MORTALITY RISK PREDICTION IN BURN INJURY: COMPARISON OF LOGISTIC REGRESSION WITH MACHINE LEARNING APPROACHES (P032)

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Introduction: For many years, mortality prediction in burn injury had been approached with traditional biostatistical methods. With the advancement of information technology many computational prediction methods can be utilised and comparisons can be made to see which models perform better.

Methods: An existing logistic regression mortality prediction model was compared to machine learning methods; artificial neural network, support vector machine, random forests and naïve Bayes. Comparisons were made based on the following performance metrics: area under the receiver operating characteristic curve, sensitivity, specificity, positive predictive value and the Youden Index.

Results: All of the model prediction methods had comparable discriminatory abilities, similar sensitivities, specificities and positive predictive values. Differences between models were not always statistically significant at the 0.05 level.

Discussion: Although some machine learning methods performed marginally better than logistic regression the differences were not substantial and the results were similar. We demonstrated that the existing logistic regression model is still relevant and its performance is acceptable. Model choice rests with the stakeholders, depending on the research context.