HOUSTON Methodist LEADING MEDICINE

Bridging the Gap: Increasing Critical Care Knowledge and Skills in PACU Nurse Residents

Ayumi Fielden, MSN, RN, CCRN-K, CPAN
Pamela Northrop, BSN, RN, CPAN
Laura Ortiz, MSN, BBA, RN, CCRN
Holly Rodriguez, BSN, RN-BC, CCRN-CMC

PROBLEM

The recent development of a Post-Anesthesia Care Unit (PACU) Nurse Residency Program is placing new graduate nurse residents in the PACU. PACU care at this large teaching institution includes Post-Surgical Intensive Care Unit (ICU) patients needing ICU level care (e.g., mechanical ventilation and support through multiple vasoactive drips). Nurse residents and PACU leadership voiced concerns regarding nurse residents' lack of knowledge and skills in caring for higher level patients, indicating a need for additional training in critical care concepts beyond observational critical care shifts during the nurse residency.

PURPOSE/OBJECTIVES

Critical care competencies are a national top priority for all PACU nurses.[1]

The purpose of this project is to develop nurse residents' knowledge and skills in:

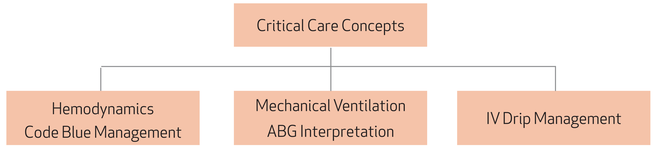
- Clinical decision-making for the critical care patients in the PACU
- Monitoring hemodynamic, oxygenation, blood chemistry and acid base balance of the critically ill patient
- Initiating and titrating high risk IV drip medications

METHODS

A needs assessment revealed a need for further critical care education for PACU nurse residents. Recommendations by professional organizations denote that critical care patients in the PACU must receive the same level of care as in ICU.

A literature review demonstrated that nurse residents are unable to apply clinical knowledge to their nursing practice and have lower confidence levels compared to experienced nurses.[2]

The need for a program that concentrates on critical care concepts in the PACU was evident. Those concepts included:[2-4]

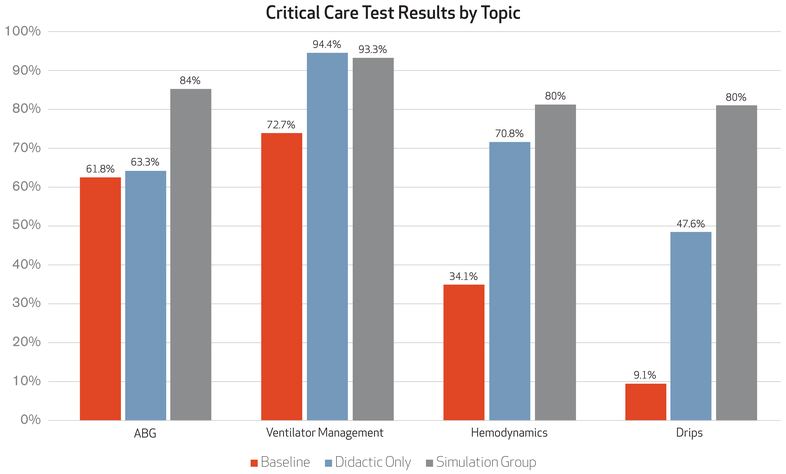


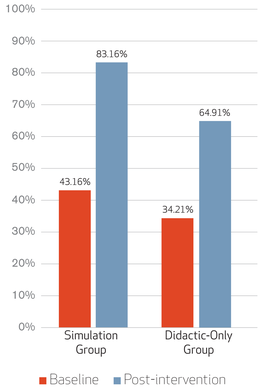
The program compared didactic instruction vs. didactic and simulation instruction. The high-fidelity simulation allowed for the residents to apply concepts specifically taught in the didactic lesson.

Realistic simulation-based teaching methodologies can serve as a bridge between the acquisition and application of clinical skills and knowledge.[6]

Knowledge in both groups were measured pre- and post-intervention using critical care certification review questions related to the concepts taught in the didactic lesson.

RESULT





OUTCOMES

The results indicated that the high-fidelity simulation group had the greatest increase in knowledge assessment score. Simulation increased knowledge levels in all of the topics covered in this course except for ventilator management. The Score difference between the simulation group and the didactic only group are highlighted in the table on the right.

- ABG interpretation and drip titration score increased significantly more in the simulation group (20.7- 32.4%) indicating that hands-on experience enhances the learning of concepts in these particular topics.
- Hemodynamics scores also increased and were higher in the simulation group denoting that simulation helps nurse residents apply critically difficult concepts.
- Ventilator management score was slightly higher in the didactic only group.

Topic	Score Difference: Simulation Group vs. Didactic Only Group
ABG	20.7%
Ventilator Managment	-1.1%
Hemodyamics	9.2%
Drips	32.4%
Overall	9.3%

A six-month follow-up of direct observation indicated that nurse residents with simulation training are applying the concepts taught in this course and changes in practice have occurred.

- They are correctly titrating vasoactive drips
- Care of mechanically ventilated patients: interpretation of ABG results, earlier recognition in changes in patient conditions and decrease in failure to rescue events

FUTURE ACTIONS

In addition to the current PACU Nurse Residency Program, nurse residents need supplemental critical care courses. Courses should include:

- High-fidelity simulation after a didactic lesson to enhance learning
- Several simulation sessions with various topics throughout the residency program

Critical Care Concepts in the PACU program created at this institution offering didactic and high-fidelity simulation for all PACU RNs.

- Classes offered in four parts over the course of eight months to be started in 2018

REFERENCES

1. Mamaril M, Ross J, Poole, EL, Brady, JM, Clifford, T. ASPANs Delphi Study on National Research: Priorities for Perianesthesia Nurses in the United States. J PERIANESTH NURS, 2009;24(1): 4-13.
2. Hartjes, T.M. (Ed). Core curriculum for high acuity, progressive, and critical care nursing. (7th ed). St. Louis, MO: Elsevier; 2018.
3. Kaufman, B, Weitz, S. PACU and ICU care: Evaluation and management of postoperative cardiovascular complications. ANESTHESIOL CLIN N A, 1997; 15 (1): 189-206.
4. White C, Pesut, B, Rush, K. Intensive care unit patients in the postanesthesia care unit: A case study exploring nurses' experiences. J PERIANESTH NURS, 2014; 29 (2):129-137.
5. Alinier, G., & Platt, A. International overview of high-Level simulation education initiatives in relation to critical care. NURS CRIT CARE; 2014); 19(1): 42-49.