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**SP4.1.3 Validation of the Emergency Surgery Score (ESS) in the UK patient population and comparison with NELA scoring: a retrospective multi-centre cohort study**

Darja Clinch¹, Michael Wong², Emma Imbert³, Laura Haddow³, Keith Simpson³, Dimitrios Damaskos¹

¹Royal Infirmary of Edinburgh, UK
²Royal Alexandra Hospital, Paisley
³University of Edinburgh

**Aims:** Accurate risk scoring in emergency general surgery (EGS) is vital for consent, resource allocation and benchmarking quality of care. The emergency surgery score (ESS) is a reliable predictor of post-operative outcomes in EGS, but has only been studied in the US population. Our primary aim was to perform an external validation study of the ESS in a UK population. Our secondary aim was to compare the accuracy of ESS and NELA scores.

**Methods:** We conducted an observational cohort study of adult patients undergoing emergency laparotomy over three years in two UK centres. ESS was calculated retrospectively. NELA score and all other variables were obtained from the prospectively held Emergency Laparotomy and Laparoscopic Scottish Audit (ELLSA) database. Primary outcome was 30-day mortality. Secondary outcome was need for post-operative ICU admission.

**Results:** 609 patients were included. Both ESS and NELA were good predictors of 30-day mortality (c-statistic=0.78 [95% CI: 0.71–0.85] for ESS and c-statistic=0.83 [95% CI: 0.77–0.88] for NELA). Similarly, both scores were good predictors of need for post-operative ICU admission (c-statistic=0.76 [95% CI: 0.71–0.81] for ESS and 0.80 [95% CI: 0.76–0.85] for NELA). There was no significant difference in performance between the two scores for predicting 30-day mortality (p=0.20) or need for ICU admission (p=0.09).

**Conclusion:** We recommend that ESS can be used in the UK population. It is non-inferior to NELA in predicting 30-day mortality and need for ICU admission, but has been validated for a wider range of outcomes and does not require scoring of intra-operative variables.