# How Implementing Simulation Best Practice Refined Our Simulation Program and Reduced Learner Anxiety

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## Introduction

**Anxiety and Simulation in Nursing Education:**

- High anxiety negatively affects nursing students' learning outcomes, physical/mental well-being, and academic performance (Al-Ghareeb et al., 2019; Tremblay et al., 2017; Yockey & Henry, 2019).
- Stress and anxiety are particularly prevalent in nurse anesthesia programs due to their complex didactic, clinical, and simulation requirements (Griffin et al., 2017).
- Simulation provides valuable experiential and psychomotor learning opportunities to meet nursing program objectives (Kim & Kim, 2022).
- Despite advances in simulation, anxiety remains a major challenge in nurse anesthesia education (Lewis, 2019; Tremblay et al., 2017).
- The Society for Simulation in Healthcare (SSH) and the International Nursing Association for Clinical Simulation and Learning (INACSL) advocate for best practices in simulation design to improve learning outcomes (SSH, 2021; INACSL Standards Committee, 2021).
- The INACSL Healthcare Simulation Standards of Best Practice (HSSOBP®) emphasize standardized design and safe learning environments to enhance student experiences (INACSL Standards Committee, 2021).

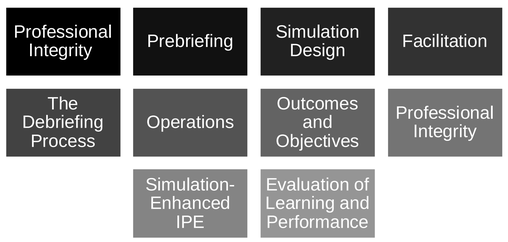
**Simulation Program Challenges**:

- As a new nurse anesthesia program, we faced limitations related to simulation development (e.g., limited access to shared simulation space, COVID restrictions, and moving to new simulation center).
- Early simulations were loosely aligned with HSSOBP®, lacked structured prebriefing/debriefing, and often led to anxiety among students due to unclear objectives and inadequate reflection.

**Quality Improvement Project**:

- This quality improvement (QI) project aimed to align the nurse anesthesia simulation program more closely with INACSL standards to reduce anxiety and improve learning outcomes.
- The project focused on improving prebriefing, debriefing, simulation design, and objective alignment to enhance student experiences and perceptions of simulation.

### INACSL Healthcare Simulation Standards of Best Practice®




**Acknowledgments**
Jennice Gist, DNP, CRNA, Sandra Rosedale, MSN RN, Kim Fugate, CHSE, CHSOS, and the Emory University Nell Hodgson Woodruff School of Nursing Simulation Team

## Methods

**Setting & Participants**:

- This project was conducted in a university-based nurse anesthesia program.
- Forty-four Doctor of Nursing Practice (DNP) nurse anesthesia students participated, with 37 completing both pre- and post-surveys.

**Pre-Implementation Survey**

- Assessed student perceptions of simulation experiences, including objectives, prebriefing, psychological safety, environmental orientation, and debriefing, utilizing the Simulation Effectiveness Tool-Modified (SET-M) and a free text response item asking students to describe their feelings toward simulation. (Leighton et al., 2015).
- Distributed before the 12-week summer semester

**Implementation**

- Faculty developed and implemented a plan to align with best practice, including providing clear learning objectives, standardized prebriefing, environment orientation, equipment limitations, performance rubrics, and dedicated debriefing space with adequate time for experience integration.
- The new simulation format was initiated at the start of the 12-week summer semester with faculty consisting of three nurse anesthesia program instructors and one simulation educator.
- Faculty conducted deliberate debriefing following each simulation using the advocacy-inquiry framework, allowing students time to self-reflect and receive feedback from faculty.

**Post-Implementation Survey**

- Distributed at the end of the 12-week summer semester
- Post-implementation survey utilized the SET-M to evaluate changes and student experiences with the new format.
- Free text response question asked students to describe their current feelings toward simulation.

**Data Collection**:

- Surveys were distributed via Google Forms, with anonymous, voluntary participation and no incentives.
- Three survey categories: prebriefing, scenario design, and debriefing
- Prebriefing items were rated on a 5-point scale; clinical scenario and debriefing items on a 3-point Likert scale.
- Free text items welcomed feedback regarding perceptions of simulation experiences and thoughts on changes incorporated in the summer semester.

