



An Impact Evaluation of a Newly Developed Pediatric Cardiac Intensive Care Unit Within a Children's Heart Center

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Purpose:

The highly complex, pediatric patients with congenital heart disease require interprofessional teamwork and collaboration to ensure high quality outcomes with low mortality and morbidity (Penny & Shekerdeman, 2013). The purpose of this study was to conduct an impact evaluation for a newly formed Pediatric Cardiac Intensive Care Unit (PCICU) and to answer the question: Is there a difference between the Pediatric Intensive Care Unit (PICU) and PCICU on clinical outcome measures of pediatric cardiac post-operative patients and nursing resources?



Setting/Sample:

The setting for this evaluation was a large, level I pediatric medical and surgical ICU located in Blair E. Batson Children's Hospital within the University of Mississippi Medical Center. This large pediatric ICU separated into two dedicated units, PICU and PCICU, on January 1, 2012. This evaluation was conducted using an accessible population of patients that had an operative cardiac procedure and were cared for post-operatively in the PICU from April 2010 through December 2011 and then the PCICU from January 2012 through April 2013. Patients excluded were those greater than eighteen or cases without a STAT score of 1 through 5.

Design/Methods:

A retrospective pre-test and post-test design was used with the independent, treatment variable as *Type of ICU*: PICU and PCICU. The dependent variables were hospital LOS, ventilation duration, ICU LOS, mortality, cardiac arrest, CAUTIs, CLABSI, RN NHPD, and RN turnover rates. The confounding variables included race, gender, age, surgeon, and STAT score.

The framework used to guide this evaluation was Owen's impact evaluation method. Descriptive statistical measures, *t* test, and Pearson's Chi Square were used for analysis. For purposes of this evaluation, an alpha level of .05 was used to determine statistical significance.

Owen, J. M. (2007). *Program evaluation: Forms and approaches* (3rd ed.). New York, NY: Guilford Press.
Penny, D. J., & Shekerdeman, L. S. (2013). The American Heart Association's recent scientific statement on cardiac critical care: Implications for pediatric practice. *Congenital Heart Disease, 8*, 3-19.

Findings/Conclusions:

In this impact evaluation, only a few of the clinical outcome findings reached a statistical significant difference between the two ICUs. Demographic data were used to compare the similarities between the PICU (*n*=296) and PCICU (*n*=333) for gender, age, STAT score and race. The only statistically significant demographic variable was surgeon, as Surgeon A was the only surgeon until the arrival of Surgeon B after program implementation in 2011. There was also a statistically significant difference found in the pediatric cardiac patient monthly mean NHPD provided. The PICU and PCICU did not have statistically different outcomes in regards to mortality, number of cardiac arrests, length of mechanical ventilation, ICU LOS, hospital LOS, CLABSI, CAUTI, or pediatric cardiac post-operative patient monthly mean NHPD. The RN controllable turnover rates increased substantially during the PCICU group time frame.

PICU and PCICU Time Frame Nursing Turnover

Group	Time Frame	RN Controllable Turnover Rate
PICU	7/1/2010 through 12/31/2010	2.17%
	1/1/2011 through 12/31/2011	3.54%
PCICU	1/1/2012 through 4/30/2013	19.48%

Implications for Practice:

The findings from this impact evaluation did reveal the standard of care provided to the patients cared for in the PICU and now the PCICU has continued to produce good outcomes that have improved slightly over the time span reviewed. While only a few statistically significant differences were found, the clinical care outcomes that were discovered did have a clinical impact on the patient outcomes and costs for the organization. These clinical findings are examples of why impact evaluations are useful to healthcare leaders. They serve to provide that "just in time" data that is needed that can affect change to provide for future success in organizational performance and good patient outcomes (Owen, 2007).