Non-CTIMP Study Protocol

Do patient information animations enhance patient understanding compared to patient information leaflets alone for a clinical trial investigating CT coronary angiography to guide treatment of heart attack (myocardial infarction)?

Co-Sponsors	The University of Edinburgh and Lothian Health Board ACCORD Usher Building The University of Edinburgh 5-7 Little France Road Edinburgh BioQuarter- Gate 3 Edinburgh EH16 4UX
Protocol authors	Dr Peter Henriksen, Consultant Cardiologist, Edinburgh Heart Centre Dr Amy Ferry, Senior Research Nurse, Centre for Cardiovascular Science, University of Edinburgh Dr Marcus Kam, Resident Doctor, NHS Lothian Dr Reagan Lee, Resident Doctor, NHS Lothian
Funder	N/A
Chief Investigator	Dr Peter Henriksen
Sponsor number	AC25113
REC Number	
Version Number and Date	V1.0 (17 Nov 2025)

CONTENTS

LIST OF ABBREVIATIONS

ACCORD	Academic and Clinical Central Office for Research & Development - Joint office for The University of Edinburgh and Lothian Health Board
ACS	Acute coronary syndrome
CI	Chief Investigator
CRF	Case Report Form
CTCA	CT coronary angiogram
GCP	Good Clinical Practice
ICH	International Conference on Harmonisation
MI	Myocardial Infarction
NSTEMI	non-ST elevation myocardial infarction
NICE	National Institute for Clinical Excellence
PI	Principal Investigator
PIL	Patient information leaflet
QA	Quality Assurance
REC	Research Ethics Committee
SOP	Standard Operating Procedure

1 INTRODUCTION

1.1 BACKGROUND

There is a treatment delay to access invasive coronary angiography for patients with myocardial infarction (MI) admitted to UK hospitals without invasive cardiac facilities: Chest pain is a common reason for hospital admission in the UK, with 120,000 patients presenting with acute coronary syndromes each year. Clinical guidelines recommend routine early (inpatient) invasive coronary angiography in patients presenting with non-ST elevation acute myocardial infarction (NSTEMI) who are considered at risk of future recurrent MI and death.[1] NICE guidance recommends early invasive coronary angiography within 3 days of admission.[1] The UK National Cardiac Audit Programme indicates that only 56% of eligible patients meet this target.[2] Completing transfer to a cardiac centre for invasive coronary angiography within 3 days is not feasible for most UK patients presenting to hospitals lacking invasive facilities. In preliminary work, we recorded an average 5-day delay from admission to invasive coronary angiography for 4700 patients with NSTEMI referred to the South-east Scotland regional cardiac centre between 2019 and 2024.[3] Delayed invasive coronary angiography has doubtful clinical benefit, is associated with substantial healthcare costs and results in a negative patient experience. Many patients with NSTEMI-ACS referred for invasive coronary angiography do not receive or require coronary revascularisation.[4,5]

Set against this background we are planning a UK multi-centre study examining the use of CT coronary angiography (CTCA) to guide treatment of patients with NSTEMI. CTCA can be used safely in patients with NSTEMI and acute chest pain. It reduces rates of invasive coronary angiography and may improve clinical outcomes in patients at high risk of further events.[4-7] As part of patient engagement and research method design for the trial we wish to understand whether patients would be prepared to participate in the research, whether there are patient concerns or fears about the protocol and whether an animation explaining the research can improve understanding of what is involved. Patient involvement is an essential part of clinical trial design. It improves study protocol design, helping researchers to focus on what matters to patients. Major funding bodies expect researchers to have completed and to include patient involvement work in funding applications.

