# Digital Home “Healthy Heart” Screening and Cardiovascular Disease Prevention Programme – A White Paper

## Executive Summary

The Digital Home “Healthy Heart” Screening and Cardiovascular Disease Prevention Programme represents a groundbreaking approach to tackling one of the UK’s most pressing health challenges. This innovative study, conducted in collaboration with Pharmacy2U and PocDoc, demonstrates the power of digital-first healthcare interventions to revolutionise cardiovascular disease (CVD) prevention and management. By combining at-home “Healthy Heart” screening with personalised, pharmacy-led health education, this programme has delivered both equitable access and behavioural change.  In doing so it has shown the potential to save lives, reduce time needed in Primary Care, and lower the economic burden on UK PLC.


## Introduction

Cardiovascular disease (CVD) remains one of the leading causes of death and disability in the United Kingdom, contributing to over a quarter of all deaths each

year[1]. Despite significant advances in treatment and prevention strategies over the past few decades, CVD continues to pose a substantial burden on public health and the healthcare system. The NHS Long Term Plan (2019) identified CVD as the single biggest area where lives can be saved over the next decade[2]. In addition to lives saved, CVD is estimated to cost the health system £7.4 billion and the economy £15.8 billion annually[3]. This makes CVD second only to Mental Health Illness[4] in terms of cost to the UK Treasury; economic modelling demonstrates a meaningful improvement to GDP by 2030 if CVD is tackled through prevention[5].

Early detection and intervention are crucial in reducing the impact of CVD. Research has shown that many cases of CVD are preventable through lifestyle changes and appropriate medical interventions[6]. The UK National Screening Committee (UK NSC) and other health organisations have been working to develop and implement effective screening programmes to identify individuals at high risk of CVD before symptoms manifest[7].

However, traditional CVD screening methods face several challenges in the UK healthcare system:

- **Limited reach**: Current screening programmes, such as the NHS Health Check, only reach a fraction of the eligible population. In 2023-24, just under half of the annual eligible population attended a Health Check[8]
- **Resource constraints**: The NHS faces significant pressure on its resources, making it challenging to implement comprehensive screening programmes across the entire population[2]
- **Technological barriers**: The infrastructure to integrate data from testing devices through the clinical pathway from screening to management significantly impacts the success of screening programmes
- **Health inequalities**: CVD disproportionately affects individuals from deprived areas and certain ethnic minorities, highlighting the need for targeted screening approaches[1]

Alongside this, in the UK there has been movement in the political agenda to improve health. The current government's mission is structured around three shifts[9]:

- From a service treating sickness to one focussed on preventing illness occurring in the first place
- From delivering care in hospitals to delivering care closer to home
- Digital transformation of service delivery

Significant transformation will be needed throughout health and care if these shifts are to be delivered, with the urgency that is being put forward.

As we enter 2025, innovative approaches to CVD management are crucial to address this ongoing health crisis. This white paper presents the results of a groundbreaking study conducted using the digital at-home "Healthy Heart Check" testing device (PocDoc) in collaboration with the online pharmacy (Pharmacy2U),

aimed at improving cardiovascular health outcomes through enhanced health education, engagement, and access to clinical support, whilst simultaneously reducing health inequalities.

We present an approach that aligns with all three of the strategic shifts described. By addressing these issues, we can work towards more effective strategies to reduce the burden of CVD on individuals, communities, and the healthcare system as a whole, whilst having a significant positive impact for The Treasury.

# Study Design and Methodology

The study was designed to test the hypothesis that a digital home “Healthy Heart Check” screening and cardiovascular disease prevention programme could target a national population, with specific attention to those in hard-to-reach communities, and have a positive impact on individuals through improvement in lifestyle factors.

## Study Population

The study targeted a defined baseline:

- Existing eScript patients from the Pharmacy2U database
- Aged between 40-74
- Equal split of male to female
- Not currently on any lipid-lowering prescribed medication

## Recruitment and Enrolment

Two cohorts were invited to enrol in the study:

- Cohort 1 - Invited based only on the baseline criteria
- Cohort 2 - Invited based on the baseline criteria and residing within an area whose postcode is defined as deprived according to the Office for National Statistics Census data for 2021 indicating that >35.5% of households in the Local Authority District are classed as deprived in at least one dimension[10]

E-mails were sent to each cohort inviting them to enrol and participate in a Healthy Heart Check study.  It was made clear that there was no charge for any element of the study (tests or pharmacist review).

