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Evaluation of the Smoke Free App in North East and Yorkshire Secondary Care Settings: Final report



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**Humber and
North Yorkshire**
Integrated Care Board (ICB)



**North East and
North Cumbria**



South Yorkshire
Integrated Care Board



NHS West Yorkshire
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Executive summary

Background

This pilot project was funded by NHSE North East and Yorkshire Region and delivered collaboratively between the four regional ICBs, whose smoking cessation leads supported implementation through engaging with their NHS trusts. The four ICBs were: North East & North Cumbria, Humber & North Yorkshire, West Yorkshire, and South Yorkshire. The Health Innovation North East and North Cumbria and Health Innovation Yorkshire and Humber were contracted to project manage and run the evaluation, respectively.

The Smoke Free App was selected for implementation by the organisations involved, from a shortlist of innovations. And, agreement was reached regarding the scope of the pilot to cover inpatients who are identified as smokers, and the offering of the app alongside referral to the traditional, community based, stop smoking support teams. Vapes were initially selected as an optional support alongside the app, with nicotine replacement therapy (NRT) added later due to feedback from sites. ICB leads approached sites within their region to seek their voluntary sign up, and training was provided to staff via the Smoke Free team. A steering group met regularly to discuss implementation and address any challenges identified, as well as to review data downloaded from the app. Over time, the scope of the app was broadened to include visitors and staff, and the pilot extended due to lower than anticipated sign-up rates. It should be noted that the evaluation only includes data up until and including February 2026 due to agreed timelines and budget constraints, with the onboarding of new sites and people ongoing since that download of data.





Methods

The evaluation was focused on exploring the effectiveness of the app, and implementation success (barriers and facilitators to offering the app, and patients taking it up) within secondary care. This was important since people approached opportunistically within inpatient care may, arguably, be less motivated to quit smoking than people actively choosing to quit and contacting their GP or community based support. A focus on underserved populations was also important, assessing for any differences in engagement and effectiveness across different demographic groups. The evaluation adopted a mixed methods approach, involving a survey to people who had accessed the app, interviews with tobacco dependency advisors, a focus group with ICB tobacco leads, and analysis of downloaded data from the app. By request, a basic costing analysis was added to the evaluation, estimating the cost per quit and return on investment of offering the app.

Results

Below we address each of the evaluation questions, before making final conclusions and recommendations.

What was the site adoption rate for the pilot, and how many people signed up at each site?

Of the 14 sites that initially signed up, 12 went on to launch the pilot by the end of February 2026. This gives a high site adoption rate of 86%. Of the two sites that withdrew, one was an acute trust, and one was a mental health trust. Only 9 of the 12 sites that remained in the pilot had data available for analysis when the app data was downloaded in February 2026, and a further two sites had low sign-up numbers compared to the rest, indicating variability across sites with regards to download rates and particularly issues for mental health trusts. Of the three sites with no data, two had been late to join the pilot, but one had been onboard since July 2025.

What was the reach of the app, and engagement rate amongst those reached? Did this vary across demographic groups?

N=336 people downloaded the app, with 95% of the sample of white ethnicity, and over 70% from IMD quintiles 1 and 2. Of those N=336 people, N=254 went on to engage with the app, giving a moderate to high engagement rate of 76%. No differences were found in engagement rates comparing across gender





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groups, sexual orientation, age or IMD quintiles. Robust comparisons could not be run to compare across ethnicities, roles (staff, patients, visitors) or comparing people who were pregnant versus not pregnant due to the uneven spread of cases across groups, even when categories were combined.

How effective was the app, what are the reasons for this, and did this vary across demographic groups?

Overall, the app was found to be effective, with a 50.8% quit rate for those people meeting the 'treated smoker' criteria of having set a valid quit date and having met the minimum use criteria for engaging with the app. This rate meets the threshold suggested within the Russel Standard and exceeds that reported by Evison et al in a largely comparable sample of hospital inpatients. Like engagement rates, no significant differences in quit outcomes were found comparing across demographic groups (gender, sexual orientation, IMD quintile and age). The only significant predictor of outcomes was the amount of time someone used the app, with the trend for people logging in more, to be more likely to quit. The frequency with which people used the various app features, and the type of product used (vapes, NRT, both, neither) were not found to be associated with quit success.

Whilst the type of product used alongside the app (NRT, vapes, both) was not found to be a significant predictor of outcomes in the main analysis, findings from the feedback survey suggest that some people considered the availability of these encouraged them to try the app. And, when received, people reported making use of these resources, not wasting them. People also perceived these aids as helping them in their quit attempt.

User experience: did people find the app useful; would they recommend it to others?

Based on the feedback survey, which was completed by 53 people who had used the app, people appeared largely positive regarding the app, covering the onboarding process and support received, and its perceived usefulness, with 87% stating that they would recommend the app to others. Some people reported issues with onboarding and receiving their vapes, with suggestions also for additional features that could be added.





What are the barriers and facilitators to implementation?

As the app data suggested, some sites had lower patient sign up rates than others. The TDA interviews identified a range of barriers and facilitators to offering the app and people's acceptance of it, covering 8 of the 14 domains from the theoretical domains framework from the field of implementation science. The greatest proportion of these were system level issues, including time pressures with having to explain the app and the download process to patients with lower digital literacy, WIFI black spots in the hospitals, and needing to revisit patients (and remembering to do this) who were unavailable at the first approach. These issues may be more pertinent in mental health care. Whilst the training was well perceived, some gaps in knowledge and skills were identified around confidence in challenging patients' misperceptions and knowledge of what happens once someone is onboarded, which effected some staff's ability to step in where problems were encountered. Some TDAs reported high motivation/intention to promote the app, driven by competition within teams, whilst others suggested differing approaches and intentions around offering the app, with examples of only offering it to patients who were considered more likely to take it up, which was not in keeping with the agreed universal offer. The ICB leads focus group further reinforced these themes, with differing team cultures perceived to influence uptake rates across sites, and issues like inconsistent promotion of the app across sites identified and addressed as far as possible. Feedback from four sites regarding the approach to offering the app they had taken found that two had initially had a tendency for selective offering but that this had been addressed with a move then towards a more universal/inclusive offer to all patients. The one site that did not report adopting a universal offer at any point was a mental health site, given sensitivities to service-users' needs in that setting. The move towards a more universal offer over time reflected a further theme from the ICB leads focus group, around the importance of monitoring over time and adaptation to ensure success.

What was the cost per quit and the return on investment of the app?

The costings analysis estimated the cost per quit to be £299.59, and the return on investment at £7.35 per £1 spent. The calculation was based on the license fee and cost of NRT, plus the cost of TDA time spent in training and their time spent offering and explaining the app to patients. The benefits of quitting smoking were based on published figures.





Conclusions and recommendations

Overall, the findings indicate that secondary care sites can introduce the app, with a high site adoption rate, but that there is variability then across sites with regards to patient sign-up/download rates. Once someone has signed up, the app is effective at engaging people and then supporting them to quit smoking, with a good return on investment. There does not appear to be any meaningful difference in engagement rates nor quit rates across different demographic groups, notably with regards to gender, sexual orientation, age and IMD quintile, although noting it was not possible to compare across ethnic groups. Several barriers to offering the app and subsequent patient uptake were noted, likely underpinning the different sign-up rates across sites, and warrant further focus if the app were to be rolled out across more inpatient settings. A different approach is likely to be needed for mental health trusts.

Key recommendations for wider roll out are:

1. To ensure the lessons learned during this pilot are shared, including:
 - a. Learning from the best performing sites what it is that they are doing differently, despite likely facing the same constraints as other sites. And, using these rich insights, alongside those identified within this evaluation (e.g., process for offering the app, competitive review of download rates, workarounds), to develop supporting materials to guide other sites.
 - b. The importance of regular monitoring and 'solution-focussed' steering group discussions and ethos.
 - c. The importance of providing clarity to sites and staff regarding the process for offering the app. There should be an emphasis on the offer being universal, and on the benefit of offering the app alongside the existing stop smoking service. The 'TACT' principle can be helpful in working through providing this clarity: what is the Target population? What is the Action required of staff? What is the Context? And what is the Timing of the offer?
2. To build on the costings analysis to develop a costed delivery model.
3. To identify influential site champions to encourage buy-in amongst all staff and to check consistency of the offer early on.





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4. To review best practice guidance for audit and feedback methodology to assess whether there is scope for improvement in the current benchmarking process used to track uptake across sites. For example, current evidence-based recommendations include the importance of feedback coming from a respected peer and including an action plan with advice for improvement^{1 2}
5. To develop a step-by-step guide to help with onboarding people with low digital literacy.
6. To review staff training to ensure staff are aware of the next steps in the onboarding process and are confident to address any misperceptions they may encounter.
7. To review alternative innovations or approaches tailored for mental health care settings, drawing on the publications of leaders in the field^{3 4}, as well as on other recent insights⁵.

Limitations

Whilst this evaluation has triangulated evidence from multiple sources, it is important to acknowledge four key limitations:

1. The first is that the data used in the evaluation was not the complete data set, having been downloaded in February 2026 to fit within the evaluation budget and timelines, with data collection still ongoing at the time of this report due to the slower than anticipated sign-up rates. Thus, there is a small but potential risk that the findings with the full final dataset could differ to those for the data analysed here.
2. The second limitation is that data was not collected on the number nor characteristics of the patients approached. As such, it was not possible to calculate a true *reach rate* for patients (of those approached, how many signed up) nor to assess for any demographic differences in sign up rates across different demographic groups. This is important since any intervention introduced into the health services should avoid further

¹ [Audit and feedback: effects on professional practice | Cochrane](#)

² [Improvement Science Snapshot - A quick guide to effective audit and feedback](#)

³ [The SCIMITAR programme - Closing the gap, University of York](#)

⁴ [A systematic review of behavioural smoking cessation interventions for people with severe mental ill health—what works? - Spanakis - 2022 - Addiction - Wiley Online Library](#)

[Improving support for people with severe mental illness to quit smoking: comparing a bottom-up with a top-down quality improvement approach - White Rose eTheses Online](#)





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contributing to health inequalities. We recommend the future evaluations attempt to gather such data, to review sign-up rates across demographic groupings. And, as an additional note regarding future data collection, we also recommend measuring self-reported intention to quit to assess the strength of intention in this 'teachable moment' secondary care population, and to use this as a predictor of quit success in subsequent analyses.

3. The third limitation is that the costings analysis was based on published figures and did not include sensitivity analyses.
4. The final limitation is that, except for the app downloaded data, sample sizes were small for the other evaluation components and so, whilst the analyses chosen were appropriate and the findings strengthened through triangulation, some caution should be used to avoid over extrapolating from these smaller sample derived findings.





Introduction

Smoking prevalence in the UK was estimated at 10.4% in 2024⁶ and remains the leading cause of preventable illness and death in the UK, estimated at 12.4% of deaths by the Global Burden of Disease study⁷. Therefore, it is the priority of both regional integrated care boards and broader public health bodies to reduce smoking rates. Helping people tackle their tobacco dependence is a key component of the NHS 10-year plan⁸, placing great emphasis on achieving a smoke-free generation. Regional strategies mirror this stance, with North East and North Cumbria and Hull and North Yorkshire ICB's taking multi-strand approaches to prevent tobacco use and manage long term effects.

This pilot project was funded by NHSE North East and Yorkshire Region and delivered collaboratively between the four regional ICBs, whose smoking cessation leads supported implementation through engaging with their NHS trusts. The four ICBs were: North East & North Cumbria, Humber & North Yorkshire, West Yorkshire, and South Yorkshire. The Health Innovation North East and North Cumbria and Health Innovation Yorkshire and Humber were contracted to project manage and run the evaluation, respectively. The breakdown of project costs is provided in appendix one. The aim of the pilot was to enhance tobacco dependency treatment by offering a digital intervention in secondary care as an additional and easy to access support tool for individuals who expressed a willingness to quit smoking while in hospital and during the post-discharge period. This project also sought to address high rates of loss to follow-up (LTF) by maintaining engagement beyond inpatient settings.

The evaluation reported here was designed to assess the implementation and impact of the Smoke Free App across the Yorkshire and Humber and North East and North Cumbria ICB footprints.

Governance

A steering group was set-up to oversee the pilot and monitor uptake and quit rates over time. The ethos of the group was to identify any issues and arrive at solutions, making adaptations to the pilot over time where required. The steering group met monthly throughout the pilot, and comprised key stakeholders from NHSE, HIY&H, HI NENC, tobacco leads from the four ICBs and representatives from participating sites involved in the process, including Trust leads and tobacco dependency advisors.

⁶ [Adult smoking habits in the UK - Office for National Statistics](#)

⁷ [GBD Compare | Institute for Health Metrics and Evaluation](#)

⁸ [10 Year Health Plan for England: fit for the future - GOV.UK](#)





The chosen intervention

The first task of the steering group was to reach consensus regarding which digital innovation to select for implementation. The Project Lead from HIY&H conducted a *Horizon Scan* (copy available on request) to identify suitable interventions for consideration. This work was done in collaboration with colleagues from the Enterprise and Innovation team at HIY&H. A webinar was held with NHSE and the four ICB leads to review these.

The smoke free app⁹ was selected: the ICB leads emphasised its evidence-base (four randomised controlled trials), its assumed ease of implementation, and the experience of NENC ICB who were already using the app in some services. Thus, interest was in piloting the Smoke Free app in a different context (secondary care, where patients may not wish to have a referral to a community support service, a 'teachable moment'), and the opportunity to gain insights more broadly into how to implement a digital intervention into secondary care:

"The app just seemed like a really neat fix. We were trying it out with a population it hadn't really been used with, with the idea that, you know, we had this cohort of people who had a teachable moment in hospital" (ICB lead).

THE APP

The app is recommended in commissioning guidance from the National Centre for Smoking Cessation and Training, has been downloaded over eight million times, and holds a 4.7/5 rating from 250,000+ reviews. Features include:

- 24/7 support from accredited stop smoking advisors
- nicotine replacement therapy, vapes, Varenicline, and Cytisinicline delivered to the patient's door
- a structured 90-day programme
- Artificial Intelligence quit coach
- a peer community
- cravings tools
- progress tracking.