1.2 RATIONALE FOR STUDY

This study is part of patient engagement and involvement in the planning of an application for a multicentre UK trial comparing CTCA guided management of patients with NSTEMI with standard care. The study will involve asking patients admitted to hospital for treatment of NSTEMI to read a patient information leaflet (PIL) describing the study. Half of participating patients (group 2) will be asked to view an additional 6 minute animation explaining the proposed research. After reading the written PIL and viewing the animation, participants will be asked to complete a basic questionnaire. This will collect basic anonymised demographics and will be designed to test their understanding of the treatment pathway and proposed research, whether they would be prepared to take part in the research and whether addition of the animation has helped their understanding and preparedness to take part.

2 STUDY OBJECTIVES

2.1 OBJECTIVES

2.1.1 Primary Objective

1. To understand whether use of an animation explaining the trial helps patient understanding of what the study is trying to do and increases preparedness to take part.

2.1.2 Secondary Objectives

1. To understand whether patients admitted to hospital with a heart attack would be willing to take part in a study using CTCA to facilitate early discharge and guide treatment decisions and care.

2.2 ENDPOINTS

2.2.1 Primary Endpoint

1. Between group difference in questionnaire scores on participant understanding of standard NSTEMI-ACS treatment pathway and study treatment pathway using CTCA

2.2.2 Secondary Endpoints

1. Between group difference in whether patients are prepared to participate in the proposed research.
2. Qualitative assessment of patient concerns and comments on the study proposal

3 STUDY DESIGN

Patients admitted to hospital and commenced on treatment for NSTEMI will be invited to participate if invasive coronary angiography is being considered as part of their treatment. Patients agreeing to participate at each hospital will be allocated the patient information leaflet (Group 1) or the patient information leaflet and animation explaining the research (Group 2). The animation will be available as a link or QR code that can be accessed on the patient's phone through hospital wifi or mobile network. It may also be viewed on an iPad or smart phone supplied by the investigator.

After reading the patient information leaflet and reviewing the animation (Group 2 only) participants will be asked to complete a short questionnaire (CTCA Study questionnaire v1). This will collect basic demographic information, explore willingness to participate in a future study of CTCA guided treatment and explore any concerns about the research proposal. The questionnaire will also examine the participant's understanding of the standard care and proposed research study treatment pathways. It is thought that reading the patient information leaflet will take no more than 15 minutes. The patient animation is 6 minutes. After reading the PIL and viewing the animation, the PIL will be removed and participants will be given a questionnaire. The questionnaire involves predominant non-text Likert scale responses with 2 optional free text questions and should take no longer than 15 minutes to complete. The participant will be encouraged to complete the questionnaire directly and the anonymised questionnaire will be collected for analysis (study end).

4 STUDY POPULATION

4.1 NUMBER OF PARTICIPANTS

The aim is to involve patients admitted to hospitals in participating sites throughout the UK that will enhance access to diverse populations including Edinburgh Heart Centre, NHS Lothian, Barts Heart Centre, London, The Queen Elizabeth Hospital in Birmingham, The Golden Jubilee University National Hospital, Clydebank and The Freeman Hospital, Newcastle. The aim is to recruit a minimum of 88 patients across all sites over 12 months.

4.2 INCLUSION CRITERIA

Age ≥ 16 years

Patients must have the ability to provide informed consent.

Patients admitted to hospital with a diagnosis of NSTEMI and scheduled for invasive coronary angiography

4.3 EXCLUSION CRITERIA

Patients with NSTEMI who are considered unsuitable or too frail for invasive coronary angiography

Unable to give consent owing to capacity or cognitive impairment

Unable to read English

5 PARTICIPANT SELECTION AND ENROLMENT

5.1 IDENTIFYING PARTICIPANTS

The investigator team will comprise members of the patient's clinical care team including medical students attached to the ward. Patients will be approached by members of the investigator team who are considered part of the clinical care team and invited to take part. They will use electronic records to identify patients who have been admitted to hospital for treatment and planned invasive investigation of NSTEMI.

5.2 CONSENTING PARTICIPANTS

Participants will be given at least 15 minutes and up to one hour if the patient prefers, to read the PIL and consider taking part in the study which involves reading a mock Study PIL and reviewing the animation prior to answering a short anonymised questionnaire. A member of the investigator team (section 5.1) will be available to take consent. Consent will be obtained through hardcopy paper forms.

