowship director to approach the conflict with kindness and equanimity, be authentically present, and focus on co-creating a fellow-centered solution. Watson's framework helps to explain implementation of simulation fellowships as a new nursing phenomenon, a new domain of nursing practice.

Although Watson's theory explains the phenomenon and informs practice from a nursing perspective, other models are needed to inform practice from a teaching—learning perspective. In addition to Watson, we used four learning theories to support the curriculum design and implementation of the fellowship: Benner's (1984) Novice to Expert Model, Dreyfus and Dreyfus' (1980, 2004) Model of Skill Acquisition, the Cognitive Apprenticeship Theory (Collins, Brown, & Newman, 1989), and Ericsson's Model of Expert Performance and Deliberate Practice (Ericsson, Krampe, & Tesch-Romer, 1993, 2006, 2008). We summarized key applications of the five theories in Table 1.

Fellowship Design and Implementation

Fellowship Structure

The fellowship is structured as a one-year program. The fellow commits two days per week to the fellowship, and during this time designs and implements at least one project in the fellow's area of interest, and participates in projects in progress at the simulation center. The fellow works closely with the fellowship director to ensure that the curriculum is followed and key objectives are met.

Fellowship Curriculum

The fellowship curriculum has four overarching learning objectives: (a) demonstrate competence in operating simulation technology, (b) apply relevant theories of learning in design and implementation of simulation-based nursing education programs, (c) demonstrate debriefing techniques, including "Good Judgment" debriefing and plus delta, and (d) apply leadership and management principles to develop and expand simulation education programs. In addition, the curriculum is comprised of seven modules designed to reflect the domains essential for a simulation leader: (a)

Table 1 Theoretical Frameworks Supporting Fellowship Design and Implementation

Theoretical Framework	Key Applications Supporting the Curriculum
Watson's Theory of Human Caring	Establishes caring relationship as the foundation for the fellowship director—fellow collaboration
Benner's Novice to Expert Model and Dreyfus and Dreyfus' Model of Skill Acquisition	Provide frameworks for assessing and anticipating developmental progress of the fellow in all domains of the curriculum
Cognitive Apprenticeship Theory	Provides a framework for designing teaching—learning strategies to include: • Situated learning: learning from implementing useful projects in a real-world setting • Modeling: teaching by demonstrating a skill or how to solve a problem and narrating the cognitive and psychomotor processes involved • Coaching: teaching by observing the fellow perform a skill or solve a problem, then offering feedback and actionable suggestions for improvement • Reflection: learning by analyzing one's own problem-solving processes and comparing them with the processes modeled by the expert mentor to identify areas for improvement • Scaffolding: teaching by providing the fellow with the needed support to solve a problem, then gradually fading the support so the fellow can do it on his/her own • Articulation: teaching by asking the fellow to narrate and discuss his/her knowledge, reasoning, and decision-making processes • Exploration: learning by solving problems on one's own as the mentor fades out scaffolding
Ericsson's Model of Expert Performance and Deliberate Practice	Identifies deliberate practice as a key-mediating mechanism for expertise development in all domains of the curriculum

simulation equipment, information technology (IT), and operations; (b) program development, implementation, and evaluation; (c) debriefing; (d) standardized patients; (e) faculty development; (f) research and scholarly projects; and (g) leadership and management. Each module has its own required and suggested readings and learning activities. The modules are not meant to be accomplished linearly, but rather simultaneously, as opportunities arise. It is expected that the fellow will work to achieve expertise in these seven domains, and in doing so, the fellow will meet the overarching learning objectives. We summarized the modules and provided an example learning activity for each module in Table 2.

Although not a complete list, the following are examples of learning activities undertaken by the fellow in this year's fellowship, mapped to the core objectives.

Objective 1: Demonstrate Competence in Operating Simulation Technology

This objective was met through activities under Module 1: simulation equipment, IT, and operations and Module 2: program development, implementation, and evaluation. Building on previous knowledge of manikin and IT operations, the fellow worked with the simulation center's health care simulation operations specialists to learn to operate a wide range of manikins, task trainers, and IT equipment. In addition, based on a needs assessment for a new in situ mock code program at the affiliated hospital, the fellow coordinated the purchase of a new pediatric manikin. The fellow researched limitations and advantages of the available products, worked with industry representatives for pricing, and purchased the product appropriate for the program objectives.

