

Project Name: Strengthening Career Readiness in Critical Care Nursing to Improve Patient Care

Requested Support Amount: \$1000

Description: The proposed project by the Stark Campus Nursing Program for a UTC Teaching Development Grant involves integrating critical care equipment, technology, and supplies, which would be purchased through the grant, into the coursework of nursing students. The equipment will provide numerous opportunities in multiple classes on a regular basis for nursing students to gain experience and confidence in understanding and using critical care equipment, including ventilators, capnography systems, and related supplies, which could not be more timely given the global pandemic.

As patient needs and health care environments become increasingly complex, nurses are called upon to make vital decisions for sicker, frailer patients. Health care for critically ill patients takes place in settings with life-saving technology and complex information management systems that require highly skilled nurses. In Northeast Ohio, the majority of nurses work in hospital settings, and critical care is the fourth highest of the 20 most common hospital practice areas (Center for Health Affairs, 2018). In a 2018 survey of Kent State Stark nursing graduates, all were working as nurses in intensive care units or step-down facilities in Northeast Ohio.

Nurses work with acutely ill patients in critical care settings with the proposed equipment. A ventilator is used when patients cannot breathe on their own and can be initiated for a variety of reasons, including acute respiratory failure or arrest, the most common reason. During acute respiratory failure, a patient cannot maintain normal ventilation and gas exchange. Capnography monitors the concentration of carbon dioxide in this gas exchange, and is used as a monitoring tool during anesthesia and in intensive care. The primary goals of mechanical ventilation are to enhance pulmonary gas exchange, decrease work of breathing, increase lung volume, reduce respiratory muscle fatigue, reverse respiratory distress and respiratory failure, improve hypoxemia, and facilitate lung healing.

The ventilator, capnography monitoring system, and critical care supplies would become permanent resources in the nursing simulation lab and would be integrated into several courses. Repeated practice of the skills learned in the lab setting assures competent, safe nursing care. Simulation experiences are incorporated into most nursing courses at Kent State Stark.

In nursing, interactive learning environments with hands-on training, demonstration, and clinical simulations engage the learner and improve the learner's ability to retain information. Creating authentic environments and providing resources for multiple methods and repetition in nursing training are important for learning (Haraldseid, et al, 2015). Having critical care equipment in the lab will provide learning experiences that help nurses develop clinical competency and improve critical care processes in a realistic and safe environment without the potential of harm to patients. Working with the critical care equipment in the lab will broaden students' understanding of diverse clinical scenarios in a safe and controlled environment.

Goals: Students are often hesitant about caring for patients with mechanical ventilators because it is a complex piece of equipment that often alarms to prompt intervention; they are required to use, interact with, and respond appropriately to the patient and equipment while on the nursing unit. Having a ventilator in the nursing lab would allow faculty to introduce students to the equipment, demonstrate its use, and trigger alarms, and allow students to perform appropriate intervention in response to the alarms in a controlled setting that would not directly impact the care of a critically ill patient. The goal of the project is to improve nursing teaching and learning with critical care equipment and to enhance the confidence of nursing students as they transition to the nursing profession.

Impacts: Since the proposed critical care equipment and technology would be a new addition to our simulation laboratory, new exercises would be integrated into the curriculum of clinical nursing courses, including the following courses: Advanced Medical Surgical Simulation, Nursing of the Critically Ill, Nursing of Adults Across the Lifespan, and Healthcare of Children. Students would engage in new scenarios that would include the following beneficial learning outcomes:

- Students will gain more classroom experience using ventilators and critical care equipment and technology in their course work.
- Students will improve critical thinking and clinical reasoning skills in critical care.
- Students will gain more confidence for their clinical experience in critical care settings.
- Students will be better prepared for clinical experiences that include critical care environments.
- Students will be better prepared to transition from nursing students to professional nurses to care for acutely ill patients in critical care settings.

The primary way in which these learning outcomes will be achieved is to provide multiple, repeated opportunities in several courses to work with authentic critical care equipment and technology in a safe learning environment prior to students embarking on the nursing careers.

Kent State Stark nursing students will be the primary direct beneficiaries (~ 232/year with repeated use) and local community members receiving critical care from our nursing graduates, most of whom work in Stark County or Northeast Ohio upon graduation, will also be beneficiaries.

Project Activities and Timeline: Implementation would involve the integration of multiple, repeated opportunities to work with authentic critical care equipment and technology in a safe learning environment and formative assessment to improve practices and repeated use with the critical care equipment in targeted nursing courses. New exercises would be developed and integrated into the curriculum in the following courses: Advanced Medical Surgical Simulation, Nursing of the Critically Ill, Nursing of Adults Across the Lifespan, and Healthcare of Children. The integration of the critical care equipment into nursing courses would be reviewed and evaluated on a regular, cyclical basis with suggestions for improvement built into the cycle.

