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Early aortic repair in patients needing endovascular/open surgery for type B aortic dissection (EARNEST)

Submission date
30/01/2025

Recruitment status
Recruiting

Registration date
04/02/2025

Overall study status
Ongoing

Last Edited
16/11/2026

Condition category
Surgery

[X] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol

Background and study aims
Uncomplicated Type B Aortic Dissection (uTBAD) is a serious condition where the inner layer of the aorta tears, which can lead to long-term complications like aneurysms, aortic rupture, or further dissection. The standard treatment focuses on managing blood pressure, but some patients still face life-threatening issues over time. Thoracic Endovascular Aortic Repair (TEVAR) is a minimally invasive procedure that uses a stent to reinforce the aorta, potentially reducing these risks. The EARNEST trial aims to find out if early TEVAR, done within three months of the initial dissection, improves patient outcomes compared to standard medical management alone.

Who can participate?
Patients with uTBAD who are 5 days to 3 months post-hospital admission for the initial event may be eligible to participate. Participants must be at least 18 years old, have a life expectancy of at least 2 years, and not require high-dependency or critical care treatment. They must also not have received opiate analgesia or similar sedative medication that may impair consciousness or decision-making for at least 48 hours prior to enrolment, and must be willing and able to provide written informed consent.

What does the study involve?
This is a randomised controlled trial, meaning participants are randomly assigned to one of two groups by a computer. One group will receive a stent (TEVAR), while the other will receive standard care. All participants will receive standard UK care, including blood pressure monitoring and medication as needed. Those in the stented group will have the procedure between 5 days and 3 months after dissection. Follow-up visits will occur at 6 weeks, 6 months, and annually, with health assessments and questionnaires. Regular CT or MRI scans will monitor the aorta and any stents.

What are the possible benefits and risks of participating?
Participating in this trial may offer potential benefits, such as better overall outcomes from early

TEVAR, though this cannot be guaranteed. The study aims to improve treatment for all patients with dissection in the future. Participants will have regular health check-ups and imaging, and any incidental findings will be reported to their GP.

Risks include procedural risks from TEVAR, such as bleeding, artery narrowing, wound infections, heart attack, pneumonia, blood clots, and reduced blood supply leading to stroke or other issues. Serious complications are rare, but they can occur. Both CT scans and TEVAR use ionising radiation, which carries a very small increased lifetime cancer risk.

Where is the study run from?
The study is run from Imperial College London (UK).

When is the study starting and how long is it expected to run for?
September 2024 to February 2034.

Who is funding the study?
NIHR HTA Programme (UK)

Who is the main contact?
Please contact the EARNEST study team at earnest@imperial.ac.uk.

Contact information

Type(s)
Scientific, Principal investigator

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Public

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Additional identifiers

Integrated Research Application System (IRAS)
327350

Central Portfolio Management System (CPMS)
66215

Study information

Scientific Title
Early Aortic Repair in patients Needing Endovascular/open Surgery for Type B Aortic Dissection (EARNEST): A randomised trial to assess the clinical and cost-effectiveness of thoracic endovascular aortic repair in the subacute phase after uncomplicated type B aortic dissection.

Acronym
EARNEST

Study objectives
To determine whether early TEVAR in addition to BMT and surveillance compared to BMT and surveillance decreases the composite outcome of aortic-related mortality, severe permanent neurological deficit, or severe permanent cardiorespiratory failure over five years.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 13/02/2025, Solihull Research Ethics Committee (Equinox House, City Link, East Midlands REC Centre, Birmingham, NG2 4LA, United Kingdom; +44 207 1048191; solihull.rec@hra.nhs.uk), ref: 25/WM/0005

Primary study design
Interventional

Study design
Parallel arm multicenter open label superiority randomized controlled trial

Study type(s)
Efficacy, Quality of life, Safety, Treatment

Health condition(s) or problem(s) studied
Uncomplicated type B aortic dissection

Interventions
Study Design and Randomisation
EARNEST is a multicentre, open-label, superiority randomised controlled trial (RCT) designed to assess the effectiveness of early intervention with Thoracic Endovascular Aortic Repair (TEVAR) combined with Best Medical Therapy (BMT) and Surveillance (SURV) compared to BMT and SURV alone in patients with uncomplicated Type B Aortic Dissection (uTBAD). Participants are

allocated in a 1:1 ratio to one of the two study arms using a minimisation algorithm, which ensures balance across key prognostic factors (centre, age, and sex). Randomisation is conducted using a validated web-based system, Sealed Envelope.
Blinding is not possible due to the nature of the intervention; however, endpoint adjudication will be carried out by an independent expert panel

