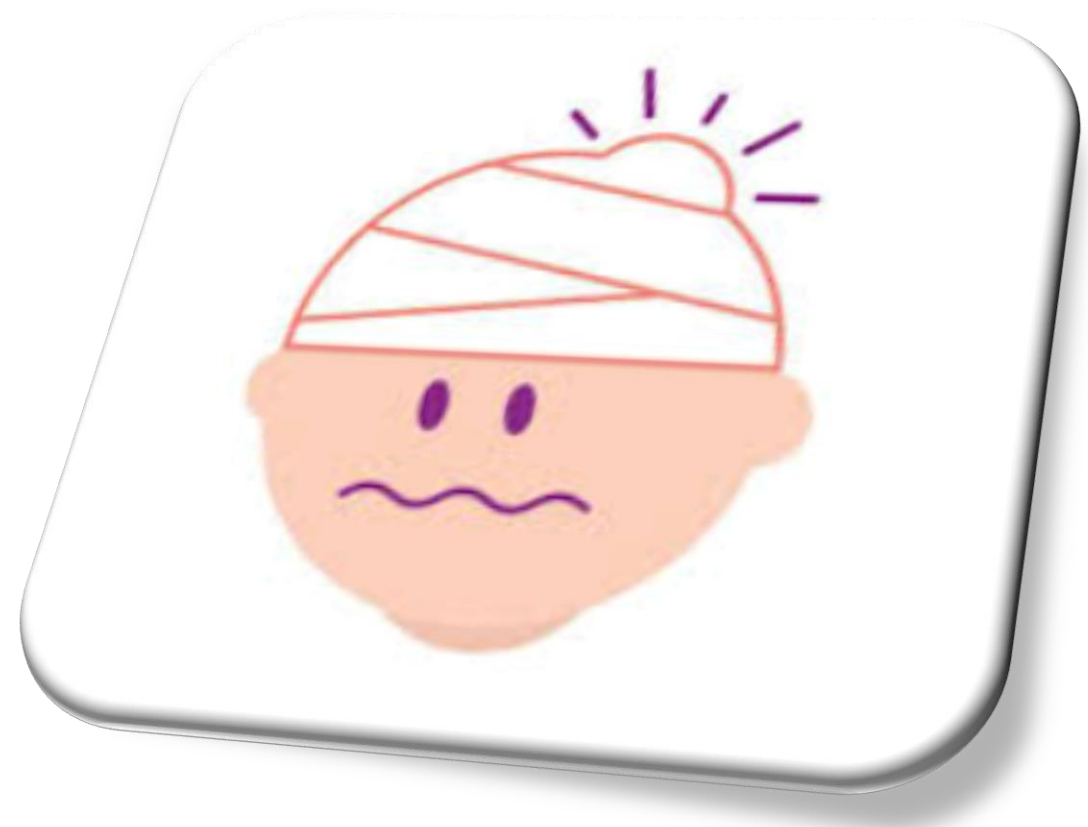


# Which elements of hospital-based clinical decision support tools for the assessment and management of children with head injury can be adapted for use by paramedics in pre-hospital care?



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## Aim:



Most head-injured children who are taken to hospital by ambulance do not have any intervention except advice.



Hospital clinicians use decision support tools to help them assess and manage head-injured children, but this is normally to determine if a CT scan is required.



There is no out-of-hospital clinical decision support tool for paramedics to assess and manage head-injured children at scene.



We aimed to identify the criteria within hospital-based clinical decision support tools for head-injured children that could predict the need for hospital conveyance by paramedics.

