

Factors contributing towards extended on-scene times for suspected stroke patients in North East England identified by a clinician survey and linked clinical care records.

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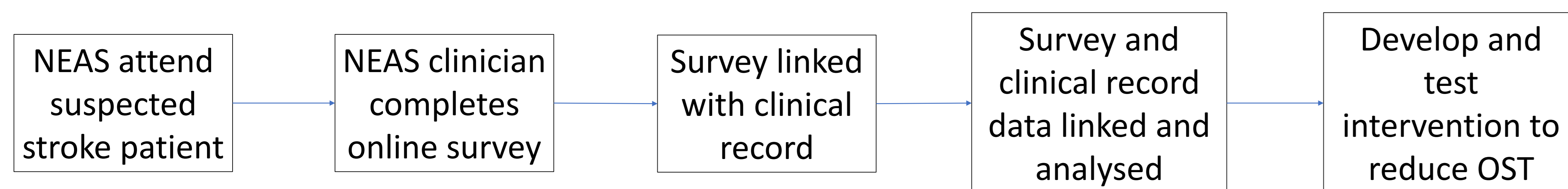
Aims/objectives. Prehospital stroke care focusses on rapid access to specialist stroke units due to the time dependent nature of reperfusion therapies. One minute saved between onset and thrombolysis equates to 1.8 extra days of healthy life¹. However, regional² and national data³ show increasing prehospital times for stroke patients. The aim of this study was to explore factors contributing to on-scene times for suspected stroke patients and identify targets for a future intervention to reduce delays.

Methods. Ambulance clinicians in North East Ambulance Service (NEAS) were directly emailed and asked to complete an online survey after transporting any suspected stroke patients, to describe details of the patient encounter, care interventions and timings. To augment survey responses, the corresponding electronic patient care record (EPCR) was identified for each event. Data were extracted from the survey and the EPCR to describe pre-selected factors potentially contributing to on-scene times. Factors significantly associated with on-scene time in univariate analysis and considered potentially modifiable were put into a Poisson regression analysis to calculate the association with on-scene time and identify targets for a future intervention (fig 1).

Results/Findings. 581 surveys were completed by 359 different clinicians, and linked with EPCRs, between July and December 2021. Median on-scene time was 33 minutes (Interquartile range (IQR) 26-41). The median age of patients was 75 years (IQR 66-83) and 52% of patients were male. Poisson regression analysis combined with clinical insight identified three activities as contributors to extended on-scene times and potential targets for modification (fig 2). Advanced neurological assessments completed in addition to the FAST added 10% to on-scene time (median 34 vs 31 minutes, p=0.008); intravenous cannulation added 13% to on-scene times (median 35 vs 31 minutes, p=<0.001) and ECGs added 22% to on-scene times (median 35 vs 28 minutes, p=<0.001) with 12-lead ECGs (median 36 minutes on-scene time) being the main contributor.

Conclusions. Three actions were identified which were strongly associated with longer on-scene times for suspected stroke patients. On-scene times could be reduced by: **avoiding cannulation when no drugs are to be given, not performing ECGs when cardiac symptoms are absent and minimising further neurological assessment for FAST positive patients.** The modifiable factors identified in this study and a parallel qualitative study are being highlighted in new training materials intended to reduce prehospital on-scene times for stroke patients which will be delivered to NEAS staff in 2022 and evaluated in 2022/23.

Figure 1. Overview of project and next steps



References
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Figure 2. Median on-scene time and three modifiable contributors

	Number (%)	Median time (IQR)	Rate ratio (Exp(B) 95% CI)	P-value
All cases	581 (100%)	33 (26-41)	-	-
Advanced assessment +	368 (63%)	34 (27-44)	1.097 (1.025-1.175)	0.008
Advanced assessment -	213 (37%)	31 (23-38)	1	
ECG+	415 (71%)	35 (28-44)	1.223 (1.134-1.320)	0.000
ECG-	166 (29%)	28 (22-35)	1	
IV cannulation+	198 (34%)	35 (29-46)	1.132 (1.060-1.208)	0.000
IV cannulation-	383 (66%)	31 (25-39)	1	

Poisson regression analysis based on 581 cases. Analyses adjusted for all variables listed with added chi-square parameter to account for over dispersion

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