L Maher 1; L Roeker 2; T Moromizato 3; F Gibbons 4; K Christopher 5

The Lahey Hospital & Medical Center, Department of Medicine, Burlington, United States, Memorial Sloan Kettering Cancer Center, Department of Medicine, New York, United States, Okinawa Southern Medical Center and Children’s Hospital, Internal Medicine Department, Naha, Japan, Massachusetts General Hospital, Pulmonary and Critical Care Division, Boston, United States, Brigham and Women’s Hospital, Renal Division, Boston, United States

Introduction:
Simple and accurate identification of high-risk critical illness survivors may allow for targeted monitoring and interventions that may improve outcomes. Our primary study objective was to determine if a risk prediction score based on demographics and surrogates for inflammation measured at ICU admission was predictive for post-hospital outcomes.

Methods:
The PEAR score, was previously derived and validated for mortality utilizing ICU admission data (age, gender, surgical vs. medical patient type, red cell distribution width, platelet count and peripheral blood eosinophil count). We performed a 2 center cohort study of 67,591 patients admitted to a MICU or SICU from 1997-2012, who survived to hospital discharge. The primary outcome was 90-day post-hospital discharge mortality. Adjusted odds ratios were estimated by logistic regression models including terms for the PEAR score, sepsis, number of acute organ failures, Deyo-Charlson comorbidity index, and the actual length of stay less the national geometric mean length of stay.

Results:
The cohort was 58% male, 49% surgical ICU with a mean age of 62 years and a 90-day mortality rate of 7.8%. 10% were diagnosed with sepsis. Mean length of stay was 11.2 days. Unplanned 30-day readmission rate was 14%.

Patients with the second highest and highest quartile of PEAR Score have an adjusted OR of 90-day post-discharge mortality of 3.95 (95%CI, 3.45-4.52; P< 0.001) and 8.21 (95%CI, 7.16-9.43; P< 0.001) respectively, relative to patients with the lowest quartile of PEAR Score. The AUC for the adjusted prediction model was 0.77. Further, patients with the second highest and highest quartile of PEAR Score have an adjusted OR of 30-day readmission of 1.38 (95%CI, 1.29-1.48; P< 0.001) and 1.64 (95%CI, 1.52-1.78; P< 0.001) respectively, relative to patients with the lowest quartile of PEAR Score.

Conclusion:
Our simple PEAR score robustly predicts the risk of out of hospital outcomes in critical illness survivors.