## Intervention

The intervention consisted of several key components:

1. **Home “Healthy Heart Check” Screening**: Participants received two PocDoc self-test kits (Healthy Heart Check) for lipid measurement and heart health screening, one at the beginning of the study and another after 8 weeks.

2. **Digital Health Platform**: Both Pharmacy2U and PocDoc operate on digital health platforms. The PocDoc app served as the central hub for processing and providing access to test results and for push notifications to educational content. The Pharmacy2U platform served as the central hub for clinician support and the 8-week health education programme, including the creation and hosting of supporting educational content. Pharmacy2U also utilised its logistics platform to provide end-to-end operations for delivery of the PocDoc Healthy Heart Check directly to patient homes.

3. **Pharmacist Consultations**: Participants were offered two clinical reviews with a Pharmacy2U pharmacist, coinciding with the completion of each test.

4. **8-Week Personalised Programme**: Following the initial screening and consultation, participants received an 8-week personalised education programme focusing on cardiovascular health improvement, targeted to their individual modifiable risk factors. They were sent targeted health information emails with content and a link to a webpage with further insights and educational material.

5. **8-Week Generalised Programme**: Participants who ordered a test but did not complete it received an 8-week generalised health promotion programme relating to risk factors associated with heart health. They were sent generalised health information emails with content and a link to a webpage with further insights and educational material.

6. **Recommendation to see their GP**: Any tester with a QRISK®3 score ≥10% was advised to see their GP for further management, based on the NHS management protocol. These individuals were still included in the 8-Week Personalised Programme and were still offered pharmacist consultations.


## Data Collection

Data was collected at multiple points throughout the study:

1. **Health Metrics**: Obtained from the PocDoc self-tests and app, including Lipid Levels, BMI, QRISK®3 and other elements of an NHS Health Check
    a. QRISK®3 is a well-established CVD risk score, designed to identify people at high risk of developing CVD[11]
    b. It is used by the NHS to identify those individuals who need aggressive support to reduce their risk of having a CVD event[12]
    c. A QRISK®3 score of ≥10% indicates those who need this targeted support

2. **Pharmacist Consultation Records**: Documenting discussions on test results and lifestyle interventions

3. **App, Web Page and Email Engagement Metrics**: Tracking participant interaction with personal notifications and educational content throughout the 8-week programme

4. **End-of-Study Survey**: Gathering participant feedback on the programme's effectiveness and user experience

## Outcome Measures

The study assessed several primary and secondary outcomes:

**Primary Outcomes**

- Participant engagement with the digital platforms and educational content

- Diversity of participation and engagement to include those living in areas of deprivation
- Self-reported lifestyle changes, motivations, and health behaviours
- Self-reported improvement between Test 1 and Test 2

### Secondary Outcomes

- User satisfaction with the digital-first approach
- Pharmacist consultation uptake, attendance rate, health topics discussed, and perceived value


## Data Analysis

Quantitative analysis was performed on the metrics available from the data relating to each test by PocDoc.

Qualitative and quantitative data analysis was performed using the survey sent to testers, and the information shared during pharmacist consultations.

