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## Acute Care 2

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### Barriers and facilitators to further development of the paramedic role during assessment of suspected stroke patients

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**Introduction:** Actions by paramedics before and during initial hospital assessment are an opportunity to reduce delays to brain imaging and thrombolysis for patients with suspected stroke. This qualitative study explored professional views regarding the barriers and facilitators to the enhancement of the paramedic role.

**Method:** A purposive sample of 103 paramedics and stroke/A&E clinicians participated in 15 focus groups across the North East, North West and Wales. Focus groups about pre and post-admission roles were digitally recorded and transcribed verbatim. Data were analysed using open then focused coding to identify barriers and facilitators to enhanced paramedic involvement along the stroke patient care pathway.

**Results:** Paramedics welcomed the possibility of an enhanced role which provided opportunities for skills development and enhanced professional identity. Hospital teams felt that paramedics helping with ongoing assessment in hospital would benefit patients. Paramedics felt that they were capable of undertaking more detailed clinical assessments, but unsure whether their experience and skills were recognised by hospital teams. Several operational issues were identified as barriers to an enhanced role e.g. inability to register patient information on the hospital electronic administration system en-route thus impeding an early brain imaging request. All participants were uncertain about the feasibility of paramedics spending extra time in hospital due to the wider implications for ambulance service response times.

**Discussion:** An enhanced paramedic role was viewed as a positive change in terms of paramedic professionalism and patient care. However, a number of operational barriers need to be addressed to facilitate more effective implementation.

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### 24/7 Hyperacute stroke care in London: Variation in health outcomes and processes of care between in-hours and out-of-hours admission

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**Introduction:** Evidence suggests outcomes among stroke patients admitted to hospital outside working hours (OOH) are poorer than those admitted in working hours (IH), though differences are smaller at specialist stroke units. We examined whether time of admission to 8 Hyperacute Stroke Units (HASUs) in London was associated with health outcomes and processes of care.

**Method:** Regression analysis using data from 7,094 patients admitted to 8 London HASUs in the 2014 Sentinel Stroke National Audit Programme. IH was defined as admission 08.30–17.30 Monday-Friday. Health outcomes were: Modified Rankin Score (mRS) >2 at discharge from HASU and hospital and inpatient mortality. Care processes were: brain scan <1h

and <12h of admission; admission to stroke bed <4h; swallow screen <4h; assessment by a Stroke Consultant and Stroke Nurse, both <24h; formal swallow assessment <72h; treatment with intravenous thrombolysis. We controlled for HASU, age, sex, type of stroke, comorbidities, and method of admission.

**Results:** The adjusted probability of mRS > 2 at discharge from HASU and hospital, and inpatient mortality, were not significantly different IH and OOH (all  $p > 0.29$ ). The probability of brain scan <1h (IH = 0.59; OOH = 0.62;  $p = 0.03$ ), admission to a stroke bed <4h (IH = 0.62; OOH = 0.68;  $p < 0.001$ ) and swallow screen <4h (IH = 0.73; OOH = 0.76;  $p = 0.006$ ) were greater OOH; the probability of brain scan <12h was greater IH (IH = 0.97; OOH = 0.96,  $p < 0.001$ ). Other measures were not different IH and OOH.

**Discussion:** Among patients admitted to London HASUs there were some differences in care processes between those admitted IH and OOH, but no differences in health outcomes while in hospital.

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### Patient factors that influence variation in clinical decision-making about thrombolysis in the treatment of acute ischaemic stroke: Results of a discrete choice experiment

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**Introduction:** Intravenous thrombolysis treatment rates for acute ischaemic stroke vary across the UK, despite implementation of 24/7 hyperacute stroke services. This may reflect differences in clinical decision-making on when to offer thrombolysis. We explored factors influencing clinical decision-making in this setting.

**Method:** A discrete choice experiment (DCE) using hypothetical patient vignettes, with variation in 9 patient factors, was conducted with clinicians involved in thrombolysis decisions.

**Results:** 138 clinicians responded. 7 patient factors were individually predictive of increased likelihood of offering thrombolysis (compared to reference levels in brackets): stroke onset time 2hours 30minutes (50mins), pre-stroke dependency mRS3 (mRS4), systolic blood pressure 185 mm/Hg (140 mm/Hg), stroke severity scores of NIHSS 5 without aphasia, NIHSS 14 and NIHSS 23 (NIHSS 2 without aphasia), age 85 (65), Afro-Caribbean (white). Factors predictive of not offering thrombolysis were: age 95, stroke onset time 4hours 15minutes, severe dementia (no memory problems), SBP 200 mm/Hg.

**Discussion:** There was considerable heterogeneity amongst respondents in thrombolysis decision-making, indicating that clinicians differ in their thresholds for treatment across a number of patient-related factors. Clinicians may delay decisions for patients presenting early (<60mins), perhaps indicating this is an unfamiliar presentation or that they may wait to see if symptoms resolve or blood pressure stabilises before decision-making. That respondents were less likely to offer thrombolysis to patients with mild stroke may reflect uncertainty/lack of data around treatment benefit. These findings add to our understanding of decision-making and

our capacity to improve it further through using the findings to inform training/CPD and future research.

