

The National Early Warning Score (NEWS) is an established scoring system and has been extensively validated in the inpatient setting. This study aims to investigate the utility of NEWS in predicting short-term morbidity and mortality outcomes in patients presenting to the ED.

Method and Design Emergency attendances in 2019 from three East London EDs were included in this study. Routinely collected structured data were extracted from electronic health records. Patients were stratified into low (NEWS 0-4), medium (5-6) or high (7 or more) NEWS categories based on initial physiological parameters. A data model with NEWS, age and sex was derived from a dataset of patients attending one of three EDs across East London. Logistic regression analysis was performed to determine the primary outcome of 24-hour mortality and secondary outcomes of 48-hour mortality, inpatient admission, ICU admission or 7-day reattendance to the ED. A binary classification model was developed using a training cohort with logistic regression and evaluated against a test set to derive areas under the receiver operating characteristic (AUROC) curves.

Results and Conclusion 256,701 patients were included finally, consisting of 247,842 (96.55%), 5,847 (2.28%) and 3,012 (1.17%) in low, medium, and high NEWS categories. The primary outcome of mortality within 24-hours was comprised of 205 (0.08%) patients. The logistic regression model performance achieved AUROC curves between 0.65 - 0.95 (24-hour mortality 0.95, 48-hour mortality 0.94, ICU admission 0.82, inpatient admission 0.68, 7-day reattendance 0.65). Within this study of an undifferentiated population of emergency care

attendances across East London, increasing NEWS was associated with increased mortality, admission and reattendance. Of the outcomes investigated, prediction of 24-hour mortality achieved the highest performance.

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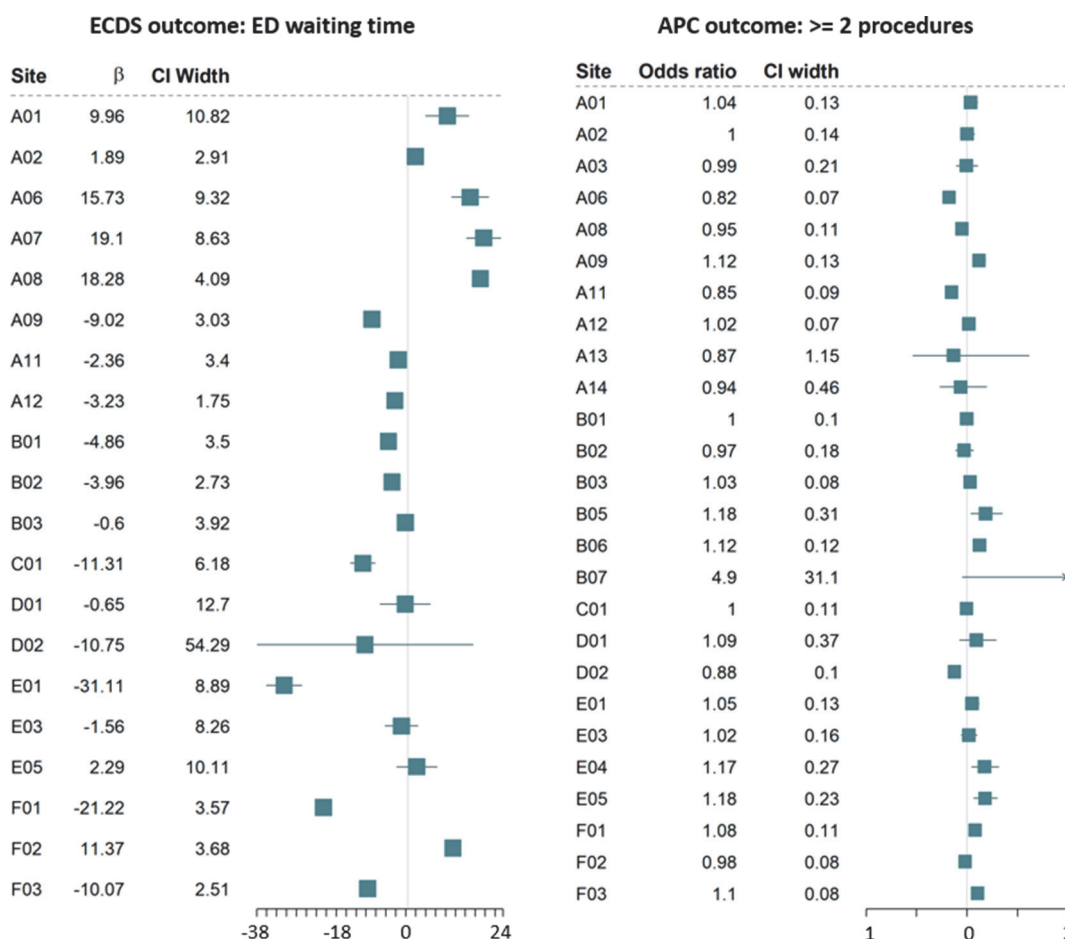
UNDERSTANDING SEASONAL DEMAND FOR EMERGENCY CARE: AGGREGATING ROUTINE DATA FROM REGIONAL EMERGENCY DEPARTMENTS AND ACUTE HOSPITAL ADMISSIONS

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Aims and Objectives In recent years there has been a large increase in demand for emergency care across the country, particularly during winter. This study utilised 12 months' of routinely collected data from Emergency Departments (EDs) and acute Admitted Patient Care Episodes (APCs) to understand trends in demand for emergency care. Specifically, we examined factors associated with seasonal variation in overall demand and avoidable usage of emergency care.

