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Creating a decision support tool to help paramedics decide if their patients need to go to hospital

Submission date 02/03/2021	**Recruitment status** No longer recruiting	[_] Prospectively registered [X] Protocol
Registration date 17/03/2021	**Overall study status** Completed	[_] Statistical analysis plan [_] Results
Last Edited 19/05/2023	**Condition category** Other	[_] Individual participant data [_] Record updated in last year

Plain English summary of protocol

Background and study aims

Paramedics have specialist knowledge and skills in helping people in emergencies. For example, if you are involved in a road traffic collision, house fire or if your heart stops. These events are quite rare, and the bulk of ambulance service patients who call have problems that are described as 'urgent'. These cases are where you may need access to healthcare and medical help, but there is only a very small chance
your problem is life threatening.

The care of urgent patients is complex and trying to find the right place for their care can be hard. In 2014 in Yorkshire, up to 16.9% of patients could have avoided being taken by ambulance to the Emergency Department (ED). This group of patients had no special tests or treatments and were sent home. This means they had a minor problem that could have been managed elsewhere.

When the ED is busy, ambulances have to wait a long time to handover the care of their patients. In the winter of 2017 in England, 41,879 ambulance handovers took more than 1 hour. This delay stops ambulances being free to respond to the next emergency. These problems mean paramedics need to make sure the ED is the right place for their patient before they take them there.

This project aims to develop a tool to help with that decision. It is designed to show the paramedic the likelihood of ED being an avoidable experience if the patient was to be transported. They can apply this tool to all their patients.

Who can participate?

All patients who called an ambulance and received a face-to-face response between 1st July 2019 and 29th February 2020.

What does the study involve?

The first step will link data from the ambulance service with that from all Emergency Departments in Yorkshire between July 2019 and February 2020. This data will show the complete patient journey from their call for help through to leaving the ED. The data will be anonymised so the researchers will only be able to see what happened in a journey, not whose

journey it was. This information will help create a tool that identifies patients who may not need to be taken to the ED. The next step will test the tool in different settings by subdividing the data. The tool will also be applied to a group of patients that were not transported to hospital.

What are the possible benefits and risks of participating?
The study will help to create a decision support tool so that future patients can get to the most appropriate healthcare setting, first time.

Where is the study run from?
Yorkshire Ambulance Service NHS Trust and the University of Sheffield (UK)

When is the study starting and how long is it expected to run for?
April 2019 to March 2022

Who is funding the study?
1. National Institute for Health Research (UK)
2. Health Education England (UK)

Who is the main contact?
Jamie Miles
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Study website
https://www.sheffield.ac.uk/scharr/research/centres/cure/projects

Contact information

Type(s)
Scientific

Contact name
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Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number
260505

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
IRAS 260505

Study information

Scientific Title
The Safety INdEx of Prehospital On Scene Triage (SINEPOST): the derivation and internal validation of a risk prediction model to support ambulance transport decisions to the Emergency Department

Acronym
SINEPOST

Study objectives
Primary research question: Can ambulance service clinical data predict an avoidable attendance at the ED in adults?
Secondary research question: What is the simulated transportability of the model derived from the primary outcome?

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 11/11/2019, Yorkshire and the Humber - South Yorkshire Ethics Committee (Yorkshire & The Humber - South Yorkshire Research Ethics Committee, NHSBT Newcastle Blood Donor Centre, Holland Drive, Newcastle upon Tyne, NE2 4NQ, UK: +44 (0)207 104 8079; southyorks.rec@hra.nhs.uk), REC ref: 19/YH/0360

Study design
Observational multi-centre cohort study using a retrospective linked dataset

Primary study design
Observational

Secondary study design
Cohort study

Study setting(s)
Other

Study type(s)
Diagnostic

Participant information sheet

No participant information sheet available

Health condition(s) or problem(s) studied
Unselected (not selected by disease or demographic status) adult patients who called an ambulance and received a face-to-face response

Interventions
Transported ambulance patients will have the prehospital care record linked to the ED record and a new binary variable will be created as to whether the level of care they received in ED justified the transportation by ambulance. Models will then be built to predict the positive class (avoidable attendance).

Intervention Type
Other

Primary outcome measure
An avoidable attendance at ED, defined as first attendance with some recorded treatments or investigations, all of which may have reasonably been provided in a non-emergency care setting, followed by discharge home or to GP care. Measured by combining elements of routinely collected ED clinical data once a patient is discharged from ED.

Secondary outcome measures
There are no secondary outcome measures

Overall study start date
01/04/2019

Completion date
31/03/2022

Eligibility

Key inclusion criteria
Cohort 1:
1. Age 18 years old or older
2. Transported to ED by Yorkshire Ambulance Service between 01/07/2019 and 29/02/2020
3. Have an ED Care record of the event
4. Assessed by a qualified ambulance clinician ((either paramedic (of any level) or technician grade II))
5. Had an electronic patient care record completed
6. Transported to an ED between 01/07/2019 and 29/02/2020
7. Were handed over and booked in as a patient to the ED

Cohort 2
1. Age 18 years or older
2. Assessed by a qualified ambulance clinician (either paramedic or technician grade II)
3. Had an electronic patient care record completed
4. Discharged on scene and not transported between 01/07/2019 and 29/02/2020

Participant type(s)

