

Evaluation of COVID-19 assessment in emergency departments and ambulance services

Submission date 27/03/2020	Recruitment status No longer recruiting	☐ Prospectively registered ☐ Protocol
Registration date 04/05/2020	Overall study status Completed	☒ Statistical analysis plan ☒ Results
Last Edited 14/06/2023	Condition category Infections and Infestations	☒ Individual participant data

Plain English summary of protocol

Background and study aims

Respiratory (lung) infections, such as influenza or the coronavirus, affect the lungs and airways, typically causing symptoms such as fever, sore throat, coughing and breathing difficulties. They have the potential to cause a pandemic if a new strain of the virus becomes widespread across many countries. This can result in increased numbers of patients attending hospital and needing investigation or admission, and can place a huge strain on the NHS.

Patients contacting NHS 111, calling for a 999 ambulance or attending a hospital emergency department with suspected pandemic respiratory infection need to be rapidly assessed to identify who has severe illness and needs hospital admission. This process is known as "triage" and often uses methods, such as scores or decision rules, which have been developed to assess the severity of illness and predict which patients are at risk of life-threatening complications. Triage methods have been developed and are ready for use in a pandemic, but it is not known how well they perform in terms of correctly predicting who needs hospital admission and who does not. The researchers plan to use patient data from the early phases of a pandemic to test how well existing triage methods predict serious complications, identify cases where the triage methods did not predict serious complications or recommended unnecessary hospital admission, and modify triage methods or develop new triage methods that predict serious complications better than existing methods. This will involve recording medical details in a standardised way from patients with a suspected respiratory infection and then using hospital records to follow patients up to find out if they die or suffer a life-threatening complication.

Who can participate?

All adults and children with suspected respiratory infection during a pandemic who present at the emergency department of a participating hospital, call 111 or 999 services or are attended by a 999 ambulance from a participating ambulance trust

What does the study involve?

The researchers plan to use routine electronic data collected from people using the emergency care system (via 111 and 999 calls, ambulance conveyance, or hospital emergency department) with suspected respiratory infections during a pandemic. Participating emergency departments

will be provided with electronic and/or paper forms that can be integrated into the patient record and used to collect standardised triage assessment data. The form can be used at triage or at full patient assessment and will form part of the clinical record. It can also be used by the emergency department to guide triage assessment. For example, the data recorded can be used to recommend diversion away from the hospital if criteria are not met or admission to hospital if criteria are met. The form will include key variables used in recommended triage methods, such as PMEWs and the swine flu hospital pathway, and other variables considered to be potentially useful predictors of adverse outcome. The researchers will allow participating sites to adapt the form to their local circumstances, for example omitting variables that are already routinely collected. The electronic and/or paper forms can also be used by paramedics in participating ambulance services. The electronic form will be used to collect data as part on the electronic case report form (eCRF) and can be used to support decisions, such as a decision not to transport the patient to hospital if triage criteria are not met. Alternatively, for 111 and 999 triage calls ambulance services could provide the University of Sheffield with the routinely collected triage question of patients with suspected respiratory infection pandemic. Though this routine data would not match data collected from participating hospitals it would closer reflect the data ambulances are collecting with patients and lessen the workload placed on frontline staff. The researchers will work with participating ambulance trusts to choose a data collection approach that best fits their capacity. Participating emergency departments and ambulances could also provide regular datasets to the University of Sheffield. Sites' business intelligence units or equivalent would be handle file transfers through a secure file transfer system, such as a FTP server.

What are the possible benefits and risks of participating?

There are no direct benefits to a patient but there are potential benefits to the ability of emergency departments to prioritise pandemic cases appropriately, so those that most require care receive it in a timely manner. The results of the study could be used in subsequent phases of a pandemic to produce a guideline or rule to decide which patients require hospital admission. The findings can also be used by doctors and nurses to identify which individual patients are at risk of serious complications. The researchers may also be able to identify which patient characteristics are associated with an increased risk of serious complications in a particular pandemic. For example, in 2009 it was found that pregnant patients and those suffering from obesity were at higher risk. The risks to patients involved in the study are very low. The study will not involve any change to the way patients are investigated or treated. Data collection has been designed to assist medical staff so that it does not interfere with patient care, and has been tested during a winter flu season. Most personal details will be removed from information that leaves a hospital, the researchers are only recording NHS numbers and ambulance incident numbers so they can track how patients move through health services. More identifiable information, such as patient's names, will only be available to local trained nurses who work alongside the care teams. The researchers do not plan to ask patients for written consent to use their data in the study because this would incur delays that could be harmful in a pandemic. However, they will inform patients of the study and ensure that they are able to remove their data from the study if they wish. This approach worked well in the 2009 study and was approved by an independent Research Ethics Committee and the National Information Governance Board.

