

June 5, 2015

To Whom It May Concern:

I am delighted to nominate the Purdue University School of Nursing for the AACN Innovations in Professional Nursing Award. The programmatic innovation for which they are being nominated is:

Infusing Systems and Quality Improvement Approaches into the Undergraduate Curriculum

The Institutional Category of the Nominee is: ***Public School without an AHC***

The first class graduated from the new curriculum this May. Faculty have systematically evaluated the impact of the curricular revision; already the following activities have been disseminated about this innovation:

Karagory, P., & McComb, S. (2013) *Measuring the Vital Signs of the Healthcare System, the first Clinical Experience: Prioritizing QI, Safety, Systems Knowledge and Skills*. Podium presentation. AACN Baccalaureate Education Conference, New Orleans, LA.

Karagory, P., & McComb, S., (2014). Measuring the Vital Signs of the Healthcare System with the First Clinical Experience: Sophomore Nursing Students Rise to the Challenge. *Journal of Nursing Education*, 53(9): S97-S100.

Kirby, K., & Karagory, P. (2014) *The New Fundamentals: Sophomore Nursing Students Leading and Implementing Community-Based Quality Improvement Initiatives*. Podium presentation. 41st Annual National Conference on Professional Nursing Education and Development Conference, Rochester, MN.

Simpson, V., McComb, S., & Kirkpatrick, J. (2015). *Enhancing Clinical Judgment and Critical Thinking Skills of Baccalaureate Nursing Students with Systems Engineering Education and Support*. Podium presentation. National League of Nursing Education Summit, Las Vegas, NV.

Simpson, V., & Richards, E. (2015). *Enhancing Cultural Competence and Global Awareness for Baccalaureate Nursing Students: An Interdisciplinary Service Learning Approach to Safe Water in a Developing Country*. Podium presentation. Sigma Theta Tau International's 26th International Nursing Research Congress, San Juan, PR.

This nomination is being submitted with support of the Purdue School of Nursing Awards Committee, chaired by Sara McComb, PhD, PE. Any questions or requests for further information can be made to Dr. McComb at sara@purdue.edu or via phone at 765.494.4029.

Warmest regards,



Christine Ladisch, PhD
Dean, College of Health and Human Sciences

Infusing Systems and Quality Improvement Approaches into the Undergraduate Curriculum Purdue University School of Nursing

In 2010, Purdue University School of Nursing (PUSON) committed to a significant revision of the Bachelor of Nursing (BSN) curriculum. The revision embraces systems and quality improvement (QI) approaches that are essential to improving the quality of healthcare. Active learning and interprofessional experiences are also incorporated to promote the development of team skills. These curricular innovations were informed by the Future of Nursing report (Institute of Medicine, 2010), the Carnegie Foundation report (Benner, et al, 2009) and the Core Competencies for Interprofessional Collaborative Practice (2011). The entire curriculum is permeated starting in the freshman introduction to nursing course, followed by increasingly sophisticated infusions of systems and QI approaches each subsequent year. A team-based approach in collaboration with practice partners contributes to the relevance of the assignments and prepares graduates for the new reality of the nursing work environment. This approach is innovative in that it (1) builds competency across the curriculum, (2) broadens the scope of foundational knowledge for BSN graduates who will assume leadership roles in the work environment and (3) provides collaborative team experiences with practice partners, including multiple professions, to address QI and systems improvements in care delivery. Joshua Fleming, Chief Nursing Executive and Vice President of Patient Care Services at IU Health Arnett, underscored the importance of the PUSON curricular innovation on the education of future nurses by simply stating, "It's what we do." While this content is addressed in multiple nursing courses, the primary education at each level is:

Freshmen: The first nursing course introduces many concepts related to the nursing profession including the nurse's role in the QI process as well as its significance for nurses, patients and the healthcare system.