5.2.1 Withdrawal of Study Participants

Participants are free to withdraw from the study at any point or a participant can be withdrawn by the Investigator and without giving a reason. Withdrawing from the study will not affect the healthcare participants receive, or their legal rights. The participant will have the option of withdrawal from:

(i) all aspects of the study but continued use of data collected up to that point. To safeguard rights, the minimum personally-identifiable information possible will be collected.

(ii) all aspects of the trial including data collected up to that point where it is possible to delete this data e.g. this data will not be used in the final data analysis. To safeguard rights, the minimum personally identifiable information possible will be retained e.g. consent form.

STUDY ASSESSMENTS

5.3 STUDY ASSESSMENTS

Screening

1. Admission list on medical admission unit and cardiology ward reviewed by the investigator team who are also members of the clinical care team to identify participants
2. NSTEMI diagnosis confirmed and invasive coronary angiography planned.
3. Potential participants approached and given PIL by investigator team.
4. Participant is asked if they wish to participate in study

Review of Study PIL and patient information animation

1. Participants will be allocated sequentially on each site to either the Study PIL alone (Group 1- odd numbers) or the Study PIL and patient information animation (Group 2- even numbers).
2. After about 15 minutes with the PIL, participants in Group 1 will be offered the opportunity to complete the study questionnaire. If they require more time with the PIL, this can be offered and agreed with the investigator up to a period of 24 hours.
3. After reading the PIL and immediately prior to completing the study questionnaire, participants in group 2 will be allowed to view the patient information animation. Group 2 participants may review the animation repeatedly if they wish.

Study questionnaire

1. Participants in group 1 and 2 will have the PIL and animation removed prior to answering the anonymised study questionnaire. Patients who have accessed the animation through a weblink will be asked not to refer to it when completing the questionnaire.
2. After about 30 minutes the paper study questionnaire will be collected by the investigator team.

6 DATA COLLECTION

Each participant will be given a study number comprising the site they were recruited and their place in the recruitment sequence for that site. For example, within NHS Lothian, prefixes 01, 02, 03 will be Royal Infirmary of Edinburgh, Western General Hospital and St John's Hospital. Study number 037 will be the 7th participant recruited

at St John's Hospital and allocated to PIL and patient animation (7 being an odd number).

Only pseudonymised data will be recorded on trial paperwork. The questionnaire is anonymised. The investigator team will record the questionnaire responses on an Excel spreadsheet held on the secure hospital server.

6.1 Source Data Documentation

Consent forms and questionnaire hard copies will be collected. There will be an anonymised screening log and that data from the questionnaire will be anonymised.

6.2 Case Report Forms

This research will not use CRFs. The anonymised paper questionnaire responses will be recorded on an Excel spreadsheet. The questionnaire will then be destroyed.

7 DATA MANAGEMENT

7.1 Personal Data

Anonymised basic demographic data will be recorded.

7.2 Data Storage

Personal data will be collected through hard copy consent forms and this will be stored in a locked storage compartment in the hospital, Excel spreadsheets containing anonymised participant responses will be kept on the secure hospital server.

7.3 Data Retention

We will retain data for 1 year before all sources are destroyed or electronically deleted.

7.4 Disposal of Data

Hardcopy consent forms and questionnaires will be physically destroyed. Electronic data from spreadsheets will be deleted.

7.5 External Transfer of Data

Data collected or generated by the study (including personal data) will not be transferred to any external individuals or organisations outside of the Sponsoring organisation(s). Following completion of recruitment, data from each participating centre will be uploaded via secure email by the study team for analysis.

7.6 Data Controller

A data controller is an organisation that determines the purposes for which, and the manner in which, any personal data is processed.

The University of Edinburgh and NHS Lothian are joint data controllers along with any other entities involved in delivering the study that may be a data controller in accordance with applicable laws (e.g. the site).

