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MATTS: Major Trauma Triage Tool Study

Submission date
18/01/2019

Recruitment status
No longer recruiting

Registration date
18/01/2019

Overall study status
Completed

Last Edited
26/05/2026

Condition category
Injury, Occupational Diseases, Poisoning

[X] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Serious injuries are a major health problem in England, responsible for 3,000 deaths and 8,000 disabilities each year. Treatment in specialist hospitals, called major trauma centres, can improve survival following such injuries. In order to benefit from this expert care, ambulance crews must first correctly identify suitable patients at the scene of injury and then transport them to a major trauma centre, potentially bypassing closer non-specialist hospitals.

The presence of serious injury is not always obvious and assessment can be difficult. Taking patients with minor injuries to the major trauma centre could waste time, money and resources; denying treatment to those who require it by overstretching the capacity of the major trauma centre. It could also inconvenience patients and their families by taking them further from home. In contrast, failing to recognise serious injury could result in less effective treatment or increased harm.

The term ‘triage’ means to sort patients in terms of priority. Ambulance crews currently use a ‘triage tool’ to help them to recognise whether a patient is seriously injured or not. The tool is a checklist of patient and injury features, for example the presence of low blood pressure, that indicate that care in a major trauma centre care might be beneficial. Unfortunately, research has suggested that current tools are not very accurate, as they could miss patients with serious injury and often unnecessarily direct patients with more minor injuries to a major trauma centre. This study aims to develop a new and more accurate tool that will help to ensure that the right patient gets to the right place at the right time.

Who can participate?
Any patient seen by one of the 4 participating Ambulance Services, who is suspected of suffering a major trauma, will be subject to the use of the new major trauma triage tool (during the 4 month intervention phase of the study)

What does the study involve?
We will carefully study existing triage tools used in England and world-wide. We will also use data already collected by ambulance services and the English national major trauma database (the Trauma Audit and Research Network, TARN) to investigate what factors are important for

detecting serious injury at the scene of the incident. Additionally we will develop a computer model that simulates the costs and outcomes of using different triage tools. Together, we will take this information to a group of experts and ask them to develop a new triage tool.

We will then test the experts' triage tool, together with other existing tools, to see how they perform. In order to do this we will link data that is routinely collected by the Yorkshire, West Midlands, South Western and London Ambulance services, with hospital information collected by TARN. It has been suggested that identifying major trauma in older people is particularly difficult, so we will also specifically focus on this age group. We will then take the best-performing tool and introduce it into practice in an area of each ambulance service, to see how it works in real life. To find out about the experiences and views of patients, and paramedics using the tool, we will carry out interviews and focus groups. We will also consult with major trauma specialists, service managers and other stakeholders to assess the possible impact of the tool.

We have talked to patients affected by serious injury, and a group of patients involved in research about emergency care, while developing these research ideas. Members of these groups have agreed to join an advisory panel to help guide any future study. We have included a lay person with personal experience of major trauma as part of our research team alongside specialists in emergency medicine, pre-hospital practice, and major trauma. We have also consulted national specialist groups and gained support from participating ambulance services.

What are the possible benefits and risks of participating?
Patients may be correctly identified as suffering a true major trauma by the use of the new tool (which could have a potential positive impact on their overall care), whereas under previous tools, they may not.
Equally, the new tool may fail to recognise true major trauma patients (which could have a potential negative impact on their overall care), when the previous used tool would have correctly identified them.

Where is the study run from?
The University of Sheffield's Clinical Trials Research Unit (CTRU) is the leading centre.
The 4 Ambulance Services involved are:
Yorkshire Ambulance Service NHS Trust
West Midlands Ambulance Service NHS Trust
London Ambulance Service NHS Trust
South West Ambulance Service NHS Foundation Trust

When is the study starting and how long is it expected to run for?
From November 2018 to August 2022

Who is funding the study?
The study is funded by the National Institute of Health Research, Health Technology Assessment programme.

