

Performance of the CURB-65 Score in Predicting Critical Care Interventions in Patients with Pneumonia

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Background: The Infectious Disease Society of America recommends the use of prognostic scoring tools such as CURB-65 for severity assessment of pneumonia for hospital admission. CURB-65 is a severity-of-illness score that predicts 30-day mortality and has been utilized as a decision tool. In this study, we illustrate the discrepancy between CURB-65 and management decisions and expound on the novel outcome of receipt of 'critical care intervention' (CCI).

Methods: We performed a retrospective analysis of electronic medical records at a single tertiary academic health center. Patients admitted to the hospital with a diagnosis of pneumonia between January 2010 and December 2015 were included. CURB-65 was calculated and the relationship to receipt of CCIs as well as in-hospital mortality was determined.

Results: 3,851 patients were admitted with pneumonia during the study period, and 1,147 patients were admitted to the ICU within 48-hours of ED triage. 636 of those admitted to the ICU received a critical care intervention. Among patients with CURB-65 score 0-1, 181 (9.5%) received a CCI and 38 (2.0%) died. Among patients with CURB-65 score 2, 233 (16.8%) received CCI and 94 (6.8%) died. Among patients with CURB 65 \geq 3, 215 (38.5%) of patients received a CCI and 74 (13.2%) died. The Area Under the ROC for CCI and in-hospital mortality were .68 and .71 respectively. The sensitivity of CURB-65 to predict CCI from the ED was 71% and was lower than that for mortality at 82%.

Conclusions: CURB-65 misclassifies patients at 'low risk' of 30-day mortality and does not account for acute care management. Patients with low CURB-65 scores were often admitted to the ICU and received critical care interventions to survive at 30-days. Our findings suggest caution in applying CURB-65 as a decision tool for triage from the Emergency Department.

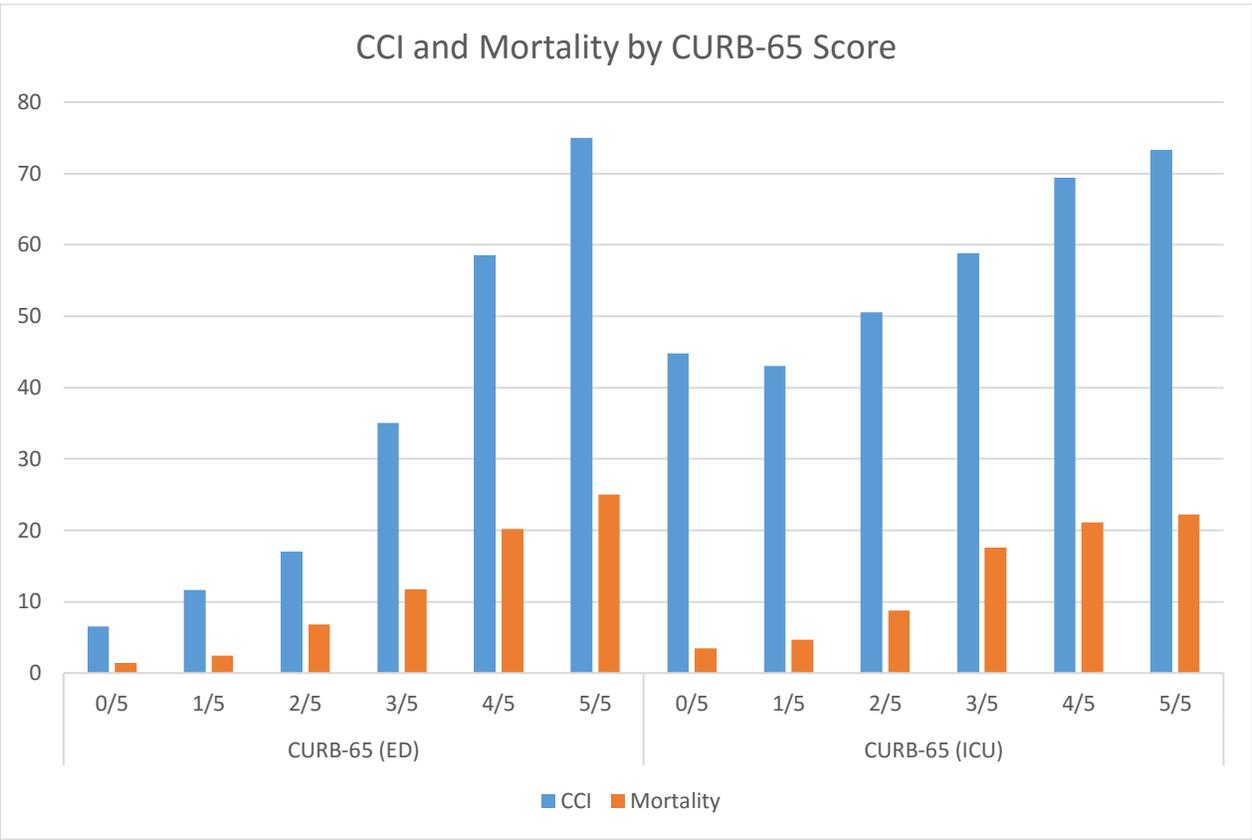


Figure 1: Rate of Critical Care Intervention (CCI) and In-Hospital Mortality by CURB-65 Scores