The app can also provide patients with 24/7 access to stop smoking support and can help to reduce the high lost to follow up rates associated with traditional

⁹ [Home - Smoke Free](#)





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cessation services. It also collects usage and outcome data, supporting real-time evaluation.

LICENSING

Having selected the app, a decision was then needed regarding the license package. When considering how many licenses to purchase from Smoke Free, there were two options that the budget could cover:

1. Pay per download (cheaper) but no guarantee of quit
2. Pay per quit (more expensive but leads to more quits)

Following discussion amongst the ICB leads and wider stakeholder group, the second option was chosen, capped at 400 quits, as it provided more assurance that there would be patient benefit. The ICB leads then agreed a fair distribution of quit licenses across their region:

"There was no guarantee per se of the eventual quits and there was an opportunity to upgrade that, so increase the funding per licence to have some definite or guaranteed quit. So, we were involved in all the stakeholder conversations at that initial stage in terms of, right, this is what we want to do, this is how we want to allocate the pot of money of the licences. We agreed amongst ourselves, okay, based on our numbers of our Trust, our smoking prevalence rates, this is a fair share basis of, with each area, what each ICB should receive in terms of licences" (ICB lead).

ADDITIONAL SMOKING CESSATION AIDS (ALONGSIDE THE APP)

Additional funding was secured in May 2025 via HI NENC from the government scheme Swap to Stop¹⁰, which aims to encourage smokers to swap cigarettes for medically approved vapes. This enabled the offer of a vape alongside the app, with 1500 medically approved vapes secured. Finally, in September 2025 nicotine replacement therapy (NRT) was added as a smoking cessation aid option alongside vapes, as a costed option for the pilot. This was due to sites feeding back at the steering group that some patients preferred NRT over vapes and that limiting the offer to vapes risked losing some patients who may otherwise have participated (more discussion regarding this issue is provided in

¹⁰ <https://www.gov.uk/government/news/smokers-urged-to-swap-cigarettes-for-vapes-in-world-first-scheme>





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the results sections below). Either product (or both) could be ordered by users through the app and was provided by Smoke Free.

Implementation strategy

The ICB leads approached NHS Trusts in their region with the offer to participate in the pilot, which was voluntary in nature. Invites varied by ICB, influenced by the ICB leads knowledge of sites (extent of management and procedural support), smoking prevalence rates in their catchment areas (aided by a regional smoking rates summarised by the HIY&H workforce lead, using Department of Health and Social Care data), and their experience of offering smoking cessation in different service settings. NENC ICB, for example, did not include mental health trusts in the offer based on the expectation that mental health trusts would benefit from a different approach, whereas the other ICBs did. H&NY ICB approached only one trust initially, to gauge the volume of work required, patient reach and engagement rates (bearing in mind the limits on license numbers), before approaching an additional site. The initial approaches were made to strategic leads and service managers within the selected trusts. Table 1 below summarises the sites that signed up, from June 2025 onwards.

Table 1 Sites that initially signed up

ICB	Trust	Service	Date
NHS Humber and North Yorkshire ICB	Hull University Teaching Hospital	Acute	Jun-25
	York and Scarborough Trust	Acute	Nov-25
NHS NENC ICB	South Tees Hospitals NHS Foundation Trust	Acute	Jun-25
	North Tees	Acute	Jun-25
	Northumbria HC FT	Acute	Jun-25
	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	Acute	Dec-25
NHS South Yorkshire ICB	Doncaster and Bassetlaw Trust	Acute	Jun-25
	The Rotherham Hospital	Acute	Jun-25
	South West Yorkshire Partnership Teaching NHS Foundation Trust (covering South Yorkshire)	Mental Health	Jun-25
	Sheffield Teaching Hospitals NHS Foundation Trust	Acute	Jan-26
	Barnsley Hospital NHS Foundation Trust	Acute	Jan-26
NHS West Yorkshire ICB	South West Yorkshire Partnership Teaching NHS Foundation Trust (covering West Yorkshire: Wakefield,	Mental Health	Jul-25





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	Calderdale, and Kirklees)*		
	The Mid Yorkshire Teaching NHS Trust	Occupational Health for Staff members	Feb-26
	Bradford District Care NHS Foundation Trust	Mental health	Jul-25

**For South West Yorkshire Partnership Teaching NHS Foundation Trust, the Trust is split across two ICBS and treated here as two sites.*

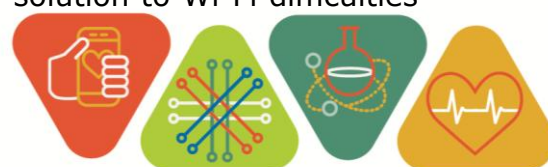
As can be seen, 14 sites signed up, with coverage across the four ICBs. Of the 14 sites, nine signed up in the first wave of recruitment (June/July 2025), with the remaining five signing up from November 2025 through until and including February 2026. Most sites were acute trusts, but two mental health trusts also signed up.

Once sites had signed up, the strategic leads/service managers' task was to then cascade the information to their teams. This was done using several different strategies:

- Training was provided to tobacco dependency advisors, consisting of:
 - a 30-minute online session and demonstrations for staff, which were recorded and uploaded to YouTube so that those unable to attend could access the training at a convenient time and revisit it as needed.
 - trial access to the app for staff to familiarise themselves with the user experience and better understand the patient journey.
 - face-to-face training sessions with the Smoke Free team at sites upon request, which teams could arrange directly, and staff were also encouraged to contact Smoke Free with any questions or support queries.

No formal record was kept of the number of staff trained, as staff were encouraged to access the recorded training at a time most convenient for them, recognising that many would be supporting patients during the live session. Teams were also encouraged to share the training recording with colleagues who did not attend Steering Group meetings directly, including staff represented by another member of their team. Additional support for implementation included:

- Flyers for both tobacco dependency advisors and patients explaining the elements of the app and the usage of vapes and NRTs
- QR codes and business cards were delivered to each trust, with personalised links for each trust. The QR codes helped with data collection and the tracking of uptake. The business cards were a solution to Wi-Fi difficulties





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at some hospitals, reminding patients of where to download the app from, when the signal is better (for example, post discharge).

The Smoke Free App team oversaw data sharing procedures, with a data sharing agreement established between sites and the app. As such, trusts were not required to have a data sharing agreement, unless they wanted to receive identifiable data back for their own monitoring purposes (for example, to follow-up on patients themselves alongside the app team).

Scope of the pilot

The inclusion criteria were to offer the app to any patient in secondary care and who had expressed willingness to quit smoking during their hospital stay. Reflecting the ethos of the steering group, of identifying any issues and arriving at solutions, in January 2026, the criteria was agreed by the steering group to be broadened to include outpatient care settings and NHS staff, as well as visitors. This was due to the lower than anticipated number of patients signing up to the app, providing an opportunity to expose a broader cohort to the intervention. This is covered in more detail in the results sections below, including exploration of the contributing factors through interviews with the tobacco dependency advisors and ICB leads. NENC ICB did not broaden the offer to staff as they already had a specific offer for them.

The procedure for offering the app was agreed in advance and communicated to staff during the initial training session:

- Any patient identified as a smoker during admission is approached by a TDA and asked whether they would like support to quit smoking or to at least abstain during their hospital stay, as is usual practice
- The app is offered alongside the community stop smoking service, with the option of vapes and/or NRT also suggested as an additional support aid to all patients
- Where patient expresses a preference for the app, the QR code and business card is handed to the patient, and the patient is supported to download the app, and to do the onboarding process, including selecting vapes and/or NRT as desired

When the scope was broadened to include outpatients and visitors and staff, people were made aware of the app via different means, including use of a promotional stand on No Smoking Day and screens around the hospital. The same QR code process was used.





Evaluation methods

The evaluation was designed to assess the effectiveness and implementation of the app within secondary care settings, including exploring how the intervention functioned in real-world hospital pathways. An important outcome was specified as learning from the pilot to inform future delivery and scale-up. The underpinning evaluation questions were:

Implementation

1. **Adoption across sites:** of the sites that signed up, how many went on to launch the app and remain in the pilot?
2. **Reach:** how many people initially registered, and of those, how many then went on to engage with the app and does this vary across demographic groups?
3. **User experience:** how did people find the onboarding process, did they find the app useful, would they recommend it to others?
4. **Blockers and enablers:** what are the barriers and facilitators to uptake?

Effectiveness

5. **How effective was the app** in this setting, what are the reasons for this, and did this vary across demographic groupings?

Following review of the draft evaluation report, it was agreed to also provide a basic costings analysis for the smoke free app, estimating the cost per quit and return on investment.

As can be seen, for evaluation questions two and five, there is an emphasis on exploring for any differences in engagement and effectiveness across different demographic groups, with a particular emphasis on underserved populations as defined by Core 20PLUS¹¹. Notably, people in the lowest indices of multiple deprivation ('IMD quintiles' 1 and 2) as well as differences across gender groups, sexual orientations, ages and ethnicities. This is important as we see a higher prevalence of smoking in the most deprived areas of the country, and smoking is also the largest avoidable cause of inequalities in health, in the UK¹². Any innovation introduced to support smoking cessation should not further compound such health inequalities.

¹¹ <https://www.england.nhs.uk/about/equality/equality-hub/national-healthcare-inequalities-improvement-programme/core20plus5/>

¹² <https://www.rcp.ac.uk/improving-care/resources/hiding-in-plain-sight-treating-tobacco-dependency-in-the-nhs/>





The five evaluation questions were addressed through the following data sources and indicators summarised in table 2 and which are discussed in greater detail below the table.

Table 2: Data sources mapped to evaluation questions

Evaluation Theme	Evaluation Question	Feedback Survey	Data Download	Advisor Interviews	ICB leads Focus Group
Implementation	Q1: Adoption across sites		✓		
Implementation	Q2: Reach and engagement (incl. demographics)		✓		
Implementation	Q3: User experience (onboarding, usefulness, recommendation)	✓			
Implementation	Q4: Barriers and facilitators			✓	✓
Effectiveness	Q5: Overall effectiveness and variation	✓	✓	✓	

FEEDBACK SURVEY (addressing evaluation questions 3 and 5)

The feedback survey was designed to explore users experience of the app and their overall perceptions of it (covering the onboarding process, perceived usefulness and whether they would recommend the app to others), alongside self-reported quit rates and factors perceived to influence success or otherwise. The survey contained 15 questions; these comprised a mix of:

- Questions followed by categorical response options (e.g., "Have you quit smoking since using the smoke free app?" "Yes/no")
- Likert scale responses (e.g., "How useful did you find the smoke free app in supporting your quit attempt"? With response covering "not useful" to "very useful")





- Free text options for richer feedback (e.g., “What made it difficult to quit smoking?”).

The survey was added to the app by the Smoke Free team, with patients prompted to complete it 28 days before they start their quit (because users can set this date far in future) and 84 days after the quit date.

SMOKE FREE DATA DOWNLOAD (addressing evaluation questions 1, 2 and 5)

The smoke free data was downloaded from the app on 13th April 2026 and provided to HIY&H on 22nd April following data cleaning by the smoke free app team (namely, removal of cases that had not yet reached their quit date and, thus, provided no outcomes). It should be noted that the data contained cases up until and including those who registered by the end of February 2026, enabling time for all people to reach their quit date by the time the data was downloaded. As such, it should also be noted that data collection was ongoing in the pilot, as of June 2026. The data comprised a single excel file, with variables as columns and rows as individual patient’s data. A pseudonym was used to reduce the risk of patient re-identification, and, except for age at sign-up which was supplied in years, all other demographic variables were grouped into categories to reduce granularity (e.g., work status was categorised into 9 options rather than people having reported specific job titles). Table 3 below summarises the variables.

Table 3: Summary of variables in the Smoke Free app download

Variable name	Data type	Description
ID number	Categorical	Unique user identifier
Site	Categorical	Service or site through which the user accessed the app
Sign-up date	Date	Date of first app registration
Quit date	Date	Initial quit date set at sign-up
Quit date valid	Categorical (yes/no)	Quit date within + or - 14 days of sign-up
Restart	Categorical (yes/no)	User reset or set a new quit date
Gender	Categorical	Self-reported gender
Ethnicity	Categorical	Self-reported ethnicity
Work status	Categorical	Employment status (categorised)
Pregnancy status	Categorical	Pregnancy status at sign-up





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Age at quit date	Continuous	Age in years at quit date
IMD quintile	Categorical	Index of Multiple Deprivation quintile (1 = most deprived, 5 = least deprived)
Sexual orientation	Categorical	Self-reported sexual orientation
Total sessions	Continuous	Number of app sessions (30-minute segments)
Advisor usage	Continuous	Number of advisor interactions
Quit coach usage	Continuous	Number of quit coach/chatbot uses
Community usage	Continuous	Number of community feature uses
Missions completed	Continuous	Number of missions completed
Feature use (total)	Continuous	Total usage across all app features
Minimum use	Categorical (yes/no)	Indicates meaningful engagement (≥ 3 sessions on separate occasions or product order); defines treated smoker
Product requested	Categorical	Product requested: vapes, NRT, both, just the app
Outcome	Categorical	Self-reported follow-up status: Quit (no smoking for ≥ 14 days at 4-week follow-up, as per the Russell Standard – see below); Not quit (followed up but does not meet quit definition); Lost to follow-up (no follow-up data)
Role	Categorical	User role: staff, patient, or visitor
Feature log-ins: day and night	Continuous	Feature accesses 9:00–17:00 (daytime) and 17:00 to 9.00 (nighttime)
Usage data (event-level)	Mixed	Feature accessed, frequency, date, day of week, and in/out of business hours





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As can be seen, the Russell Standard (Clinical)¹³ was used as the criteria to assess quit outcomes, specifically the self-reported 4 week quit statistic for treated smokers:

A smoker is counted as a 'self-reported 4-week quitter' (SR4WQ) if s/he is a 'treated smoker', is assessed (face to face, by postal questionnaire or by telephone) 4 weeks after the designated quit date (minus 3 days or plus 14 days) and declares that s/he has not smoked even a single puff on a cigarette in the past 2 weeks.