• Study Arms
1. TEVAR + BMT + SURV Group (Intervention Arm)
• Treatment: Participants undergo Thoracic Endovascular Aortic Repair (TEVAR) within 3 months of the index uTBAD event. TEVAR is performed at 25 specialist vascular centres across the UK.
• Follow-up Duration: Minimum of 5 years post-enrolment.
• Surveillance & Assessments:
o CT/MRI at 6 weeks , 12 months, 1, 2, 3, 4, 5 years
o Follow-ups at 6 weeks, 6 months, 1 year, and annually up to 5 years.

2. BMT + SURV Group (Control Arm)
• Treatment: Participants receive Best Medical Therapy (BMT) and clinical surveillance without TEVAR, unless clinically indicated per existing guidelines.
• Follow-up Duration: Minimum of 5 years post-enrolment.
• Surveillance & Assessments:
o CT/MRI at 6 weeks , 12 months, 1, 2, 3, 4, 5 years
o Follow-ups at 6 weeks, 6 months, 1 year, and annually up to 5 years.
o Late TEVAR intervention is permitted only if clinically necessary.

Randomisation Process
• 470 participants will be randomised 1:1 using a minimisation algorithm with a random component.
• The algorithm is stratified by age, sex, and centre to ensure balance across the study arms.
• Randomisation is conducted via a web-based system (Sealed Envelope).

Intervention Type
Procedure/Surgery

Primary outcome(s)
Time to first of aortic-related mortality AND/OR severe permanent neurological deficit AND/OR severe permanent cardiorespiratory failure measured using patient records throughout follow up from randomisation until the first composite event. Patients censored if there is a competing event (non-aortic-related death, patient withdrawal or end of the study). Reported when all patients are five years after randomisation

Key secondary outcome(s)
1. Aortic-related mortality is measured using patient records at one year for the TEVAR group and five years after randomisation for all patients
2. All-cause mortality is measured using patient records at one year for the TEVAR group and five years after randomisation for all patients
3. Complications including stroke, paraplegia, and cardiorespiratory failure are measured using patient records throughout follow up and reported at one year for the TEVAR group and five years after randomisation for all patients
4. Reinterventions are measured using patient records throughout follow up and reported at one and five years after randomisation
5. Quality of Life (QoL) is measured using EQ-5D-5L questionnaires at baseline, 6 weeks, 6

months, 12 months, and then annually from randomisation until the end of follow up
6. Aortic remodelling is measured using CT/MRI scans assessed using a specific CT analysis protocol from the core lab at one year after TEVAR in the intervention group and at five years
7. Costs are measured using health resource use and cost data at 6 weeks, 6 months, 12 months, and then annually from randomisation and analysed at 5 years
8. Cost-effectiveness is measured using health resource use and cost data at 6 weeks, 6 months, 12 months, and then annually from randomisation and analysed at 5 years
9. Controlled blood pressure is measured using blood pressure recordings at baseline, 6 weeks, 6 months, 12 months, and then annually from randomisation until the end of follow up and analysed at 5 years

Completion date
01/02/2034

Eligibility

Key inclusion criteria
Current inclusion criteria as of 06/10/2026:
1.Patients with uTBAD, 5 days-3 months after the day of admission with acute uTBAD to hospital (defined as day 1, the date of the index event)
2. Age ≥18 years
3. Life expectancy ≥2 years
4. Not requiring high dependency/critical care treatment and not receiving opiate analgesia or similar sedatives impairing consciousness or decision making for at least 48 hours before enrolment

Previous inclusion criteria:
1. Patients with uTBAD, 10 days-3 months after the day of admission with acute uTBAD to hospital (the date of the index event)
2. Age ≥18 years
3. Life expectancy ≥2 years

