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Efficacy of a pharmacist-managed diabetes clinic in high-risk diabetes patients, a randomized controlled trial-"Pharm-MD"

Alexandra Halalau
Beaumont Health

Melda Sonmez
Beaumont Health Resident

Ahsan Uddin
Beaumont Health

Patrick Karabon

Zachary Scherzer

See next page for additional authors

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Authors

Alexandra Halalau, Melda Sonmez, Ahsan Uddin, Patrick Karabon, Zachary Scherzer, and Scott Keeney

analysis, the professional guidelines were compared to the departmental OHNS recommendations to PCPs.

RESULTS: In 44.3% of the preoperative evaluations, tests were ordered in excess of professional guidelines. We discovered that the departmental OHNS recommendations conflicted with professional guidelines; for example, OHNS advises obtaining an ECG on any patient over the age of 50, although guidelines do not endorse routine age-based preoperative ECG testing.

CONCLUSIONS: Preliminary evidence demonstrates that preoperative testing exceeds professional guidelines. Next steps include reconciling departmental OHNS recommendations with professional guidelines, identifying the reason(s) for guideline discordance in clinical practice, and then intervening accordingly in order to prevent patient harm and reduce healthcare costs.

LEARNING OBJECTIVE #1: Systems-Based Practice: Discuss the importance of guideline concordance in preoperative evaluation as it pertains to individual patients and high-value healthcare.

LEARNING OBJECTIVE #2: Practice-Based Learning and Improvement: Describe how preoperative testing in clinical practice compares to professional guidelines.

EARLY PREDICTION MODEL FOR PROLONGED HOSPITALIZATION IN ADULTS WITH TRAUMATIC BRAIN INJURY; ANALYSIS OF THE NATIONAL TRAUMA DATA BANK

Phillip Acosta¹; Axel Moreira²; Kevin Chorath³; Karthik Rajasekaran³; Alvaro Moreira¹

¹Medical School, The University of Texas Health Science Center at San Antonio Joe R and Teresa Lozano Long School of Medicine, San Antonio, TX

²Pediatric Critical Care, Baylor College of Medicine, Houston, TX

³University of Pennsylvania, Philadelphia, PA. (Control ID #3547537)

BACKGROUND: In the United States, traumatic brain injury (TBI) is a significant cause of morbidity and mortality. TBI rates have steadily risen since 2006, and annual healthcare expenses in the United States are estimated at \$35 billion. Thus, predicting which patients with TBI will have poor outcome(s) will optimize decision making, patient care, and improve resource utilization. This study sought to develop and validate a clinical tool for predicting prolonged hospital stay (PROHOSP) in adults after TBI.

METHODS: Data was collected for adults (≥ 18 years) from the National Trauma Data Bank from years 2007-2015. Patients who presented with any TBI who survived emergency department admission were included. Our goal was to use clinical variables that can readily be measured upon arrival to the emergency room (ER). As such, the predictors included patient demographics, mechanism and intent of injury, vital signs, mode of transportation, respiratory status, time from injury to ER arrival, Glasgow Coma Score (GCS), and Injury Severity Score (ISS). Multivariable logistic regression was used to investigate associations between predictive variables and PROHOSP. The samples were split into a training set (70%) and a test set (30%). Model performance was measured using the C-statistic and accuracy [(true positive + true negative)/patient population]. Furthermore, we conducted a calibration curve to assess the accuracy between estimated and observed number of outcome events.

RESULTS: In total, 484,775 adults were included in the study (67% male; median [IQR] age, 54.0 [34.0, 73.0] years; 78% White). The number of patients who fell under PROHOSP category was n=127,912 (26.4%). PROHOSP patients more often had GCS 3 (26% vs 4.2%, $p < 0.001$), were victims of motor vehicle trauma (51% vs 35%, $p < 0.001$), were transported via helicopter to the ER (28% vs 14%, $p < 0.001$), had a higher ISS (22 vs 16, $p < 0.001$). The final model consisted of 12 variables; the C-statistic of 80.5% (95% CI, 80.2% - 80.7%), accuracy of 80.3%, sensitivity of 70.8%, and specificity of 82.1%.

CONCLUSIONS: This study provides an accurate and well-calibrated early predictive model for PROHOSP in TBI patients. Lastly, we translated our findings to develop a web application that is user-friendly for healthcare providers in trauma centers.