A statistical analysis plan (SAP) was developed and reviewed by the app developer and smoke free app key account manager to reach agreement on validation of cases and the handling of any duplicates. Given the app developer's expertise, there was also discussion around suitable exploratory analyses for inclusion in the SAP; for example, examining the time of day (feature log ins: day versus night) when the app was accessed.

DATA CLEANING RULES

The following rules were applied for data cleaning (validation of cases and the handling of duplicates):

1. The *total sample* refers to the raw data as received ahead of data cleaning
2. The *cleaned sample* refers to the data after duplicates and 'restart' cases without an up-to-date outcome had been reviewed and a decision made regarding whether to retain or delete. Duplicates were identifiable via the *restart* variable (namely, cases coded as 'yes') given that people restarting after an unsuccessful quit attempt would appear more than once, as separate rows in the data but with the same pseudonym/identifier. For these duplicates, the entry for most recent quit date was retained, with earlier quit dates deleted. A small number of cases were flagged as restarts but did not appear as duplicates. This was

¹³ [Microsoft Word - russellstandardclinicalversion2.doc](#)





due to these cases having a new quit date which fell beyond the cut-off date for the data download. After reviewing and reporting the figures for the cleaned sample, these cases were deleted due to not having an up-to-date outcome for their most recent quit attempt.

3. The *valid sample* refers to the final set of cases that (having already removed duplicates and restarts as above) met the agreed 'treated smoker' criteria. When assessing outcomes, valid cases ('treated smokers') were considered those with a valid quit date (coded 'yes' for this variable, namely their quit date is 14 days pre or post sign-up date) and who met the minimum use criteria (coded 'yes' for this variable, namely they have engaged with the app at least 3 times or ordered a product: vape or NRT or both). This is an adaptation of the Russell Standard (clinical) criteria for 'treated smokers'. It was adapted since the Russell Standard is based on NHS community Stop Smoking Services (rather than a digital app), requiring a smoker to undergo at least one treatment session with NHS Stop Smoking Services on or prior to the quit date and to set a firm quit date to be considered a 'treated smoker'.

After reviewing the spread of cases across demographic groups as part of the data cleaning process, some groups were combined ahead of analysis to create larger and more even group sizes for subsequent comparisons and analyses. For ethnicity, age, work status and sexual orientation the following combinations were made (table 4):

Table 4: Summary of how demographic groups were combined for subsequent analyses

Variable	Combinations (for summary purposes)
Ethnicity	White: White British, Irish and Any Other
	Asian: Asian Bangladeshi and Pakistani
	Black: Black African and Caribbean
	Mixed heritage: White and Asian, White and Black African/Caribbean, Any Other
	'Other'
Work status	Full time student: full time student
	Home carer: home carer
	Working: routine, intermediate, professional/managerial





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	Not working: never worked or unemployed for one year or over, sick or disabled and unable to work
	Retired
	Other
Sexual orientation	Heterosexual straight
	Not heterosexual: gay man, gay woman, pan sexual, bisexual, queer, other
	Missing/unknown: asexual, prefer not to say, do not know
Age	18-24
	25-34
	35-44
	45-54
	55-64
	65+

Analysis consisted of:

1. Comparing the demographics of the cleaned sample with the valid sample using Chi Squared analysis, a statistical test which checks for associations between categorical variables (e.g., demographic variables and frequency counts). This was to assess for differences in engagement across groups, based on the logic that cases in the cleaned sample that were not carried through to the final sample would be cases that failed to meet the treated smoker criteria (did not set a valid quit date or meet the minimum use criteria) and, thus, did not engage after signing up.
2. Frequency counts to summarise the demographics of the valid sample.
3. Frequency counts for the valid sample, reviewing:
 - a. Sites and type of site
 - i. The site adoption rate was calculated by dividing the number of sites who remained in the pilot by the total number of sites that signed up.
 - ii. Number of cases per site and date of sign-up.
 - b. Usage statistics, namely: total number of sessions, features accessed (individually and combined in total, the latter using the *features used* variable) and log ins during the day versus nighttime. A chi square analysis was also performed comparing the proportion of day versus





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nighttime log ins across IMD quintiles and working status groups separately, with these two variables anticipated to be more likely to be associated with differences in the time of log ins.

4. Calculation of the percentage quit rate:

- a. Quit rates were compared to the Russell Standard 4-week self-reported quit rate suggested target of 50% or above. However, recognising that that quit rate applies to NHS Stop Smoking Services (community based), rather than an opportunistic inpatient sample as per this evaluation (where intention/motivation to quit may be lower), the quit rates were also compared to the 42% 4 week quit rate reported by (Evison et al, 2020¹⁴).
- b. Assessment of the relative strength of different variables (demographic variables, product use, total session and feature usage counts) at predicting whether someone quits or not, including assessment of any differences in outcomes across demographic groups. This was done using logistic regression analysis with the demographic variables entered into the model first, followed by product/s used, and the count of total sessions and features usage entered second. Ahead of running this analysis, a check for univariate outliers was run, with some demographic variables excluded and some regrouped to ensure a good spread of cases across the comparisons (model robustness). To assess model fit, the model and block chi squares were compared at each stage, alongside the Wald statistic to assess the strength of the different predictors. Residuals were reviewed to assess model robustness. All analyses were run using SPSS.

INTERVIEWS WITH TOBACCO DEPENDENCY ADVISORS (addressing evaluation questions 4 and 5)

The interviews were designed to explore the perceived effectiveness of the app and reasons for this (evaluation question 5) from the perspective of the TDAs, as well as to explore barriers and facilitators to implementation of the app (evaluation question 4), including factors effecting initial sign-ups/downloads of the app. The interviews were semi-structured, with the topic guide comprising set questions but with flexibility for additional ones to be added in and prompts, as appropriate. The topic guide was developed in collaboration with the steering group and can be found in appendix 2.

¹⁴ [Feasibility, uptake and impact of a hospital-wide tobacco addiction treatment pathway: Results from the CURE project pilot - ScienceDirect](#)





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TDA and service leads representing TDA teams were recruited through targeted email invitations sent to representatives from each trust, typically individuals who regularly attended steering group meetings and were well placed to reflect on service-level implementation. Indeed, this qualitative component of the evaluation had been introduced to participating trusts via the steering group approximately two months after project initiation. A total of nine individuals were invited. Participants were provided in advance with the interview questions and a consent form; written consent was obtained prior to participation.

To increase the number of TDAs spoken to, the interview questions were also developed into a free text questionnaire using Microsoft forms which was sent by email to all TDAs who had not taken part in an interview. This invitation was sent to approximately 28 individuals. Recipients were encouraged to share the survey within their wider teams.

Interviews took place between November and December 2025 and were conducted online using Microsoft Teams and recorded, with AI generated verbatim transcriptions. All participants were allocated pseudonyms. Given the emphasis on identifying implementation barriers and facilitators, the Theoretical Domains Framework (TDF, Michie et al, 2005¹⁵, Cane et al, 2012¹⁶) was used as the overarching framework for the analysis. The TDF is a determinant framework used in behavioural and implementation science to understand the barriers and facilitators influencing behaviour, including the uptake of innovations and changes in clinical practice. The TDF summarises 14 domains of barriers and facilitators, including knowledge, skills, professional role and identity, and memory, attention and decision processes. In using the TDF, the interview transcriptions were coded against the 14 domains, to draw out the full range of barriers and facilitators. This was done using the rapid qualitative analysis method (Gale et al), and comprised the following two stages:

1. Development of a summary template, summarising the TDF domains down the left-hand column, with another column to provide a brief synopsis of insights linked to that domain, and example quotes. Alongside the TDF domains, three additional rows were added to the template to record the perceived impact upon services (for example, workloads and flows, efficiencies), the perceived effectiveness for patients, and what they considered to be the chief 'active ingredients' contributing to success (or failure).
 - a. A separate template was completed per interview.
 - b. The insights provided via the questionnaire were coded into a single summary template.

¹⁵ [Making psychological theory useful for implementing evidence based practice: a consensus approach | BMJ Quality & Safety](#)

¹⁶ [Validation of the theoretical domains framework for use in behaviour change and implementation research | Implementation Science | Springer Nature Link](#)





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2. Development of a matrix (available on request), to synthesise insights from all the interview summary templates into a single document, organised by TDF domain and further divided into barriers and facilitators.
 - a. Insights from each template summary were added into the matrix, and coded as a barrier or facilitator per domain.
 - b. Once all participants' data was added in, the insights were reviewed, with thematically similar entries combined, and theme names revised to reflect the different entries.
3. A summary narrative was then produced, distilling the themes per domain and highlighting the more frequently cited versus less frequently cited domains.

FOCUS GROUP WITH ICB LEADS (addressing evaluation question 4)

The focus group was designed to explore the perceived effectiveness of the pilot overall, and reasons for this (evaluation question 4), to complement the TDA interviews. The focus group was also designed to uncover how the pilot was implemented by each ICB, from the initial decision to focus on the smoke free app, through to inviting trusts and monitoring uptake over time, to provide background context for the evaluation. A semi-structured topic guide was developed comprising set questions but with flexibility for additional ones to be added in and prompts, as appropriate. The topic guide can be found in appendix 3.

Due to West Yorkshire ICB lead withdrawing from the pilot (albeit with their sites still in the pilot), only leads from the remaining three ICBs were approached to participate. Thus, three ICB leads with responsibilities which included smoking cessation/tobacco control were sent an email invitation which included a copy of an information sheet and consent form. Of those who expressed an interest in participating, a mutually convenient date was then agreed for an online (via Teams) focus group.

The focus group was recorded, with an AI generated verbatim transcription. All participants were allocated pseudonyms. Data was analysed into themes using thematic analysis, with supporting quotations.





COSTINGS ANALYSIS

A simple cost per quit and return on investment (ROI) analysis was undertaken to estimate the cost of the app. The analysis was conducted from an NHS perspective over a 10-year time horizon.

The cost per quitter was estimated, combining direct programme costs (licence and NRT treatment) and staff time inputs:

- Licence and NRT treatment costs were provided by Smoke Free. Total licence costs were calculated by multiplying the cost per quit by the number of observed quitters.
- Staff costs were based on NHS Band 4 TDAs. A cost of £37 per hour was applied, reflecting the PSSRU (Unit Costs of Health and Social Care 2024) estimate for hospital-based staff cost per hour of patient contact, which includes salary, on-costs and overheads:
 - TDA time spent in training costs were included as a one-off implementation cost. It was estimated by Smoke free that 28 staff received 30 minutes of training, with total cost calculated as:
number of staff × training duration × hourly staff cost.
 - Staff time for introducing the app to patients was estimated based on TDA feedback. There was variation in reported time required (ranging from 2–5 minutes up to 20 minutes). To reflect this, a blended approach was used:
 - 50% of patients were assumed to require 3.5 minutes
 - 50% were assumed to require 20 minutes
 - The number of patients approached by the TDAs was based on the number of quitters and calculated percentage quit rate (see results section).
 - Total staff time cost was calculated by multiplying time per patient by the cost per minute and the number of patients in each group.

No additional IT or infrastructure costs were included, as the intervention is delivered via a QR code and patients use their own devices. Monitoring and implementation activities were assumed to be absorbed within existing service provision.

Cost per quitter

Total programme costs (licence, training, and staff time) were summed and divided by the number of quitters to estimate a cost per quitter.





Return on investment (ROI)

ROI was then calculated by comparing total costs with estimated long-term NHS savings associated with smoking cessation.

- A value of £2,202 per quitter was used, based on the EQUIPT economic model¹⁷, using the figure for the difference in savings reported for a quitter compared with a non-quitter, for a 10 year time horizon. This reflects healthcare cost savings over a 10-year period associated with reduced incidence of major smoking-related diseases (lung cancer, coronary heart disease, chronic obstructive pulmonary disease, and stroke).
- Total benefits were calculated as:
 $\text{number of quitters} \times \text{value per quitter}$
- ROI was calculated as:
 $\text{total benefits} \div \text{total costs}$

¹⁷ [Development and application of an economic model \(EQUIPTMOD\) to assess the impact of smoking cessation - Coyle - 2018 - Addiction - Wiley Online Library](#)





Results

The results are structured by the data sources and then further broken down by evaluation questions and overarching domains (implementation and effectiveness). This is due to the same data sources answering several evaluation questions.

Smoke free data

The smoke free data addresses evaluation questions 1, 2 and 5, covering both implementation and effectiveness of the app. As detailed in the methods section, the focus of the analyses is on the *valid sample*, which consists of all those cases which met the agreed criteria for validity (had a valid quit date and met the minimum use criteria, and so can be regarded as a 'treated smoker'). Nonetheless, for transparency purposes, we start by reporting on the *total sample* size and compare those who downloaded the app but did not go on to engage (the *cleaned sample*) with those who did go on to engage (*valid sample*).

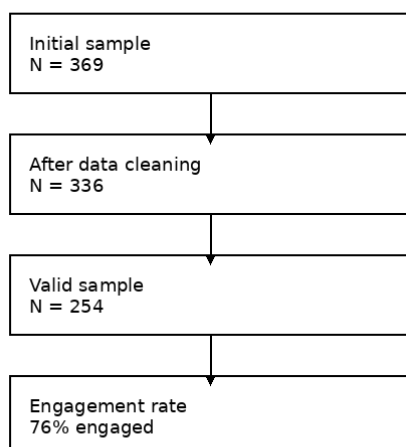
Figure 1 summarises the sample sizes at the data cleaning stages. As can be seen, the *total sample* size, ahead of data cleaning was N=369. After applying the data cleaning rules, the *cleaned sample* size was N=336. And after removing non-valid cases (cases not meeting the treated smoker criteria), the *valid sample* size (for calculation of outcomes) was N=254. Comparing the size of the cleaned sample to that of the valid sample (all cases meet the minimum use 'treated smoker' criteria) indicates that 76% of those who initially signed up for the app went on to engage with it.





