

Pediatric ICU nurse staffing models with more experience and education cut inpatient mortality

November 14 2013

Nursing leaders from 38 children's hospitals, led by Patricia Hickey, PhD, MBA, RN, FAAN, vice president of critical care and cardiovascular services at Boston Children's Hospital, demonstrated that nursing education and experience significantly impact outcomes for patients who underwent cardiac surgery. The researchers recommend that there be no more than 20 percent of nurses with less than two years of clinical experience in pediatric ICUs to decrease mortality rates. Nurse education preparation at the baccalaureate level or higher also improved mortality rates in these hospitals.

The study, published December 2013 in the *Journal of Nursing Administration*, assessed this impact on 20,407 pediatric cardiac surgery patients. In pediatrics, congenital heart disease is the most commonly occurring birth defect requiring surgical intervention for survival. These patients also consume a disproportionate share of hospital resources within the U.S. healthcare system due to their [critical care](#) requirements.

Among the national sample of 3,413 pediatric critical care nurses, 71 percent held a baccalaureate degree or higher in nursing. Fifty-two percent of the nurses had five years or less of total nursing experience. Years of nursing experience was significantly associated with improved patient outcomes and independently associated with in-hospital mortality.

In these pediatric critical care units, a cut point of 20 percent appears to be the critical value at which the percentage of RNs with two years of clinical experience or less significantly increases the odds of death, according to the study authors. Also, when more than 25 percent of nurses have two years of experience or less, the odds of in-hospital mortality increases.

Importantly, years of ICU experience alone was not a predictor of mortality, but total clinical experience was a significant factor. "This finding may reinforce the notion that experiential knowledge and skill acquisition is cumulative over time regardless of the clinical setting, as professional nurses advance their practice," the study authors wrote.

Nursing education at the baccalaureate level or higher also was associated with decreased odds of death for children undergoing [cardiac surgery](#). The odds of death also decreased as the institutional percentage of critical care nurses with: 11 or more years clinical experience increased; more than 16 years of [clinical experience](#) increased; and for hospitals participating in national quality metric benchmarking.

Based on their findings, the study authors recommended that pediatric ICUs should not have more than 20 percent of their staff with less than two years' experience.

Given these findings, there are two important messages, says Hickey:

1. "Ongoing attention to the proportional mix of RN experience levels in pediatric units is necessary; and,
2. There is a continued need for retention strategies to ensure that experienced nurses remain in the pediatric critical care environment. Our findings support the IOM recommendations for nurse residency programs to support new graduate nurses."

Laura Wood, DNP, MS, RN, senior vice president and chief nursing officer at Boston Children's, adds; "While prior studies have associated greater proportions of [nurses](#) educated at the baccalaureate level or higher with lower mortality and failure-to-rescue rates, Dr. Hickey and colleagues have specifically advanced the science of pediatric nursing practice to affirm the importance of RN experience levels and educational preparation in the safe and effective care of children. This work will inform our ongoing efforts to improve care for our patients. "

Provided by Children's Hospital Boston

Citation: Pediatric ICU nurse staffing models with more experience and education cut inpatient mortality (2013, November 14) retrieved 6 May 2024 from <https://medicalxpress.com/news/2013-11-pediatric-icu-nurse-staffing-inpatient.html>

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