Authors: Azeem Thahir, laura Daby, Chandima Halahakoon, Stavroula Madenlidou, Rui Pinto-Lopes

Mortality Risk Scoring in Emergency General Surgery: what is the best tool?

BACKGROUND: It is imperative that an accurate assessment of risk of death is undertaken pre-operatively on all patients who may need an emergency laparotomy of laparoscopy equivalent. Two most commonly used risk scoring systems are P-POSSUM and NELA. Multiple studies have been performed showing how each one of them is better but none comparing the two together. Our objective was to analyse which of them is the best predictor of mortality when compared to reality.

METHOD: Data was collected retrospectively study over a four-and-a-half-year period using the NELA online database on patients who required an emergency laparotomy or laparoscopy equivalent excluding who were deemed not fit. The Hosmer-Lemeshow goodness of fit test was performed to assess model calibration. For the outcome of death and for each scoring system, a non-parametric receiver operator characteristic (ROC) analysis was done. The sensitivity, specificity, area under ROC curve (AUC) and their standard errors were calculated.

RESULTS: There were 774 patients of which 650 patients were included in the analysis (124 excluded). There were 59 observed deaths, giving an overall observed mortality rate of 9.1%. Predicted mortality rate for the P-POSSUM score and NELA score were 15.2% and 7.8% respectively. The discriminative power for mortality was highest for the NELA score when compared to P-POSSUM.

CONCLUSION: The NELA score showed good discrimination in predicting mortality in the entire cohort. The P-POSSUM over-predicted observed mortality and the NELA score under-predicted observed mortality.