Sophomores: Clinical groups complete basic QI projects in clinical or public health settings. Students are introduced to the Define, Measure, Analyze, Improve and Control (DMAIC) framework for identifying systems, waste, gaps, and problems. They employ this framework, in collaboration with practice and community partners, to complete projects that tackle system problems, provide deliverables that improve patient care flow, and address system policy gaps. Examples include organizing a supply room, developing a food allergy policy for a rural elementary school, designing a sustainable training program for public school system employees to manage children's severe allergic reactions, and redesigning the patient flow through a community child wellness day clinic.

Juniors: Student teams complete data-driven QI projects as part of their med/surg clinical experience. Teams receive assistance in scoping their projects from practice partners and faculty. Team members are given one clinical day during the semester to work on their projects, which require them to apply basic systems and QI tools (e.g., 5S, Value Stream Mapping, Five Whys, Fishbone Diagrams, Pareto Charts). A National League of Nursing-funded study provided support for initiating and evaluating this approach (Simpson et al., 2012). Projects include determining barriers to changing IV tubes; evaluating the use, value, and effectiveness of rounding lights; conducting a root cause analysis of CAUTIs; mapping processes (e.g., the medication delivery process within the hospital, the unit discharge process, the specimen labeling process) to identify barriers and opportunities for improvement.

Seniors: In the Senior Nursing Leadership course, student teams take on more complex problems using Lean QI methodology with an emphasis on expanding leadership and team skills (<http://www.nursing.purdue.edu/purduenurse/>). Projects include designing patient healthcare portals for a diverse population of patients in a rural community, redesigning a process to eliminate patient chair to bed falls, creating a system for transitioning patients from the ER to a unit in a critical access hospital, and developing a protocol for individualizing alarm settings to reduce alarm fatigue.

In addition to the infusion of systems and QI concepts throughout the curriculum, Purdue students have additional opportunities to embrace the new paradigm. Annual leadership conferences hosted by the school bring thought leaders such as Dr. Linda Aiken, known for her groundbreaking research that has influenced

how hospital staff nurses care for patients, and Dr. Doris Quinn, a process improvement and quality expert at MD Anderson. Students also complete Institute for Healthcare Improvement (IHI) Open School safety and quality learning modules. All students experience a variety of interprofessional education opportunities with a systems focus such as the Geriatric Medication Game (Chen et al 2014), and some participate in courses such as the Safe Water Service Learning Course (Simpson & Richards, 2015) or the Engineering and Public Health in the Service Sector study abroad program.

Outcomes Achieved: To date 294 students have been exposed to the systems and QI approaches. The student projects are impacting our practice partners in positive ways. Alfonso Gatmaiten, CEO of IU Health Arnett, states, "The LEAN QI deliverables to the hospital and clinic settings have been significant, novel and meaningful to our ongoing improvement efforts and of comparable quality to the work produced by our current leadership team." Moreover, some projects have been integrated into the facility's magnet journey. Similarly, Jim Layman, Executive Director of North Central Nursing Clinics, states that the senior-level LEAN projects "help us to better define and analyze the problem and bring innovative solutions to these QI initiatives. We have implemented many of the ideas and recommendations presented by the students and are already seeing progress and improved patient outcomes." The students are also reporting the significance of these efforts on their careers, the field of nursing, and healthcare. For instance, one student reported "The project gave me the chance to enhance my own learning while working with a team toward an end product that made us all proud. For my internship this summer I had to complete another QI project and having the previous QI project experience, I felt confident with my abilities before even tackling the project." A second student demonstrates how life changing this paradigm shift can be by stating, "I never felt as though I was making a lasting difference in community healthcare until our QI project...This single project changed the dynamic of my nursing career before it has even started by giving me confidence and showing me that I have the capability to make a significant impact. Thanks to the lessons learned through this process I am ready to be a leader and a proactive member of the healthcare community." A senior exit-survey comment was "Now, I automatically think about things from a QI perspective....how can we do things differently to achieve better outcomes?"

Concise Summary: The infusion of systems and QI approaches in the BSN program provides students with hands-on opportunities to address challenges in providing high-reliable quality healthcare in the dynamic environment of today's healthcare system. This type of knowledge enables graduates to recognize and collaborate with interprofessional practice partners to successfully improve healthcare delivery.