Figure 1

Sample Flow Diagram



DEMOGRAPHICS OF THE VALID SAMPLE

Tables 5 to 8 and figures 2 to 4 (for demographic groups with more than two categories) summarise the frequency counts for the valid sample across the different demographic groups.

Table 5: Frequency count for valid sample by gender

Gender	Frequency (%)
Male	102 (40.2)
Female	109 (42.9)
Other	43 (16.9)
Missing	0

Table 6: Frequency count for valid sample by ethnicity

Ethnicity	Frequency (%)
White	245 (96.5)
Black	0





Asian	0
Mixed	3 (1.2)
Missing	6 (2.4)

Table 6: Frequency count for valid sample by pregnancy status

Pregnancy status	Frequency (%)
Pregnant	6 (2.4)
Not pregnant	226 (89)
Missing	22 (8.7)

Table 7: Frequency count for valid sample by sexual orientation

Sexual orientation	Frequency (%)
Heterosexual	218 (85.8)
Not heterosexual (gay, bisexual, pan, queer)	22 (8.7)
Missing	14 (5.5)

Table 8: Frequency count for valid sample by role of respondent

Role	Frequency (%)
Patient	204 (80.3)
Visitor	35 (13.8)
Staff	6 (2.4)
Missing	9 (3.5)





Figure 2: Bar chart summarising frequency count across work status

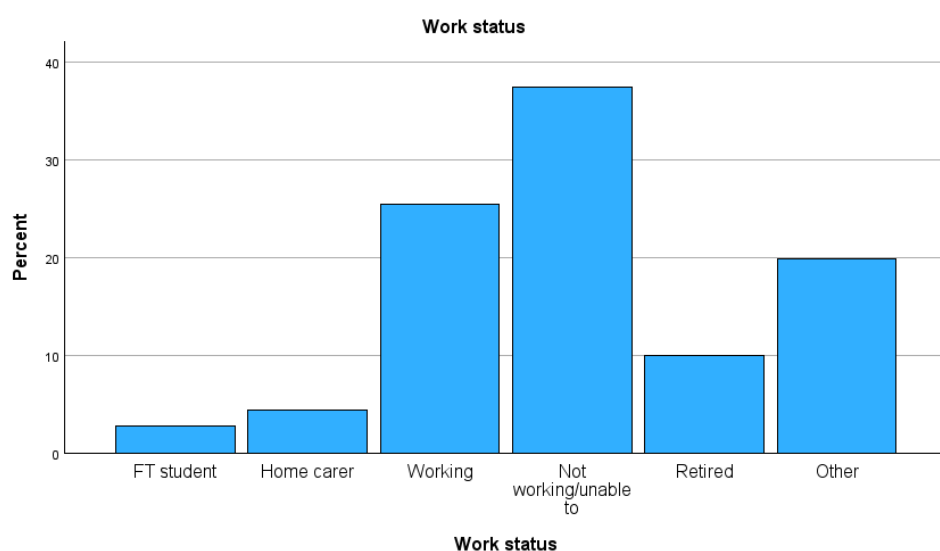


Figure 3: Bar chart summarising frequency count across IMD quintiles

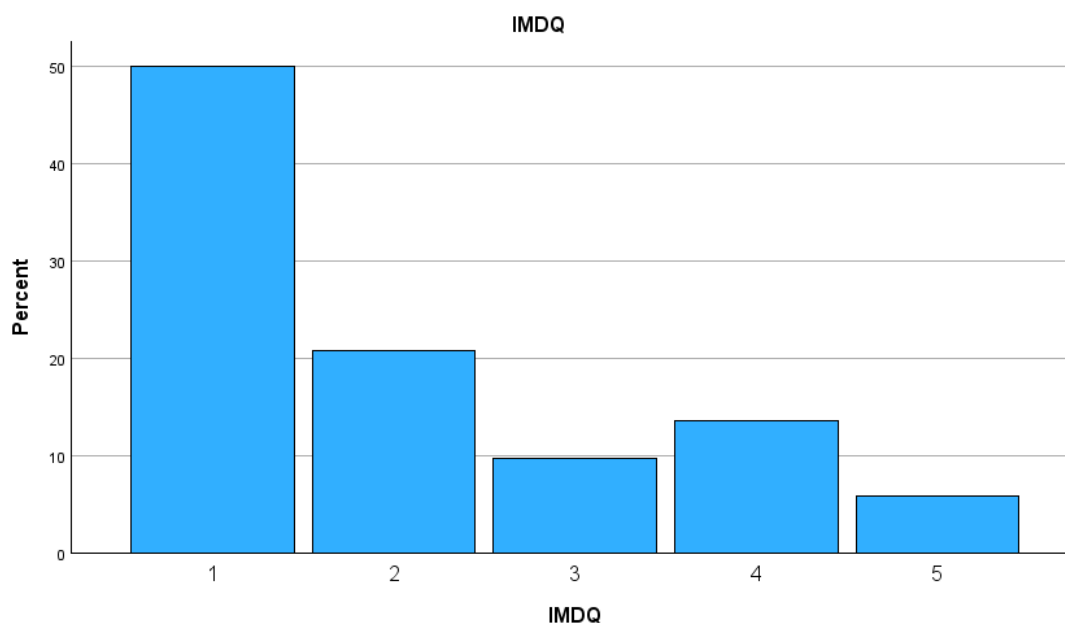
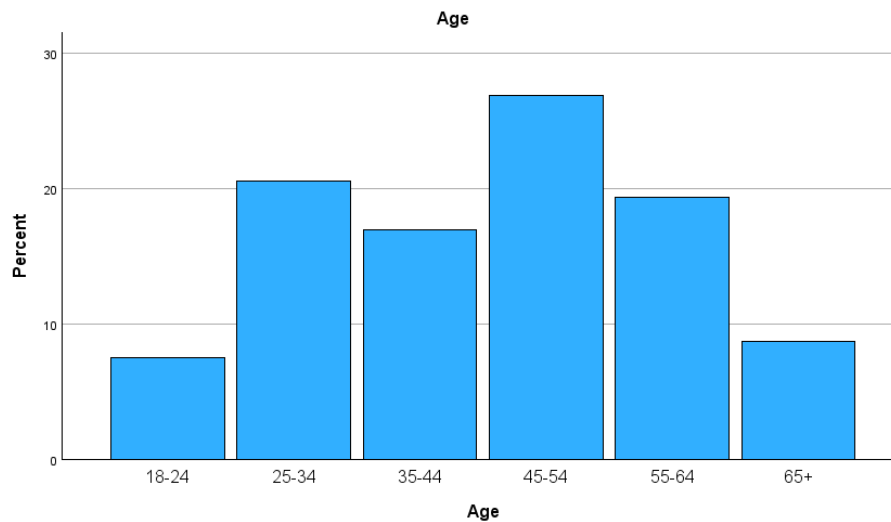




Figure 4: Bar chart summarising age in years



As can be seen, the sample is relatively even split between people identifying as male ($n=102$, 40.2%) and female ($n=109$, 42.9%), with $n=43$ (16.9%) selecting 'Other'. However, the sample is overrepresented by white respondents ($n=245$, 96.5%), with no one of Black or Asian ethnicity and $n=3$ (1.2%) selecting mixed heritage ethnicity. The highest proportion of respondents rated themselves to be not working/unable to work ($n=94$, 37.0%), followed by working ($n=64$, 25.2%), with representation for each of the work status categories (retired, home carer, student, other). Reflecting the early focus on recruiting patients only, a criterion which was broadened later in the pilot to include visitors and staff for most sites, we can see that the highest proportion of the sample stated that they were patients ($n=204$, 80.3%), followed by visitors ($n=35$, 13.8%). Most respondents stated being not pregnant ($n=226$, 89%) and heterosexual ($n=218$, 85.8%) (with 8.7% identifying as gay, queer, bi or pan sexual). There was a good spread of ages in the sample, with 45-54 years the modal group. Finally, for IMD quintile, the highest proportion of people were coded as quintile 1 ($n=118$, 50.0%), and the smallest in quintile 5 ($n=5$, 5.9%). Over 70% of people were in the two lowest quintiles.





DEMOGRAPHICS OF THE CLEANED VERSUS VALID SAMPLE: DIFFERENCES IN ENGAGEMENT ACROSS DEMOGRAPHIC GROUPS

Comparing the demographics of cases in the cleaned sample which did and did not get carried through to the valid sample enables us to assess whether there were any differences across demographic groups with regards to engagement. This is because for cases to be carried through to the final valid sample, they had to meet the treated smoker criteria of having set a valid quit date and having met the minimum use criteria.

A new dummy variable was created, indicating if a participant met the treated smoker criteria or not. A series of Chi Square analyses were then run, comparing the proportion of cases meeting the valid/treated smoker criteria versus not, across demographic variables. This was only possible where the number of cases per group was adequate (e.g., there were no empty cells in the cross tabulations and no cells with an expected frequency count less than 5) to ensure robustness of the analysis. Where it was not possible, we attempted to group some categories or omit some, to still enable review of differences in engagement. The results are summarized in table 9 below

Table 9: Comparison of engaged versus non engaged cases across demographic groups

Variable	Difference between engaged and non-engaged	Details
<i>Gender</i>	<i>No, there was no significant association between gender and engagement</i>	$\chi^2 (2) = 1.55, p=0.46$
<i>Sexual orientation</i>	<i>No, there was no significant association between sexual orientation and engagement</i>	$\chi^2 (1) = 1.17, p=0.28$
<i>Age</i>	<i>No, there was no significant association between age and engagement</i>	$\chi^2 (5) = 1.57, p=0.91$
<i>Work status</i>	<i>No, there was no significant association</i>	$\chi^2 (3) = 0.79, p=0.85$





	<i>between work status and engagement</i>	
<i>IMD quintile</i>	<i>No, there was no significant association between IMD quintile and engagement</i>	$\chi^2 (2) = 5.00, p=0.08$ IMD quintiles were combined into 3 groups to enable analysis
<i>Pregnancy status</i>	-	<i>Not possible to run analysis due to low number within the 'pregnant' category</i>
<i>Ethnicity</i>	-	<i>Not possible to run the analysis due to low numbers across groups other than 'white'</i>
<i>Role</i>	-	<i>Not possible to run analysis due to low numbers across groups other than 'patient'</i>

It was only feasible to run the Chi Square analysis for five of the demographic variables. For gender, sexual orientation, and age, the analyses indicated there to be no significant association between membership of a demographic group and whether a person went on to engage or not. As such, people of different genders, sexualities and ages were no more or less likely to go on to engage. For IMD quintiles, we combined quintiles into three groups (low, middle, and high) and found no association between IMD quintile and engagement. Finally, for working status we removed the two categories with the lowest numbers which had expected frequency counts below five (full time students and home carer) and again found no association across the different remaining working status groups and whether they went on to engage or not. For role, ethnicity, and pregnancy status, it was not possible to combine or omit categories to run the analysis due to having one very high frequency category and then very low frequencies across the remaining categories.

USAGE STATISTICS: TIME OF DAY, TOTAL NUMBER OF SESSIONS, AND FEATURES USED

Frequency analyses were run for the following variables, assessing the spread of scores (minimum and maximum values and modal and median scores):

- Total sessions





- Feature usage (a composite of the individual features usages)
- Advisor usage
- Quit coach chatbot usage
- Community usage
- Missions completed

Table 10 summarizes the descriptive statistics.

Table 10: Usage statistics and different features

Statistic	Total sessions	Feature use	Advisor usage	Quit coach chatbot usage	Community usage	Missions completed
N	254	254	254	254	254	254
Median	8	6	5	0	0	0
Mode	3	1	1	0	0	0
Lowest value	1	0	0	0	0	0
Highest value	110	97	88	6	17	97

As anticipated, given that the total sessions variable is the broadest measure of engagement with the app (e.g., clicking on the app, scrolling through, recorded in 30-minute segments), this had a higher median (8) and modal score (3) than the other variables. The total number of sessions ranged from 1 (n=10) to 110 (n=1). Similarly, the feature usage variable, as a composite of the individual usage variables, had a higher median (6) and modal score (1) than the individual feature usage variables, and scores ranged between 0 (n=5) and 97 (n=2) uses.

Except for the advisor usage variable which had a median score of 5 and a modal score of 1, the other individual feature usage variables had a median and modal score of 0, indicating low usage of these features.

To assess whether there were any differences in the proportion of day versus nighttime logins, the day and night log ins variables were reviewed. As these were not normally distributed (and could not be made so through applying a transformation), for subsequent comparison, a new dummy variable was





created, coded '1' for cases where the person's number of logins was higher at night compared with the day, and '0' where this was not the case. Scores were then compared across two demographic variables hypothesized to be most likely to differ in their time of login (this decision was taken to avoid multiple testing): IMD quintile and working status, using Chi squared analysis.

Neither result was significant, indicating there to be no significant association between IMD quintile nor working status group and the tendency to log in more at nighttime over daytime. Figures 5 and 6 are bar charts showing the frequencies for these two demographic variables, indicating that when comparing the frequency of day versus nighttime log ins, the patterns across groups stay the same.

Figure 5: Proportion of daytime versus nighttime log ins by work status

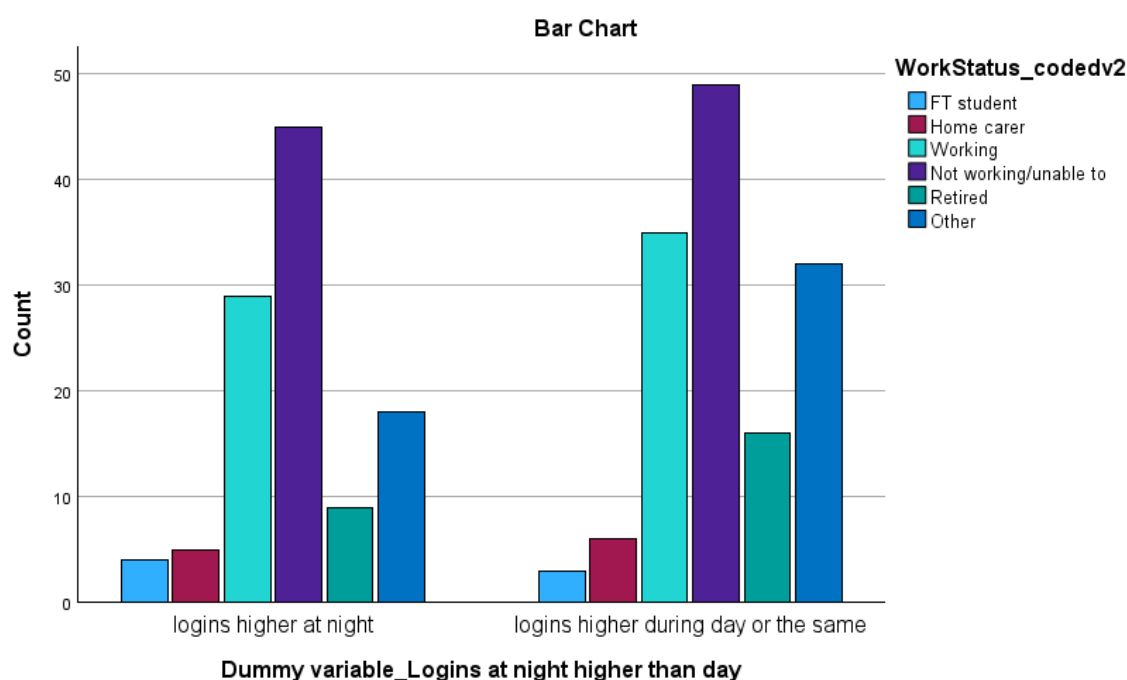
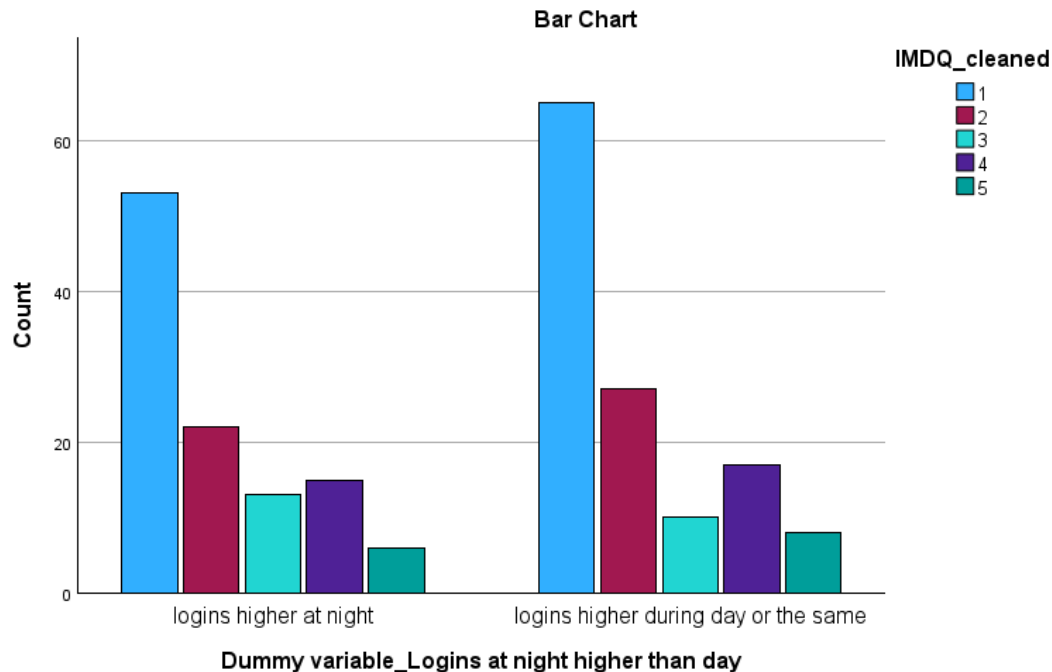


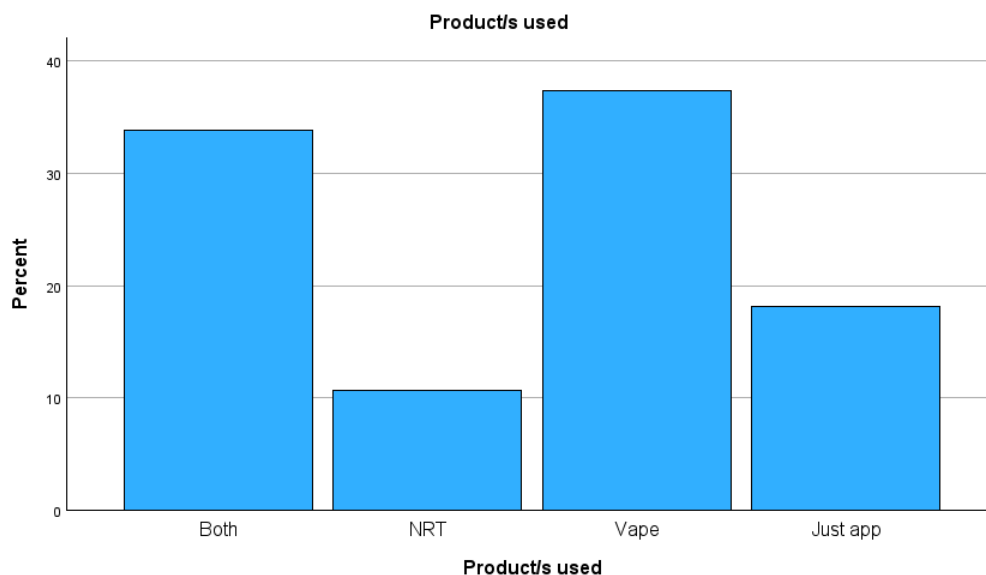


Figure 6: Proportion of daytime versus nighttime log ins by IMD quintile



Finally, figure 7 below summarise the percentage of cases that used just the app, NRT, vapes, or both NRT and vapes. As can be seen, vapes were the most popular aid (n=95), followed by vapes and NRT combined (n=86).

Figure 7: Choice of aid/products





SITE ADOPTION RATES AND PARTICIPANT SIGN-UP NUMBERS

Table 11 summarises the sites that initially signed up, the type of site, whether they withdrew and the number of cases recorded in the valid sample by the data download of February 2026. As a check, the number of cases in the cleaned sample is also included in the table.

Table 11: Sites and status as of February 2026

ICB	Trust	Service	Date joined	Withdrew	Valid cases (% of total)	Valid + non-valid cases
NHS Humber and North Yorkshire ICB						
	Hull University Teaching Hospital	Acute	Jun-25	No	32 (12.6)	45 (13.4)
	York and Scarborough Trust	Acute	Nov-25	No	17 (6.7)	20 (6.0)
NHS NENC ICB						
	South Tees Hospitals NHS Foundation Trust	Acute	Jun-25	No	2 (0.8)	3 (0.9)
	North Tees	Acute	Jun-25	Yes – Sept-25	–	–
	Northumbria HC FT	Acute	Jun-25	No	79 (31.1)	113 (33.6)





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	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	Acute	Dec-25	No	4 (1.6)	5 (1.5)
NHS South Yorkshire ICB						
	Doncaster and Bassetlaw Trust	Acute	Jun-25	No	16 (6.3)	20 (6.0)
	The Rotherham Hospital	Acute	Jun-25	No	75 (29.5)	94 (28.0)
	South West Yorkshire Partnership Teaching NHS Foundation Trust (covering South Yorkshire)	Mental Health	Jun-25	No	3 (1.2)	4 (1.2)
	Sheffield Teaching Hospitals NHS Foundation Trust	Acute	Jan-26	No	26 (10.2)	32 (9.5)
	Barnsley Hospital NHS Foundation Trust	Acute	Jan-26	No	0	0
NHS West Yorkshire ICB						





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	South West Yorkshire Partnership Teaching NHS Foundation Trust (covering West Yorkshire)	Mental Health	Jul-25	No	0	0
	The Mid Yorkshire Teaching NHS Trust	Occupational Health for Staff members	Feb-26	No	0	0
	Bradford District Care NHS Foundation Trust	Mental Health	Jul-25	Yes – Oct-25	–	–

As can be seen, of the 14 sites that initially signed up, only two withdrew (one mental health trust and one acute trust), giving a site adoption rate of 86%. Of the remaining 12 sites, we can see that three sites (one mental health, one acute and one occupational health) had no sign-ups at the time of the data download (neither valid nor not). Two of these three sites had joined the pilot late, in January and February 2026, but the third (mental health trust) had joined in the initial sign-up period, July 2025. We can also see a further two sites (one acute, one mental health) with a low number of cases, despite having signed up early in the pilot. A check of the most recent download data (May 2026, beyond the scope of the pilot) indicates that one of the three sites (acute) with no data in February 2026 still had no data in May 2026, but the other two sites had started to have sign-ups. The acute site with a low number of sign-ups in February, still had the same number in May, and the same for the mental health trust with a low number of sign-ups. This highlights a difficulty experienced during the pilot with initial patient sign-up rates to the app, despite a site having adopted the innovation, and despite the high subsequent engagement rates (with no apparent demographic differences) for those patients who do sign-up. This is why the steering group took the decision in January 2026 to expand the pilot scope to include outpatients, staff and visitors. The perceived reasons for the low sign-up amongst patients are discussed in the qualitative sections of this report (below), based on insights provided by the TDAs and the ICB leads.

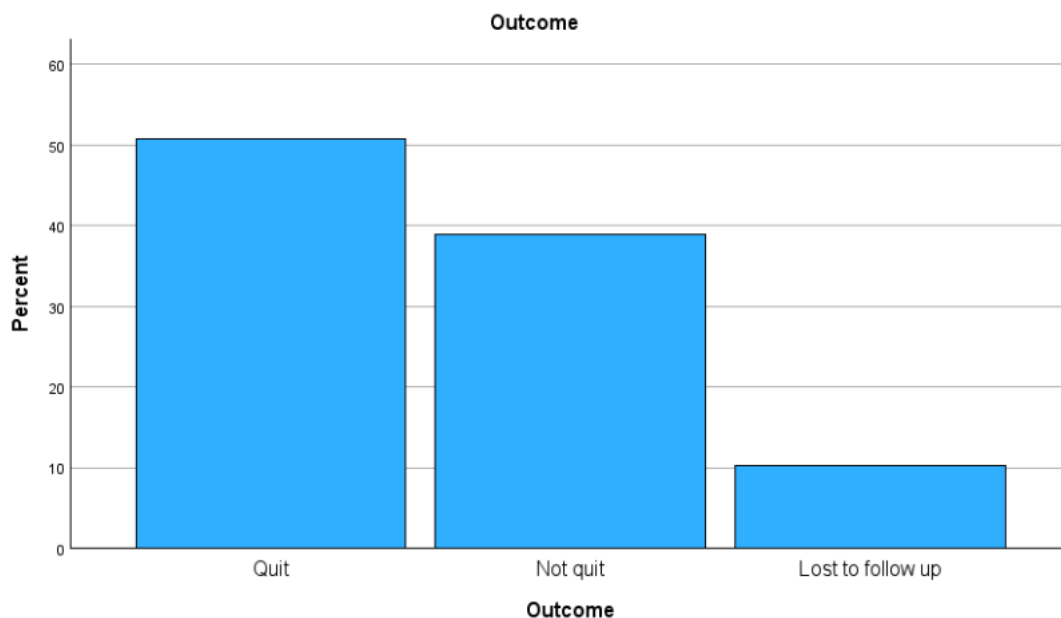




EFFECTIVENESS AND FACTORS INFLUENCING THIS

In total, n=129 people reported quitting, compared with n=99 who reported not quitting, with n=26 lost to follow up (figure 8). As such, the quit rate for the sample was 50.8%, and the non-quit rate was 39%. This quit rate meets the suggest level in the Russell Standard and exceeds the 42% rate reported in Evison et al (2020) for an inpatient sample.

Figure 8: Quit outcomes



To assess the relative predictive strength of the demographic variables and other predictors (total sessions, features use and products used), a logistic regression analysis was run. Ahead of running the analysis, the demographic and other predictors were reviewed to determine which to include and which to exclude, based on the following criteria:

1. For categorical variables:
 - a. To check for univariate outliers, the split of responses across groups was reviewed. Where group sizes were highly different (a 90% to 10% split or above), if it was possible to combine groups to create more even sizes, this was considered. Where this did not make





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conceptual sense, the decision was taken to omit the variable due to the risk of weakening the analysis.

- b. The split of responses across the outcomes was then checked, using the rule of thumb of having no expected frequencies below 1 and no more than 20% of cells with an expected frequency count of 5 or less.
2. For continuous predictors:
 - a. The spread of scores was checked, to assess whether they fell into a normal distribution (a higher frequency for middle values, tapering out to lower frequencies at the extremities), with reference to the skew and kurtosis values and review of histogram plots.
 - b. To assess for univariate normality, Z scores were computed, looking for any cases with scores greater than 3.29 as a cut-off. Where these were found, skew and kurtosis values (measures of normality) were checked again to see if their removal resulted in a normal distribution. Where it did not, square root and logarithmic transformations were applied to the variables with the cases still removed, reviewing skew and kurtosis to see if normality could be reached. The decision was taken to remove the outliers.

Table 12 summarises the decisions regarding which variables to include and exclude.

Table 12: Variables included and excluded from logistics regression analysis

Variable	Decision	Comments
Quit outcome	Treat as a binary outcome, removing lost to follow ups	The smaller number of lost to follow-ups created overly small group sizes for predictors when split across the 3 quit outcomes
Gender	Include	Male, female, other
Sexual orientation	Include with 2 categories only (exclude 'Other')	Heterosexual and not heterosexual. Including 'Other' violated criteria 1b above
IMD Q	Include with 3 groups	IMD 1 and 2, IMD 3, and IMD 4 and 5. Including all 5 groups violated criteria 1b
Age	Include as a categorised variable, 6 groups	





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Total sessions	Include using the logarithmically transformed variable	The raw scores and square root transformed scores were not normally distributed but the logarithmically transformed one was
Feature usage	Include using the square root transformed variable	
Product	Include (4 groups)	App only, NRT, vapes, both NRT and vapes
Ethnicity, pregnancy status, role and work status	Exclude	Due to violating 1a above. For work status, whilst it may have been possible to combine cases to enable inclusion, a conceptually defensible way of doing this was not identified and it was considered likely to be related also with IMD quintile and age which were included, running the risk of multicollinearity.

As detailed in the methods, the entry method was chosen, with the demographic variables entered as block one, and total sessions, feature usage and product/s as block 2.

After removal of the lost to follow up cases and the outliers, the sample size was N=219. Cross tabulations of the predictors and outcome were rerun, to ensure the group sizes were still adequate for the analysis. However, missing cases for some of the demographic variables resulted in the loss of some cases in the final analysis, with a final sample size of N=195.

Adding the demographic variable into the model at block 1 did not result in a significant model fit: $\chi^2 (10) = 9.57$, $p=0.50$, nor improve upon the base model which contained only a constant. Review of the Wald statistic for each demographic variable (predictor) reinforced this, with no significant predictors. This suggests that quit rates did not differ across genders, sexual orientations, IMD quintiles nor ages.





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Adding total sessions and feature usage and product used into the model at block 2 significantly improved model fit, the overall model was significant: $\chi^2(15) = 27.78$, $p < 0.05$, and the non-significant Hosmer-Lemeshow statistic indicates a good model fit. Review of the Walds statistic suggests only *total sessions* to be a significant predictor of quitting ($B = -1.524$ (1df), $p < 0.01$), such that as total sessions increases, the odds of quitting increases, although this should be interpreted with caution since the confidence intervals for this predictor cross 1. Quit rates did not differ depending on products used nor features usage. The model was correctly able to classify 66.7% of cases as quit or not quit. Whilst this is above the level of chance (which would be a 50% rate), it is modest and indicates that a lot of the variability in the outcome is due to factors beyond those measured and included in the analysis. Regarding robustness of the model, whilst only one case had a standardised residual higher than three (indicative of an outlier), and the Cooks distance values (a gauge of cases that have an undue influence on the model) were all below the rule of thumb threshold of 1, some caution should be noted with the findings, given that a high number of cases ($n=82$) had leverage values above the threshold calculated for this sample (0.04).

Summary of the smoke free data analysis

The final sample of valid cases meeting the treated smoker criteria was $N=254$. People of white ethnicity, who were heterosexual, not working or unable to work, and living within IMD quintiles one and two were most frequently represented in the sample.

There was a moderate to high engagement rate of 76%. There were no differences across demographic groups with regards to engagement, although comparisons could not be robustly run comparing engagement by a person's role (patient, staff, visitor), ethnicity nor pregnancy status.

The total number of times a person engaged with the app (the total sessions variable) had a good spread of scores indicating low through to high usage of the app overall, but for individual features within the app, whilst the advisor feature was used to some extent, with a median score of five, the other features had lower usage. There was no significant association found between which IMD quintile or working status group a person fell into and whether there were more log ins during working day hours versus outside of working day hours.

The site adopt rate was high, at 86%, with only 2 of the 14 sites that initially signed up dropping out, one of which was an acute trust, and one was a mental health trust. Of the remaining 12 sites, three were yet to provide data (no sign-ups to the app), with two of those having joined the pilot late, in 2026, whilst





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the third site (a mental health trust) had joined in July 2025. A further two sites were observed to have a low number of sign-ups, despite having joined the pilot in the first wave of implementation.

The quit rate was 50.8%, which meets the suggested level within the Russell Standard and exceeds that reported in Evison et al for an inpatient sample. Using logistic regression analysis to predict quit versus not quit outcomes, we found no difference in outcomes across the demographic groups able to be included (gender, sexual orientation, IMD quintile and age). When the total number of sessions was included in the model, and the combined count of all features used, and the product used (NRT, vapes, both or just the app), this resulted in a good model fit, although with only 66.7% of cases able to be correctly predicted, indicates that there are other more influential variables not measured which could better predict smoking outcomes. Only the total number of sessions used was a significant predictor of outcomes, indicating that the more the app is used, the more likely someone is to quit.

Feedback survey

The feedback survey addressed evaluations questions 3 and 5.

The survey data was downloaded on 13th April 2026 and, thus, does contain some responses that go beyond the date range of the downloaded smoke free data (downloaded February 2026). This was to optimise the amount of data collected, ensuring as many people's feedback as possible was included, whilst still being manageable within the evaluation timelines.

THE SAMPLE

The sample size was N=53, with the first response in July 2025 and the last response in April 2026. The largest proportion of respondents were patients (n=34, 64%), with only n=3 (6%) staff, however, there was n=16 (30%) missing responses to the 'role' question.

CHOICE OF VAPES AND NRT

The numbers opting for NRT or vapes to support their quit attempt, alongside the app, are summarised in figure 9 below.



Figure 9: Self-reported support alongside the app

Smoking aid	Percent
Vapes	62
NRT	55
Just the app	4

As can be seen, all but two people reported having either a vape or NRT to support their quit attempt alongside the app. The highest proportion of respondents opted for vapes (n=33, 62%), with n=18 (55%) opting for NRT. Given that vapes were the only option provided initially, with NRT added in September 2025, for the n=33 who opted for vapes, the date of their survey completion was checked. It was found that all but one of the people who had opted for vapes had completed the survey from October 2025 onwards, when NRT was an option. This suggests that where people had opted for vapes over NRT, this was typically due to preference rather than the availability of an alternative.

Usage of the vapes and NRT once received was high, with 17 out of 18 of the people who chose NRT reporting that they went on to use it, and all the n=33 people who chose vapes reported using it. Furthermore, 60% of respondents stated that had the app and additional support not been available, they would not have tried to quit, compared with n=4 (8%) who felt that they still would have (and n=17, 32% who were unsure). Whilst subjective, it suggests that the offer of the app and/or additional support may have helped nudge these people into a quit attempt.

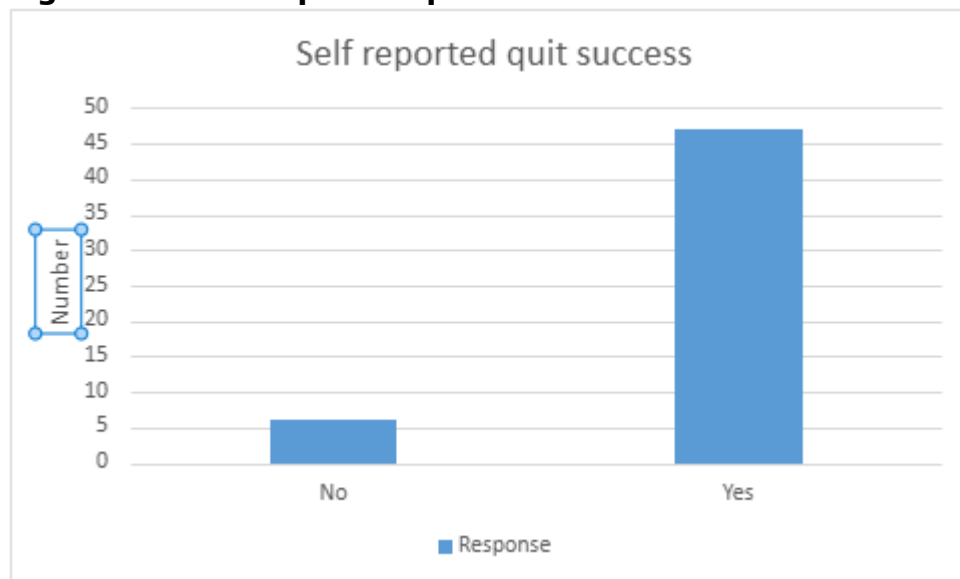
SELF-REPORTED QUIT RATES AND FACTORS PERCEIVED TO INFLUENCE SUCCESS

47 people self-reported that they had quit, a quit rate of 88.7% (figure 10).





Figure 10: Self-reported quits



Of these $n=47$, 21 (45%) said it was their first try, compared with 26 (55%) who said they had tried at least once before (for some, they reported trying multiple times).

When asked what they felt had helped them to quit, the most cited combination of factors (people could select multiple responses) was: the app and the vape, mentioned by $n=7$ people, followed by the app, vape and NRT ($n=5$), and the app, vape, NRT and support from an NHS professional ($n=4$). When responses were separate out, the most frequently cited component was the app ($n=38$), followed by vapes ($n=38$), and NRT ($n=26$), with support from family, and support from an NHS professional both separately cited 14 times. Given the small number of self-reported non-quitters ($n=6$), results for this group are not broken down further, to avoid presenting potentially misleading findings (where a small number can still lead to a high percentage).

Review of the free text comments distilled the following key themes (table 13), divided into positive, negative and suggested areas for improvement:





Table 13: Summary of free text comments

Category	Key themes	Example quotes
Positive	- App and support found helpful and effective - Positive experience with staff/team - Evidence of quitting or reducing smoking	<i>"None at all, very helpful and very nice team."</i> <i>"I was with my sister who was a patient I wasn't the patient I was with her when the stop smoking nurse came and we both stopped together, I feel it is a really good program"</i>
Negative / challenges	- Setbacks due to health or personal circumstances - Confusion or dissatisfaction with programme approach - Difficulties accessing resources	<i>"I tried very hard to stop but circumstances due to having heart monitor inserted set me back"</i> <i>"You give out the aid's but at the end of the day they all have nicotine in them...so why was i left to struggle with no vape, it's ludicrous how many people do you know on nhs that have photo id"</i>
Ideas for improvement	- Improve access to products/services - Add app functionality (tracking, ordering supplies) - Ensure continuity of vape provision	<i>"Allow ordering replacement vape liquid through the app"</i> <i>"Having something to measure... and write it down & see may help"</i> <i>"Maybe have 2 vapes... in case people lose one"</i>

As can be seen, feedback was predominantly positive, particularly regarding the usefulness of the app and support from staff. A smaller number of comments highlighted challenges related to personal circumstances and access to vaping products or support, and suggestions for improvement focused on improving access, adding app features (e.g. tracking, ordering supplies), and ensuring continuity of support.





USER EXPERIENCE AND PERCEPTIONS OF THE APP

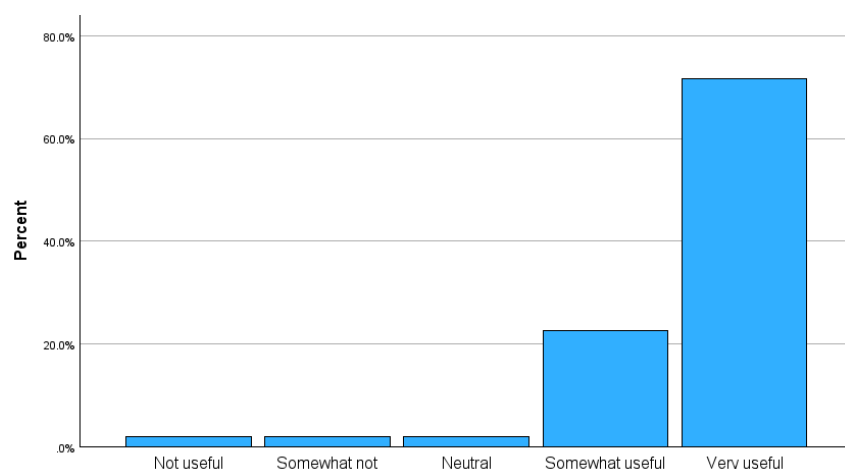
People rated the onboarding process through the NHS staff positively, with n=44 (83%) suggesting it to be 'very clear', whilst n=1 indicated that they had been handed the information only (table 14).

Table 14: Clarity of onboarding process

Response	Frequency (percent)
Very clear	44 (83%)
Clear	8 (15%)
Handed the information only (passive)	1 (2%)

Figure 11 shows the percentage ratings of the app usefulness.

Figure 11: ratings of app usefulness



As can be seen, n=38 (72%) of people rated it as being 'very useful' and a further n=12 (23%) as 'somewhat useful'. The remaining n=3 people rated it as 'not useful/somewhat not useful' (n=2) or 'neutral'.

Finally, n= 46 (89%) of those who quit said they would be very likely to recommend the app to others, and n=5 (83%) of those who did not quit said they would still be very likely to recommend the app. Across the sample as a whole, 87% stated being very likely to recommend the app (table 11).



Table 11: Likelihood of recommending the app to others

Response	Frequency (%)
Very likely	46 (87%)
Somewhat likely	5 (9%)
Neutral	2 (4%)

Summary of the feedback survey

N=53 people completed the survey, who were predominantly patients, with a roughly even split of first-time quit attempts versus those on their second or more attempt. Responses indicate a preference for having an aid alongside the app to help in the quit attempt, with vapes more popular than NRT, and where these had been ordered, they were used by the majority rather than a wasted resource. Typically, people perceived the availability of a support aid to have helped nudge them into their quit attempt (60% of cases). The self-reported quit rate in this sample was high, at 88.7%. People perceived the app itself, followed by vapes and NRT to have helped in their quit attempt, although the availability of NHS staff support and support from friends and family was also recognised. Overall perceptions were positive, with 87% saying they would recommend the app (the figure was still 83% amongst those who did not successfully quit) and 72% rating the app as very useful, and people were positive regarding the support received in the free text feedback. Despite some free text feedback regarding issues encountered with onboarding and for one person, with receiving the ordered vapes, overall, the onboarding process was also positively rated.

Interviews with TDAs

This section addresses evaluation question 4, summarising the barriers and facilitators to implementation of the Smoke Free App (covering offering the app and people's uptake of it, with a focus on patients given the timing of the interviews) from the perspective of TDAs and those responsible for leading or supporting tobacco dependency services. The analysis was framed around the Theoretical Domains' Framework (TDF) and, as such, the findings are summarised by those domains.

