ISRCTN26635857 https://doi.org/10.1186/ISRCTN26635857

App-based financial incentives to encourage naloxone carriage

Submission date
30/07/2026

Recruitment status
Recruiting

Registration date
17/08/2026

Overall study status
Ongoing

Last Edited
08/10/2026

Condition category
Mental and Behavioural Disorders

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

Plain English summary of protocol

Background and study aims
Naloxone is a medicine that can reverse an opioid overdose and save a person's life. Take-home naloxone (THN) is provided to people who use opioids so that they, their friends, family or other people nearby can use it in an emergency.

However, having naloxone available does not necessarily mean that people carry it with them when they are away from home. This means that naloxone may not be available when it is needed. Research has found that rates of naloxone carriage are low, despite naloxone being widely available.

Contingency management (CM) is an approach that uses rewards to encourage specific behaviours. This study will develop and test a mobile phone-based contingency management intervention (mCM) designed to encourage people to carry their take-home naloxone when they are away from home.

The study has three main aims: to develop the mobile intervention, to find out whether it is acceptable, usable and reliable for people who use opioids, and to assess whether it is feasible to carry out a larger study in the future.

Who can participate?
Adult patients aged 18 years and over who use opioids and have been supplied with take-home naloxone.

What does the study involve?
In the main feasibility study, 40 participants will be randomly allocated to one of two groups – app + financial incentives or app only.

Participants in both groups will receive naloxone training and use the app. Participants in the intervention group will receive notifications when they leave their home. They will be asked to use their smartphone camera to verify that they are carrying their naloxone. If they successfully

verify that they are carrying it, they will receive a £2 reward through the app. If they are not carrying their naloxone, they will be asked to select a reason and will receive a £1 reimbursement.

Participants in the control group will use the app and receive naloxone training but will not receive the prompts during the intervention period.

All participants will be asked about their experience of the study and will complete follow-up assessments at 6 and 10 weeks. These will include questions about naloxone carriage, treatment and drug use, as well as their experience of using the app. Interviews will normally take place remotely by telephone or Microsoft Teams, although participants can request a face-to-face interview at the participating clinic. Participants will be reimbursed for their time spent taking part in the study interviews.

What are the possible benefits and risks of participating?
Participants may not receive a direct personal benefit from taking part. However, taking part may help researchers understand whether a mobile phone-based intervention could help increase naloxone carriage. The findings may help inform the development of a larger study and future approaches to improving access to naloxone during an opioid overdose.
Participants in the intervention group may also receive financial rewards when they successfully verify that they are carrying their naloxone.

The study is not expected to involve significant physical risks. However, some participants may experience emotional or psychological discomfort when discussing naloxone carriage, opioid use or related experiences. There may also be some burden associated with receiving notifications, using the application or experiencing technical problems.

Where is the study run from?
The study is being run by King's College London in collaboration with South London and Maudsley NHS Foundation Trust.
Participants will be recruited through NHS and non-NHS drug treatment and harm reduction services in London and Derby.

When is the study starting and how long is it expected to run for?
March 2025 to March 2027 2026.

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

Who is the main contact?
1. Dr Nicola Metrebian, Co-Chief Investigator and Reader in Addiction Treatment Research, King's College London, nicola.metrebian@kcl.ac.uk
2. Professor John Strang, Co-Chief Investigator, King's College London.

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Integrated Research Application System (IRAS)
362229

Central Portfolio Management System (CPMS)
73288

National Institute for Health and Care Research (NIHR)
204952

Study information

Scientific Title
Contingency management to increase naloxone carriage: development and testing of a new behavioural intervention (CM4COYN)

Acronym
CM4COYN

Study objectives
This project aims to develop a mCM intervention to increase carriage of take home naloxone and undertake a feasibility study using a RCT design to investigate the feasibility of trial procedures.

