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Randomised controlled multi centre trial comparing two standard of care revascularisation treatments, either percutaneous angioplasty and stents (PCI) or coronary artery bypass grafting (CABG), in patients who have been diagnosed with a condition that reduces heart function known as ischaemic left ventricular dysfunction (ilSVD) as well as coronary artery disease (CAD)

Submission date 29/05/2024	**Recruitment status** Recruiting	[ ] Prospectively registered [ ] Protocol
Registration date 17/07/2024	**Overall study status** Ongoing	[ ] Statistical analysis plan [ ] Results
Last Edited 17/07/2024	**Condition category** Circulatory System	[ ] Individual participant data [ ] Record updated in last year

Plain English summary of protocol

Background and study aims

Heart failure affects 1-2% of the population and is increasing in prevalence due to a growing. Ageing, a more sedentary population, and improved management of acute myocardial infarction (MI). Heart failure causes severe, debilitating symptoms, high rates of mortality, frequent long hospitalisations, and costs the NHS £2 billion per year (2% of the total NHS budget). Coronary artery disease (CAD) is the most common cause of heart failure, responsible for 52% of cases in patients under 75 years of age, and is the primary cause of heart failure with reduced ejection fraction (HFrEF).

In the UK, over 20,000 people per year with ischaemic left ventricular dysfunction (iLSVD) and CAD undergo revascularisation with coronary artery bypass grafting (CABG) or percutaneous angioplasty and stents (PCI). However, the choice of revascularisation strategy in heart failure is not guided by high quality evidence because most randomised controlled trials (RCTs) comparing effectiveness of CABG versus PCI included small numbers (1%-7%) of people with iLSVD. The evidence from these trials may not be generalisable to people with heart failure; observational analyses suggest that the risks and benefits for CABG and PCI are different in people with - versus people without heart failure.

No RCT has compared the effectiveness of PCI and CABG in people with iLSVD. The represents an important unmet need in a high risk population that experiences all-cause mortality rates of

up to 30% at 5 years.
BCIS4 will compare PCI versus CABG for the revascularisation of patients with iLSVD (defined as LV ejection fraction (LVEF) <40% and multi-vessel coronary artery disease) who are deemed to derive clinical benefit from revascularisation.
The main hypothesis is that CABG is superior to PCI for the primary outcome all-cause death and cardiovascular hospitalisation with a minimum follow up of four years post randomisation.
An internal pilot will test design assumptions around recruitment at 12 months.
A health economic analysis will determine cost effectiveness.
The trial will contribute to data to the international STICH 3 analysis that will evaluate the comparative effectiveness of CABG versus PCI in iLSVD for the outcome all-cause mortality.

Who can participate?
Males and females over 18 years.
LVEF <40% quantified by a recognised assessment of LVEF within the last 12 months
If a MI has occurred within 12 months post MI-imaging is required with LVEF <40%.
Significant amount of myocardium at risk, defined as coronary artery disease with BCIS myocardial jeopardy score >6 on recent (<6 months) coronary angiogram.

What does the study involve?
Once consent has been obtained the participant will be randomised on a 1:1 ratio to either revascularisation by Percutaneous Angioplasty and Stents (PCI) or revascularisation by Coronary Artery Bypass Grafting (CABG).
Participants will be asked to attend hospital twice (including for the intervention). Three months after the intervention a review of medication will take place along with four trial questionnaire. After six months and every six months up to four years two the participants will be asked to complete two trial questionnaires related to quality of life and access to healthcare. The review of medication and questionnaires will be performed using either ResearchApp™ of Healthbit® (smartphone app) or over the telephone with the research team.

What are the possible benefits and risks of participating?
There are no guaranteed direct benefits to taking part in the trial. The participant's condition may remain the same, improve or worsen. However, given that the research team will be in touch with the participants regularly, they may receive more regular care compared to someone who is not taking part.
Both PCI and CABG are standard of care and taking part in this trial presents no added risk to that which a patient would experience being treated outside of the trial. As we do not know whether it is better for patients to received PCI or CABG, we do not know for sure if there are any disadvantages.
CABG is a major undertaking which carries a higher risk and requires a longer recovery period and may not be suitable for everyone. However, in people without iLSVD, CABG reduces the rate of death and repeat heart attacks in the long-term compared to stenting.
PCI is minimally invasive, and a simpler procedure with fewer risks, and a quicker recovery. However, the long-term results of stents are often not as good and over time it may become necessary to repeat the procedure.

Where is the study run from?
Leicester Clinical Trials Unit (UK)

When is the study starting and how long is it expected to run?
April 2024 to March 2032

Who is funding the study?
Trial's existence confirmed by the National Institute for Health and Care Research (NIHR) (UK).

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number
329409

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
CPMS 61658, NIHR155123, IRAS 329409

Study information

Scientific Title
A multicentre randomised trial of surgical versus percutaneous revascularisation of ischaemic left ventricular dysfunction (iLVSD) in the United Kingdom, with embedded internal pilot and health economic analysis

Acronym
STICH3-BCIS4

Study objectives
Coronary artery bypass grafting (CABG) is superior to percutaneous angioplasty and stents (PCI) in people with ischaemic left ventricular dysfunction (iLVSD)

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 19/04/2024, London – Queen Square Research Ethics Committee (HRA NRES Centre Bristol, 3rd floor, block B, Whitefriars, Lewins Mead, Bristol, BS1 2NT, United Kingdom; +44 207 104 8284; queensquare.rec@hra.nhs.uk), ref: 24/LO/0246

Study design
Interventional randomized controlled trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Treatment

Participant information sheet
See outputs table

Health condition(s) or problem(s) studied
Heart failure

Interventions
Following baseline assessment participants will be chosen at random (randomised by a computer randomisation system, 1:1 method) to undergo revascularisation either via percutaneous angioplasty and stents (a procedure where the blockages are ballooned and then stented with a small wire mesh tube through a small incision in the wrist or groin) or coronary artery bypass grafting (an open-heart operation where healthy blood vessels from inside the chest, leg or arm are used to “bypass” the blockages, like a detour). We will then look at what happened to these people for a median of five years. We will compare the number of hospitalisations, complications and deaths between those who had percutaneous angioplasty and stents and coronary artery bypass grafting. We will check people's quality of life regularly, patient's productivity loss and record healthcare resource use.

Intervention Type
Procedure/Surgery

Primary outcome measure

Survival time from all-cause mortality and cardiovascular hospitalisation measured using patient records

Secondary outcome measures
Measured using patient records unless noted otherwise:
1. Overall survival time (all-cause)
2. Cardiovascular survival time
3. Time to first cardiovascular hospitalisation
4. Time to first heart failure hospitalisation
5. Time to first non-procedural myocardial infarction
6. Time to first revascularisation following assigned treatment with PCI or CABG
7. Time to stroke
8. Days Alive and Out of Hospital at 90-and 365-days
9. The number of total (first and recurrent) cardiovascular hospitalisations and heart failure hospitalisations
10. Kansas City Cardiomyopathy Questionnaire (KCCQ) at baseline, discharge, 3 months, 6 months
and then every 6 months until end of trial follow-up
11. Seattle Angina Questionnaire-7 (SAQ-7) at baseline, discharge, 3 months, 6 months, and then every 6 months until end of trial follow-up
12. Quality of life measured by the EQ-5D-5L questionnaire at baseline, 3 months, 6 months and annually until end of trial follow-up

Overall study start date
19/04/2024

Completion date
01/03/2032

Eligibility

Key inclusion criteria
1. Age >18 years
2. LVEF <40% (quantified by any recognised imaging modality) within the last 12 months. If the patient has had an MI within the last 12 months post-MI imaging is required with LVEF <40%
3. Significant amount of myocardium at risk defined as coronary artery disease with BCIS myocardial jeopardy score >6 on recent (<6 months) coronary angiogram
4. Signed informed consent

Participant type(s)
Patient

Age group
Adult

Lower age limit
18 Years

Sex

Both

Target number of participants
Planned Sample Size: 630; UK Sample Size: 630

Key exclusion criteria
1. Decompensated heart failure requiring inotropic support, invasive or non-invasive ventilation or mechanical circulatory support less than 48 hours prior to randomisation
2. ST Elevation Myocardial Infarction (STEMI) <72 hours
3. Valvular heart disease or any other cardiac conditions (e.g., LV aneurysm) requiring surgery
4. Pregnancy
5. Individuals who have declined access to Hospital Episode Statistics for research purposes
6. An inability to understand the languages in which the trial materials are provided

Date of first enrolment
01/06/2024

Date of final enrolment
01/03/2032

Locations

Countries of recruitment
England

Northern Ireland

Scotland

United Kingdom

Study participating centre
NHS National Waiting Times Centre Board
Agamemnon Street
Clydebank
United Kingdom
G81 4DY

Study participating centre
University Hospitals of Leicester NHS Trust
Leicester Royal Infirmary
Infirmary Square
Leicester
United Kingdom
LE1 5WW

Study participating centre
University Hospitals Sussex NHS Foundation Trust
Worthing Hospital
Lyndhurst Road
Worthing
United Kingdom
BN11 2DH