LEARNING OBJECTIVE #1: Through the lens of patient care, this study sought to develop a model that could predict PROHOSP in TBI patients. We hope that our model would allow clinicians and families to more easily reach consensus during medical decision-making for TBI patients. With time, the goal would be to improve TBI outcomes nationwide.

LEARNING OBJECTIVE #2: This study sought to raise awareness about the societal burden of TBI. We hope our predictive model can be seen as systems-based practice that helps conserve healthcare resources, streamline care, and increase positive outcomes.

EFFICACY OF A PHARMACIST-MANAGED DIABETES CLINIC IN HIGH-RISK DIABETES PATIENTS, A RANDOMIZED CONTROLLED TRIAL - "PHARM-MD"

Alexandra Halalau^{1,2}; Melda Sonmez¹; Ahsan Uddin¹; Patrick Karabon²; Zachary Scherzer²; Scott Keeney³

¹Internal Medicine, Beaumont Health, Royal Oak, MI

²Internal Medicine, Oakland University, Rochester, MI

³Apogee Physicians, Erie, PA. (Control ID #3536754)

BACKGROUND: Diabetes mellitus affects 13% of American adults. To address the complex care requirements necessary to avoid diabetes-related morbidity, the American Diabetes Association recommends utilization of multidisciplinary teams. Research shows pharmacists have a positive impact on multiple clinical diabetic outcomes. We aimed to determine impact of an education-focused pharmacist managed diabetes clinic model (PMDC) on hemoglobin A1c (HbA1c) and other diabetes core measures at 6 and 12 months follow-up.

METHODS: Open-label randomized controlled trial with 1:1 allocation. Patients 18-75 years old with type 2 diabetes mellitus and most recent HbA1c $\geq 9\%$ were enrolled from a single institution resident-run outpatient medicine clinic. Standard of care (SOC) patients continued with routine follow up with their primary provider whereas the PMDC group had an additional 6 visits with the pharmacist within 6 months from enrollment. Patients were followed for 12 months from enrollment. Data collected included HbA1c, lipid panel, statin use, blood pressure control, immunization status for influenza and pneumonia, and evidence of diabetic complications (retinopathy, nephropathy, neuropathy). Data analysis was done in the intention-to-treat and per-protocol populations.

RESULTS: Forty-two patients were enrolled in the PMDC group and 44 patients in the SOC group. Three patients dropped out (2 patients from the PMDC group and 1 patient from the SOC group). Average decrease in HbA1c for the intervention compared to the control group at 6 months was -2.99% vs. -1.01%, ($p = 0.0021$). (Figure 1) Additionally, the odds of achieving a goal HbA1c of $\leq 8\%$ at 6 months was 3.03 (95% CI= 1.01, 9.12, $p = 0.0488$) in the intervention versus control group. There was no statistically significant difference in the remaining secondary outcomes measured. Missing data during follow up limited power of secondary outcomes analyses.

CONCLUSIONS: Addition of pharmacist-managed care for patients with type 2 diabetes mellitus is associated with significant improvements in HbA1c compared with standard of care alone.

LEARNING OBJECTIVE #1: Medical Knowledge: To acquire knowledge regarding the treatment of high-risk diabetes mellitus patients, and applying this knowledge in patient care and in the education of others

LEARNING OBJECTIVE #2: 2. Patient Care: To assist in making informed decisions about the therapeutic options for the treatment of high-risk diabetes mellitus patients based on scientific evidence

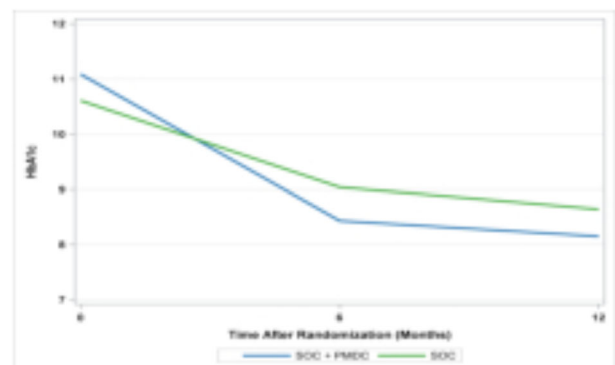


Figure 1: HbA1c values in Intent-to-Treat Population