7.7 Data Breaches

Any data breaches will be reported to the University of Edinburgh (dpo@ed.ac.uk) and NHS Lothian (Lothian.DPO@nhslothian.scot.nhs.uk) Data Protection Officers who will onward report to the relevant authority according to the appropriate timelines if required.

8 STATISTICS AND DATA ANALYSIS

8.1 SAMPLE SIZE CALCULATION

We will allocate a minimum of 44 participants per group to detect a difference of 3 points between groups on the participant's understanding and knowledge score (maximum score 30, standard deviation 5) at 90% power, p=0.05. This will represent a minimum recruitment target of 88 participants.

8.2 PROPOSED ANALYSES

The primary analysis will be participant understanding and knowledge score between groups. This will be an intention-to-treat, and the impact of the patient animation video will be expressed by a point estimate and its 95% confidence interval.

Between group difference in whether patients are prepared to participate in the proposed research will also be reported.

9 OVERSIGHT ARRANGEMENTS

9.1 INSPECTION OF RECORDS

Investigators and institutions involved in the study will permit study related monitoring and audits on behalf of the Sponsor, REC review, and regulatory inspection(s). In the event of audit or monitoring, the Investigator agrees to allow the representatives of the Sponsor direct access to all study records and source documentation. In the event of regulatory inspection, the Investigator agrees to allow inspectors direct access to all study records and source documentation.

9.2 STUDY MONITORING AND AUDIT

The ACCORD Sponsor Representative will assess the study to determine if a study specific risk assessment is required.

If required, a study specific risk assessment will be performed by representatives of the Sponsor(s), ACCORD monitors and the QA group, in accordance with ACCORD governance and sponsorship SOPs. Input will be sought from the Chief Investigator or designee. The outcomes of the risk assessment will form the basis of the monitoring plans and audit plans.

If considered necessary, ACCORD clinical trial monitors, or designees, will perform monitoring activities in accordance with the study monitoring plan. This will involve on-site visits and remote monitoring activities as necessary. ACCORD QA personnel, or designees, will perform study audits in accordance with the study audit plan. This will involve investigator site audits, study management audits and facility (including 3rd parties) audits as necessary (delete where not required).

10 GOOD CLINICAL PRACTICE

10.1 ETHICAL CONDUCT

The study will be conducted in accordance with the principles of the International Conference on Harmonisation Tripartite Guideline for Good Clinical Practice (ICH GCP).

Before the study can commence, all necessary approvals will be obtained and any conditions of approvals will be met.

10.2 INVESTIGATOR RESPONSIBILITIES

The Investigator is responsible for the overall conduct of the study at the site and compliance with the protocol and any protocol amendments. In accordance with the principles of ICH GCP, the following areas listed in this section are also the responsibility of the Investigator. Responsibilities may be delegated to an appropriate member of study site staff.

Delegated tasks must be documented on a Delegation Log and signed by all those named on the list prior to undertaking applicable study-related procedures.

10.2.1 Informed Consent

The Investigator is responsible for ensuring informed consent is obtained before any study specific procedures are carried out. The decision of a participant to participate in clinical research is voluntary and should be based on a clear understanding of what is involved.

Participants must receive adequate oral and written information – appropriate Participant Information and Informed Consent Forms will be provided. The oral explanation to the participant will be performed by the Investigator or qualified delegated person, and must cover all the elements specified in the Participant Information Sheet and Consent Form.

The participant must be given every opportunity to clarify any points they do not understand and, if necessary, ask for more information. The participant must be given sufficient time to consider the information provided. It should be emphasised that the participant may withdraw their consent to participate at any time without loss of benefits to which they otherwise would be entitled.

The participant will be informed and agree to their medical records being inspected by regulatory authorities and representatives of the Sponsor(s).

The Investigator or delegated member of the study team and the participant will sign and date the Informed Consent Form(s) to confirm that consent has been obtained. The original will be signed in the Investigator Site File (ISF). The participant will receive a copy of the signed consent form and a copy will be filed in the participant's medical notes.

10.2.2 Study Site Staff

The Investigator must be familiar with the protocol and the study requirements. It is the Investigator's responsibility to ensure that all staff assisting with the study are adequately informed about the protocol and their study related duties.

10.2.3 Data Recording

The Principal Investigator is responsible for the quality of the data recorded in the CRF at each Investigator Site.

10.2.4 Investigator Documentation

The Principal Investigator will ensure that the required documentation is available in local Investigator Site files (ISFs).

10.2.5 GCP Training

All members of the investigator team will be encouraged to undertake online GCP training in order to understand the principles of GCP. This is not a mandatory requirement unless deemed so by the Sponsor.

10.2.6 Data Protection Training

All University of Edinburgh employed researchers and study staff will complete the Data Protection Training through Learn.

NHS Lothian employed researchers and study staff will comply with NHS Lothian mandatory Information Governance Data Protection training through LearnPro.

Non-NHS Lothian staff that have access to NHS Lothian systems will familiarise themselves and abide by all NHS Lothian IT policies, as well as employer policies

10.2.7 Information Security Training

All University of Edinburgh employed researchers, students and study staff will complete the Information Security Essentials modules through Learn and will have read the minimum and required reading setting out ground rules to be complied with.

NHS Lothian employed researchers and study staff will comply with NHS Lothian mandatory Information Governance IT Security training through LearnPro.

Non-NHS Lothian staff that have access to NHS Lothian systems will familiarise themselves and abide by all NHS Lothian IT policies, as well as employer policies

10.2.8 Confidentiality

All laboratory specimens, evaluation forms, reports, and other records must be identified in a manner designed to maintain participant confidentiality. All records must be kept in a secure storage area with limited access. Clinical information will not be released without the written permission of the participant. The Investigator and study site staff involved with this study may not disclose or use for any purpose other than performance of the study, any data, record, or other unpublished information, which is confidential or identifiable, and has been disclosed to those individuals for the purpose of the study. Prior written agreement from the Sponsor or its designee must be obtained for the disclosure of any said confidential information to other parties.

10.2.9 Data Protection

All Investigators and study site staff involved with this study must comply with the requirements of the appropriate data protection legislation (including the General Data Protection Regulation and Data Protection Act) with regard to the collection, storage, processing and disclosure of personal information.

Computers used to collate the data will have limited access measures via user names and passwords.

Published results will not contain any personal data that could allow identification of individual participants.

11 STUDY CONDUCT RESPONSIBILITIES

11.1 PROTOCOL AMENDMENTS

Any changes in research activity, except those necessary to remove an apparent, immediate hazard to the participant in the case of an urgent safety measure, must be reviewed and approved by the Chief Investigator.

Proposed amendments will be submitted to the Sponsor for classification, review and authorisation.

Amendments to the protocol must be submitted in writing to the appropriate REC and local R&D for approval prior to implementation and prior to participants being enrolled into the amended protocol.

11.2 MANAGEMENT OF PROTOCOL NON COMPLIANCE

11.2.1 Protocol Waivers

Prospective protocol deviations, i.e. protocol waivers, will not be approved by the Sponsors and therefore will not be implemented, except where necessary to eliminate an immediate hazard to study

participants. If this necessitates a subsequent protocol amendment, this should be submitted to the REC and local R&D for review and approval if appropriate.

11.2.2 Management of Deviations and Violations

Deviations and violations are non-compliance events discovered after the event has occurred. This questionnaire based study will not be associated with serious breach risks.

SERIOUS BREACH REQUIREMENTS

A serious breach is a breach which is likely to effect to a significant degree:

(a) the safety or physical or mental integrity of the participants of the study; or

(b) the scientific value of the study.

If a potential serious breach is identified by the Chief investigator, Principal Investigator or delegates, the Sponsor(s) (qa@accord.scot) must be notified within 24 hours. It is the responsibility of the Sponsor(s) to assess the impact of the breach on the scientific value of the study, to determine whether the incident constitutes a serious breach and report to research ethics committees as necessary.