Five TDAs participated in an interview, representing four sites, and 10 feedback forms were also completed.





Table 15 provides a high-level summary of the range of barriers and facilitators to uptake distilled from the interviews. These are coded to the 14 domains from the theoretical domains framework.

Table 15: High level summary of relevant domains of barriers and facilitators, for the TDF

Domain	Barriers	Facilitators
Knowledge	x	x
Skills	x	
Social and professional role		
Belief about capabilities	x	x
Optimism		
Belief about consequences	x	
Reinforcement	x	
Intentions	x	
Goals		
Memory, attention and decision processes	x	x
Environmental consequences and resources	x	x
Social influences		
Emotion		
Behavioural regulation		

As can be seen, a wide range of barriers and facilitators to uptake were noted by the TDAs, covering eight out of the 14 domains from the TDF. Barriers were discussed more than facilitators, but for certain domains, notably knowledge, belief about capabilities, memory attention and decisional processes, and environmental consequences, people discussed barriers but also touched upon solutions they had arrived at.

ENVIRONMENTAL CONSEQUENCES AND RESOURCES

The highest number of issues were coded to the domain *environmental context and resources*, signifying how the app design and onboarding process, ward, hospital and system level contextual factors influenced the offering of the app and people's uptake of it. The issues discussed were chiefly barriers, but two facilitators were also cited. From a health inequalities perspective, people





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working in mental health settings spoke of how the app did not meet the needs of their services-users due to, for example, their being too poorly to engage, not having a smart phone or being wary of bringing on extra engagement with services. Regarding health inequalities, however, another respondent also commented on how good the app translation element had worked when they had a patient who did not speak English. Others spoke of patients' app skills or lack of skills – across all settings- and how this impacted on staff time, with staff needing to then step in and assist. Staff time was further impacted by situations where a patient was being seen by a doctor or was not in their bed when the TDA went to visit them, requiring them to find time to revisit them. System level barriers included poor Wi-Fi in hospitals meaning patients could not always log on after expressing an interest, increasing the risk of their failing to do once discharged. Additional issues raised included the need for patients to have ID with them to order vapes and NRT (but not always having ID with them in hospital, again increasing the risk of their failing to do once they leave hospital), and early on in the pilot only being able to offer vapes alongside the app. This was reported as being a barrier to some patients due to misperceptions of vapes and their health impacts. Once NRT was added onto the offer, this was felt to remove this issue.

"generally over the last three years we found from our service users that they like face to face contact the like sort of that one-to-one tailored support which thankfully the service that we deliver is able to do that both within the hospital and also the community... for mental health is that preference for somebody who's there in the room with them and a bit more of that hand holding support rather than that distant support" (Charlotte)

"actually one patient wasn't really good at English, but it actually came up in all the wording came up in his language, so and I'm quite impressed with that"

"NRT I have had a few patient that has said it asked for ID and sometimes they don't have this information whiles in hospital, ordering in hospital is maybe the best place to order it as they have a lot of sitting around time because when they go home it can be forgot about" (survey)

KNOWLEDGE, SKILLS, BELIEFS, REMEMBERING AND INTENTIONS TO OFFER THE APP (AND TO WHOM)

The domains of knowledge (of the app, including procedural set-up), memory and attention and decision process (remembering to offer the app) and





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intentions to offer the app were the next most frequently coded to sets of barriers and facilitators. The TDAs spoke positively regarding the training received (knowledge), said they felt confident and liked the fact that they could download the app themselves to explore it. However, issues with a lack of procedural knowledge during the set-up process was also mentioned, for example, hindering their ability to trouble shoot where any issues were encountered, and a lack of clarity regarding the rules for ordering NRT was also mentioned by one person.

"I'm very confident on explaining the smoke free app, I have had a good number of patients that has agreed to download and use the app to quit smoking"
(survey respondent)

"I think we could do with more information about what happens after, once they have downloaded, in case they ask us" (survey respondent)

"I did have some patients that have stated that the smoking app advisers said they shouldn't be ordering the NRT until they get home which I found unhelpful as if they order it in hospital they have it to go home too" (survey respondent)

Whilst the training was regarded positively for developing knowledge and confidence, there could be scope to further develop people's skills (*skills*) in handling patient resistance, for example, where this is due to misperceptions or misinformation around vapes. This challenge was encountered early in the pilot. Developing people's technical skills in walking 'non-tech savvy' patients through the process could also be helpful, with this barrier discussed by four people, or having an easy access guide to support this. Whilst most staff appeared confident in explaining the app, one survey respondent felt that there were differences in confidence across staff which could act as a barrier to offering the app (*belief in capabilities*):

"it really is a struggle to try and explain and then show them and then they can be quite resistant to it as well" (Bethany)

"I think some staff are not confident in supporting patients with the app and therefore they don't offer it to patients" (survey respondent)

The TDAs shared examples of things they had done to help them remember to mention the app to patients in the early days of the roll out, acting as a facilitator to offering the app, and one commented on how the QR codes themselves had been good reminders/prompts for them (*memory and attention*)





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and decision processes). Nonetheless, that issue of remembering (as well as finding time, discussed under environmental consequences and resources) to revisit patients who were not available (were off ward, or being seen by a doctor, or not initially interested) when first visited was still raised:

"I've got a little clipboard to take out with patient notes on and the leaflets underneath... so I can hand the leaflet over." (Mike)

"I tried to make the cards as visible as possible so I didn't forget to tell them about the app, like sticking one of the cards to my laptop so every time I did an assessment I could see the card" (survey respondent)

"And then it's remembering follow up. Oh, we haven't talked about the app. Let's bring that up. So yeah, it can sometimes be challenging to bring it up" (Bethany).

Another facilitator for offering the app, shared by one TDA, was the competitive culture in their team, driving colleagues to hand out the app (*intention*), with a 'tally' kept on the office wall, acting as a further motivator. Other TDAs, however, mentioned prioritising the standard stop smoking service first, with the app as a back-up, or their choice of wording suggested they are only offering the app to some patients who were felt to be able to use it. This suggests differing practices across people, teams and sites with some possible divergence from the suggested practice of offering it to all, alongside the stop smoking service:

"we're still doing the same process, it's kind of this is the options we've got and that would still be our last option because obviously we've a lot of our stuff, we refer people to community teams anyway, that's part of the treatment they want" (Mike)

"we've got like a tally on our wall and it's like a competition. So we're actually within the whole team, we're actually seeing who can get more cards out. So every time we, you know, give a patient a card, we've got a spreadsheet" (Louise)

"I offer the smoke free app now to most patients that are capable to download and use it" (survey respondent)





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SOCIAL INFLUENCES AND REINFORCEMENT

The final two domains of barriers and facilitators that were coded to, *social influences, and reinforcement*, complement insights linked to the other domains already discussed. For example, TDAs touched upon the challenges of offering the app, and patients taking it up, when there was reluctance from patients (*social influences*), often underpinned by misinformation regarding vapes. This again emphasises the importance of developing skills in this area, as part of initial training. An example of a social influence related facilitator was, again, the positive influence of colleagues through competition within a team to promote the app to patients. A possible barrier to offering the app, possibly impacting on motivation (*intention*) and perceptions of patient engagement and/or app effectiveness (*belief in consequences*) was the absence of feedback/follow-up on app patients for the ward-based staff:

"that's the only downside to it because we don't get any feedback, which it would be nice, you know, to actually know whether they have actually downloaded it properly because obviously we could then phone them up and say, oh, we're just reminding you, have you downloaded the app, you know?"
(Louise).

Summary of the TDA interviews

Overall, a range of barriers and facilitators to TDAs offering and patients taking up the app (noting the focus on patients, rather than patients, visitors and staff, given the timing of the interviews) were identified across eight of the 14 Theoretical Domains Framework domains. Barriers were discussed more frequently than facilitators. The greatest number of issues were related to the system people were working in, with constraints on staff time making it difficult to assist patients with lower digital literacy and system challenges such as poor Wi-Fi. Issues linked to health inequalities were noted, including mental health patients being too unwell to engage or not having a smart phone, compared with positive experiences of the app's translation function for patients who do not speak English as their first language.

While training was generally viewed positively and people felt confident offering the app, this was perceived to vary, and gaps in procedural knowledge (what happens after onboarding), and skills and confidence in challenging misinformation (especially around vapes) and patients' low digital literacy were described. Staff developed individual strategies to remember to offer the app, such as prompts and visual cues, though challenges in remembering and then





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finding the time to revisit patients remained. This was when patients were initially unavailable or uninterested at the first time of asking. Practices varied across sites and individuals in terms of to whom the app was offered, suggesting differences in motivation and intentions to offer the app, which likely impacted sign-up rates for some sites. Competition within teams appeared as a driver for offering the app. A lack of feedback on patient outcomes following app referral was described as a potential barrier to motivation for some staff.

ICB LEADS FOCUS GROUP

The ICB leads focus group explored the perceived effectiveness of the pilot overall, and reasons for this, addressing evaluation question 4, to complement the TDA interviews.

Whilst all 3 ICB leads agreed to take part, only two were able to participate in the end due to diary commitments.

A clear theme to emerge in the analysis was the *adaptations made to ensure the pilot was successful*. Issues were typically identified through the project steering group meetings, and solutions then developed and introduced. By way of example, the uptake of the app was reportedly lower than anticipated, and so the ICB leads discussed how the steering group had agreed to broaden the evaluation scope to include outpatients, visitors, and staff. They saw this as helping the pilot rather than detracting from it. Similarly, variability in how the offer was being made was identified, with some staff assuming certain patients would not use the app. Consequently, a document was developed and shared to reiterate the need to offer it to all, rather than making assumptions. Finally, the feedback from TDAs that some patients were not keen on vapes led to the introduction of NRT as an alternative offer, with the budget being revised to accommodate this addition:

"We started off looking at one thing, which was we'll just give it out to inpatients who've engaged with the service, who don't want to go to their stop smoking service, who are wanting to use a vape. And then we were saying, well, actually, that's a limited population. We didn't get close to the engagement we thought we would. Let's just offer it to all inpatients. And then we added NRT onto that because some people were unhappy with just offering of vape, and then we still weren't getting the numbers, so we added, so the team can now go round and





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offer it, use it in an offer to people visiting a site so that they can, you know, they can to help them to stop smoking. We offer it to staff"

"And one thing was the narrative that was being said to the patients differed. So, it was almost like we had a brief, but people were saying different things or interpreting who could take it or who couldn't. And rather than the app being offered to anyone, regardless of whether or not they were going to a local stop smoking service, people were almost giving them a choice rather than saying, well, do you know what, in that we're going to refer you, but you have this as well, because this could help when you're craving. So that was also learning for us in the stakeholder meetings to try and understand why we weren't getting the uptake and why some trusts had higher uptakes and why some trusts weren't. And I think once it became a bit clearer, so that resulted in a bit of a FAQ document which kind of really spelt out what the offer was and what it wasn't. I think that also helped in a way".

The ICB leads discussed the potential to learn from two Trusts that had the highest number of people downloading the app, suggesting a likely differentiator between them and some of the other trusts was differing cultures. This was perceived to be not only at Trust level, but also at team, and influencing staff motivation too: *individual, teams and trust cultures*. This is an interesting finding, that cultural differences were still perceived, even though signing up was voluntary rather than mandatory and that the ICB leads had been selective in their approach to sites. The difference was felt to stem from a readiness to engage with the innovation, seeing its value, through to a competitive motivation to hit the high download rates and to seek out solutions or workarounds where genuine challenges like poor Wi-Fi were experienced:

"So, they know the information, but how well they say or present that information...Because I also have one of the trusts that is really high performing is in my patch. You know, they've run with it and they're doing fantastic. And then I had one trust who (only had a small number of patients take it up). And I kept wondering what's happening. So, there was an offer of support from Smokefree. I offered to have a meeting with them...and there was a push back, reluctance, cancellation, which then speaks to the trusts, you know, the team culture...as opposed to this offer isn't good and people don't want it. But if you're not telling people about it, then people cannot take up the offer".





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"for instance, if you talk about the Wi-Fi thingy and they can't download it because the Wi-Fi is bad while they're in hospital, when people get discharged, the teams are meant to do a follow-up anyway, you know, after a week and check, how are you getting on, have you got your medication yet, etc. That's the opportunity to ask, oh, were you able to download the app? If not, I'll send you the link again. So, there are ways to get around some of that. So again, I think it's the team, the team can be the facilitator of the barrier to the successful implementation of that".

The leads emphasised that their interest was in how well the app worked in this setting, where patients (and staff and visitors) may not have formed such a strong intention to quit, and discussed the importance of that being acknowledged in the evaluation. Indeed, the discussion around team culture also emphasised the *importance of a fair evaluation and the opportunity to learn*, reflecting sentiments from the implementation science literature that if the app is not being promoted to patients, or is not being promoted well, then it cannot be taken up and cannot have an effect:

"We weren't ever setting out to prove that the app helps people to stop smoking because they've done that. It works everywhere. So, was it effective in helping people stop smoking? Yes, but we knew that or else we wouldn't have engaged in it the way we would. Was it in fact, was it effective in expanding our knowledge around about the interventions that work in this space. Yes, I think it is... I think that's where for me was the utility of this is, if we add an app to a discharge, does it result in people, you know, other people who leave hospital? Are they, do they take that up?".

Finally, the leads discussed the *sustainability of the app*. It was seen as easy to implement, and smoking cessation is a priority topic, but the leads also reflected on how budgets are carved up to pay for services would determine sustainability. It was acknowledged that the traditional stop smoking services are secured for trusts in ICB funding, and local authorities had additional funds





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for smoking cessation. However, additional NHS funds would need to be secured for the app, and this could end up as small pots of underspend as had been the case in one of the ICBs for next year. The fact that the pilot has generated evidence was seen as a positive step, with potential to also share funds across the NHS and local authorities, given that NHS treated patients flow back to the community:

"I think it would be easy in a practical sense to continue. How easy it would be financially to continue, I think, is the question, and it, you know, it will be, as Louise said, it will be up to ICBs to find funding from somewhere. It will be up to charities to find funding from somewhere to give to the NHS".