The overall aims of the study are:
1. To develop a mCM intervention to increase carriage of take-home naloxone among individuals to whom a THN kit has been provided
2. To test the acceptability, usability, and reliability of the mCM intervention
3. To establish feasibility of undertaking a future confirmatory trial

Stage 1: Understanding the target behaviour of THN carriage and guiding foundations for intervention
1. To conduct a scoping review of the literature to identify existing evidence on factors influencing THN carriage
2. To carry out focus groups to explore personal, social, and systemic barriers and challenges to THN carriage
3. To synthesise findings from the literature and focus groups to guide the design and development of the app

Stage 2: Developing the mCM intervention
1. Define key intervention components, including behavioural targets, delivery mechanisms, and potential digital
prompts or supports
2. Develop a prototype mobile app to deliver the intervention
3. Test how well the app features work in practice (e.g., tracking whether naloxone is carried and sending messages requesting verification of naloxone carriage)
4. Assess user engagement and adherence with the app and intervention procedures in a small-scale pilot
5. Evaluate usability using validated tools such as the System Usability Scale
6. Identify and resolve technical issues related to app performance and user experience

Stage 3: Testing the acceptability and usability of the mCM intervention
1. To determine reliability and functioning of the intervention
2. To assess compliance (i.e., receipt or response) with text messages requesting verification of naloxone carriage
3. To examine the accuracy of picture and unique number code demonstrating naloxone carriage
4. To establish ease of use
5. To establish acceptability of mCM intervention
6. To examine options for a remote payment system for participants
7. To determine reliability and user-friendliness

Stage 4: Feasibility study
1. To determine the number and percentage of eligible participants who are successfully recruited into the study
2. To assess participant adherence to app prompts by calculating the number and percentage of prompts responded to
3. To evaluate compliance with naloxone carriage verification requests by measuring:
3.1. The number and percentage of verification prompts responded to,
3.2. The time taken to provide verification following prompts.
4. To assess the feasibility of photo-based verification by determining the number and percentage of successful naloxone camera uploads with sufficient image quality
5. To identify and categorise the number and types of technical problems encountered during app use
6. To assess the usability of the mCM app using the System Usability Scale (SUS)
7. To explore participants' acceptability of remote payment options through semi-structured interviews

8. To explore perceived barriers and facilitators to using the mCM app through semi-structured interviews
9. To explore perceived barriers and facilitators to take-home naloxone (THN) carriage through semi-structured interviews

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 16/04/2026, Yorkshire and the Humber – Sheffield Research Ethics Committee (Holland Drive, Newcastle upon Tyne, NE2 4NQ, United Kingdom; no telephone number provided; sheffield.rec@hra.nhs.uk), ref: 26/YH/0084

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Blinded (masking used)

Control
Active

Assignment
Parallel

Purpose
Treatment

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Opioid overdose

Interventions
The study will involve four inter-linked stages which are summarised below:

Stage 1: Understanding Target Behaviour
The aim of work stream 1 is to examine the barriers and challenges associated with the carriage of Take-Home Naloxone (THN) to inform intervention development.

Four focus groups with individuals supplied with take-home naloxone and who use opioids (N=20-30) will be conducted to explore individual experiences of carrying THN, expectations and acceptability of using mCM to increase carriage. Two focus groups will be conducted in London, and two focus groups will be conducted in Derby with 5-8 participants in each group. Focus groups will be conducted face-to-face at the recruitment site.

Three focus groups of providers and commissioners (N=10-15). These focus groups will take place on MS Teams and will include naloxone providers who are based in Derby and London. These focus groups will explore clinical needs and priorities, and expectations, along with the acceptability of mCM to increase carriage.

Posters in these services will explain the study and invite people to contact the research team. Anyone who expresses interest will be contacted by a researcher and asked a few brief screening questions to check that they feel stable in their mental health and substance use, and that taking part will not cause difficulty.

Before the group discussion begins, participants will sign a consent form and complete a short form with basic background information, including what type of naloxone they currently carry.

Service providers and commissioners will also take part in separate focus groups. These will be held online via Microsoft Teams to make participation easier for staff based across different regions.

