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Evaluating whether app-based advice on stop-smoking medicines helps people quit smoking

Submission date
08/10/2025

Recruitment status
Recruiting

Registration date
14/10/2025

Overall study status
Ongoing

Last Edited
09/11/2026

Condition category
Mental and Behavioural Disorders

[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

Smoking remains the leading cause of preventable illness and premature death in the UK and is the single largest driver of health inequalities. Despite the proven effectiveness of structured behavioural support and pharmacotherapy, many people who smoke do not use these interventions, making long-term abstinence difficult to achieve. Among available pharmacotherapies, varenicline is one of the most effective stop smoking medications, while cytisine, a plant-derived alkaloid with a similar mechanism of action to varenicline, has shown promise as an effective, cost-effective and well-tolerated alternative. The growing popularity of digital health interventions, particularly mobile applications, has created new opportunities for delivering smoking cessation support. This study aims to assess the effectiveness of digital recommendations for stop smoking medication (cytisine and varenicline) on smoking cessation medication use and their impact on increasing quit rates.

Who can participate?

Adults who smoke cigarettes, reside in the UK, and have downloaded and signed up for a smoking cessation app within the past week during the recruitment period. Participants must intend to quit smoking within the next four weeks, be willing to participate in a 7-month study, and be able to provide informed consent.

What does the study involve?

If participants meet the eligibility criteria (as determined through a secure online survey), they will be asked to provide sociodemographic and smoking-related characteristics. Participants will then be automatically and randomly assigned to one of three study groups. The first group will receive no specific stop smoking medication recommendation, the second group will receive a recommendation to use varenicline, and the third group will receive a recommendation to use cytisine. Participants will be advised to use an evidence-based stop smoking app. They will be contacted to complete further online questionnaires two and seven months later to assess their use of stop smoking medication and smoking status.

What are the possible benefits and risks of participating?

Benefits: Quitting smoking is widely recognised as one of the most important actions an individual can take to improve their health and overall quality of life. Participation in this study

will contribute to a better understanding of the effectiveness of digital recommendations for stop smoking medications and how these may influence medication use and quit rates. The findings from this research may help shape future public health strategies aimed at reducing smoking prevalence.
Risks: Participants may experience common withdrawal symptoms during the first few weeks of quitting smoking. These may include cravings, low mood, and difficulties concentrating, which can be unpleasant. To support participants, the study provides free access to the evidence-based Smoke Free app. This app includes an automated chatbot and offers the opportunity to communicate with trained smoking cessation counsellors who are available 24/7.

Where is the study run from?
Department Of Epidemiology & Public Health, University College London, UK.

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

Who is funding the study?
Cancer Research UK

Who is the main contact?
Dr Dimitra Kale, dimita.kale.09@ucl.ac.uk

Contact information

Type(s)
Public, Scientific

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Study information

Scientific Title
Effectiveness of digital recommendations for cytisine and varenicline on medication use and smoking cessation in adults using a smoking cessation app: a randomised controlled trial

Study objectives
The primary research questions are:
1. Does a digital recommendation for cytisine or varenicline (intervention arms) compared to no recommendation (control arm) increase medication use (defined as the percentage of participants in the intervention arms who use either varenicline or cytisine) at two months after enrolment among individuals using a stop smoking cessation app during their quit attempt?

2. Among participants who receive a digital medication recommendation, is there a difference in medication use between those recommended cytisine and those recommended varenicline at two months after enrolment?

This study will also address the following secondary research questions:
How effective is the intervention (advice to use either cytisine or varenicline) in promoting:
(i) Continuous abstinence over the past month, assessed two months after enrolment?
(ii) Biochemically verified continuous smoking abstinence for the past six months, assessed seven months after enrolment by a) group allocation (cytisine vs varenicline vs control) and b) by use of recommended medication among those in the intervention arms?

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 07/07/2025, UCL Ethics Committee (2 Taviton St, London, WC1E 6BT, United Kingdom; +44 (0)207 6798717; ethics@ucl.ac.uk), ref: 1248

Primary study design
Interventional

Study design
Interventional randomized controlled trial

Study type(s)
Efficacy, Treatment

Health condition(s) or problem(s) studied
Smoking cessation

Interventions

This will be a three-arm individually randomised controlled effectiveness trial.

Those who are eligible and consent to participate in the trial will be randomised after completing the baseline questionnaire. Randomisation will be 1:1:1 at the individual level with no restrictions (i.e., no blocking) and will be generated by an online automated algorithm, which aims to ensure each intervention will be displayed equally.

Control.
No specific medication recommendation arm
Participants in this group will be advised to access the Smoke Free app using a unique link provided to participants in the no specific recommendation medication arm, where they will receive routine smoking cessation behavioural support during their quit attempt. One day after randomisation, they will receive an email to remind them to use the Smoke Free app for smoking cessation behavioural support. The Smoke Free app is a theory-driven and evidence-based smoking cessation app. The app is designed to support users through the first three months of their quit attempt by reinforcing motivation, tracking progress, and highlighting the benefits of a smoke-free lifestyle. It incorporates a range of behaviour change techniques, including goal setting, reward systems, trigger identification, and coping strategies, to help users manage cravings and sustain abstinence.