Where is the study run from?

The study will be undertaken by experienced researchers in Sheffield, Manchester and London who will involve around 40 hospitals across the country. They include experts in emergency medicine, intensive care, public health, and statistics. The Clinical Trials Unit in Sheffield is registered to provide research support and will be responsible for collecting and analysing the data.

When is the study starting and how long is it expected to run for?

October 2012 to October 2021

Who is funding the study?

Health Research Health Technology Assessment (NIHR HTA) Programme (UK)

Who is the main contact?

Dr Ben Thomas, priest-study@sheffield.ac.uk

Contact information

Type(s)

Scientific

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Scientific

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ScHARR

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217 Portobello

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S1 4DP

Additional identifiers

Integrated Research Application System (IRAS)

101138

Study information

Scientific Title

The PRIEST study: Pandemic Respiratory Infection Emergency System Triage

Acronym

PRIEST

Study objectives

The aim of this study is to optimise the triage of people using the emergency care system (111 and 999 calls, ambulance conveyance, or hospital emergency department) with suspected respiratory infections during a pandemic and identify the most accurate triage method for predicting severe illness among patients attending the emergency department with a suspected respiratory infection.

The specific objectives during the pandemic are:

1. To undertake continuous monitoring of the performance of the emergency care triage method (or methods) used for suspected respiratory infections during a pandemic.
2. To identify clinical characteristics and routine tests associated with under-triage (false negative assessment) or over-triage (false positive assessment) during a pandemic.
3. To determine the discriminant value of alternative triage methods for predicting severe illness in patients presenting with suspected respiratory infection during a pandemic.
4. To inform policymakers and practitioners during a pandemic of the study's emerging findings.

The specific objectives after the pandemic are:

1. To determine the discriminant value of emergency department triage methods for predicting severe illness in patients presenting with suspected pandemic respiratory infection.
2. To determine the discriminant value of presenting clinical characteristics and routine tests for identifying severe illness.
3. To determine the independent predictive value of presenting clinical characteristics and routine tests for severe illness.
4. To develop new triage methods based upon presenting clinical characteristics alone or presenting clinical characteristics, electrocardiogram (ECG), chest X-ray and routine blood test results, depending upon the data available and the predictive value of variables evaluated in objective 3.

Ethics approval required

Old ethics approval format

Ethics approval(s)

Approved 25/06/2012, North West - Haydock Research Ethics Committee (3rd Floor - Barlow House, 4 Minshull Street, Manchester, M1 3DZ, UK; +44 (0)2071048165; haydock.rec@hra.nhs.uk), REC ref: 12/NW/0303

Primary study design

Observational

Study design

Both; Design type: Other, Cohort study

Study type(s)

Other

Health condition(s) or problem(s) studied

COVID-19 (SARS-CoV-2 infection)

Interventions

The researchers plan to undertake an observational cohort study using routine electronic data capture from people using the emergency care system (via 111 and 999 calls, ambulance conveyance, or hospital emergency department) with suspected respiratory infections during a pandemic.

Participating emergency departments will be provided with electronic and/or paper forms that can be integrated into the patient record and used to collect standardised triage assessment data. The form can be used at triage or at full patient assessment, and will form part of the clinical record. It can also be used by the emergency department to guide triage assessment. For example, the data recorded can be used to recommend diversion away from the hospital if criteria are not met or admission to hospital if criteria are met. The form will include key variables used in recommended triage methods, such as PMEWS and the swine flu hospital pathway, and other variables considered to be potentially useful predictors of adverse outcome. We will allow participating sites to adapt the form to their local circumstances, for example omitting variables that are already routinely collected.

The electronic and/or paper forms can also be used by paramedics in participating ambulance services. The electronic form will be used to collect data as part on the electronic case report form (eCRF) and can be used to support decisions, such as a decision not to transport the patient to hospital if triage criteria are not met. Alternatively, for 111 and 999 triage calls ambulance services could provide the University of Sheffield with the routinely collected triage question of patients with suspected respiratory infection pandemic. Though this routine data would not match data collected from participating hospitals it would a) closer reflect the data ambulances are collecting with patients and b) lesson the work load placed on front line staff. The researchers will work with participating Ambulance trusts to choose a data collection approach that best fits their capacity.