# Key Findings

## Primary Outcomes

### Participant Engagement

- Rapid recruitment: 3,871 patients signed up in two weeks

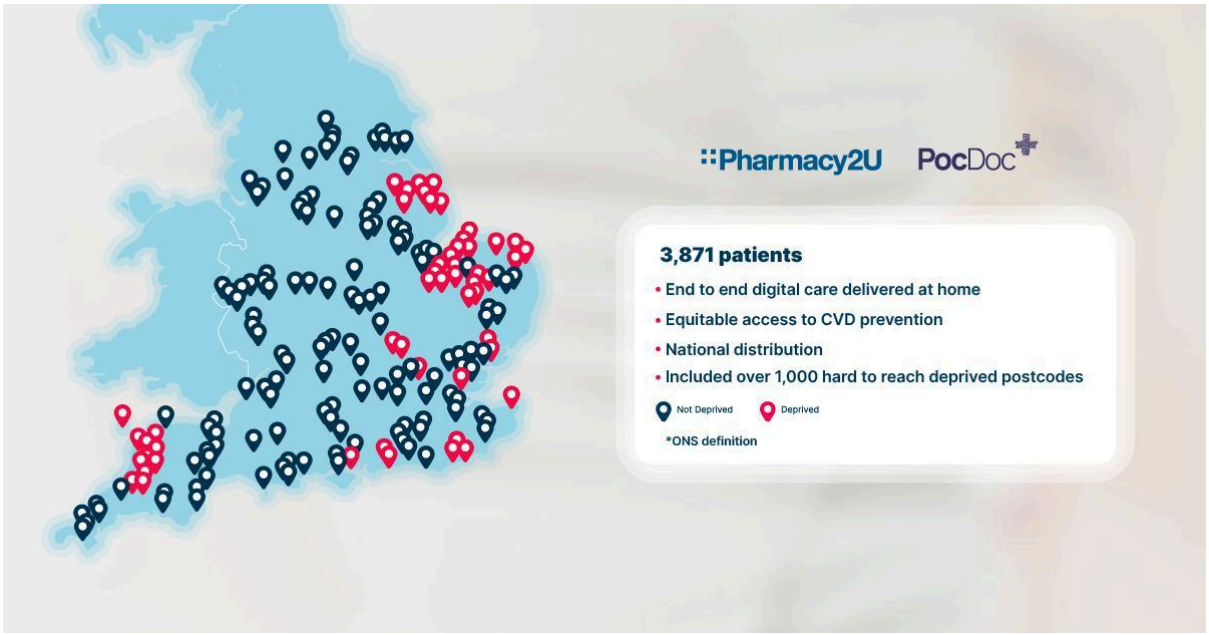
- 2,657 (69% uptake rate based on Test 1 sent out) tests were completed as initial tests (Test 1)

- 754 (52% uptake rate based on Test 2 sent out) tests were completed as initial tests (Test 2)
    - 28% of those who completed Test 1 also completed Test 2

- Testers fell into a 56% Female: 44% Male split

- The mean age of testers was 55 years and 10 months (SD 9 years and 4 months)

- 7.6% of those who completed Test 1 came from the most deprived 20% of postcodes, as determined using the English Indices of Deprivation 2019[13]
    - 3.5% came from the most deprived 10% of postcodes
    - 29.5% came from the most deprived 50% of postcodes




- 749 (28% of those who completed Test 1) had NEVER had their cholesterol level checked
    - 1,118 (42% of those who completed Test 1) had their cholesterol level checked in the last year and still went on to check it again through this study

- The education-specific webpages attracted good attention, with smoking cessation standing out as 25% of participants who smoke engaged with that digital pathway

### Self-reported lifestyle changes and health behaviours

- 77% reported being "Motivated" or "Very Motivated" to continue making healthier choices
    - Key themes: healthy choices, weight management, diet & exercise

- As predicted in this short timeframe, there was not a statistically significant difference in lipid levels between Test 1 and Test 2, however 46% of those who completed Test 2 reported improved health results

- 62% reported they had told family and friends about this programme
    - 43% had told 3 or more people about it

### Lipid Test Metrics

- 22% of those completing Test 1 had a Total Cholesterol level higher than 5.0mmol/L (above healthy level)
- 35% of those completing Test 1 had a triglyceride level higher than 2.3mmol/L (above healthy level)
- 22% of those completing Test 1 had a QRISK®3 score ≥10% (high risk)

Additional analysis of the data captured to calculate QRISK®3 also identified the participant population included:

- 74% above a healthy BMI
    - 38% had a BMI >30 (indicating obesity)
- 7% who currently smoke

## Secondary Outcomes

### User satisfaction with the digital-first approach

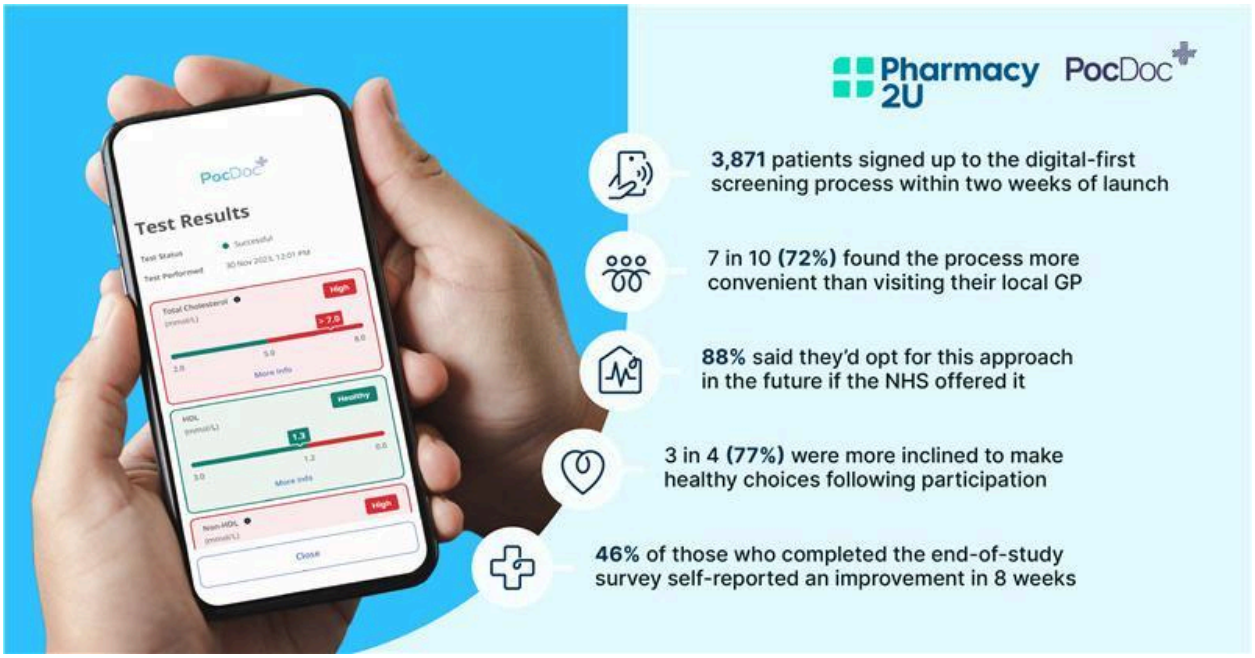
- 95% of survey respondents found app download "Easy" or "Very Easy"
- 86% of survey respondents found results interpretation "Easy" or "Very Easy"
- 72% of people who took a test agreed the process was more convenient than visiting a GP
- 94% overall ease score from those who participated in the full programme (75% for those who completed only Test 1)
- 87% overall satisfaction score from those who participated in the full programme (69% for those who completed only Test 1)

### Pharmacist consultation uptake and perceived value

- 18% of participants booked the free pharmacist consultation
    - 84% attendance rate at these appointments
- 98% found booking the consultation "Easy" or "Very Easy"
- 84% found the consultation "Helpful" or "Very Helpful"

- Of those who did not book a free pharmacist consultation;
    - 32% reported not feeling like they needed one at this time
    - 19% reported that they might book one in the future

- Those who had a pharmacist consultation focussed their discussions around
    - Understanding their Healthy Heart age and QRISK®3 score – 90%
    - Understanding what raised lipids meant, particularly triglycerides – 52%
    - Understanding their BMI and the implications of a raised BMI – 98%
        - Making changes to diet, weight, and BMI had the highest level of commitment to change




## Alignment with National Health Priorities

The Healthy Heart Programme approach outlined in this paper aligns closely with the three strategic shifts in UK health and care strategy. These shifts aim to transform the NHS and improve healthcare delivery across the country[9].

## Shift 1: From Treatment to Prevention

Prevention is clearly the core of the Healthy Heart Programme approach, with the study demonstrating how effectively self-reported behaviour change was achieved.

- Providing personalised educational support that is both engaging and accessible, given its digital format
- Offering lifestyle intervention advice and regular support throughout the programme
- Uncovering individuals at risk of ill health and providing them with tools to address health issues

This approach aligns with the government's goal of shortening the time people spend in ill health and preventing illnesses before they occur[14].

## Shift 2: From Hospital to Community

By anchoring the Healthy Heart Programme approach through the nation's largest online pharmacy, this study has demonstrated how CVD prevention can be firmly rooted in all communities, nationwide.

- Expanding services beyond traditional dispensing to include a digital clinical care pathway for Cardiovascular Health
- Engaging patients who may not be adequately served through Primary Care or conventional in-surgery routes
- Providing care and support in the community, wherever that community is
- Providing on-demand digital access with convenient clinician engagement as required, putting people in better control of their health

This aligns with the government's goal of delivering more tests, scans, treatments, and therapies closer to where people live, whilst at the same time freeing up routine Primary Care time for those most in need[14][15].