Stage 2: Developing the mCM intervention to ensure constant carriage
The aim of work-stream 2 is to design and develop a mobile Contingency Management (mCM) intervention that encourages and supports regular carriage of take-home naloxone (THN), and to assess its usability and acceptability. This work-stream adapts an existing CM approach, previously used to promote medication adherence and substance-use reduction, to a new target behaviour (carrying naloxone), a new population (people who use opioids and already have THN), and a new remote delivery method (a smartphone app). We will explore the real-world contexts in which people may carry naloxone, including practical and social factors that could help or hinder this behaviour. Insights from the literature, focus groups, and stakeholder discussions from Stage 1 will guide decisions about which intervention components need modification and which established CM elements should be retained. Development will be informed by the COM-B model, recognising that behaviour is shaped by capability, opportunity, and motivation. This will help us identify what needs to change for individuals to routinely carry naloxone.

The digital health partner, CMI, has an established CM technology platform that will be adapted for this purpose. The app will automate behaviour monitoring, calculation of rewards, and delivery of reinforcement with high accuracy. It includes both participant and provider interfaces, allowing progress to be tracked in real time. The mCM intervention will maintain core CM principles, including clear, objectively measurable target behaviours and immediate reinforcement when behaviour is verified.

Stage 3: Test acceptability and usability of the mCM intervention
The aim of work-stream 3 is to establish the acceptability and usability of the mCM intervention by exploring whether participants are able to verify carriage of their naloxone with CM reinforcement schedules.

This stage will involve the recruitment of participants to test the app and answer questions on the acceptability and usability of the mCM intervention. The app will be tested for one week by the KCL team and refined as necessary before being tested by 5-10 individuals who use opioids and have been supplied with THN for a further two weeks.

Feedback will be gathered for further refinement before progressing to the feasibility study (Work-stream 4).

The testing phase will include the following stages:
1. Induction: Participants will receive a tutorial of the mCM app. Once inducted, participants will be enrolled on the system and provided with instructions on participation.

2. Testing: Participants will undergo a two-week testing period, engaging with the mCM intervention, responding to sample request push notifications, conducting testing and uploading videos.

3. Feedback & refine: After the testing period, participants will engage in focus groups, exploring usability, acceptability, reliability and functionality of the app. Participant feedback will aid app refinement. If necessary, all will be modified to enhance user experience. The process will be repeated until uncertainties are resolved.

Participants will be identified by a healthcare worker responsible for their care (i.e., drug service professional). Therefore, we do not need to inform GPs of their participation.

Stage 4: Feasibility study
The aim of work-stream 4 is to determine the acceptability and feasibility of conducting a future randomised controlled trial of a mCM intervention to encourage take-home naloxone carriage.

The feasibility study will use a randomised controlled design, where 40 service users supplied with take-home naloxone will be recruited and randomly assigned (1:1) to mCM (intervention) or app use only (treatment as usual).

Intervention:
Over a 6-week period, participants randomised to the intervention condition will receive generated prompts on a mobile phone when they are at least one mile from their home, validated via Geofencing built into the CMI-developed application. The prompts will be generated once a day, between 5-7 times a week after the participants leave their home.

Each participant will be asked to verify their own naloxone kit at enrolment with the camera of their smartphone. If their naloxone is verified then participants will receive a £2 e-gift card sent directly to the participant's smartphone and £1 for submitting a valid explanation for why they are not carrying naloxone. Earnings will be automatically loaded to the app wallet. Participants can access and spend vouchers from multiple vendors.

All participants will complete a semi-structured interview with the researcher at the end of the intervention period (6 weeks) and at the end of the trial (10 weeks from baseline). Participants will be reimbursed £10 for their time.

All participants (intervention and control) will be asked to verify their naloxone carriage at 6 and 10-weeks by uploading a photo of their naloxone kit when prompted to do so.

Sites:
The study will be carried out through Take-Home Naloxone (THN) schemes operating within NHS and non-NHS drug treatment and harm-reduction services in London (including South London and Maudsley NHS Foundation Trust) and in Derby. Participants will be identified by a healthcare worker responsible for their care (i.e., drug service professional). Therefore, we do not need to inform GPs of their participation.