Participating emergency departments and ambulances could also provide regular datasets of the study's predictor variables to the University of Sheffield. Sites business intelligence units or equivalent would be handle file transfers through a secure file transfer system, such as a FTP server.

Intervention Type

Other

Primary outcome(s)

Patients who die or require respiratory, cardiovascular or renal support will be defined as having an adverse outcome. If patients survive to 30 days without requiring respiratory, cardiovascular or renal support they will be defined as having no adverse outcome. If a severe pandemic leads to hospital resources being overwhelmed the researchers will categorise patients as having an adverse outcome if they were deemed to have needed respiratory, cardiovascular or renal support but were denied this due to lack of resources; Timepoint(s): 30 days

Key secondary outcome(s)

There are no secondary outcome measures

Completion date

31/10/2021

Eligibility

Key inclusion criteria

All adults and children with suspected respiratory infection during a pandemic who present at the emergency department of a participating hospital, call 111 or 999 services or are attended by a 999 ambulance from a participating ambulance trust.

Patients will be eligible for inclusion if they meet the current clinical diagnostic criteria;

1. Fever (pyrexia $\geq 38^{\circ}\text{C}$) or a history of a fever
2. Influenza-like illness (two or more of cough, sore throat, rhinorrhoea, limb or joint pain, headache, vomiting or diarrhoea or severe and/or life-threatening illness suggestive of an infectious process. (Or if they meet any future clinical diagnostic criteria recommended by the Department of Health).

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Mixed

Sex

All

Total final enrolment

22445

Key exclusion criteria

Participants will only be excluded from the study if they request to be.

Date of first enrolment

26/03/2020

Date of final enrolment

31/07/2020

Locations

Countries of recruitment

United Kingdom

England

Northern Ireland

Scotland

Wales

Study participating centre

Sheffield Teaching Hospitals NHS Foundation Trust

Northern General Hospital

Herries Rd

Sheffield

United Kingdom

S5 7AU

Study participating centre

Sheffield Children's NHS Foundation Trust

Sheffield Children's Hospital

Clarkson St

Broomhall

Sheffield

United Kingdom

S10 2TH

Study participating centre

Salford Royal NHS Foundation Trust

Salford Royal Hospital

Stott Ln

Salford

United Kingdom

M6 8HD

Study participating centre

York Teaching Hospital

Wigginton Rd

Clifton

York

United Kingdom

YO31 8HE

Study participating centre

Scarborough General Hospital

Woodlands Dr
Scarborough
United Kingdom
YO12 6QL

Study participating centre**Barts Health NHS Trust**

St Bartholomew's Hospital
W Smithfield
London
United Kingdom
EC1A 7BE

Study participating centre**Hull University Teaching Hospitals NHS Trust**

Hull Royal Infirmary
Anlaby Rd
Hull
United Kingdom
HU3 2JZ

Study participating centre**University Hospitals Plymouth NHS Trust**

Derriford Hospital
Derriford Rd
Plymouth
United Kingdom
PL6 8DH

Study participating centre**Milton Keynes University Hospital**

Standing Way
Eaglestone
Milton Keynes
United Kingdom
MK6 5LD

Study participating centre**Royal Berkshire NHS Foundation Trust**

Royal Berkshire Hospital

London Rd
Reading
United Kingdom
RG1 5AN

Study participating centre

Dorset County Hospital NHS Foundation Trust

Dorset County Hospital

Williams Ave

Dorchester

United Kingdom

DT1 2JY

Study participating centre

Gloucestershire Hospitals NHS Foundation Trust

Gloucestershire Royal Hospital

Great Western Rd

Gloucester

United Kingdom

GL1 3NN

Study participating centre

The Royal Wolverhampton NHS Trust

New Cross Hospital

Wolverhampton Rd

Heath Town

Wolverhampton

United Kingdom

WV10 0QP

Study participating centre

The Shrewsbury & Telford Hospital NHS Trust

Princess Royal Hospital

Apley Castle

Telford

United Kingdom

TF1 6TF

Study participating centre

The Shrewsbury & Telford Hospital NHS Trust

Royal Shrewsbury Hospital

Mytton Oak Rd
Shrewsbury
United Kingdom
SY3 8XQ

Study participating centre

University Hospital North Midlands NHS Trust

Royal Stoke Hospital
Newcastle Rd
Stoke-on-Trent
United Kingdom
ST4 6QG

Study participating centre

Northumbria Specialist Emergency Care Hospital

Northumbria Way
Cramlington
United Kingdom
NE23 6NZ

Study participating centre

Southend University Hospital NHS Foundation Trust

Southend Hospital
Prittlewell Chase
Westcliff-on-Sea
Southend-on-Sea
United Kingdom
SS0 0RY