## Shift 3: From Analogue to Digital

At the heart of the Healthy Heart Programme approach is digital transformation:

- Utilising PocDoc's digital platform for home-testing and result interpretation
- Offering in-app, digital-first engagements including real-time booking of a clinician review of results integrated into Pharmacy2U's digital platform to offer tailored learning resources, personalised health advice, and virtual consultations

- Providing dynamic and personalised notifications connected to digital treatment pathways driving conversion into tangible patient behaviour change

This shift mirrors the government's aim to create a more modern NHS by leveraging digital technologies to improve patient care and engagement[1416].

The study's comprehensive approach, combining digital tools, community-based care, and a focus on prevention, demonstrates a strong alignment with the three strategic shifts in UK health and care strategy. By validating this model operationally and clinically at scale across the UK, the study has the potential to contribute significantly to the transformation of healthcare delivery in line with the government's new health strategy.

## Discussion

The findings of the Healthy Heart Study conducted by Pharmacy2U and PocDoc highlight the potential of a digital-first approach to cardiovascular disease (CVD) prevention and management.

### Comparison with Traditional NHS CVD Screening Programmes

National screening programmes aim for an acceptable threshold that varies from programme to programme; from 52% of the relevant population in Bowel Cancer Screening to 80% in Cervical Cancer[17].

There isn't a clear threshold for the current NHS Health Check. However, the Healthy Heart Study demonstrated a significantly higher engagement rate compared to traditional NHS Health Check programmes.

With nearly 70% of participants completing the first test (Test 1), this programme outperformed the NHS Health Check uptake rate of 39%. Furthermore, 28% of participants who completed Test 1 proceeded to complete Test 2, indicating sustained engagement over the study period.

Most significantly 22% of those tested were at serious risk of having a CVD event in the next 10 years, as indicated by a QRISK®3 score of ≥10%. This is consistent with published data on the pick-up rate of those at high risk of a CVD event found through the traditional NHS Health Check[18] demonstrating the effectiveness of this approach in identifying those at serious risk of harm from CVD.

### Addressing Health Inequalities

The Healthy Heart Study demonstrated promising results in reaching populations affected by health inequalities, particularly those living in areas of multiple deprivation. The digital-first approach proved effective in engaging individuals across various socioeconomic backgrounds, with 7.6% of participants coming from the most deprived 20% of postcodes and 29.5% from the most deprived 50% of postcodes. This distribution suggests that the programme can successfully penetrate communities often underserved by traditional healthcare interventions.

The study's ability to attract participants who had never previously checked their cholesterol levels (28% of those who completed Test 1) is particularly significant. This indicates that the digital platform and at-home testing approach can overcome barriers to access that may have prevented these individuals from engaging with conventional CVD screening programmes.

Furthermore, the high satisfaction rates and ease of use reported by participants suggest that this model could be particularly beneficial for those who face challenges in accessing traditional healthcare services due to factors such as time constraints, transportation issues, or healthcare literacy.

By providing a convenient, user-friendly alternative to in-person visits, supported with virtual consultations to support participants, this approach has the potential to reduce health disparities and improve cardiovascular health outcomes across diverse populations.

## Impact on Patient Awareness and Health Behaviours

The programme successfully motivated participants to adopt healthier lifestyles. Self-reported data showed that 77% of participants felt "Motivated" or "Very Motivated" to make healthier choices, with key themes including weight management, improved diet, and increased exercise.

Given the short timeframe of the study, it was not anticipated that there would be a statistically significant change in lipid levels or QRISK®3 during the study, but understanding people’s perceptions of their health over this time frame was important.

46% of participants who completed Test 2 reported improved health results, demonstrating that the intervention fostered positive behavioural changes in a significant number of respondents.

Also significant was how individuals felt motivated to encourage others to engage with this approach, with 62% reporting they had told family and friends about this programme and 43% telling 3 or more people about it.  This demonstrates the influential ripple effect on wider health behaviours when there is a programme that is easy to engage with.

Educational content delivered through digital platforms played a crucial role in enhancing patient awareness. The personalised advice programmes tailored to individual modifiable risk factors were particularly effective in driving engagement and promoting actionable health improvements. This aligns with national health priorities focused on prevention and early intervention.

## Potential for Reducing Primary Care Workload

The study's digital-first approach offers a viable solution to alleviate pressure on Primary Care Services. By enabling at-home lipid testing and providing pharmacist consultations for result interpretation and lifestyle guidance, the programme reduces the need for in-person Primary Care visits.

88% “Agree” or “Strongly Agree” if the NHS offered this approach to home screening in the future, they would use it.

Notably, 72% of participants found the process more convenient than visiting a GP, highlighting its potential to streamline healthcare delivery while maintaining patient satisfaction.

Using NHS data, this move to a digital at-home test alone could save 20 minutes per check of Primary Care time[19].

Furthermore, only 18% of participants booked pharmacist consultations despite their availability at no cost.

This suggests that a significant portion of participants were able to independently manage their health using digital tools without requiring additional clinical support whilst being reassured that the support was there if needed. Such self-management capabilities could further ease the burden on Primary Care Services.

## Role of Pharmacists in CVD Prevention

Pharmacists played a pivotal role in this study by offering clinical reviews and personalised advice based on test results. The high satisfaction rates with pharmacist consultations (84% found them "Helpful" or "Very Helpful") underscore their value in supporting CVD prevention efforts. Expanding the role of pharmacists to include ongoing health coaching and referrals to Primary Care for those who actually require that intervention could enhance their contribution to community-based healthcare delivery.

This model also demonstrates how pharmacists can bridge gaps in care for populations underserved by traditional healthcare systems. By leveraging their accessibility and expertise, pharmacists can play a central role in addressing health inequalities and improving cardiovascular outcomes at scale.

# Opportunities for Improvement

The Healthy Heart Study conducted by Pharmacy2U and PocDoc demonstrated significant success in many areas.  There were opportunities for improvement identified through the end-of-study survey and overall programme analysis, specifically around technical and customer support, that will be incorporated into future iterations of this programme.

# Future Directions

The success of the Healthy Heart Study conducted by Pharmacy2U and PocDoc opens up exciting possibilities for the future of digital-first healthcare interventions. Building on the insights gained from this innovative approach to cardiovascular disease (CVD) prevention and management, several key areas for future development and expansion emerge.

## Expansion to Other Health Conditions

The digital-first model demonstrated in this study has the potential to be adapted for other chronic health conditions, such as type II diabetes and renal health, completing the suite of conditions most implicated with cardiometabolic diseases.

By leveraging the existing infrastructure with programme enhancements identified from the CVD programme, these expansions could provide comprehensive, at-home screening and management solutions for a wider range of health issues.

## Enhanced Integration with NHS Services

Future iterations of this programme could seek deeper integration with existing NHS services:

- Direct comprehensive data sharing with GP practices to ensure continuity of care
- Integration with NHS digital platforms for seamless patient record updates
- Continued collaboration with the NHS Health Check programme to reach underserved populations

This integration would create a more cohesive healthcare ecosystem, improving patient outcomes and reducing the burden on Primary Care Services.

## Artificial Intelligence and Predictive Analytics

Incorporating advanced AI and machine learning algorithms could enhance the personalisation and effectiveness of the programme:

- Develop predictive models for individual CVD risk based on longitudinal data
- Create AI-driven chatbots for instant patient support and education
- Implement adaptive learning systems to tailor interventions based on user engagement and progress

These technological advancements would further personalise the user experience and potentially improve health outcomes.

### Expansion of Pharmacist Role

Building on the success of pharmacist consultations in this study, future programmes could explore an expanded role for online and community pharmacists:

- Offer more comprehensive reviews to cover clinical pathways, home screening, and condition-led reviews at scale through improved accessibility to clinical care though digital journeys
- Provide ongoing health coaching and lifestyle advice
- Facilitate referrals to primary and secondary care, if and when necessary

This expansion would further utilise the expertise of pharmacists in communities, offering a hybrid model for healthcare delivery that combines the scale and accessibility of digital, with both virtual and in-person clinical consultations.

## Addressing Health Inequalities

Future iterations of the programme should build on the clear evidence that digital-first services can serve communities affected by health inequality and focus on further reach into underserved populations:

- Develop targeted outreach strategies for areas with high CVD prevalence
- Create culturally adapted versions of the app and educational content
- Partner with community organisations to improve access in deprived areas

These efforts would align with the NHS's goal of reducing health inequalities and improving overall population health.

Excitingly, these “future directions” are closer than ever. The digital-first approach to CVD prevention and management demonstrated in this study has the potential to

transform healthcare delivery, improve patient outcomes, and contribute significantly to the ongoing digital transformation of the NHS.

## Conclusion

The Healthy Heart Study underscores the transformative potential of digital-first healthcare interventions in addressing public health challenges like CVD.

By combining innovative technology with community-based care models, this approach aligns closely with national health priorities focused on prevention, community-centered care, and digital transformation.

Future innovation should build on these findings to further enhance programme effectiveness, expand the scope to other chronic conditions, and deepen integration with NHS services, ensuring equitable access to preventative healthcare for all.

## References


1. England NHS. NHS England » Cardiovascular disease (CVD). Accessed January 20, 2025. https://www.england.nhs.uk/ourwork/clinical-policy/cvd/

2. NHS Long Term Plan » Online version of the NHS Long Term Plan. Accessed January 20, 2025. https://www.longtermplan.nhs.uk/online-version/

3. Cardiovascular Disease In England: Supporting Leaders To Take Actions. The King's Fund. Accessed February 5, 2025. https://www.kingsfund.org.uk/insight-and-analysis/reports/cardiovascular-disease-england

4. The economic and social costs of mental ill health. Centre for Mental Health. Accessed February 5, 2025. https://www.centreformentalhealth.org.uk/publications/the-economic-and-social-costs-of-mental-ill-health/

5. Prosperity Through Health: The Macroeconomic Case for Investing in Preventative Health Care in the UK. Accessed February 5, 2025. https://institute.global/insights/economic-prosperity/the-macroeconomic-case-for-investing-in-preventative-health-care-UK

6. Coronary heart disease - Prevention. nhs.uk. October 3, 2018. Accessed January 20, 2025. https://www.nhs.uk/conditions/coronary-heart-disease/prevention/

7. Sudden cardiac death - UK National Screening Committee (UK NSC) - GOV.UK. Accessed January 20, 2025. https://view-health-screening-recommendations.service.gov.uk/sudden-cardiac-death/

8. Progress in preventing cardiovascular disease - NAO report. National Audit Office (NAO). November 13, 2024. Accessed January 20, 2025. https://www.nao.org.uk/reports/progress-in-preventing-cardiovascular-disease/

9. The Government's Ten Year Plan | Health And Care. The King's Fund. Accessed January 14, 2025. https://www.kingsfund.org.uk/insight-and-analysis/projects/governments-long-term-plan-health-and-care

10. Household deprivation - Census Maps, ONS. Accessed January 29, 2025. https://www.ons.gov.uk/census/maps/choropleth/population/household-deprivation/hh-deprivation/household-is-deprived-in-one-dimension

11. QRISK3. Accessed July 20, 2023. https://www.qrisk.org/index.php

12. Scenario: CVD risk 10% or more | Management | CVD risk assessment and management | CKS | NICE. Accessed February 13, 2025. https://cks.nice.org.uk/topics/cvd-risk-assessment-management/management/cvd-risk-10percent-or-more/

13. English indices of deprivation 2019. GOV.UK. Accessed February 5, 2025. https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019

14. Government issues rallying cry to the nation to help fix NHS. GOV.UK. Accessed January 20, 2025. https://www.gov.uk/government/news/government-issues-rallying-cry-to-the-nation-to-help-fix-nhs

15. Change NHS: help build a health service fit for the future. GOV.UK. Accessed January 20, 2025. https://www.gov.uk/government/publications/change-nhs-help-build-a-health-service-fit-for-the-future/change-nhs-help-build-a-health-service-fit-for-the-future

16. England NHS. NHS England » Integrated health and care. Accessed January 20, 2025. https://www.england.nhs.uk/long-read/integrated-health-and-care/

17. Young person and adult screening KPI data: Q1 summary factsheets (1 April to 30 June 2024). GOV.UK. Accessed January 20, 2025. https://www.gov.uk/government/publications/q1-1-apr-to-30-jun-2024-annb-and-ypa-screening-kpi-data/young-person-and-adult-screening-kpi-data-q1-summary-factsheets-1-april-to-30-june-2024

18. Robson J, Garriga C, Coupland C, Hippisley-Cox J. NHS Health Checks: an observational study of equity and outcomes 2009–2017. *Br J Gen Pract*. 2021;71(710):e701-e710. doi:10.3399/BJGP.2020.1021

19. New digital health check to tackle deadly cardiovascular disease. GOV.UK. Accessed February 5, 2025.

https://www.gov.uk/government/news/new-digital-health-check-to-tackle-deadly-cardiovascular-disease