Who is the main contact?
Dr Sam Keating
Email: s.m.keating@sheffield.ac.uk

Contact information

Type(s)

Public

Contact name
Dr Samuel Keating

ORCID ID
https://orcid.org/0000-0003-3685-2849

Contact details
Clinical Trials Research Unit
ScHARR
University of Sheffield
Room 2027
Regent Court
30 Regent Street
Sheffield
United Kingdom
S1 4DA
0114 22 25156
s.m.keating@sheffield.ac.uk

Additional identifiers

Protocol serial number
v1 19Dec18, v2 18Sep19

Study information

Scientific Title
MATTS (Major Trauma Triage Tool Study): identification, development, validation and evaluation of major trauma triage tools

Acronym
MATTS

Study objectives
To develop an accurate, acceptable and usable pre-hospital triage tool to identify patients with major trauma who benefit from MTC care.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 28/06/2019, Yorkshire & The Humber - Bradford Leeds Research Ethics Committee (NHSBT Newcastle Blood Donor Centre, Holland Drive, Newcastle upon Tyne, NE2 4NQ; +44 (0) 207 1048 088; nrescommittee.yorkandhumber-bradfordleeds@nhs.net), ref: 19/YH/0197

Primary study design
Interventional

Study design
Phase One: review and development by expert consensus
Phase Two: prospective cohort
Phase Three: non-randomized interventional

Study type(s)
Screening

Health condition(s) or problem(s) studied
Major trauma

Interventions
MATTS is a programme of research in 3 phases, that will be conducted over 31 months in total, whose overall aim is to establish a new and improved major trauma triage tool for use in NHS settings.

Phase 1 involves establishing which major trauma triage tools are currently in use in NHS settings, gathering data around their use and performance, gathering feedback on major trauma triage from key stakeholders, and then convening an expert consensus panel to design a new and improved major trauma triage tool.

Phase 2 involves gathering data from 4 Ambulance Services (and the Hospital sites they deliver patients to) on all major trauma patients, then modelling the performance of a short list of triage tools (including our new tool), then further refining the tool which will be implemented for use in Phase 3.

Phase 3 involves training ambulance staff from the 4 participating Ambulance Services to use our new major trauma triage tool, then gathering ambulance service and hospital data around its performance, for a period of 4 months. The patients who will be screened using the new triage tool will be followed up in Hospital until the end of that specific episode.

Intervention Type
Other

Primary outcome(s)
The performance of the new major trauma triage tool will be defined by its over and under triage rates, with regard to identifying a case of true major trauma as defined by expert consensus panel. This will be measured only once, after the patients have been screened by the new major trauma triage tool, been received in a Hospital site, and their episode has concluded.

Key secondary outcome(s)
The performance of the new major trauma triage tools will be defined by sensitivity, specificity, predictive values, and c-statistics with their 95% confidence intervals (95% CI), with regard to identifying a case of true major trauma as defined by expert consensus panel. This will be measured only once, after the patients have been screened by the new major trauma triage tool, been received in a Hospital site, and their episode has concluded.

Completion date
31/08/2022

Eligibility

Key inclusion criteria
Patients who have experienced major trauma in participating trauma networks

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
All

Sex
All

Total final enrolment
38010

Key exclusion criteria
N/A

Date of first enrolment
01/09/2019

Date of final enrolment
01/11/2020

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
West Midlands Ambulance Service NHS Foundation Trust
Trust Headquarters
Millennium Point
Waterfront Business Park
Waterfront Way
Brierley Hill
West Midlands
England
DY5 1LX

Study participating centre
London Ambulance Service NHS Trust
Headquarters: Waterloo
220 Waterloo Road
London
England
SE1 8SD

Study participating centre
Yorkshire Ambulance Service NHS Trust
Trust Headquarters
Brindley Way
Wakefield 41 Business Park
Wakefield
England
WF2 0XQ

Study participating centre
South West Ambulance Service NHS Foundation Trust
South Western Ambulance Service NHS Foundation Trust
Abbey Court
Eagle Way
Exeter
England
EX2 7HY

Study participating centre
The University of Sheffield
Western Bank
Sheffield
England
S10 2TN

Sponsor information

Organisation
The University of Sheffield

ROR
https://ror.org/05krs5044

Funder(s)

Funder type
Government

Funder Name
Health Technology Assessment Programme

Alternative Name(s)
NIHR Health Technology Assessment Programme, Health Technology Assessment (HTA), HTA

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from the Trial Manager, Dr Sam Keating (s.m.keating@sheffield.ac.uk).

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		21/05/2024	04/06/2024	Yes	No
Results article		01/05/2026	26/05/2026	Yes	No
HRA research summary			28/06/2023	No	No
Protocol file	version v2	18/09/2019	13/02/2020	No	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes