

Small vessel assessment to guide early hospital discharge following acute heart attack

| | | |
|----------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Submission date 11/06/2024 | Recruitment status Recruiting | <input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol |
| Registration date 05/07/2024 | Overall study status Ongoing | <input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results |
| Last Edited 02/09/2024 | Condition category Circulatory System | <input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year |

Plain English summary of protocol

Background and study aims

Patients presenting with heart attack remain in hospital for 48 hours following their emergency treatment with stents. Recent UK data highlighted the safety of shorter in-hospital stays following heart attacks. Nonetheless, the decision to early discharge patients remains subjective. Index microcirculatory resistance (IMR) is a well-established wire-based technology and can directly evaluate the status of the injured heart immediately after a heart attack. It was demonstrated to be a reliable tool in predicting in-hospital complications and outperformed guidelines-recommended models in identifying patients who are susceptible to adverse outcomes whilst in hospital. IMR is strongly linked to the amount of clot inside the heart blood vessel. New technologies appear promising in reducing clot volume which could help protect the injured heart after a heart attack. The aim of this study is to evaluate the effect of using IMR to guide hospital discharge and its impact on the strength of heart muscle in patients presenting with heart attack.

Who can participate?

Patients aged 18-90 years with acute heart attack

What does the study involve?

Patients who have large clot volumes will be randomly allocated to either a new clot removal device or conventional treatment. The amount of clot will be assessed using an established imaging device and IMR will be performed at the end of the stenting procedure. Patients with favourable IMR will be randomly allocated to early or standard discharge. Patients in the standard discharge will remain in hospital according to local policy. Patients in the early discharge group will be planned for hospital discharge on the following day. Patients with unfavourable IMR will remain in-hospital according to local policy. The strength of the heart muscle is assessed by an MRI scan after 3 months. The amount of clot inside the heart blood vessel is also measured.

What are the possible benefits and risks of participating?

The benefits are identifying patients who are at low risk and suitable for early hospital discharge. The risk is related to early discharge as it is not yet standard clinical practice.

Where is the study run from?
Freeman Hospital (UK)

When is the study starting and how long is it expected to run for?
February 2022 to December 2026

Who is funding the study?

1. Abbott Vascular (USA)
2. Vesalio (USA)

Who is the main contact?

Dr Mohammad Alkhalil, mohammad.alkhalil@nhs.net

Contact information

Type(s)

Public, Scientific, Principal investigator

Contact name

Dr Mohammad Alkhalil

ORCID ID

<https://orcid.org/0000-0002-3088-8878>

Contact details

Cardiothoracic Department
Freeman Hospital
Newcastle upon Tyne
United Kingdom
NE7 7DN
+44 (0)191 233 6161
mohammad.alkhalil@nhs.net

Additional identifiers

Clinical Trials Information System (CTIS)

Nil known

Integrated Research Application System (IRAS)

334935

ClinicalTrials.gov (NCT)

Nil known

Protocol serial number

10630, IRAS 334935, CPMS 59911

Study information

Scientific Title

Safety of Early discharge Using index microcirculatory Resistance in patients with acute myocardial infarction (SECURE)

Acronym

SECURE

Study objectives

The use of coronary physiology is a safe strategy to guide early discharge in patients presenting with ST-segment elevation myocardial infarction (STEMI)

Ethics approval required

Ethics approval required

Ethics approval(s)

approved 03/04/2024, South East Scotland Research Ethics Committee (Waverley Gate, 2-4 Waterloo Place, Edinburgh, EH1 3EG, United Kingdom; +44 (0)7814 764 241; eilidh.clifford@nhs.scot), ref: 23/SS/0116

Study design

Prospective single-centre randomized clinical trial

Primary study design

Interventional

Study type(s)

Safety

Health condition(s) or problem(s) studied

Acute myocardial infarction

Interventions

The aim of this study is to evaluate the effect of using index microcirculatory resistance (IMR) to guide hospital discharge and its impact on the strength of heart muscle in patients presenting with heart attack. A sub-study of patients who have large clot volume will be randomised, after obtaining verbal consent, to either a new clot removal device or conventional treatment. The amount of clot will be assessed using an established imaging device and IMR will be performed at the end of the stenting procedure. Patients with favourable IMR will be subsequently randomised using web-based randomisation into early or standard discharge. Patients in the standard discharge will remain in the hospital according to local policy. Patients in the early discharge group will be planned for hospital discharge on the following day. Patients with unfavourable IMR will remain in-hospital according to local policy. The primary endpoint of this study is the strength of the heart muscle as assessed by magnetic resonance imaging after 3 months. For the sub-study, the primary endpoint is the amount of clot inside the heart blood vessel.

Intervention Type

Device

Phase

Phase II

Drug/device/biological/vaccine name(s)

-

Primary outcome(s)

Left ventricle function (strength of heart muscle) measured using cardiac magnetic resonance imaging.at 3 months

Key secondary outcome(s)

1. Clinical events measured using GP/ hospital records and patient contact at 1 year
2. Clot volume during acute heart attack measured using optical coherence tomography at the time of acute heart attack presentation
3. Health status measured using Seattle questionnaire at 3 months

Completion date

28/12/2026

Eligibility**Key inclusion criteria**

Patients aged 18-90 years presenting with ST-segment elevation myocardial infarction (STEMI)

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 years

Upper age limit

90 years

Sex

All

Key exclusion criteria

1. Patients in whom safety or clinical concerns preclude participation
2. Pregnant or breastfeeding female
3. Suboptimal angiographic results such as final slow flow or distal embolization
4. Need for in-hospital staged percutaneous coronary intervention (PCI)
5. Cardiogenic shock
6. Pulmonary oedema or severe heart failure requiring diuretics treatment during or immediately after the procedure
7. Contraindication to adenosine
8. Standard contra-indications to MRI such as claustrophobia
9. Known allergy to any other component of xience stent

Date of first enrolment

09/05/2024

Date of final enrolment

30/03/2026

Locations

Countries of recruitment

United Kingdom

England

Study participating centre**Freeman Hospital**

Freeman Road

Newcastle upon Tyne

United Kingdom

NE7 7DN

Sponsor information

Organisation

Newcastle upon Tyne Hospitals NHS Foundation Trust

ROR

<https://ror.org/05p40t847>

Funder(s)

Funder type

Industry

Funder Name

Abbott Vascular

Alternative Name(s)**Funding Body Type**

Private sector organisation

Funding Body Subtype

For-profit companies (industry)

Location

United States of America

Funder Name

Vesalio

Results and Publications

Individual participant data (IPD) sharing plan

Data related to this study will be available from Dr Mohammad Alkhalil (mohammad.alkhalil@nhs.net) on reasonable request

IPD sharing plan summary

Available on request

Study outputs

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|-----------------------------------------------|-------------------------------|--------------|------------|----------------|-----------------|
| Participant information sheet | Participant information sheet | 11/11/2025 | 11/11/2025 | No | Yes |