"tobacco is still a priority, but the tobacco benefit treatment teams are the priority, because that's the one that they have to, they can strategically commission it, and that's the one they nationally need to report back on... And also they were mentioned in like the government's, the 10 year plan and all of that. Anything like this pilot is an enabler, supportive element. So whether or not the ICB is used to continue to prioritise this, I don't know. I think I've just been fortunate that I had some underspend that I could make a case to say, right, in this 26, 27, can I use some of this? But what happens beyond that? I don't know. I think there's probably an opportunity with the local authorities as well, given the amount of funding that they are flush with around, you know, because this is, well, while the interventions is starting in hospital, people are going home. So you could almost make the case for that".

Summary of the ICB leads focus group

The focus group was attended by two ICB leads whose roles involved responsibilities around smoking cessation. Two key themes to emerge were the importance of having adapted to insights over time and the importance of team culture. The ability to adapt over time was seen as important in ensuring the success of the pilot, and the learning derived from this was also evident, notably around the inclusion criteria and offering of NRT and vapes alongside the app. This would not have been as easy without the frequent steering group meetings and monitoring of data throughout the pilot. Regarding team culture, this was seen as particularly influential on uptake rates by patients across sites, but also around sites willingness to engage with solutions and workarounds to challenges encountered such as the poor onsite WIFI. Tangible examples given included





competition across sites and teams driving uptake rates and staff motivation. The evaluation was seen as important in creating an evidence base for how the app works and its ease of implementation in this inpatient setting, with this evidence important to help drive future funding decisions. Indeed, funding was the only challenge to sustainability, with the app otherwise seen as easy to roll out.

A CHECK OF HOW THE APP WAS OFFERED

Based on the insights from the ICB and TDA focus group and interviews, a short Microsoft forms survey was administered in April 2026 via the steering group, to check the process being used for offering the app across the sites. Ten people responded, but covering 4 sites only.

As detailed in the methods section, the agreed process for offering the app initially was:

- Any patient identified as a smoker during admission is approached by a TDA and asked whether they would like support to quit or to at least abstain during their hospital stay, as is usual practice
- The app is offered alongside the community stop smoking service, with the option of vapes and/or NRT also suggested as an additional support aid to all patients
- Where patient expresses a preference for the app, the QR code and business card is handed to the patient, and the patient is supported to download the app, and to do the onboarding process, including selecting vapes and/or NRT as desired

However, as can be seen in table 16, the process differed across sites initially, with two identifying a tendency for staff to selectively offer the app, but then their moving to a more inclusive, universal offer, and one site suggesting an inclusive offer from the start. The remaining site has continued with a selective offer, likely reflecting their being a mental health trust and some of the challenges discussed during the TDA interviews.





Table 16: Site reported approach to offering the app

Trust / Site	Combined Staff Response Pattern	Key Themes from Responses
Doncaster & Bassetlaw	App offered alongside NRT during inpatient stay with full support	Inclusive offer
Hull University Teaching Hospital	Shift from initially selective use toward broader all-patient offer	Moved from selective to inclusive offer
Rotherham NHS Foundation Trust	Some staff were selectively offering the app, but following a Plan-Do-Study-Act review, moved to a strong emphasis on offering app to all patients, reducing staff judgement, practical support, team reflection, and iterative service improvement	Moved from selective to inclusive offer
SWYPFT (Mental Health Trust)	More selective or certain-case use; often discharge-stage; leaflet/QR dependent; variable support levels	Selective offer, lower-touch model, discharge-focused, certain-case implementation

Whilst only available for four of the sites, this feedback reinforces the insights from the ICB leads focus group, where a process of reviewing, learning and adapting over time was discussed. It also flags initial implementation challenges (fidelity to the intervention as planned), with some staff adopting a different approach to the offer that originally intended.

Costings analysis

The following intervention costs were included in the analysis (table 17):

Table 17 Estimated costs

Input costs	Calculation	Cost
Quit license and NRT	£281 x 129 quitters	£36,249
TDA time spent in training	28 staff x 0.5 hr at £37/hr	518
TDA time taken to introduce app to patients	Based on 50% quit rate, N=129 patients costed at 3.5 mins and N=129 costed at 20 minutes	£1880
Total intervention costs		£38,646

The cost per quit was estimated at £38646.53 (total costs)/129 (number who quit)
= £299.59





For the ROI, As detailed in the methods section, the NHS saving benefit of a person quitting smoking was assumed to be £2202, based on the EQUIPT study for a ten year time horizon. The total benefit, therefore, was estimated at £2202 x 129 = £284,058.

The Return on Investment, therefore =

$$£2202 \div £299.59 = 7.35$$

Therefore, an estimated £7.35 was saved for every £1 invested

Conclusion and recommendations

This pilot found that the Smoke Free App can be introduced within secondary care sites, having achieved a high site adoption rate (only two sites withdrew). However, there was variability across sites in the sign-up/download rates to the app, with some sites achieving high download rates yet others having very low rates that persisted over time. It is for this reason that the scope of the pilot was expanded to include staff, outpatients and visitors in January 2026, reflecting the remit of the steering group to monitor the data and arrive at solutions and adaptations to address problems encountered. Once a person signed up, however, engagement rates were moderate to high and did not appear to vary across those demographic groups able to be included in the analysis.

System factors, notably WIFI connectivity in hospitals, and challenges around supporting patients with low digital literacy (namely, the time required and staff knowledge of the onboarding process to help with trouble shooting) were common implementation barriers identified by the TDAs interviewed, alongside the skills needed to challenge patient misperceptions, for example, regarding vapes and their merits. These are chiefly examples of barriers to achieving sign-ups. However, there was also some variability apparent in how the app was offered to people across sites, which was perceived to influence sign-up rates, and is an example of a barrier to staff offering the app. This was addressed by the steering group, with a document shared to reinforce the 'universal offer' procedure, and some sites did report moving towards a more universal offer. Nonetheless, it is assumed that this variability likely contributed to the varying download rates across sites. Some sites also reported a competitive culture for offering the app and achieving high download rates which, again, likely bolstered download rates for those sites compared with others. Indeed, the ICB leads focus group reinforced these findings, suggesting how differing cultures across





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sites influenced staff motivation, how the offer to people was made, readiness to use workarounds to tackle challenges (like poor site WIFI), and, ultimately, download rates.

Besides these largely system and team level drivers of implementation success (which affect both the offer from staff and the likelihood of people taking it up), the qualitative and quantitative findings also suggest that the Smoke Free App is less suitable for use within mental health care inpatient settings or requires a different approach. Of the three mental health trusts, one withdrew from the pilot and the other two had lower sign-up rates. The TDA interviews further reinforced this, with issues around access to smart phones, service-users not being well enough to engage, and a potential preference for in-person support for mental health care service-users mentioned. Indeed, the evidence-base for smoking cessation amongst mental health service-users suggests that whilst people with severe mental health problems may be motivated to quit, more tailored support is required to effectively support them^{18 19 20}.

Once someone has engaged with the app, the quit rates among those meeting the 'treated smoker' criteria are in line with, or higher than, relevant benchmarks, and there is no evidence of differential outcomes by gender, sexual orientation, age nor IMD quintile. The costings analysis, based on the total intervention cost (quit license, NRT, TDA time in training and offering the app), the quit rate, and the estimated NHS savings of a person quitting suggests the cost per quitter to be £299.59, and the return on investment at £7.35 per £1 spent. Taken together, this suggests the app can be a useful addition to existing stop smoking support when offered in secondary care.

Going forwards, attention should be given to strengthening implementation and reducing variation between sites. The following actions are recommended:

1. To ensure the lessons learned during this pilot are shared, including:
 - a. Learning from the best performing sites what it is that they are doing differently, despite likely facing the same constraints as other sites. And, to use these rich insights, alongside those identified within this evaluation (e.g., process for offering the app,

¹⁸ <https://www.york.ac.uk/healthsciences/closing-the-gap/scimitar-programme/>

¹⁹ <https://onlinelibrary.wiley.com/doi/pdf/10.1111/add.15724?msocid=2592a2e092296eec3705b48193a36f16>

²⁰ [Improving support for people with severe mental illness to quit smoking: comparing a bottom-up with a top-down quality improvement approach - White Rose eTheses Online](#)





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competitive review of download rates, workarounds), to develop supporting materials to guide other sites.

- b. The importance of regular monitoring and 'solution-focussed' steering group discussions and ethos.
 - c. The importance of providing clarity to sites and staff regarding the process for offering the app. There should be an emphasis on the offer being universal, and on the benefit of offering the app alongside the existing stop smoking service. The 'TACT' principle can be helpful in working through providing this clarity: what is the Target population? What is the Action required of staff? What is the Context? And what is the Timing of the offer?
2. To build on the costings analysis to develop a costed delivery model.
 3. To identify influential site champions to encourage buy-in amongst all staff (site and team cultures) and to check consistency of the offer early on.
 4. To review best practice guidance for audit and feedback methodology to assess whether there is scope for improvement in the current benchmarking process used to track uptake and feedback across sites. For example, current evidence-based recommendations include the importance of feedback coming from a respected peer and including an action plan with advice for improvement^{21 22}
 5. To develop a step-by-step guide to help with onboarding people with low digital literacy.
 6. To review staff training to ensure staff are aware of the next steps in the onboarding process and are confident to address any misperceptions they may encounter.
 7. To review alternative innovations or approaches tailored for mental health care settings, drawing on the expertise in this area by leaders in the field and recent developments^{17 18 19}.

²¹ [Audit and feedback: effects on professional practice | Cochrane](#)

²² [Improvement Science Snapshot - A quick guide to effective audit and feedback](#)





Limitations

Whilst this evaluation has triangulated quantitative and qualitative evidence from patients, TDAs and ICB leads, and included app downloaded data, it is important to acknowledge four key limitations. The first is that, due to the slower than anticipated sign-up rates amongst patients, the scope of the pilot was extended, and the deadline was lengthened to ensure all licenses were used. This meant that the data used in the evaluation was not the complete data set, having been downloaded in February 2026 to fit within the evaluation budget and timeline, with data collection still ongoing at the time of this report (June 2026). Thus, there is a small but potential risk that the findings with the full dataset could differ to those for the partial, early downloaded data analysed here, for example, due to the former containing more staff and visitor cases.

The second limitation is that data was not collected on the number nor characteristics of the patients approached. As such, it was not possible to calculate a true *reach rate* for patients (of those approached, how many signed up) nor to assess for any demographic differences in sign up rates across different demographic groups. This is important since any intervention introduced into the health services should avoid further contributing to health inequalities. As such, we recommend the future evaluations attempt to gather such data, to review sign-up rates across demographic groupings. As an additional note regarding future data collection, we also recommend measuring self-reported intention to quit to assess the strength of intention in this 'teachable moment' secondary care population, and to use this as a predictor of quit success in subsequent analyses.

The third limitation is that the costings analysis was a basic costings, using published figures for the estimated NHS benefit of people quitting and with no sensitivity analyses run. It is for this reason that we have recommended building on that analysis to development a costed delivery model. The final limitation is that sample sizes were small for the evaluation components except for the downloaded data (e.g., the feedback survey, the TDA interviews and the ICB leads focus group). And so, whilst the analyses chosen were appropriate and the findings strengthened through triangulation across multiple data sources, some caution should be used to avoid over extrapolating from these smaller sample derived findings.





APPENDIX 1

Total project finances

NEY Tobacco @ 30/06/2026	
Income	
Income NEY Tobacco	180,000.00
	-
Total Income	180,000.00
Pay	
NENC HIN Administration	18,000.00
Project Manager NENC	16,500.00
Onboarding and training	3,500.00
Total Pay	38,000.00
Non-Pay	
Contract 1339 - SmokeFree service	102,070.00
Yorkshire & Humber HIN Evaluation	35,500.00
Comms Materials	4,430.00
Total Non-Pay	142,000.00
Net Balance	-





APPENDIX 2

TDA interview topic guide

1. *What do you see as the main barriers and enablers that affect staff engagement with the app?*
 - a. *How confident do you feel when explaining the SmokeFree app's purpose and benefits to patients?*
 - b. *Do you ever find it challenging to remember to introduce the SmokeFree app during patient consultations?*
2. *Based on patient feedback or what you've observed, how effective do you think the app is in supporting smoking cessation?*
 - a. *In what ways has referring patients to the SmokeFree app influenced your clinical workflow and the wider delivery of tobacco dependency treatment?*
 - b. *Since you began referring patients to the SmokeFree app, what changes have you observed in follow-up rates and overall service performance?*
3. *Do you recommend the app to be widely adopted?*





APPENDIX 3

ICB leads focus group topic guide

TA leads topic guide

1. Can you tell me briefly about your TA roles in general, please?
 - a. What's your remit/responsibilities? What area do you cover?
2. What has been your involvement with the smoke free pilot?
 - ♣ E.g., approaching sites ?
 - Can you give me an example of how you approached sites
 - What did you do?
 - Do you have any insights RE what made some sites agree and launch, and others, not?
 - ♣ Do others agree?
 - ♣ E.g., roll out/implementation across sites or across your ICB
 - Can you give an example of what you did? Or wider team within the ICB?
 - Did you vary across sites or use the same approach for all?
 - Was that the same for others?
 - Was it easier for some sites than others to do the roll out?
 - Why do you think that was the case?
3. Why do you think your ICBs got involved in the pilot?
 - b. Did it address a gap in delivery?
 - c. Scope for improvement in this area?
 - d. Was it a priority area for your ICB?
 - ♣ How did you know that?
 - e. Had the smoke free app already been selected as the innovation to pilot when your ICB came onboard?
 - ♣ What did you think of it?
4. How effective do you think the pilot has been?
 - ♣ And why is that?
 - The app? How implemented? Engagement levels across sites?





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- ♣ Any unanticipated consequences?
- ♣ Do others agree?

5. How easy would it be to continue with the app at the end of the pilot?
 - Does your ICB plan to do this?
 - What could help support this?