## 094

### Busting the hype: Estimating how many of our patients might benefit from thrombectomy

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**Introduction:** Intra-arterial thrombectomy has emerged as an effective treatment in acute ischaemic stroke. We aimed to identify the potential impact of this therapy on patients treated at Northwick Park Hospital, a busy Hyper-Acute Stroke Unit.

**Method:** The MR CLEAN, EXTEND-IA, ESCAPE, REVASCAT and SWIFT PRIME trial inclusion and exclusion criteria were used to create a local protocol for patient selection. This protocol was compared against a database of our stroke admissions in the first quarter of 2015 to identify patients who may have benefited from thrombectomy.

**Results:** Selection criteria included age  $\geq 18$  yrs, pre-morbid modified Rankin Scale of 0 or 1, presentation  $\leq 6$  hours of symptom onset, NIHSS  $\geq 5$ , normal coagulation and ASPECTS  $\geq 7$ . All trials selected patients with thrombi in the major intracranial vessels such as the internal carotid arteries and the first 2 segments of the middle cerebral arteries. As CT angiogram and perfusion studies are not done routinely on admission, it was not possible to select only these patients. 311 stroke patients were admitted, of which 265 were ischaemic. Of these, 23 were eligible for thrombectomy using the above criteria (9%). Only 5 of 23 (2%) had radiological evidence of a suitable thrombus on a non-contrast CT head.

**Discussion:** At Northwick Park Hospital up to 9% of acute ischaemic stroke patients may be eligible for intra-arterial therapy. After the application of CT angiogram and CT perfusion criteria, this number is likely to shrink further.

## 095

### Intracranial haemorrhage following IV thrombolytic therapy for acute ischaemic stroke in patients with an incidental intracranial aneurysm: A systematic review of the literature

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**Introduction:** Intravenous (IV) thrombolysis is now regarded as standard therapy for acute ischaemic stroke. The presence of un-ruptured intracranial aneurysms is stated as a contraindication to thrombolytic therapy due to a theoretical increased risk of intracranial haemorrhage. With increased pre-thrombolysis imaging, more incidental un-ruptured aneurysms are being identified in patients otherwise suitable for thrombolytic therapy. We conducted a systematic review to identify the rate of intracranial haemorrhage in patients with a pre-existing intracranial arterial aneurysm, who received IV thrombolytic therapy for acute ischaemic stroke.

**Methods:** 2 reviewers agreed on a comprehensive search strategy, covering PUBMED and Cochrane library databases to identify appropriate publications. Both reviewers screened abstracts for relevance, and full text of relevant abstracts were double-reviewed before final data extraction.

**Results:** 234 publications were identified, of which 82 relevant abstracts were reviewed. Full text review revealed 10 relevant papers (4 case reports, 3 retrospective cohort studies, 3 case series). From these 10 publications, 57 patients underwent IV thrombolysis for acute ischaemic stroke and had an incidental intracranial aneurysm. 6 (10.5%. 95% CI: 2.6%–18.5%) patients experienced intracranial haemorrhage following IV thrombolytic therapy.

**Discussion:** The reported rate for intracranial haemorrhage in all patients receiving IV thrombolysis for ischaemic stroke is 5.2% (n = 137/2639). The reported rate of intracranial haemorrhage in the general population receiving IV thrombolysis is not significantly different from that in our reported cohort (5.2% vs 10.5% p = 0.075). Our data suggests that IV-thrombolytic therapy may be safe in acute ischaemic stroke patients with an incidentally discovered intracranial aneurysm.

## 096

### Outcome comparison between patients suffering a stroke/TIA or a moderate/major bleed: Data from the 'Triple Antiplatelets for Reducing Dependency after Ischaemic Stroke' (TARDIS) trial

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**Introduction:** After ischaemic stroke (IS) or TIA, recurrence and moderate/major bleeding are each associated with worse outcome. We compared baseline characteristics and outcomes for patients who did and did not have recurrence or bleeding using data from the ongoing TARDIS trial.

**Method:** TARDIS is assessing the safety and efficacy of intensive vs guideline antiplatelet agents in 4,100 patients with acute non-cardioembolic IS or TIA. Information on bleeding is collected up to day 90. Recurrent IS and TIA events and functional outcome are assessed centrally with blinding to treatment assignment at day 90. Data are unadjusted odds ratio (OR) or mean difference (MD) with 95% confidence interval (CI).

**Results:** In 2541 recruited patients, recurrent events (166) were more common in patients with a qualifying event of TIA (p = 0.038). Conversely, moderate/major bleeding (68) was more common in patients with a qualifying event of stroke (p = 0.046). Patients with a recurrent or moderate/major bleeding event had worse outcomes at day 90 than those without such events, with: more deaths (both p < 0.001), dependency (modified Rankin Scale, both p < 0.001), disability (Barthel Index, both p < 0.001), cognitive impairment (TICS-M, both p < 0.001), worse quality of life (EQ-5D HUS, recurrence p < 0.001, bleeding p = 0.002) and more mood disturbance (Zung depression scale, both p < 0.001).

**Discussion:** Recurrent events are more common after TIA, and bleeding after stroke. Both events are associated with a worse outcome.