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

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

## **Plain English Summary**

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 j.miles@sheffield.ac.uk

**Study website** https://www.sheffield.ac.uk/scharr/research/centres/cure/projects

# **Contact information**

**Type(s)** Scientific

**Contact name** Mr Jamie Miles

ORCID ID https://orcid.org/0000-0002-1080-768X

**Contact details** Yorkshire Ambulance Service HQ Springhill 1, Brindley way Wakefield United Kingdom WF2 0XQ +44 (0)333 130 0550 jamie.miles@nhs.net

# 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 hypothesis

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

## Condition

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

Overall study end date 31/03/2022

# Eligibility

## Participant 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

Participant 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

## Recruitment start date

01/07/2019

Recruitment end date 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 Wakefield England United Kingdom 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?
<u>Protocol article</u>		08/11/2021	19/05/2023	Yes	No
<u>HRA research summary</u>			28/06/2023	No	No