Method and Design Data was obtained from 20 EDs and associated acute hospitals from 1/11/2020-31/10/2022. Main outcomes included ED waiting times, total time in ED, the number of treatments, investigations or procedures received,



Abstract 2315 Figure 1 Example aggregated outcomes from ECDS and APC analyses. Estimates show the adjusted effect of winter (Oct-March)

and whether the attendance or admission was considered 'avoidable'.

Using a novel 'federated' analysis exploiting local relationships with data providers, regional researchers analysed local data and provided summary statistics and analysis results to the lead site. Aggregation of summary results established a picture of seasonal demand across the country, and an understanding of local variation in seasonal trends.

Results and Conclusion After controlling for key variables, results indicated that ED outcomes showed more seasonal and regional variation than APC outcomes (figure 1). However, there were no clear systematic effects of winter across all sites for any outcome.

Findings suggest that seasonal pressures on emergency care are complex and not due simply to increases in treatments or procedures, or to increased avoidable usage. Although seasonal virus diagnoses were controlled for, absolute numbers of these cases were too small to have fully accounted for seasonal pressure. Hospitals may already be accounting well for increased seasonal demand, moderating any observed effect of season. Ongoing work aims to establish more complex combinations of factors e.g., trends in demographics which may help to clarify findings.

2136 THE ASSOCIATION OF ABO AND RH BLOOD GROUPS WITH 30-DAY MORTALITY FOLLOWING TRAUMATIC INJURY – A RETROSPECTIVE OBSERVATIONAL STUDY

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Aims and Objectives Trauma is a leading cause of death for those under 44. Patients with blood group O (bgO) have been

reported to have higher mortality. The existing hypothesis (that lower levels of circulating von Willebrand factor/factor VIII in patients with bgO increases mortality through a bleeding tendency) has not been tested. Our study uniquely investigates the association between all ABO Rh groups and 30-day all-cause mortality in a large adult trauma patient cohort. Understanding post-trauma physiological shifts may identify potential therapeutic targets to attenuate risks.

Method and Design All patients ≥16 years old attending the East of England Major Trauma Centre (2016-2019) who met Trauma Audit Research Network (TARN) criteria were included. The primary outcome was 30-day mortality; secondary outcomes included admission clotting profile (PT/aPTT). Data reported as number (percentage), median [interquartile range]. Proportions were compared with a Chi-square test, reported as relative risk (95% confidence interval) (RR (95% CI)). Continuous data were compared with a Kruskal-Wallis test, reported as p-value. Data analyses were performed in Python v.3.8.9. Bonferroni correction was used for multiple comparisons.

Results and Conclusion 4188 patients were included. The median age was 59.3 [39.0-77.9] years, n=2634 (62.9%) were male, the median injury severity score was 19 [10-25], and 30-day mortality was 9.3%. Pairwise comparison demonstrated increased mortality in O Rh negative patients (Oneg) compared to three other groups, table 1. Compared to all other ABO Rh groups combined, Oneg patients had significantly greater 30-day mortality – 15.1% compared to 8.8%; RR 1.72 (95%CI 1.32-2.24), p=0.0002 (significance defined as p<0.0063 (eight comparisons)). There was no difference in admission PT or aPTT between Oneg and all other groups combined, p=0.12 and p=0.26 respectively. Trauma patients with Oneg had significantly greater 30-day mortality compared to other ABO Rh groups, which questions the existing hypothesis of the underlying mechanism.

Abstract 2136 Table 1 A pairwise comparison of 30-day mortality between all ABO Rh blood groups in n=4188 trauma patients at the East of England Major Trauma Centre (2016-2019)

	A+	A-	B+	B-	AB+	AB-	O+	O-
A+		0.18	0.92	0.51	1.0	0.35	0.65	0.0016*
A-			0.30	1.0	0.42	0.23	0.26	0.0006*
B+				0.63	1.0	0.34	0.92	0.015
B-					0.78	0.27	0.65	0.075
AB+						0.36	1.0	0.095
AB-							0.32	1.0
O+								0.0005*
O-								

Significance defined as 0.05 / 28 comparisons, p<0.0018