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Implementation of a High-Fidelity Simulation Day for Student Registered Nurse Anesthetists:  
Program Development and Evaluation Project

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**Introduction of the Problem**

Student Registered Nurse Anesthetists (SRNAs) must meet high standards in both didactic and clinical settings to successfully complete anesthesia school. Throughout the clinical practicum experiences, students rotate to many clinical settings. Each of these settings provides unique operating room layouts, anesthesia cart organization, anesthesia machine, and institution-based protocols. Lack of familiarity with the setting interferes with learning and can take away from the clinical experience. Our project involved the development and implementation of a simulation boot-camp created exclusively to prepare SRNAs to care for patients at a level 1 trauma center located in central Illinois. The pilot took place in a high-fidelity simulation center within the facility that identified a problem with orientation and that serves as a clinical affiliate to the university-based nurse anesthesia program.

**Literature Review**

Anesthesia students are under a great deal of pressure to perform well in complex clinical settings. This pressure often causes stress and anxiety among SRNAs, and in many cases, leads to a negative impact on student well-being and the learning process (Rouser, Tremonti, & Golinski). Studies have shown that simulated experiences help students identify areas of weakness, while helping them gain confidence and increase their preparedness in the clinical setting (Bremner et. al, 2006). The use of simulation-based education gives SRNAs the opportunity to experience critical scenarios in a safe environment. It also allows educators to

identify potential performance gaps in a controlled setting before the SRNA enters clinical. A study by Moody, Slakey & LaVelle (2007), showed that 96 percent of 50 students participating in high-fidelity simulation training reported that the experience improved their anesthesia skills, and decreased stress by better preparing them for clinical experiences. There is a direct correlation between clinical performance improvement and simulation training (Shear, Greenberg & Tokarczyk, 2013). While there is insufficient evidence that simulation effects patient safety and outcomes. The literature does support the premise that simulation-based training improves the quality of care delivered to patients (Shear et al., 2013).

### **Project Methods**

The purpose of this project was the development, implementation, and evaluation of an orientation simulation experience specifically designed for SRNAs beginning practice at a tertiary care facility in central Illinois. The aims of the project include developing scenarios that would help prepare SRNAs to practice in the selected clinical site.

The simulation day was developed based on the information learned from our review of the literature, along with the skills and knowledge obtained from attending a two-day simulation facilitation course held at the host facility. We then collaborated with the director of interprofessional education at the facility to develop a full-day educational experience that would best serve our learners. A “part-one” document was submitted to the education program committee which included goals, educational rationale for the boot-camp, the curriculum, and a description of how the curriculum aligned with the institution’s strategic goals and initiatives. Each simulation consisted of a “part-two” document which listed the specific objects of each simulation, outlined how the simulation will unfold to help the simulation technicians, specific needs, and the assessment documents associated with each. Simulations used in this boot-camp

addressed the documents associated with each. Simulations used in this boot-camp addressed clinical scenarios and skills development in conjunction with preparing students to begin their clinical rotation at the associated site and were selected in collaboration with the facility stakeholder.

We spent time identifying objectives of each scenario and tailoring them for anesthesia students. This process involved re-writing and editing simulation material that was provided by the facility. Each simulation was then reviewed and approved by the university faculty and the education program committee at the facility.

Senior and Junior student registered nurse anesthetists who were previously assigned to the specific clinical facility as part of their curricular rotation were chosen to participate in our project. This project was submitted to the university IRB and was approved for exempt status prior to implementation.

### **Evaluation**

Several challenges were experienced during project implementation. The simulation center had strict guidelines that made it difficult to confirm a date for implementing the project. Once the boot-camp received approval from the simulation facility's curriculum committee, dates were selected for implementation. However, due to extraneous circumstances, the original dates could not be used, and the newly determined dates seriously limited the number of students who could participate in the boot-camp. When trying to coordinate schedules of the host facility, our project coordinator, the University, and both classes of SRNAs it became incredibly difficult to narrow down an appropriate date. This delayed our implementation and caused inconvenience to our participants due to the date changes. After a date was chosen for implementation, we lead

the simulation scenarios with the facility's director of interprofessional education while a university faculty was present for observation.

Following the completion of the simulation day boot-camp, the SRNAs were asked to complete a post-simulation evaluation. This tool was developed based on the literature and following the review of several evaluation tools. Individually, we created evaluation tools, then collaborated to determine which items were consistent with the goals of the project. The created tool was then reviewed by our project stakeholder and team lead, both experts in survey development. The online tool included five-point Likert scale questions, two open ended response questions to gain a deeper understanding of student perceptions. The questions addressed the SRNAs perception of their knowledge base going into the simulations, their perceptions of the amount of learning or knowledge gained during the simulation, their perceptions of confidence levels after the simulation experience, and identification of drawbacks or improvements that could be made to improve any of the simulations.

After implementation of the SRNA simulation experience, all of the participants provided positive feedback. According to the data obtained from the Likert scale questions, along with open response feedback, learners rated the experience as a valuable educational experience. All of responses to the Likert scale questions reflected Agree or Strongly agree to all statements, indicating that learners felt the simulation both enhanced their ability to handle critical situations in the operating room and decreased stress and anxiety related to upcoming clinical rotations.

### **Impact on Practice**

This project will benefit student registered nurse anesthetists in both short-term and long-term capacities. For example, learners who had not previously completed a clinical rotation at the facility were able to become acclimated to the simulation operating room environment, which

leads to an easier transition during clinical rotations. Fortunately, the majority of the SRNAs had not been exposed to the critical scenarios presented. Results of the evaluation indicated that the simulations enhanced the SRNA's knowledge of handling critical scenarios and decreased stress and anxiety through exposure to these scenarios in a controlled setting. Students were able to care for patients during critical scenarios that are rarely experienced in practice. When acute issues arise in the operating room, students are able to recall the simulated experience and react to the situation.

This project can be replicated not only at this facility, but others, through the use of high-fidelity simulation and task trainers. Others may structure their boot-camp differently to use low-fidelity simulation as an alternative. Simulation has a valuable impact on Nurse Anesthesia clinical practice and evaluation through providing a safe place for students to practice critical thinking and decision-making. Verbal feedback from anesthesia program directors was favorable with an agreement to continue the workshop in future semesters.

### **Conclusion**

This project exposed learners to the anesthesia setup, resources, and protocols through the use of high-fidelity simulated crisis scenarios. Results of this project are consistent with evidence indicating a direct correlation between clinical performance improvement and simulation training (Shear et al., 2013). The physiologic and behavioral responses that SRNAs experience due to stress and anxiety have negative impacts on the student and the learning process (McKay, Buen, Bohan, & Maye, 2010). Evidence suggests a majority of students who participate in high-fidelity simulation training report that the experience improved their anesthesia skills, and decreased stress by better preparing them for clinical experiences (Moody, Slakey, & LaVelle, 2007). Finding from this project also suggested the use of simulation-based

education increase the learner's confidence in dealing with critical situations in the operating room and better prepare them to start clinical rotations at the associated institution. Simulation is an effective teaching tool for rare, serious, and potentially life-threatening situations students may not encounter in training (Sandord, 2010).

Future recommendations include the creation and implementation of more anesthesia-related simulations to improve SRNA education, and further utilization of such scenarios outside of the clinical setting. In terms of sustainability, future students may choose to create new anesthesia simulations as a part of their own doctoral project, and implement them wherever there is a need for simulation based learning.

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