

Effectiveness of MPEWS at Predicting Pediatric Risk Events and Unplanned ICU Admissions in a PACU Setting

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Introduction: Pediatric early warning scores have been studied as a way to help nurses analyze the large amount of care data gathered and synthesize it into a score denoting risk and need for closer monitoring.

Identification of the problem: There is no validated tool for evaluating the risk of pediatric PACU patients based on data obtained in the PACU. This information could be valuable in the determinations of disposition and level of care needed.

Purpose of the Study: To determine the sensitivity and specificity of the Modified PEW System Score (MPEWS) to predict an unplanned ICU admission or risk event within 24 hours of PACU discharge among pediatric PACU patients.

Methodology: This study used a case control design. Cases were selected from patients 0-18 that experienced a risk event or unplanned ICU admission within 24 hours of PACU discharge. Controls were selected randomly from patients that did not have a risk event or unplanned ICU admission after PACU discharge to acute care unit. Patient data was pulled from the electronic medical record and analyzed logistic regression. Area under the ROC (AUC) curve was calculated to determine discriminative power.

Results: A total of 61 cases and 210 controls were scored. For each increase in MPEWS score, the odds of being admitted to the ICU were 1.57 times the odds from the MPEWS 1 unit lower and the ROC AUC was 0.70, indicating acceptable, but weak, discrimination. However, cutpoint analysis failed to identify an appropriate MPEWS score that resulted in high sensitivity and specificity.

Discussion: Cases were significantly younger than control patients (median age 4.3 years vs. 9.3 years). ROC AUC improved from 0.70 to 0.75 when age was included in the model suggesting that it may warrant inclusion in the scoring algorithm.

Conclusion: The MPEWS showed a statistically significant ability to predict risk events and unplanned ICU admissions, however, it lacked the discrimination needed for clinical decision-making.

Implications for perianesthesia nurses and future research: Though not clinically significant, MPEWS may hold promise in establishing a common language of acuity between PACU and acute care nursing. Future tools developed may consider inclusion of age as indicator of increased risk.