## Methods:

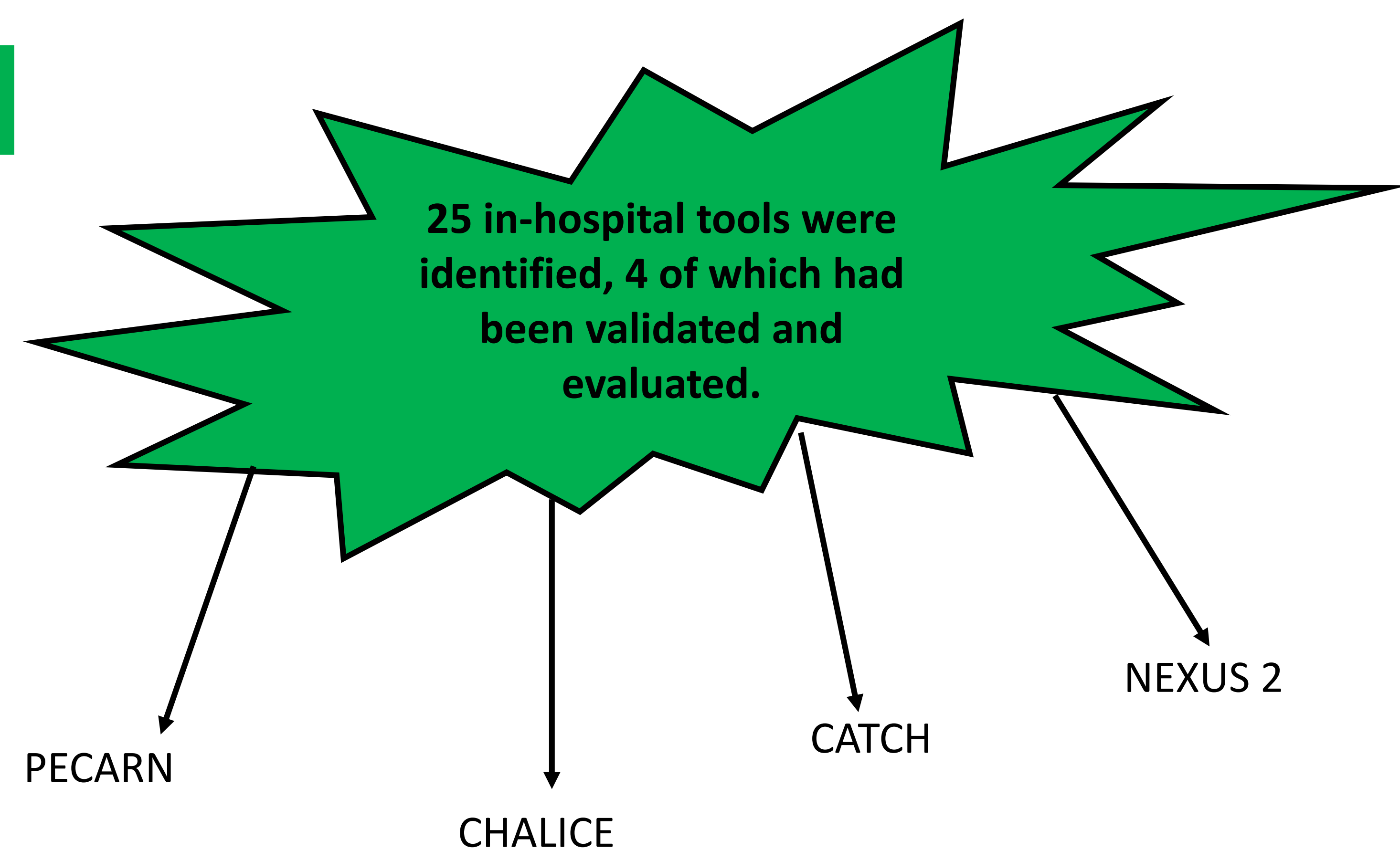
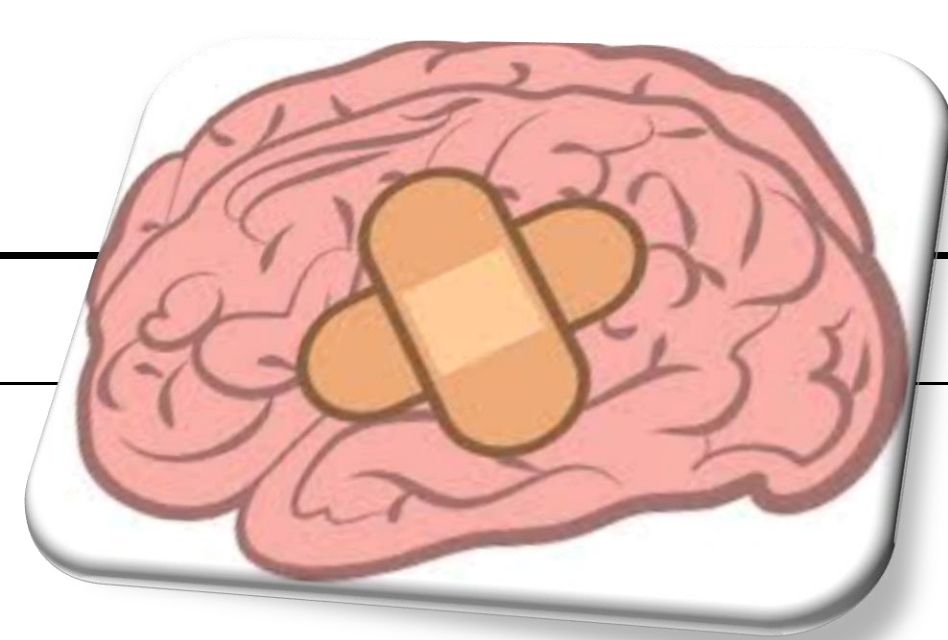
### A systematic mapping review and narrative synthesis.

Searches were conducted for articles using MEDLINE, EMBASE, PsycINFO, CINAHL and AMED. We systematically identified all in-hospital clinical decision support tools and extracted from these the clinical criteria used in decision-making. To describe the criteria that would be most suitable for paramedic use, we complemented this with a narrative synthesis.

## Results:

18 clinical categories were identified from 67 clinical predictors

History	Examination
Vomiting	Signs of skull fracture
Headache	Haematoma/laceration/bruising
Loss of consciousness	Neurological deficit
Seizure	Behaviour change/altered mental status
Amnesia	GCS
Dizziness/vertigo	Drowsiness
Clotting impairment/anticoagulated	Alert and well with no clinical concern/acting normal as per parent
Non accidental injury	Non accidental injury
Age	
Severe mechanism of injury	
Drug or alcohol use	



The most frequently used criteria were signs of a skull fracture, loss of consciousness and scalp haematoma.

## Conclusions:

Factors that increase the likelihood of neurosurgical intervention, and should be included in a clinical decision support tool for paramedics to predict the need for hospital conveyance, are: signs of skull fracture; a large, boggy or non-frontal haematoma; more than one vomit; focal neurological deficit; GCS less than 15; not acting normally; prolonged or worsening headache; prolonged loss of consciousness; post traumatic seizure; amnesia in older children; non-accidental injury; drug or alcohol use; less than one year old. Clinical criteria that require further investigation include: mechanism of injury; clotting impairment; vertigo; length of time of unconsciousness; number of vomits.