Study participating centre

Oxford University Hospitals NHS Foundation Trust

John Radcliffe Hospital
Headley Way
Headington
Oxford
United Kingdom
OX3 9DU

Study participating centre

Harrogate District Hospital

Harrogate District Hospital

Lancaster Park Rd
Harrogate
United Kingdom
HG2 7SX

Study participating centre

NHS Lothian

Royal Infirmary of Edinburgh
51 Little France Cres
Edinburgh
United Kingdom
EH16 4SA

Study participating centre

Royal Hospital for Sick Children

9 Sciennes Rd
Edinburgh
United Kingdom
EH9 1LF

Study participating centre

St John's Hospital

Howden W Rd
Howden
Livingston
United Kingdom
EH54 6PP

Study participating centre

Western General Hospital

Crewe Rd S
Edinburgh
United Kingdom
EH4 2XU

Study participating centre

Mid and South Essex NHS Foundation Trust

Broomfield Hospital
Court Rd
Broomfield
Chelmsford

United Kingdom
CM1 7ET

Study participating centre
Newcastle Upon Tyne Hospitals NHS Trust
Royal Victoria Infirmary
Queen Victoria Rd
Newcastle upon Tyne
United Kingdom
NE1 4LP

Study participating centre
Manchester University NHS Foundation Trust
Manchester Royal Infirmary
Oxford Rd
Manchester
United Kingdom
M13 9WL

Study participating centre
Royal Manchester Children's Hospital
Oxford Rd
Manchester
United Kingdom
M13 9WL

Study participating centre
Liverpool University Hospitals NHS Foundation Trust
Aintree University Hospital
Lower Ln
Liverpool
United Kingdom
L9 7AL

Study participating centre
Cambridge University Hospitals NHS Foundation Trust
Addenbrooke's Hospital
Hills Rd
Cambridge
United Kingdom
CB2 0QQ

Study participating centre

Nottingham University Hospitals NHS Trust

Queens Medical Centre

Derby Rd

Lenton

Nottingham

United Kingdom

NG7 2UH

Study participating centre

Craigavon Area Hospital

68 Lurgan Rd

Portadown

Craigavon

United Kingdom

BT63 5QQ

Study participating centre

Wexham Park Hospital

Wexham St

Slough

United Kingdom

SL2 4HL

Study participating centre

The Queen Elizabeth Hospital King's Lynn NHS Foundation Trust

Queen Elizabeth Hospital

Gayton Rd

King's Lynn

United Kingdom

PE30 4ET

Study participating centre

Aneurin Bevan University Health Board

Royal Gwent Hospital

Cardiff Rd

Newport

United Kingdom

NP20 2UB

Study participating centre
Aneurin Bevan University Health Board
Nevill Hall Hospital
Brecon Rd
Abergavenny
United Kingdom
NP7 7EG

Study participating centre
Great Western Hospitals NHS Foundation Trust
Great Western Hospital
Marlborough Rd
Swindon
United Kingdom
SN3 6BB

Study participating centre
King's College Hospital NHS Foundation Trust
King's College Hospital
Denmark Hill
Brixton
London
United Kingdom
SE5 9RS

Study participating centre
Ashford and St Peter's Hospitals NHS Foundation Trust
Ashford Hospital
London Rd
Stanwell
Ashford
United Kingdom
TW15 3AA

Study participating centre
Ashford and St Peter's Hospitals NHS Foundation Trust
St Peter's Hospital
Guildford Rd
Lyne
Chertsey
United Kingdom
KT16 0PZ

Study participating centre
Lancashire Teaching Hospitals NHS Trust
Royal Preston Hospital
Sharoe Green Ln
Fulwood
Preston
United Kingdom
PR2 9HT

Study participating centre
Epsom and St Helier University Hospitals NHS Trust
Epsom Hospital
Dorking Rd
Epsom
United Kingdom
KT18 7EG

Study participating centre
Epsom and St Helier University Hospitals NHS Trust
St Helier Hospital
Wrythe Ln
Sutton
Carshalton
United Kingdom
SM5 1AA

Study participating centre
North Tees and Hartlepool NHS Foundation Trust
University Hospital of North Tees
Hardwick Road
Stockton on Tees
Cleveland
United Kingdom
TS19 8PE