Patient

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
409937

Total final enrolment
409937

Key exclusion criteria
Cohort 1:
1. Patient cases where they were less than 18 years old at time of episode
2. Patient cases where they had five or more patient contacts within the data collection period

Cohort 2:
1. Patient cases where they were less than 18 years old at time of episode
2. Patient cases where they had five or more patient contacts within the data collection period
3. Patient cases that were transported by the ambulance crew on scene

Date of first enrolment
01/07/2019

Date of final enrolment
29/02/2020

Locations

Countries of recruitment
England

United Kingdom

Study participating centre
Yorkshire Ambulance Service NHS Trust
Yorkshire Ambulance Service HQ
Springhill 1
Brindley Way
Wakefield
United Kingdom
WF2 0XQ

Study participating centre
Barnsley Hospital NHS Foundation Trust
Gawber Rd
Barnsley
United Kingdom
S75 2EP

Study participating centre
Pinderfields Hospital
Aberford Rd
Wakefield
United Kingdom
WF1 4DG

Study participating centre
St. James's University Hospital
Beckett Street
Leeds
United Kingdom
LS9 7TF

Study participating centre
Leeds General Infirmary
Great George Street
Leeds
United Kingdom
LS1 3EX

Study participating centre
Harrogate and District NHS Foundation Trust
Lancaster Park Road
Harrogate
United Kingdom
HG2 7SX

Study participating centre
Huddersfield Royal Infirmary
Acre Street
Lindley

Huddersfield
United Kingdom
HD3 3EA

Study participating centre
Calderdale Royal Hospital
Salterhebble
Halifax
United Kingdom
HX3 0PW

Study participating centre
Hull Royal Infirmary
Anlaby Road
Hull
United Kingdom
HU3 2JZ

Study participating centre
Rotherham NHS Foundation Trust
Moorgate Road
Rotherham
United Kingdom
S60 2UD

Study participating centre
York Teaching Hospital NHS Foundation Trust
Wigginton Road
York
United Kingdom
YO31 8HE

Study participating centre
Airedale General Hospital
Skipton Road
Steeton
Keighley
United Kingdom
BD20 6TD

Study participating centre
Doncaster Royal Infirmary
Armthorpe Road
Doncaster
United Kingdom
DN2 5LT

Study participating centre
Northern General Hospital
Herries Road
Sheffield
United Kingdom
S5 7AU

Study participating centre
Bradford Royal Infirmary
Smith Lane
Bradford
United Kingdom
BD9 6DA

Study participating centre
Dewsbury and District Hospital
Halifax Rd
Dewsbury
United Kingdom
WF13 4HS

Study participating centre
Scarborough General Hospital
Woodlands Drive
Scarborough
United Kingdom
YO12 6QL

Sponsor information

Organisation
Yorkshire Ambulance Service NHS Trust

Sponsor details
Yorkshire Ambulance Service HQ
Springhill 1, Brindley Way
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WF2 0XQ
+44 (0)7557955748
jamie.miles@nhs.net

Sponsor type
Hospital/treatment centre

Website
http://www.yas.nhs.uk/

ROR
https://ror.org/01sawky49

Funder(s)

Funder type
Government

Funder Name
National Institute for Health Research

Alternative Name(s)
National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Funder Name
Health Education England

Results and Publications

Publication and dissemination plan

1. Planned publication of the protocol in BMJ Open
2. Planned publication of the study results in a high-impact, peer-reviewed, open-access journal

Strategy for disseminating to the public and patients:
Public members will be invited to co-produce a video that will be created for the public. This will introduce the concept of not transporting all patients and using a tool to help clinicians with making the decision to transport or not. They will also be invited to co-author conference abstracts and present findings with the researcher. As the research progresses, a PI group formed out of the Sheffield Emergency Care Forum (SECF) and interested members of the RDS PI event will steer and develop further dissemination strategies.

Strategy for disseminating to NHS:
The research will be presented to the Association of Ambulance Chief Executives. This will be to highlight the findings and scope feasibility to implement nationwide. Contacts made at this level will be followed up at regional and local level. Contact with the National Leads for Urgent and Emergency Care will be maintained throughout the project and feedback will be invited from them at various stages. In addition, workshops will be put on for NHS staff and the work will be presented to the UECRT and the National Ambulance Commissioners Network (NEWS). A Lay executive summary will be produced in digital format to disseminate widely on stakeholders web pages.

Strategy for disseminating to the wider population:
The linked data used in the research uses the Systemized Nomenclature of Medical Clinical Terms (SNOMED-CT), which is an international recognised clinical terminology. This would allow the possibility of international integration. Contacts will be made at the PAIC conference for future studies. Reproducibility of the tool outside of the NHS would require a validation step including calibration and discrimination.

Strategy for implementation:
Areas for further research will be identified and grant applications will be made to secure funding. Once the model has been developed, there will be collaboration with NHSD. They will be the main route to implementation. There will also be an opportunity to work with industry partners who own patient care software.
The clinical terminology that the variables are captured (SNOMED CT) is advantageous in implementing the tool as the National Information Board (NIB) has mandated all NHS organisations capture clinical information in this language.

Intention to publish date

31/03/2022

Individual participant data (IPD) sharing plan

The data sharing plans for the current study are unknown and will be made available at a later date

IPD sharing plan summary

Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol article		08/11/2021	19/05/2023	Yes	No
HRA research summary			28/06/2023	No	No