

Beaumont Health

Beaumont Health Scholarly Works and Archives

Conference Presentation Abstracts

Internal Medicine

7-23-2021

Modified clinical risk score to predict hospital admission and in-hospital mortality in COVID-19 patients

Olga R. Gomez Rojas

Inayat Gill

Zaid Imam

Patrick Karabon

Alexandra Halalau

Follow this and additional works at: https://scholarlyworks.beaumont.org/internal_medicine_confabstract



Part of the [Internal Medicine Commons](#)

through bedside assessment by our addiction clinician. These patients were subsequently assessed for initiation and/or optimization of MOUD.

CONCLUSIONS: We developed two complementary EHR screening methods to identify patients with OUD and housing insecurity. Approximately 30% of the patients from this dual screen were considered likely to have OUD & housing insecurity upon further review by a nurse. After clinical assessment by an addictions provider, 33% of these patients were confirmed to have housing insecurity and OUD. Automated strategies may help health systems identify at-risk patients.

LEARNING OBJECTIVE #1: To create a prospective screening method to identify patients with suspected opioid use disorder (OUD) and housing insecurity.

LEARNING OBJECTIVE #2: To connect patients with OUD and housing insecurities to an addictions provider for initiation and optimization of medications for opioid use disorder (MOUD).

INVESTIGATING RACIAL/ETHNIC INEQUITIES IN INTER-HOSPITAL TRANSFER AT A MAJOR ACADEMIC HEALTH CARE SYSTEM

Evan Shannon¹; Julie Fiskio²; Cathy Yoon¹; Jeffrey L. Schnipper¹; Stephanie K. Mueller¹

¹Medicine, Brigham and Women's Hospital, Boston, MA

²Mass General Brigham Inc, Boston, MA. (Control ID #3542415)

BACKGROUND: Interhospital transfer (IHT), which is often performed to provide patients with necessary procedural and specialized care, is a common occurrence in modern healthcare. Racial/ethnic inequities in IHT have been described using nationally representative data, however such inequities have not been characterized at a more local level, which can provide more granular data to adjust for possible confounding. The purpose of this study was to determine if there were racial/ethnic inequities in IHT for common medical conditions within our major academic healthcare system.

METHODS: We performed a retrospective matched cohort study of patients admitted to general medicine services at community hospitals within our system. We included adult patients age ≥ 18 with all medical diagnoses admitted to these hospitals between June 2015 to December 2018 and excluded intensive care unit patients. The outcome was IHT to the tertiary care hospitals within our system. The primary predictor of interest was Black race and Latinx ethnicity. We used a matched cohort study design in which one Black patient with an index admission to one of our system's community hospitals was matched to three White patients based on their origin hospital, age within five years and similar electronic cardiac arrest risk triage (eCART) score on admission. The same design was then used for Latinx and White patients. Following this match, rates of transfer were compared between the groups. This was done using a series of conditional logistic regression models, including an unadjusted model and a model which adjusted for patient-level demographic and clinical covariates. Analyses were considered significant at a 2-sided p-value of 0.05.

RESULTS: Among the 72,113 admissions included in the cohort, 1,209 (2.1%) of White, 132 (2.3%) of Black and 138 (2.1%) of Latinx patients underwent IHT. After matching, compared to White patients, Black and Latinx patient had significantly higher rates of Medicaid as primary insurance and of being in the lowest zip code median income quartile. There was a non-significant signal toward lower odds of IHT for Black compared to White patients in unadjusted (OR 0.86, 95% CI 0.70-1.05, $p=0.14$) and adjusted (OR 0.80, 95% CI 0.62-1.02; $p=0.074$) models. There was no significant difference for Latinx compared to White patients.

CONCLUSIONS: Black patients had a non-significant signal toward lower odds of IHT to tertiary hospitals within our system compared to White patients after adjusting for patient clinical and demographic variables. There are several potential explanations for these findings, including provider bias toward Black patients. Our findings emphasize the need for better understanding of transfer practices so that such inequities may be eliminated.

LEARNING OBJECTIVE #1: To identify potential racial and ethnic inequities in specialty care access

LEARNING OBJECTIVE #2: To understand the role that provider bias may play in decision-making surrounding the triage of patients to higher levels of care.