Objective 2: Apply Relevant Theories of Learning in Design and Implementation of Simulation-Based Nursing Education Programs

This objective was met through activities under Module 2: program development, implementation, and evaluation; Module 3: debriefing; Module 4: standardized patients; and Module 5: faculty development. The fellow designed and implemented multiple simulation-based programs, primarily in situ simulations for patient emergencies in outpatient and inpatient settings. The fellow also taught in competency assessment and pediatric transport simulation-based programs. In addition, the fellow developed a mock code facilitator training course. Nurses were recruited from the affiliated hospital to attend this 4-hour immersive faculty development program to learn how to conduct and debrief mock codes on their units. To ensure that the mock code program is scalable and sustainable, the fellow trained >30 nurses who can continue to teach after the fellow graduates.

To expand the fellow's instructional design repertoire, the fellow and fellowship director collaborated to develop an e-learning module focused on introducing novice simulation educators to simulation. The fellow contributed to the content, wrote scripts for videos and narration, participated in video production, and organized and edited the components into a finished product.

Finally, to expand knowledge of learning theories, the fellow participated in a monthly journal club with several medical simulation fellows and fellowship directors from the affiliated hospital. Fellows took turns selecting a journal article focused on a learning theory and led a discussion on the theory and its application to simulation. The journal club served to develop knowledge and helped the fellows build an interprofessional community of practice.

Objective 3: Demonstrate Debriefing Techniques, Including "Good Judgment" Debriefing and Plus Delta

Debriefing is a significant focus of the fellowship. The "Good Judgment" method (Rudolph, Simon, Dufresne, & Raemer, 2006) was emphasized because it is the preferred method used by the simulation center. The fellow met the objective through activities pertaining to Module 3: debriefing and Module 4: faculty development. As part of the

Table 2 Fellowship Modules and Example of Learning Activities

Module	Example Activity
1. Simulation equipment, information technology, and operations	• Operate and troubleshoot manikins, video recording system, and audio visual equipment with support from simulation operation specialists
2. Program development, implementation, and evaluation	• Design and conduct in situ simulations in inpatient and outpatient areas
3. Debriefing	• Attend intensive simulation instructor course, with emphasis on debriefing frameworks and skills
4. Standardized patients	• Observe standardized patient training sessions
5. Faculty development	• Teach in simulation instructor courses, taking on progressive responsibilities
6. Research and scholarly projects	• Join an interprofessional simulation-based research team
7. Leadership and management	• Lead a novel National Simulation Fellows Symposium

fellow's formal debriefing training, the fellow attended a four-day instructor course. Throughout the fellowship, the fellow had ample opportunities to debrief in clinical courses and debrief-the-debriefers in simulation instructor courses offered by the simulation center. The fellow took on progressive responsibility in teaching the simulation instructor course, progressing from an observer to a co-debriefer of the participants' debriefings.

Feedback on debriefing was incorporated throughout these activities. The fellowship director observed the fellow's debriefings, and then the fellow and director debriefed the fellow's debriefings in depth together. Several versions of the Debriefing Assessment for Simulation in Healthcare tool (Brett-Fleegler et al., 2012) were used to provide structured feedback to the fellow. The learners in clinical courses used the student version, the fellowship director used the rater version, and the fellow used the instructor version for self-reflection. The debriefings were also transcribed or recorded to give more specific feedback and help the fellow appreciate the effect of small semantic adjustments. In addition, a sub-objective under the debriefing module was selecting the appropriate debriefing method based on needs assessment. To meet the needs of the in situ mock code program, the fellow developed a hybrid debriefing method for in situ simulation that incorporated best practices of several existing models.

Objective 4: Apply Leadership and Management Principles to Develop and Expand Simulation Education Programs

Leadership development is another major focus. Much of the fellow's activities discussed above required leadership and management skills. Activities related to all the modules, but particularly Module 6: research and scholarly projects and Module 7: leadership and management helped to meet this objective. The fellow participated in directors' meetings and team meetings to gain exposure to the administrative and strategic proceedings of the simulation center. The fellow also joined an interprofessional research team and worked with an experienced researcher on a simulation-based educational research project. The fellow submitted abstracts for international simulation conferences and was accepted for poster and podium presentations. The fellow also collaborated with the medical simulation fellow at the center to lead conference planning; together, they organized a grand rounds session, and a novel Simulation Fellows Symposium, bringing together 40 simulation fellows and fellowship directors to network and present capstone projects and research.