11.3 STUDY RECORD RETENTION

All study documentation will be kept for a minimum of 1years from the protocol defined end of study point. When the minimum retention period has elapsed, study documentation will be destroyed with permission from the Sponsor.

11.4 END OF STUDY

The end of study is defined as the last participant's last visit.

The Investigators and/or the Sponsor(s) have the right at any time to terminate the study for clinical or administrative reasons.

The end of the study will be reported to the REC, and R&D Office(s) and Sponsor(s) within 90 days, or 15 days if the study is terminated prematurely. The Investigators will inform participants of the premature study closure and ensure that the appropriate follow up is arranged for all participants involved. End of study notification will be reported to the Sponsor(s) via email to researchgovernance@ed.ac.uk.

A summary report of the study will be provided to the REC within 1 year of the end of the study.

11.5 INSURANCE AND INDEMNITY

The Sponsor(s) are responsible for ensuring proper provision has been made for insurance or indemnity to cover their liability and the liability of the Chief Investigator and staff.

The following arrangements are in place to fulfil the Sponsor(s)' responsibilities:

- The Protocol has been designed by the Chief Investigator and researchers employed by the University and collaborators. The University has insurance in place (which includes no-fault compensation) for negligent harm caused by poor protocol design by the Chief Investigator and researchers employed by the University.
- Sites participating in the study will be liable for clinical negligence and other negligent harm to individuals taking part in the study and covered by the duty of care owed to them by the sites concerned. The Sponsor(s) require individual sites participating in the study to arrange for their own insurance or indemnity in respect of these liabilities.
- Sites which are part of the United Kingdom's National Health Service will have the benefit of NHS Indemnity.

12 AUTHORSHIP POLICY

Ownership of the data arising from this study resides with the study team.

13 REFERENCES

1. NICE. Recommendations | Acute Coronary Syndromes | Guidance | NICE. www.nice.org.uk/guidance/ng185/chapter/Recommendations#nstemi-and-unstable-angina-early-managementAcute coronary syndromes. 2020.

2. National Cardiac Audit Programme. 2023 Annual Report for Patients, Carers and the Public. www.nicor.org.uk/national-cardiac-audit-programme/previous-reports/patient-public-and-carer-reports/106 Accessed online 25 August 2024

3. Kam MHM, Lee R, Ng BZL, Gringas D, Coong J, Moosa B, et al. Delay to ICA for patients with NSTEMI admitted to hospitals without cardiac catheterisation facilities in SE Scotland. Br J Cardiol 2025;32:63–7doi:10.5837/bjc.2025.022

4. Smulders MW, Kietselaer BLJH, Wildberger JE, et al. Initial Imaging-Guided Strategy Versus Routine Care in Patients With Non-ST-Segment Elevation Myocardial Infarction. J Am Coll Cardiol. Nov 19 2019;74(20):2466-2477. doi:10.1016/j.jacc.2019.09.027

5. Linde JJ, Kelbæk H, Hansen TF, et al. Coronary CT Angiography in Patients With Non-ST-Segment Elevation Acute Coronary Syndrome. J Am Coll Cardiol. Feb 11 2020;75(5):453-463. doi:10.1016/j.jacc.2019.12.012

6. Gray AJ, Roobottom C, Smith JE, et al. Early computed tomography coronary angiography in patients with suspected acute coronary syndrome: randomised controlled trial. BMJ. Sep 29 2021;374:n2106. doi:10.1136/bmj.n2106

7. Jones DA, Beirne AM, Kelham M, et al. Computed Tomography Cardiac Angiography Before Invasive Coronary Angiography in Patients With Previous Bypass Surgery: The BYPASS-CTCA Trial. Circulation. Oct 31 2023;148(18):1371-1380. doi:10.1161/CIRCULATIONAHA.123.064465