Category :**ICU organization**

A128 - ***Predicting emergency hospital admissions in intensive care survivors***

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Introduction:

Relative to the general hospital population, ICU survivors experience high levels of morbidity following hospital discharge, leading to high rates of unplanned hospital readmission. If we can predict which patients are at highest risk of readmission, targeted outpatient interventions can be made to prevent use of costly emergency healthcare resources. Existing models to predict readmissions, designed for the general hospital population, have poor predictive performance in the ICU survivor cohort. We set out to create a parsimonious, ICU-specific model to predict emergency readmission in ICU survivors.

Methods:

Data were collected retrospectively on patients discharged alive from hospital following ICU admission from a single Scottish ICU between April and October 2018. Patients were split into derivation and validation cohorts using an 80:20 random split. A logistic regression model was developed using the derivation cohort; performance of the model was determined using the validation cohort.

Results:

121 of 402 patients (30.1%) experienced unplanned readmission within 90 days of hospital discharge. The model consists of 8 predictors which predict 90-day emergency hospital admissions with a discriminatory c-index of 0.75 (0.70-0.80). Significant predictors in the multivariable model were: number of emergency admissions in year prior to ICU admission (OR=1.51, 95% CI=1.25,1.83) and number of elective admissions in year prior to ICU admission (OR=1.24, 95% CI=1.09,1.41). Table 1 illustrates the performance of the model as a screening tool.

Conclusion:

Emergency hospital readmissions are common in this ICU survivor cohort. This simplistic model can be used as a screening tool at hospital discharge to identify patients at high risk of emergency hospital readmission. This allows risk stratification of need for outpatient support. Further consideration should be given to exploring modifiable risk factors for readmission to improve the cost-effectiveness and clinical utility of post-ICU outpatient care.

Table:

Threshold of predicted risk for screening positive	Number (%) screening positive	Sensitivity (%)	Specificity (%)
0.2	70.0	95.5	39.7
0.25	53.8	77.3	55.2
0.3	42.5	68.2	67.2
0.35	28.8	63.6	84.5
0.4	22.5	54.5	89.7

Performance of risk prediction model as a screening tool to identify patients at risk of emergency hospital readmission