# ENHANCING PARAMEDIC CARE OF HEAD INJURIES IN OLDER ADULTS

#### Collaborators

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# Introduction

Traumatic brain injury (TBI) is a leading cause of death and disability globally, particularly from falls in older adults, who often arrive at emergency departments via ambulance. Poor outcomes in older adults with TBI result from a combination of comorbidities, vulnerability to injury, blood thinning medication, and reduced physiological reserve, but early identification and appropriate triage can improve these outcomes.

### Preliminary work

Are older adults with clinically significant traumatic brain injuries being transported to major trauma centres in KSS?

Using data from TARN, we were able to demonstrate that the majority of older adults were presenting with mild head injuries despite having clinically significant brain injuries following a fall from standing height and that most of these patients were being transported to hospitals without on-site neurosurgical services. Do older adults with major trauma receive a timely response from prehospital enhanced care teams?

Data from the AAKSS patient database and TARN indicated that older major trauma patients were more likely to receive a delayed response from an enhanced care team. These cases, often involving falls from standing height, were delayed because current dispatch criteria were not well-suited for older adults, whose serious injuries from minor incidents may not trigger an immediate dispatch.

# Project aims

- What factors may determine whether an older adult with a TBI would be appropriate for neurosurgical care.
- Understand whether there is sufficient information on the scene for ambulance clinicians to determine whether an older adult with a head injury should be transported to the ED.
- Understand the clinical decision-making processes ambulance staff go through.











Main findings

What factors determine whether an



What clinical signs can

#### older adult with traumatic brain injury is suitable for neurosurgical care?

**Aim:** Determine if there are clinical variables that could help paramedics identify older adults with a TBI who would be eligible for neurosurgical care.

**Data collection:** Nine papers were included in a literature review that examined the differences between older adults with TBI who received neurosurgical interventions and those who did not.

#### Findings:

- Patients with high injury severity scores and more significant intracranial bleeds were more likely to receive neurosurgical care.
- Decisions on providing neurosurgical care varied greatly due to clinician bias and the need for standardised guidelines.
- Overall, there was little difference between patients who were or weren't accepted for neurosurgical care.

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Tomography; DOAC, Direct Oral Anticoagulant; GCS, Glasgow Coma Scale; HTN, Hypertension; MI, Myocardial Infarction; MOI, Mechanism of Injury; OR, Odds Ratio; RTC, Road Traffic Collision; tICH, Traumatic Intracranial Haemorrhage



#### Paramedics use to detect intracranial bleeds in older adults with head injuries?

Aim: Using routinely collected ambulance data with ED follow-up to determine which variables could predict a traumatic intracranial bleed (tICH).

Data collection: From 1 January 2020 to 31 December 2020, 3545 patients were included in the study, of which 2111 were conveyed to the ED, and 162 had a tICH.

#### Findings:

- Falls from height, Clopidogrel, Chronic Kidney Disease and a previous.
   Myocardial Infarction was associated with a tICH following a head injury.
- Symptoms traditionally associated with a clinically significant head injury may not be suitable for older adults.



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## **Upcoming publication**

#### Assessing head injuries in older adults: insights from UK ambulance clinicians

**Aim:** Understand how UK ambulance clinicians assess head injuries in older adults and decide on ED conveyance.

**Data Collection:** Survey (n=385) and interviews (n = 21).

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**Findings:** The study suggests current guidelines may be too rigid. A more holistic, patient-centred approach is needed to improve decision-making and reduce unnecessary ED visits for older adults.

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### Impact

In early 2024, JB was invited to join the working group to review the Joint Royal Colleges Ambulance Liaison Committee ambulance clinical guidelines for head injuries. The research conducted in KSS and the broader body of research in prehospital head injury and TBI contributed to reviewing the guidelines. The guidelines were updated and published in July 2024. Guidelines were updated for older adults to acknowledge their complex care needs and distinction from younger adults.

### What's next?

- Research for the Patient Benefit grant has been short-listed to Stage 2 - addressing the risk of tICH in asymptotic head injury patients on blood thinning medications.
- A systematic review and meta-analysis is currently underway reviewing the literature on the risk of tICH in older adults on blood thinning medication with no red flag symptoms.
- Exploring partnerships with industry to determine the feasibility of measuring TBI biomarkers in the prehospital setting to identity older adults with a TBI.