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A Quick Pediatric Early Warning Scores is Predictive of Adverse Outcome in a Out-of-Hospital Cohort of Unselected Ambulance Patients.

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Background: Pediatric Early Warning Scores (PEWS) for hospital inpatients can recognise deteriorating children hours before a critical event. We have previously published data validating the use of PEWS in the out-of-hospital environment.

Study Objectives: 1. Which specific physiological parameters of the PEWS were most predictive of the primary outcome; specifically, ICU admission within 48 hours or death within 30 days. 2. Is a quick PEWS (qPEWS), using less parameters, valid in the out-of-hospital environment.

Methods: All patients aged < 16 years old conveyed by the Scottish Ambulance Service (SAS) to hospital from 2011 to 2015. A stepwise approach was used by including the eight individual PEWS components with significance level thresholds of 5% and 10% respectively for entry to and remaining in the model.

Results: 102,993 patients were available for analysis. All eight components of the PEWS were independent predictors of the primary outcome; however, the AUC increased little after the first 4 entered components - GCS, heart rate, O2 saturation and systolic BP - derived as the qPEWS. There were a total of 67265 patients with at least one record of all 4 components of a qPEWS score. Using the qPEWS score as the explanatory variable showed an area under the curve (AUC) for the primary outcome of 0.782 (95% CI 0.763 to 0.801, p<0.001). qPEWS using four components is predictive of adverse outcome in an unselected paediatric out-of-hospital population. Capture of the four data points required for qPEWS is much better - three times as many patients had the data available compared to PEWS (67265 vs 21202). All 4 of the parameters required for qPEWS can be captured with a saturation probe, making this a practical scoring tool to use in primary care, out-of-hospital and austere environments. This simplified score is not at the expense of diagnostic accuracy.