The timeline for project implementation includes:

- Summer 2020: training faculty on the use of the ventilator and capnography system in early Summer and integrating the equipment for initial use into summer courses
- Fall 2020: evaluating integration of equipment into summer courses and continuing to integrate critical care equipment with improvements into fall courses
- Winter break 2020-2021: evaluating Fall 2020 courses and suggesting improvements for Spring 2021 course integrations
- Spring 2021: integrating critical care equipment into courses
- Spring 2021: at end of semester, evaluating Spring 2021 course integration of critical care equipment and technology and suggesting improvements
- Summer 2021: surveying recent graduates from May 2021 in late summer 2021 and asking about learning outcomes associated with the integration of critical care equipment into courses and continuing to integrate the equipment into summer courses; begin the cycle of integration, use, and evaluation again.

Communication Plan: Our communication plan involves 1.) announcing the grant awards for the ventilator, capnography system, and critical care supplies through a number of internal media forms, including print and digital media; 2.) participating in the University Teaching Council Conference in Fall 2020; and 3.) seeking other professional opportunities to present our findings from integrating critical care equipment and technology into multiple courses for repeated use by our nursing students and their transition into the nursing profession based on this learning experience.

Evaluation Plan: Adding critical care equipment and technology to the classroom experience at Kent State Stark would provide expanded opportunities in the number and complexity of the critical care scenarios offered in each clinical course. We will track the number and type of critical care exercises offered in our courses and will examine the type of exercises for increasing complexity as students progress through the nursing program. We will measure student's learning outcomes related to the new

equipment and their classroom experiences and modify the curriculum depending on the strengths and weakness of their learning outcomes.

We have baseline data from our current recent graduates on their experience in critical care settings and their perception of their undergraduate training related to critical care settings. We would follow up with additional recent graduate surveys to measure change and improvement in their perception of their critical care preparedness.

Additionally, we would continue to discuss our students' career readiness with acutely ill patients with the appropriate hospital staff to learn where we are excelling and how we could improve nursing training in critical care settings.

Professional Background: As well as being a Professor of Nursing, is currently Coordinator of the Nursing Program at Kent State University at Stark and Interim Coordinator of Retention and Recruitment at Kent State Stark. She has held each of these latter two positions since 2015 and 2020, respectively. She joined the faculty at Kent State University at Stark in 2007, and has taught the following courses: Integration of Leadership and Management, Legal Issues for Nurses, Advanced Med-Surg Simulation, Professional Nursing Development, Foundations of Nursing, Critical Thinking and Test Taking and Basic Nursing Informatics. In 1987, earned her bachelor's degree in nursing from University of Akron, and in 2016, she earned her doctorate degree in education from Capella University. She is currently the co-Principal Investigator of two Choose Ohio First STEM Scholarship grants.

is passionate about the need to enhance her students' education and training with ventilators in the safe environment of the classroom before they embark on their nursing careers in critical care and step-down units. The current global pandemic has heightened the need for this enhancement to the education of nursing students.

Spending Plan: The funds will be utilized as part of a larger project (\$13,300) to fund critical care equipment (a ventilator, capnography system, and supplies) for teaching and learning purposes in the simulation laboratory of the Nursing Program at the Stark Campus. In January 2020, the Stark Campus received a challenge grant for half of the required amount (\$6,650) from the Stark Community Foundation contingent upon our obtaining funding for the other half by mid-July 2020. In February 2020, we applied for a grant from The Aultman Foundation to fund the other half. In a phone conversation in March 2020 with The Aultman Foundation, representatives indicated their interest in our project but noted that they may not be able to fund it at the full request of \$6,650. (It has approximately \$75,000 in funding and received requests for \$400,000.) We are hoping that if we are awarded a UTC teaching grant for \$1,000 that we can return to the The Aultman Foundation and reduce our request to \$5,650 and thus obtain the necessary funding for the full project, with a combination of funding from the Stark Community Foundation, The Aultman Foundation, and the University Teaching Council of Kent State University by the deadline of mid-July 2020. The requested \$1,000 from the UTC would fund a portion of the \$13,300 project, which would involve purchasing the following critical care equipment and supplies: #1 Refurbished PB 840 Ventilator with Neonatal \$7,995 #2 Compressor for PB 840 Ventilator \$1,495 #3 Capnograph II 8401 C2 Monitor \$2,415 #4 Capnograph Plus Calibration Kit \$365 #5 Laryngoscope Set Miller Style \$179 #6 Laryngoscope Set Macintosh Style \$154 #7 Endotracheal Tubes \$40 #8 Oral Care Sponge Swabs \$28 #9 Closed Suction System \$38 #10 Freight & Handling \$591 Total \$13,300