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
100 Years

Sex
All

Total final enrolment
0

Key exclusion criteria
Current exclusion criteria as of 06/10/2026:
1. Complicated TBAD (ruptured aorta, aortic dilatation >5 cm or visceral/limb/spinal malperfusion requiring urgent/emergency TEVAR, persistent pain secondary to the dissection requiring intervention or uncontrolled BP)
2. Previous TBAD
3. Type A dissection with distal residual dissection
4. Intramural haematoma alone
5. Dissection secondary to traumatic blunt aortic injury
6. Pre-existing aorto-iliac aneurysms greater than 4.5 cm in size
7. Requiring carotid/innominate artery

Previous exclusion criteria:
1. Complicated TBAD (ruptured aorta, aortic dilatation >5 cm or visceral/limb/spinal malperfusion, persistent pain or uncontrolled BP)
2. Previous TBAD
3. Type A dissection
4. At significant risk from complications (either from condition related to the dissection or not – rephrase) during TEVAR

Date of first enrolment
14/04/2025

Date of final enrolment
01/09/2029

Locations

Countries of recruitment
United Kingdom

England

Northern Ireland

Study participating centre
Imperial College Healthcare NHS Trust
The Bays
St Marys Hospital
South Wharf Road
London
England
W2 1BL

Study participating centre
Royal Brompton Hospital
Sydney Street
London
England
SW3 6NP

Study participating centre
The Newcastle upon Tyne Hospitals NHS Foundation Trust
Freeman Hospital
Freeman Road
High Heaton
Newcastle upon Tyne
England
NE7 7DN

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

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

Study participating centre
Barts and the London NHS Trust
Alexandra House
The Royal London Hospital
Whitechapel
London
England
E1 1BB

Study participating centre

Belfast Health and Social Care Trust
Trust Headquarters
A Floor - Belfast City Hospital
Lisburn Road
Belfast
Northern Ireland
BT9 7AB

Study participating centre
Cambridge University Hospitals NHS Foundation Trust - Oxford Covid19 Trials
Nihr Cambridge Clinical Research
Cambridge Biomedical Campus
Hills Road
Cambridge
England
CB2 0QQ

Study participating centre
The Guys and St Thomas' NHS Trust
Guys Hospital
St Thomas Street
London
England
SE1 9RT

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

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

Study participating centre
Liverpool University Hospitals NHS Foundation Trust
Royal Liverpool University Hospital
Prescot Street
Liverpool
England
L7 8XP

Study participating centre
Manchester University Hospital NHS Ft (hq)
Oxford Road
Manchester
England
M13 9WL

Study participating centre
Basildon and Thurrock University Hospitals NHS Foundation Trust
Basildon Hospital
Nethermayne
Basildon
England
SS16 5NL

Study participating centre
Norwich
Norfolk & Norwich University Hosp'
Colney Lane
Colney
Norwich
England
NR4 7UY

Study participating centre
Nottingham University Hospitals NHS Trust - Queen's Medical Centre Campus
Nottingham University Hospital
Derby Road
Nottingham
England
NG7 2UH

Study participating centre

Oxford University Hospitals NHS Trust
Churchill Hospital
Old Road
Headington
Oxford
England
OX3 7LE

Study participating centre
Royal Free London NHS Foundation Trust
Royal Free Hospital
Pond Street
London
England
NW3 2QG

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

Study participating centre
North Bristol NHS Trust
Southmead Hospital
Southmead Road
Westbury-on-trym
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BS10 5NB

Study participating centre
University Hospitals Coventry and Warwickshire NHS Trust
Walsgrave General Hospital
Clifford Bridge Road
Coventry
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CV2 2DX

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

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

Sponsor information

Organisation
Imperial College London

ROR
https://ror.org/041kmwe10

Funder(s)

Funder type
Government

Funder Name
Health Technology Assessment Programme

Alternative Name(s)
NIHR Health Technology Assessment Programme, Health Technology Assessment (HTA), HTA

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
All data generated or analysed during this study will be included in the subsequent results publication

IPD sharing plan summary
Published as a supplement to the results publication

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	version 2.3	25/02/2026	06/10/2026	No	Yes
Protocol (other)	V5.0	20/07/2026	16/11/2026	No	No
Study website		11/11/2025	11/11/2025	No	Yes