Study participating centre
Guys and St Thomas' NHS Foundation Trust
Evelina London Children's Hospital
Westminster Bridge Rd
Bishop's

London
United Kingdom
SE1 7EH

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

Study participating centre
Leeds Teaching Hospitals NHS Trust
Leeds General Infirmary
Great George St
Leeds
United Kingdom
LS1 3EX

Study participating centre
Leeds Teaching Hospitals NHS Trust
St James' University Hospital
Beckett St
Harehills
Leeds
United Kingdom
LS9 7TF

Study participating centre
County Durham and Darlington NHS Foundation Trust
Hollyhurst Rd
Darlington
United Kingdom
DL3 6HX

Study participating centre
County Durham and Darlington NHS Foundation Trust
University Hospital of North Durham
North Rd
Durham

United Kingdom
DH1 5TW

Study participating centre

St George's University Hospital NHS Foundation Trust

St. James Wing
St George's Hospital
Blackshaw Rd
Tooting
London
United Kingdom
SW17 0QT

Study participating centre

South Tees Hospitals NHS Foundation Trust

The James Cook University Hospital
Marton Rd
Middlesbrough
United Kingdom
TS4 3BW

Study participating centre

Alder Hey Children's Hospital

E Prescott Rd
Liverpool
United Kingdom
L12 2AP

Study participating centre

Stockport NHS Foundation Trust

Stepping Hill Hospital
Poplar Grove
Hazel Grove
Stockport
United Kingdom
SK2 7JE

Study participating centre

Liverpool University Hospitals NHS Foundation Trust

Royal Liverpool Hospital
Prescot St

Liverpool
United Kingdom
L7 8XP

Study participating centre

The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust

Royal Bournemouth Hospital
Castle Ln E
Bournemouth
United Kingdom
BH7 7DW

Study participating centre

Sherwood Forest Hospital NHS Foundation Trust

Sutton Rd
Stockwell Gate
Mansfield
United Kingdom
NG18 5QE

Study participating centre

East Sussex Healthcare NHS Trust

Conquest Hospital
The Ridge
Hastings
Saint Leonards-on-Sea
United Kingdom
TN37 7RD

Study participating centre

East Sussex Healthcare NHS Trust

Eastbourne District General Hospital
Kings Dr
Eastbourne
United Kingdom
BN21 2UD

Study participating centre

Bolton NHS Foundation Trust

Royal Bolton Hospital
Minerva Rd

Farnworth
Bolton
United Kingdom
BL4 0JR

Study participating centre
Surrey and Sussex Healthcare Foundation Trust
East Surrey Hospital
Canada Ave
Redhill
United Kingdom
RH1 5RH

Study participating centre
East Lancashire Hospital NHS Trust
Royal Blackburn Teaching Hospital
Haslingden Rd
Blackburn
United Kingdom
BB2 3HH

Study participating centre
East Lancashire Hospital NHS Trust
Burnley General Teaching Hospital
Casterton Ave
Burnley
United Kingdom
BB10 2PQ

Study participating centre
Lewisham and Greenwich NHS Trust
Queen Elizabeth Hospital
Stadium Rd
Woolwich
London
United Kingdom
SE18 4QH

Sponsor information

Organisation

Sheffield Teaching Hospitals NHS Foundation Trust

Funder(s)

Funder type

Government

Funder Name

NIHR Evaluation, Trials and Studies Co-ordinating Centre (NETSCC); Grant Codes: 11/46/07

Results and Publications

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?
Results article	post-exertion oxygen saturation sub-study results	03/12/2020	07/12/2020	Yes	No
Results article	results	25/11/2020	15/01/2021	Yes	No
Results article	triage tool development results	22/01/2021	19/03/2021	Yes	No
Results article	secondary analysis results	01/07/2021	10/05/2021	Yes	No
Results article		03/06/2021	07/06/2021	Yes	No
Dataset		25/11/2020	14/06/2023	No	No
HRA research summary			28/06/2023	No	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Preprint results	non-peer-reviewed analysis of DNAR status in preprint	27/01/2021	19/03/2021	No	No
Preprint results	Prognostic accuracy study results	29/07/2021	30/07/2021	No	No
Preprint results	Observational cohort study results	19/10/2021	21/10/2021	No	No
	Accuracy of telephone triage	29/06	03/12		

Preprint results		/2021	/2021	No	No
Preprint results	Prognostic accuracy results for children	10/09 /2021	03/12 /2021	No	No
Statistical Analysis Plan		01/06 /2020	22/07 /2020	No	No