Study participating centre
Lothian
Waverleygate
2-4 Waterloo PLACE
Edinburgh
City of Edinburgh
United Kingdom
EH1 3EG

Study participating centre
South Tees Hospitals NHS Foundation Trust
James Cook University Hospital
Marton Road
Middlesbrough
United Kingdom
TS4 3BW

Study participating centre
Guy's and St Thomas' NHS Foundation Trust
St Thomas' Hospital
Westminster Bridge Road
London
United Kingdom
SE1 7EH

Study participating centre
Hull University Teaching Hospitals NHS Trust
Hull Royal Infirmary
Anlaby Road
Hull
United Kingdom
HU3 2JZ

Study participating centre
Blackpool Teaching Hospitals NHS Foundation Trust
Victoria Hospital
Whinney Heys Road
Blackpool
United Kingdom
FY3 8NR

Study participating centre
Nottingham University Hospitals NHS Trust
Trust Headquarters
Queens Medical Centre
Derby Road
Nottingham
United Kingdom
NG7 2UH

Study participating centre
Oxford University Hospitals NHS Foundation Trust
John Radcliffe Hospital
Headley Way
Headington
Oxford
United Kingdom
OX3 9DU

Study participating centre
Royal Papworth Hospital NHS Foundation Trust
Papworth Road
Cambridge Biomedical Campus
Cambridge
United Kingdom
CB2 0AY

Study participating centre
Manchester University NHS Foundation Trust
Cobbett House
Oxford Road
Manchester
United Kingdom
M13 9WL

Study participating centre
Liverpool Heart and Chest Hospital NHS Foundation Trust
Thomas Drive
Liverpool
United Kingdom
L14 3PE

Study participating centre
Imperial College Health Centre
40 Princes Gardens
London
United Kingdom
SW7 1LY

Study participating centre
University Hospitals of North Midlands NHS Trust
Newcastle Road
Stoke-on-trent
United Kingdom
ST4 6QG

Study participating centre
University Hospitals Bristol and Weston NHS Foundation Trust
Trust Headquarters
Marlborough Street
Bristol
United Kingdom
BS1 3NU

Study participating centre
University Hospitals Dorset NHS Foundation Trust
Management Offices
Poole Hospital
Longfleet Road
Poole
United Kingdom
BH15 2JB

Study participating centre

The Newcastle upon Tyne Hospitals NHS Foundation Trust
Freeman Hospital
Freeman Road
High Heaton
Newcastle upon Tyne
United Kingdom
NE7 7DN

Study participating centre
Sheffield Teaching Hospitals NHS Foundation Trust
Northern General Hospital
Herries Road
Sheffield
United Kingdom
S5 7AU

Study participating centre
Belfast Health and Social Care Trust
Trust Headquarters
A Floor - Belfast City Hospital
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United Kingdom
BT9 7AB

Study participating centre
University Hospitals Birmingham NHS Foundation Trust
Queen Elizabeth Hospital
Mindelsohn Way
Edgbaston
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B15 2GW

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G71 8BB

Study participating centre
University Hospital Southampton NHS Foundation Trust
Southampton General Hospital
Tremona Road
Southampton
United Kingdom
SO16 6YD

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

Study participating centre
Barts Health NHS Trust
The Royal London Hospital
80 Newark Street
London
United Kingdom
E1 2ES

Study participating centre
Kings College Hospital
Mapother House
De Crespigny Park
Denmark Hill
London
United Kingdom
SE5 8AB

Study participating centre
St George's University Hospitals NHS Foundation Trust
St Georges Hospital
London
United Kingdom
SW17 0QT

Study participating centre
University Hospitals Plymouth NHS Trust
Derriford Hospital
Derriford Road
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PL6 8DH

Study participating centre
Mid and South Essex NHS Foundation Trust
Prittlewell Chase
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SS0 0RY

Sponsor information

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Sponsor type
University/education

Website
http://www.le.ac.uk/

ROR
https://ror.org/04h699437

Funder(s)

Funder type
Government

Funder Name
NIHR Evaluation, Trials and Studies Co-ordinating Centre (NETSCC)

Results and Publications

Publication and dissemination plan
A detailed study protocol will be published before the start of pooled analysis in a peer reviewed journal. The findings will be disseminated by usual academic channels (i.e., presentation at international meetings as well as by peer-reviewed publications) and through patient organisations and newsletters to patients, where available. The anonymised trial data will be made available to other researchers in ethically approved studies after the publications of the main trial findings.

Intention to publish date
01/03/2033

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are not expected to be made available due to us not seeking consent for this from the trial participants.

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	version 1.1	10/04/2024	30/05/2024	No	Yes