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Testing if feedback improves ambulance clinicians' ventilations during CPR

Submission date 23/07/2026	**Recruitment status** Not yet recruiting	[X] Prospectively registered [_] Protocol [_] Statistical analysis plan [_] Results [_] Individual participant data [X] Record updated in last year
Registration date 27/07/2026	**Overall study status** Ongoing	
Last Edited 27/07/2026	**Condition category** Circulatory System	

Plain English summary of protocol

Background and study aims

A cardiac arrest occurs when the heart suddenly stops beating. NHS ambulance services attend approximately 30,000 cardiac arrests each year to provide cardiopulmonary resuscitation (CPR). CPR involves pushing up and down on the patient's chest, chest compressions, and breathing for the patient, ventilations. Some patients respond to CPR and their heart starts beating again.

In the past it has been difficult to measure ventilations during CPR so less research has been done on ambulance clinician ventilations than on chest compressions. However, new technology enables ambulance clinicians to receive real-time visual feedback on their ventilations. We think that the feedback will help ambulance clinicians deliver better ventilations which may improve the chances of someone surviving a cardiac arrest.

The aim of this study is to complete a small trial of ventilation feedback during CPR by ambulance clinicians to decide if a larger trial is feasible and how best can it be conducted.

Who can participate?

Adults aged 18 years or older, who are in cardiac arrest and being attended by a North East Ambulance Service NHS Foundation Trust technician.

What does the study involve?

This study will involve ambulance clinicians in North East Ambulance Service (NEAS). The defibrillators used in NEAS will be set to show visual feedback on the defibrillator screen. In some cases, the ambulance clinician will receive feedback and in some cases they won't. This will be decided by chance. This is known as a randomised controlled trial and is the best way of finding out which treatment is most effective. All patients will continue to receive all other normal treatments during CPR. We will follow up all patients involved in the study to see if they survive and how well they recover.

Results from the study will be shared with clinicians involved in resuscitation, academics and interested members of the public. This study will help us decide if a bigger study of ventilation feedback is needed and how to best deliver the bigger study.

What are the possible benefits and risks of participating?
The potential benefit is that we will learn more about how ambulance clinicians breathe for people in cardiac arrest which will inform more research in this area. There are no additional risks to patients as all patients are in cardiac arrest.

Where is the study run from?
North East Ambulance Service NHS Foundation Trust (UK)

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

Who is funding the study?
National Institute for Health and Care Research (NIHR) (UK).

Who is the main contact?
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Contact information

Type(s)
Principal investigator, Scientific, Public

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Central Portfolio Management System (CPMS)
64807

National Institute for Health and Care Research (NIHR)
208154

Study information

Scientific Title
Ambulance clinician use of real-time ventilation feedback during cardiac arrest resuscitation to improve ventilation performance and patient outcomes: a randomised feasibility study

Acronym
VANZ3

Study objectives
The aim and primary objective of this study is to assess the feasibility of conducting a randomised controlled trial (RCT) to explore the impact of real-time visual feedback on ventilation rate and volume delivered by ambulance clinicians to patients in OHCA.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 22/04/2026, tbc (2 Redman Place, Stratford, London, E20 1JQ, United Kingdom; no telephone number provided; -), ref: 26/NE/0068

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Open (masking not used)

Control
Uncontrolled

Assignment
Single

Purpose
Treatment

Study type(s)

Health condition(s) or problem(s) studied
Ambulance clinician use of real-time ventilation feedback during cardiac arrest resuscitation

Interventions
Research participants will be adult patients in cardiac arrest (no heartbeat, not breathing) who are resuscitated by ambulance clinicians in the North division of North East Ambulance Service. This is effectively the area between the River Tyne and the Scottish border.

When patients are being resuscitated, they will receive cardiopulmonary resuscitation (CPR), which involves chest compressions and breathing for the patient (ventilation). Ambulance clinicians use a device called a bag-valve-mask to breathe for patients. This device allows them to force air into a patient's lungs via a facemask or tube inserted into the mouth. All ventilations should be delivered at around 10 per minute and around 500 mL (half a litre) of air.

The study intervention is a device added to the equipment used to breathe for the patient, which will allow the defibrillator used by ambulance clinicians to help guide their ventilations. The defibrillator has a screen that shows clinical information such as heart rate and rhythm. The study intervention allows information on the rate and volume of ventilations to be displayed on the defibrillator screen.

In order to test what impact this feedback has on ventilation quality, and ultimately patient outcomes, the defibrillators will be randomised so that half show feedback and half do not. This allows us to study the difference that the feedback makes. All defibrillators will record data on the quality of the ventilations delivered. All patients will receive the normal standard of care. The only difference is that some ambulance clinicians will have guidance on the defibrillator screen to help them ventilate at the right rate and volume.

Unfortunately, most people do not survive a cardiac arrest. Currently, around one in ten people in England survive a cardiac arrest. Due to this low survival rate, the majority of patients enrolled in this study will not survive. We are seeking permission to include data from all patients who die without approaching anyone for consent, to minimise the amount of additional distress caused to families, relatives or loved ones during what will be a very traumatic time.

For patients who do survive, they will be taken to hospital where their treatment will continue as part of normal care. We will talk to people in the hospital and monitor when would be a good time to approach the patient and/or their family or representative. We will seek consent at this point to include their data in the study. Our final point of contact with patients will be around 30 days after their cardiac arrest, when we will assess how many people survived and how they are doing at that point.

As this is a feasibility study testing whether a larger study would be workable, we are looking to collect data from 80 patients over 8 months, which is an appropriate number of patients for a feasibility study. We will collect data on how often the ventilation feedback is used, the quality of the ventilations, what care is delivered to patients, and how many people survive.

Intervention Type
Other

Primary outcome(s)
1. % of eligible patients experiencing cardiac arrest where ventilation data collected measured using review of ambulance clinical records at baseline (time of cardiac arrest)

Key secondary outcome(s)
1. Number of ambulance clinicians participating in study measured using training log at baseline

2. clinical data on enrolled patients measured using review of ambulance clinical records at baseline

3. patients with 30-day outcome data measured using interview at 30 days post cardiac arrest

4. % of survivors that consent to inclusion in the study measured using verbal and/or written consent at between baseline and 30-days

Completion date
31/07/2027

Eligibility

Key inclusion criteria
1. Adults (known or thought to be 18 years old or above)
2. In cardiac arrest
3. CPR performed by NEAS clinician
4. In the catchment area of the participating hospitals

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
120 Years

Sex
All

Total final enrolment
0

Key exclusion criteria
1. Paediatric patients (known or thought to be under 18 years old)
2. Non cardiac arrest (e.g., respiratory arrests)
3. Do not resuscitate order or equivalent
4. Ventilation needing to be performed at a rate and/or volume different to normal adult rate and/or volume

Date of first enrolment
01/09/2026

Date of final enrolment
31/03/2027

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
North East Ambulance Service NHS Foundation Trust
Bernicia House
The Waterfront
Goldcrest Way
Newcastle upon Tyne
England
NE15 8NY

Sponsor information

Organisation
North East Ambulance Service NHS Foundation Trust

ROR
https://ror.org/02mphet60

Funder(s)

Funder type
Government

Funder Name
National Institute for Health and Care 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

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 study leads (Graham McClelland and Julia Williams, graham.mcclelland@northumbria.ac.uk. After the study is completed anonymised data may be made available for other researchers upon reasonable request and with appropriate ethical and governance approvals

IPD sharing plan summary
Available on request