MODIFIED CLINICAL RISK SCORE TO PREDICT HOSPITAL ADMISSION AND IN-HOSPITAL MORTALITY IN COVID-19 PATIENTS

Olga R. Gomez Rojas¹; Inayat Gill¹; Zaid Imam³; Patrick Karabon²; Alexandra Halalau^{1,2}

¹Internal Medicine, Beaumont Health, Royal Oak, MI

²Oakland University William Beaumont School of Medicine, Rochester, MI

³Gastroenterology and Hepatology, Beaumont Health, Royal Oak, MI. (Control ID #3538381)

BACKGROUND: The COVID-19 pandemic has resulted in over 1 million deaths globally. Prognostic tools to identify high risk patients are crucial to guide resource allocation efforts. We aimed at developing a risk assessment tool for patients with COVID-19 based on the risk factors with most significant effect on hospital admission and in-hospital mortality

METHODS: We performed a retrospective analysis of patients with positive COVID-19 presenting in between 3/31/2020 – 5/15/2020 at Beaumont Health's 8 emergency departments (ED). Data was abstracted using automated reports. The electronic health record (EHR) embedded risk score previously externally validated was modified based on risk factors, with different points given those that were statistically significant. Two outcome variables were measured, both using a yes/no binary scale: hospital admission and in-hospital mortality. Hospital admission, on the first encounter to the ED, was evaluated for the entire cohort, while mortality was evaluated only for inpatients discharged prior to 5/12/2020. Descriptive statistics, univariate/multivariate analyses by logistic regression were performed and presented in terms of Adjusted Odds Ratios (AOR) with corresponding 95% confidence intervals and P-Values. Any P-Values < 0.05 were considered as statistically significant associations.

All analysis was done in SAS 9.4 (SAS Institute Inc. Cary, NC).

RESULTS: 2,735 encounters were extracted from EHR. 68.06% were hospital admissions and 9.97% experienced in-hospital mortality. 61.23% were < 69 years old. 58.07% had hypertension (HTN), 46.29% had chronic pulmonary disease (CPD), 37.81% had diabetes (DM), and 6.71% had end-stage renal disease (ESRD). Mean length of stay was 8.43 days. In the multivariate model to predict admission, ESRD (AOR 1.97), liver disease (AOR 7.77), CPD (AOR 1.63), DM (AOR 1.70), HTN (AOR 1.97) and nursing home residence (NH) (AOR 1.90) were independently associated with admission. For prediction of in-hospital mortality in the multivariate model, CPD (AOR 2.35), and NH (AOR 1.58) were significantly associated with in-hospital mortality. The modified risk score recognized the statistically significant comorbid conditions and attributed 0 points to non-significant values. The cross-validated C-Statistics for the modified risk score model showed good discrimination for both hospital admission ($C=0.72$ vs 0.70) and in-hospital mortality ($C=0.74$ vs 0.70) when compared to the automatically generated risk tool for this cohort.

CONCLUSIONS: The modified risk score model created using statistically significant risk factors yielded a better scoring system than the scoring system automatically generated in Epic. This risk scoring model may help predict hospital admissions and in-hospital mortality for COVID-19 patients. Further external validation in a different cohort is recommended.

LEARNING OBJECTIVE #1: Timely identification of COVID 19 patients at higher risk for hospital admission.

LEARNING OBJECTIVE #2: Recognition of predictive factors of poor outcome in COVID 19 patients.

MULTIMORBIDITY AND 30-DAY READMISSIONS AMONG MEDICARE BENEFICIARIES USING A NEW ICD-CODED MULTIMORBIDITY-WEIGHTED INDEX

Melissa Y. Wei^{1,2}

¹Medicine, University of California Los Angeles David Geffen School of Medicine, Los Angeles, CA

²Medicine, VA Greater Los Angeles Healthcare System, Los Angeles, CA. (Control ID #3547595)

BACKGROUND: Medically complex patients with disability have among the highest 30-day readmissions. However, physical functioning is neither readily available in claims data nor included in CMS risk-adjustment models.