DATA COLLECTION
1. Smartphone App

The smartphone app will automatically record data on participant usage and engagement, including the number of prompts responded to and photo uploads. The accuracy and reliability of uploads will be measured automatically by the application. At the end of 10 weeks post-enrolment, these data will be extracted from the software system by a researcher and entered into a database. This will be stored with other trial databases in password-protected files on a King's College London (KCL) secure network drive.

Usage of the mCM system will be captured through an automated system and any technical problems logged. App usability will be determined using the System Usability Survey.

2. Quantitative interviews
The researcher will conduct face-to-face interviews with participants at baseline (before enrolment) and telephone or face to face interviews at 6&10 weeks post-enrolment.
These data will be collected for all participants, unless the participant withdraws consent for continued collection of their data. The purpose of the interview is to explore whether participants continue to carry naloxone, changes in their treatment and current drug use as captured by the Opiate Treatment Drug Use Index. Open-ended questions will also be asked about the participants' overall experience of the app, for instance, its reliability and functioning, the remote payment options, and the usability and acceptability of the mCM will also be included.

3. Qualitative interviews
Semi-structured, open-ended questions will also be asked about the participants overall experience of the app, for instance, its reliability and functioning, the remote payment options, and the usability and acceptability of the mCM will also be included.

TIMELINE
The study is being undertaken over 20 months (ending October 2026).

Intervention Type
Behavioural

Primary outcome(s)
1. The number of eligible service users recruited during the 4-month recruitment period, measured using study recruitment records at the end of 4-month recruitment period

2. Recruitment rate: The number and percentage of eligible participants recruited during the 4-month recruitment period, measured using study recruitment records at the end of 4-month recruitment period

Key secondary outcome(s)
1. Adherence to mCM app prompts: The number and percentage of participants responding to app prompts, including the number of days/prompts to which participants respond, during the 6-week intervention period measured using mCM app usage data, at the end of the 6-week intervention period

2. Verification of naloxone carriage: The number and percentage of participants providing verification of naloxone carriage, including the number of days/prompts for which verification is provided and the time taken to provide verification, during the 6-week intervention period measured using mCM app records, at the end of the 6-week intervention period

3. Quality of naloxone verification photographs: The number and percentage of successful camera uploads of naloxone where the photograph is of sufficient quality for verification, during the 6-week intervention period measured using mCM app records and verification data, at the end of the 6-week intervention period

4. Technical problems: The number and type of technical problems encountered when using the mCM, during the 6-week intervention period measured using technical problem logs/support records, at the end of the 6-week intervention period

5. Usability of the mCM: Usability of the mCM, measured using the 10-item System Usability Scale (SUS) at the end of the 6-week intervention period

6. Acceptability of remote payment options: Acceptability of remote payment options, measured using semi-structured interviews, conducted at the end of the 6-week intervention period

7. Barriers and facilitators to using the mCM app: Participants' experiences of, and barriers and facilitators to, using the mCM app, measured using semi-structured interviews, conducted at the end of the 6-week intervention period

8. Barriers and facilitators to THN carriage: Participants' experiences of, and barriers and facilitators to, carrying take-home naloxone (THN), measured using semi-structured interviews, conducted at the end of the 6-week intervention period

Completion date
31/03/2027

Eligibility

Key inclusion criteria
1. Aged 18+ years of age
2. Able to provide written informed consent
3. Own a smartphone with mobile data and can bring it on the day of enrolment
4. Individuals who use opioids
5. Individuals who have been supplied with take-home naloxone and can verify their kit at enrolment

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
110 Years

Sex
All

Total final enrolment
0

Key exclusion criteria
Does not have access to a smartphone

Date of first enrolment
03/08/2026

Date of final enrolment
30/11/2026

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
-
-
-
England
-

Sponsor information

Organisation
King's College London

ROR
https://ror.org/0220mzb33

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

IPD sharing plan summary
Not expected to be made available