



## INTRODUCTION

**Background:** The Nurse Anesthesia Program at the University of Pittsburgh initiated the use of high fidelity human simulation in 1994. Students have frequently reported to program faculty the power of the experience and a perception that skills and knowledge attained during simulation transfer directly to actual clinical practice situations. Student comments on post-course evaluations and post-graduation program evaluations have consistently indicated that students have viewed the simulation activities as a valuable enhancement to their education and suggest that simulation be offered at more regular intervals throughout the curriculum.

**Purpose:** This study was undertaken to determine if knowledge acquisition occurred with student participation in problem based simulation modules and if attitudes associated with simulation changed significantly with the experience.

## METHODS

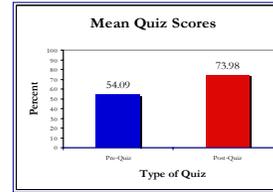
- After receiving IRB approval, 1<sup>st</sup> year nurse anesthesia students enrolled in NURSAN 2720: Applied Physiology and Pathophysiology (2<sup>nd</sup> term) participated in a day long problem based simulation session, which was offered on three consecutive days. The class was divided into groups of 9-10 students with a total of twenty nine (n=29) students volunteering as study subjects.
- Immediately prior to the simulation session, each study subject completed a 22-item multiple choice pre-test referenced to best evidence or standards of care. A 16-item pre-attitudinal survey consisting of a 5 point Likert rating scale with 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree.
- The simulation intervention consisted of a series of 6 patient scenarios designed to integrate course content from NURSAN 2720. Students rotated between 2 simulated operating rooms and all students were assigned specific roles in each scenario. Debriefing sessions, facilitated by a Nurse Anesthesia Program faculty member followed the completion of each scenario.
- Immediately following debriefing of the final scenario, study subjects completed the 22-item multiple choice post-test and a 16-item attitudinal survey.
- All pre and post-course test and survey responses were entered via wireless tablet PC into the Winter Institute for Simulation, Education and Research (WISER) data base. After, de-identification- data was released to the investigators for analysis.



IRB Approval Number  
0603158

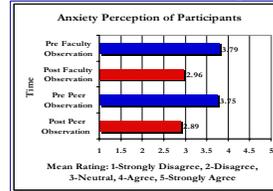


## Improved Knowledge



- Statistically significant increase between pre-quiz scores (M=54.08, SD=12.469) and post quiz scores (M=73.98, SD=10.009),  $t_{28} = 10.746, p < .001$

## Decreased Anxiety

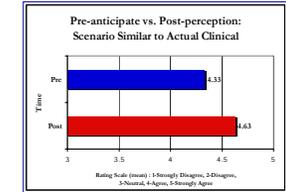


- Statistically significant decrease in student anxiety rating of peers observing simulation performance pre-module (M=3.75, SD=1.175) to post-module (M=2.89, SD=1.315),  $t_{27} = 4.204, p < .001$
- Statistically significant decrease in student anxiety rating of faculty observing simulation performance pre-module (M=3.79, SD=1.067) to post-module (M=2.96, SD=1.401)  $t_{27} = 4.116, p < .001$



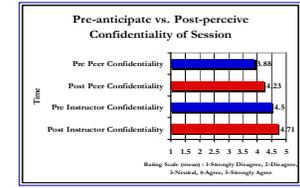
## RESULTS

### Similar to Actual Clinical



- Statistically significant increase between anticipation of scenario similarity to actual clinical situations pre-module (M=4.33, SD=.784), and post-module rating of scenario similarity to actual clinical situations (M=4.63, SD=.492);  $t_{28} = -2.302, p = .03$

### Performance Confidentiality



- Statistically significant increase in student confidence that the instructors would maintain confidentiality of student performance from pre-module (M=4.5, SD=.7935) to post-module (M=4.71, SD=.160)  $t_{27} = 2.274, p < .031$
- Statistically significant increase in student confidence that peers would maintain confidentiality of student performance from pre-module (M=3.88, SD=1.2434) to post-module (M=4.23, SD=1.0699)  $t_{28} = 3.143, p < .004$

## CONCLUSIONS

- Scenario based problem management modules integrating human simulation methods were found to be an effective adjunct to didactic lecture content provided during the term.
- Students significantly improved in their post-test scores and felt less anxious with simulation education approaches by the end of the session.
- Students reported that scenarios were realistic and were similar to actual clinical situations.
- As a result of the study this simulation module will continue to be offered as a supplement to course content for NURSAN 2720 in the anesthesia curriculum. Additional problem based modules with more complete curricular integration are planned.