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Using predictive analytics to improve patient outcomes: using the Rothman index to reduce 30-day readmissions

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Statement of the Problem: In the United States, one-in-five Medicare fee-for-service beneficiaries are readmitted within 30-days of hospital discharge at a cost of $26 billion dollars annually. The Hospital Readmissions Program created under the Affordable Care Act of 2013, supports reduced payments to hospitals that do not meet incentives to reduce readmissions. The organizational goal at the project site, a 551-bed academic medical center, has a readmission rate of 12.5% or less. The 2014 baseline readmission rate for the Medical Intensive Care Unit (MICU) and the Medical Intermediate Care Unit (MIMCU) was 28.9%. A potential solution for reducing readmissions is the Rothman Index (RI), a predictive analytic tool embedded in the electronic medical record that uses existing clinical data, including vital signs, nursing assessments, and lab values, to generate a predictive score for discharge readiness. The purpose of this evidence-based quality improvement project was to evaluate whether use of the RI in discharge decision-making could reduce 30-day readmission rates for patients discharged from the MICU and MIMCU.

Methodology & Theoretical Orientation: The Johns Hopkins Nursing Evidence-Based Practice Model framework was used to guide this project from evidence appraisal through translation. A retrospective review included the admission and discharge RI score of patients discharged from the MICU and MIMCU between September and November 2015.

Findings: The measured intervention variables were RI score on admission and discharge. The RI score on admission was found to significantly correlate with readmission (p=0.03854). The outcome metric was 30-day readmission rate (24.2%).

Conclusion & Significance: This retrospective analysis demonstrated a statistically significant correlation between an admission RI score <70 and 30-day readmission. This allows targeting resource intensive interventions to patients at greatest risk for readmission. Findings suggest use of the RI in discharge decision-making may reduce readmissions. Implications include improved patient outcomes and decreased associated costs.

Biography

Lynn Motz is a board-certified Acute Care Nurse Practitioner and has practiced in the critical care area for 17 years. She is a member of the Surgical Intensivist team in a Surgical Intensive Care Unit specializing in Trauma and Acute Care Surgery. She completed scholarly work using predictive analytics to improve patient outcomes. Additionally, she is an involved member of the advanced practice leadership group at an academic medical center with a focus on onboarding, orientation, and education of advanced practice nurses.

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