Assessment and Evaluation

Formative assessments occurred frequently. With caring mentorship as a basis, the fellow and the fellowship director maintained open communication and met weekly for coaching and feedback. Summative assessments occurred at six months and at the end of the fellowship. Both formative and summative assessments of the fellow were tied to the four primary objectives of the fellowship. At the conclusion, the fellowship director gave a formal review to the fellow on each of the core fellowship objectives.

Outcome Measures and Value to the Stakeholders

Because this is an innovative nursing fellowship, articulating the outcome measures and added value is particularly important, not only for the fellow's professional growth, but also for those who invested time and resources into the fellowship. Fellowship outcomes are partly measured by deliverables. By the end of the fellowship, the fellow had the following accomplishments: a pediatric in situ mock code program with trained facilitators, podium and poster presentations at an international simulation conference, an innovative symposium for simulation fellows, an e-learning module for simulation educators, and a manuscript for publication. As the fellowship program continues, future fellows would be expected to have similar quality and quantity of deliverables.

To ensure the fellowship program can be sustained, it is imperative that the program leaders continue to articulate the outcomes and demonstrate value to stakeholders. This fellowship provided added value to stakeholders by positioning the simulation center as one of the pioneers in nursing simulation leader development. The innovative deliverables created by the fellow add to the reputation of the simulation center and its parent institutions. Additionally, the simulation programs designed and implemented by the fellow contributed to nursing quality and patient safety in the hospital. In addition, through the mock code facilitator program, the hospital gained nurses trained to conduct and debrief mock codes, and the nurses gained valuable professional development, something that the affiliated hospital, a Magnet® institution, values highly. For the medical simulation fellowship programs already in place in the hospital, the addition of nursing fellows to the community of practice breaks down professional silos and adds a new dimension of interprofessional learning and collaboration in simulation, something that all simulation fellows enjoyed and highly valued.

Strategic Collaborations

Collaboration with other nursing leaders in the affiliated hospital is a key factor that led to successful outcomes. The Senior Director for Women's and Children's Services was a major partner who supported the mock codes across the

pediatric units and allowed the fellow to maintain a part-time position at the medical center, so the fellow was able to maintain benefits and some income. In addition, nursing leaders in the pediatric units, as well as those on the resuscitation committee, emergency response teams, and nursing quality councils, were also key collaborators. Medical simulation fellowships in the simulation center and affiliated hospital were also important collaborative partners.

Challenges

The most significant challenges to implementing the simulation fellowship are funding and time. Continuing funding for this 0.4 full time equivalent (FTE) fellowship is the main challenge. Currently, it is funded by a philanthropic donation from the Hearst Foundations. The funding covered the fellow's time and the travel costs for attending professional conferences. However, the simulation center directors must continue to search for other sources to sustain the fellowship after the current funding is depleted. Revenue-generating activities at the center and other philanthropic donors are possible sources of funding.

In addition, the fellowship required a significant time commitment from both the fellow and the fellowship director. The fellow had to be able to spend at least two full days a week at the simulation center to take full advantage of the immersive nature of the fellowship. As such, the fellow needed to adjust other obligations and work commitments. The fellowship director also committed a significant amount of time to plan the curriculum, provide scaffolding to the fellow for projects, and meeting regularly with the fellow. On the other hand, the fellowship also has the potential to increase the director's productivity because the fellow should assist the director with existing projects that further the agenda of the simulation center.

Conclusion

As the use of simulation continues to expand in nursing education, the need for leaders who can meet program implementation and faculty development challenges becomes more urgent. However, it takes investment of resources, time, planning, and nurturing to develop strong leaders. Nursing simulation fellowships provide a longitudinal guided experience to ensure emerging nurse leaders develop relevant expertise in simulation education, scholarship, and leadership. With suitable theoretical foundations, structure, and focused planning, simulation fellowships can be a viable solution to meet the growing challenges in simulation program implementation.

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