**Data Analysis**:

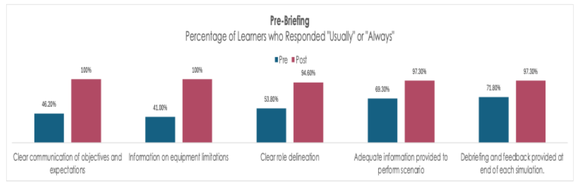
- Chi-square tests were conducted to compare pre- and post-survey data using SPSS version 28.0, with a significance level of 0.05.
- Frequency analysis of keywords used to assess overall student feelings towards simulation.

## Results

**Overall Results**

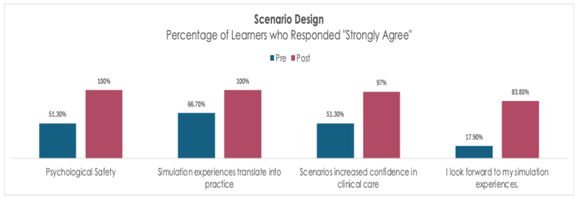
- 39 participants completed the pre-implementation survey, and 37 completed the post-implementation survey.
- Participants reported a more positive simulation experience post-implementation, with statistically significant improvements across all categories (prebriefing, scenario design, and debriefing).

**Prebriefing Improvements**:




- Prior to each simulation, objectives and expectations were clearly communicated: 23.1% vs. 91.9% *
- Prior to each simulation, I was informed of known gaps in fidelity (realism), such as equipment limitations/malfunctions: 20.5% vs. 83.8% *
- Simulation participant roles were clearly delineated for each simulation: 25.6% vs. 86.5% *
- I was provided with the information I needed to adequately perform each simulation (i.e., pt. history, planned procedure, medications available, etc.). (e.g., patient history): 38.5% vs. 94.6% *
- Debriefing and feedback were provided at the conclusion of each simulation. : 61.5% vs. 94.6% ***

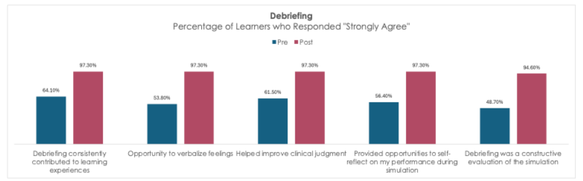
**Scenario Design Improvements**:




- I feel comfortable participating, speaking up, sharing thoughts, and asking for help as needed without concern for retribution or embarrassment: 51.3% vs. 100% *
- Experiences in the simulation environment regularly translate into beneficial experiences for practice application: 66.7% vs. 100% **
- Simulation scenarios increase my confidence in caring for patients in the clinical setting: 51.3% vs. 97.3% *
- I look forward to my simulation experiences: 17.9% vs. 83.8%. *

p value ≤ 0.001 *; p value ≤ 0.002 **, p value = 0.011 ***

**Debriefing Improvements**:



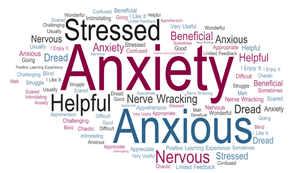

- Post Simulation Debriefing consistently contributed to my learning experiences: 64.1% vs. 97.3% **
- Post Simulation Debriefing allowed me to verbalize my feelings upon scenario completion: 53.8% vs. 97.3% *
- Post Simulation Debriefing was valuable in helping me improve my clinical judgment: 61.5% vs. 97.3% *
- Post Simulation Debriefing regularly provided opportunities to self-reflect on my performance during simulation: 56.4% vs. 97.3% *
- Post Simulation Debriefing was a constructive evaluation of the simulation: 48.7% vs. 94.6% *

**Feelings Toward Simulation Free Text Analysis**:

- Pre-implementation, 33% of responses were positive (e.g., "helpful," "beneficial").
- Post-implementation, 90% of responses were positive, indicating a significant shift toward more favorable feelings toward simulation.

***Pre- and Post-Implementation Free Text Frequency Analysis***

***Pre-Implementation***




***Post-Implementation***


## Conclusions

- The integration of simulation best practices (standardized prebriefing, simulation design, and evidence-based debriefing) significantly reduced student anxiety and improved perceptions of psychological safety.
- The intervention was feasible and effective in a nurse anesthesia program, improving student experiences in clinical simulation.
- This project demonstrated the benefits of adopting the INACSL HSSOBP® in nurse anesthesia programs and provides a model for other programs looking to mitigate anxiety and improve simulation effectiveness.
- Aligning with best practices enhances the pedagogical experiences in nurse anesthesia education and contributes to the literature on best practices for simulation in clinical education.

**Article**

**References**