Interventions.
Varenicline arm
Participants in the varenicline arm will receive a digital recommendation and support to use varenicline during their quit attempt, along with information on varenicline's benefits and potential side effects, instructions for proper use, and guidance on how to obtain the medication either free of charge or with the standard NHS prescription charge. They will also be advised to access the Smoke Free app using a unique link provided to participants in the varenicline arm, where they will receive smoking cessation behavioural support and advice on the benefits of using varenicline during their quit attempt. One day after randomisation, they will receive an email with similar information on varenicline's benefits and potential side effects, instructions for proper use and guidance for obtaining the medication and a reminder to use the Smoke Free app for smoking cessation behavioural support.

Cytisine arm.
Participants in the cytisine arm will receive a similar digital recommendation to use cytisine during their quit attempt, along with information on its benefits and potential side effects, instructions for proper use and guidance on obtaining the medication either free of charge or with the standard NHS prescription charge. They will also be advised to access the Smoke Free app using a unique link provided to participants in the cytisine arm, where they will receive smoking cessation behavioural support and advice on the benefits of using cytisine during their quit attempt. One day after randomisation, they will receive an email with similar information on cytisine's benefits and potential side effects, instructions for proper use and guidance for obtaining the medication and a reminder to use the Smoke Free app for smoking cessation behavioural support.

The Smoke Free app will be restricted for participants who enrol in the study, and they will only be able to access it through the unique link based on their group allocation. If participants opt out of the study, they will regain normal access to the Smoke Free app.

Analysis.
Following the Russell Standard, self-reported abstinence will be measured as not having smoked more than five cigarettes for the entire 6-month period preceding the 7-month follow-up.

Analyses will follow the intention-to-treat principle. This means that all participants will be analysed in the groups to which they were originally assigned, regardless of whether they completed the study or adhered to the intervention. Multiple imputation will be used to account for missing outcome data (i.e., participants who will be lost to follow-up or did not provide outcome data). As a sensitivity analysis, missing data will be treated as no medication users (for medication use outcomes) and smokers (for smoking cessation outcomes) in the analysis. Self-reported abstinence will be biochemically verified by measuring participants' CO levels via a video call with a researcher. A CO monitor will be sent to participants who self-report abstinence at the 7-month follow-up, and those with a CO reading of less than 10 parts per million will be classified as abstinent.

Intervention Type
Behavioural

Primary outcome(s)
1. The percentage of participants reporting medication use (varenicline or cytisine use) measured using an online questionnaire at the 2-month follow-up
2. The percentage of participants reporting varenicline or cytisine use among those recommended one of them measured using an online questionnaire at the 2-month follow-up

Key secondary outcome(s)
Current secondary outcomes as of 06/02/2026:
The following secondary outcome measures assess the percentage of participants reporting:
1. Attempts to obtain stop-smoking medication in the past two months, assessed using an online questionnaire at the 2-month follow-up
2. Continuous abstinence for one month measured using an online questionnaire at 2-month follow-up
3. Biochemically-verified continuous smoking abstinence for 6 months measured using data from a CO monitor at the 7-month follow-up by a) group allocation and b) by use of recommended medication

Previous secondary outcomes:
The following secondary outcome measures assess the percentage of participants reporting:
1. Continuous abstinence for one month measured using an online questionnaire at 2-month follow-up.
2. Biochemically-verified continuous smoking abstinence for six months measured using data from a CO monitor at the 7-month follow-up by a) group allocation and b) by use of recommended medication

Completion date
31/10/2027

Eligibility

Key inclusion criteria
1. Aged between 18 and 65 years old (as cytisine is available for prescription in UK to adults 18-65 years old)
2. Able to consent
3. Residing in the UK
4. English speaking
5. Current cigarette smoker

6. Willing to be followed up by email and complete online questionnaires after two and seven months
7. Interested in making a quit attempt within the next month
8. Have downloaded and signed up to the Smoke Free app within the past week during the recruitment period, and have set a quit date no more than 30 days in the future

Participant type(s)
Healthy volunteer, Service user

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
65 Years

Sex
All

Total final enrolment
0

Key exclusion criteria
1. Current enrolment in another smoking cessation programme/study
2. Current use of smoking cessation medication
3. Varenicline and/or cytisine use in the previous 12 months
4. Pregnant/breastfeeding/planning to get pregnant
5. Self-reported moderate/severe renal impairment
6. Treatment for active/latent tuberculosis
7. Experience of a heart attack, stroke or severe angina within the previous two weeks
8. Uncontrolled high blood pressure (> 150 mmHg systolic, > 100 mmHg diastolic)
9. History of seizures

Date of first enrolment
01/11/2025

Date of final enrolment
30/04/2027

Locations

Countries of recruitment
United Kingdom

Study participating centre
-
-
-
England
-

Sponsor information

Organisation
University College London

ROR
https://ror.org/02jx3x895

Funder(s)

Funder type
Charity

Funder Name
Cancer Research UK

Alternative Name(s)
CR_UK, Cancer Research UK - London, Cancer Research UK (CRUK), CRUK

Funding Body Type
Private sector organisation

Funding Body Subtype
Other non-profit organizations

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The dataset generated during and/or analysed during the current study will be available upon request from Dr Dimitra Kale, dimitra.kale.09@ucl.ac.uk.
· The type of data that will be shared: Anonymised data.
· Timing for availability: 30/12/2027 (a year after study completion)

· Whether consent from participants was required and obtained: Yes
· Comments on data anonymization: Available data will be anonymous
· Any ethical or legal restrictions: None
· Any additional comments: None

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet			13/10/2025	No	Yes
Protocol file			13/10/2025	No	No