Award Criteria:

Catalyst for change: As Purdue faculty embarked on updating the BSN curriculum to match nurses' expanded professional requirements in today's rapidly evolving healthcare context, input from practice partner leadership was solicited via the question "What knowledge, skills, and abilities would make our students stand out and contribute to the mission and vision of your organization?" The answer was specific and immediate: systems thinking and QI knowledge and skills. These leaders articulated the value this foundation would add to their organizations in meeting national quality standards, enhancing interprofessional team synergy, and improving their organizations' viability and sustainability by having nurses serve as change agents and leaders. As systems engineering has been a core of Purdue's DNP program since 2006, infusing this content into the BSN program was a logical next step. The momentum for this innovation is clearly seen in the faculty. Recognizing the need for a common skill set, ten faculty who teach across all levels of the curriculum became Lean Six Sigma yellow belt certified (i.e., they successfully completed coursework and a project employing Six Sigma tools). An early inspiration for nursing faculty was a pilot of QI projects at the sophomore level, led by the teaching team with support from an engineering colleague. This pilot's success drove increasingly complex QI projects in subsequent courses, ultimately creating BSN graduates who have experience using systems and quality improvement approaches to improve healthcare, and who expect these activities to be part of their professional practice.

Potential for replication and dissemination: The incorporation of systems and QI approaches into BSN programs is replicable. The tools (e.g., yellow belt certification for faculty) and resources (e.g., cooperative relationships with engineering) needed are available. More importantly, practice partners are extremely supportive, as evidenced in the statements noted in the outcomes section. Our faculty are disseminating results at conferences and in archival journals. A sample of their growing evidence base can be seen in journal articles (e.g., Karagory & McComb, 2014) and conference presentations (e.g., Karagory & McComb, 2013; Kirby & Karagory, 2014; Simpson et al., 2015).

Involved teams of faculty: The involvement of faculty in this innovation has occurred in four specific ways. First, the entire faculty was instrumental in the curricular revision. Over the course of one academic year, the faculty held a series of meetings to overhaul the BSN curriculum. These meetings included conducting a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, review of current literature, and analysis of learning experiences. Since systems and QI approaches are infused into every level, all faculty were involved in the development and implementation of this innovation. Second, ten faculty to date have achieved Lean Six Sigma yellow belt certification to increase their QI knowledge. Third, PUSON hired an Industrial Engineering (IE) professor in 2011 who has been instrumental in working with nursing faculty as they incorporate this body of knowledge into various courses. Fourth, two nursing and the IE faculty, in partnership with the junior-level teaching team, undertook a National League of Nursing-funded research project that infused QI projects into clinical experiences (Simpson et al., 2012-2014).

Consistent with AACN's Mission and Vision: This innovation strongly aligns with AACN's Mission as it significantly advances nursing education. The faculty commitment to dissemination advances nursing educational research; and the overwhelming support for this approach articulated by our practice partners demonstrates how this innovation is advancing practice. Moreover, this innovation provides the foundation for the realization of AACN's Vision to "lead the delivery of quality healthcare and the generation of new knowledge to improve health and the delivery of care services" by ensuring that future nurses have the QI tools and systematic mindset needed to make healthcare delivery more efficient for patients and providers.

Demonstrates advancement of professional nursing education: Faculty have transformed the undergraduate curriculum by infusing new knowledge, skills, and attitudes of systematic healthcare quality improvement. The marriage of this content with a strategy of team-based active learning and interprofessional practice partner collaboration has highlighted the relevance and significance of these skills to the students, who gain increasingly sophisticated experiences in systems and QI as they progress through the curriculum. The positive results of this educational approach are evident to practice partners, and we now have a waiting list of practice partners who wish to collaborate with our students on QI projects. The outcome of this innovative approach to undergraduate education is the generation of graduates who expect QI to be a natural part of the nursing role and who are ready to serve as effective members of interprofessional teams as they systematically improve healthcare delivery, quality, and safety.

References:

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