Atrial Fibrillation Screen, Management And Guideline Recommended Therapy (AF SMART II) in the rural primary care setting: a cross-sectional study and cost-effectiveness analysis of eHealth tools to support all stages of screening

Short title: AF SMART II: AF screening in rural primary care

Jessica Orchard MPH BEc/LLB (Hons I)[1]; Jialin Li MN B.Ec(SocSci) [1]; Ben Freedman MBBD PhD[1]; Ruth Webster PhD BMedSc(Hons) MBBS(Hons) MIPH(Hons)[2]; Glenn Salkeld PhD MPH[3]; Charlotte Hespe MBBS(Hons) DCH[4]; Robyn Gallagher PhD BA MN[5]; Anushka Patel MBBS SM PhD [2]; Bishoy Kamel BPharm MMedSc PhD[2]; Lis Neubeck BA(Hons) PhD[6]; Nicole Lowres PhD BPhty[1]

Affiliations

(1) Heart Research Institute/Charles Perkins Centre, University of Sydney, Sydney, Australia
(2) The George Institute for Global Health, University of New South Wales, Sydney, Australia
(3) Faculty of Social Sciences, University of Wollongong, Wollongong, Australia
(4) School of Medicine, University of Notre Dame Australia, Sydney, Australia
(5) University of Sydney, Susan Wakil School of Nursing, Faculty of Medicine and Health/Charles Perkins Centre, Sydney, Australia
(6) School of Health and Social Care, Edinburgh Napier University, Edinburgh, UK

Address for correspondence:

Jessica Orchard

Charles Perkins Centre (D17), Level 2, University of Sydney NSW 2006 Australia

Email: jessica.orchard@sydney.edu.au Phone: +61 2 8627 1664

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Abstract

Background

Internationally, most atrial fibrillation (AF) management guidelines recommend opportunistic screening for AF in people aged ≥65 years, and oral anticoagulant (OAC) treatment for those at high stroke risk (CHA_2DS_2-VA ≥2). However, gaps remain in screening and treatment.

Methods and Results

General practitioners/nurses at practices in rural Australia(n=8) screened eligible patients (aged ≥65 years without AF) using a smartphone electrocardiogram during practice visits. eHealth tools included electronic prompts, guideline-based electronic decision support, and regular data reports. Clinical audit tools extracted deidentified data. Results were compared to an earlier study in metropolitan practices(n=8) and non-randomised control practices(n=69). Cost-effectiveness analysis compared population-based screening to no screening and included screening, treatment and hospitalisation costs for stroke and serious bleeding events. Patients (n=3,103, 34%) were screened (mean age 75.1±6.8 years, 47% male) and 36(1.2%) new AF cases were confirmed (mean age 77.0 years, 64% male, mean CHA_2DS_2-VA=3.2). OAC treatment rates for patients with CHA_2DS_2-VA≥2 were 82% (screen-detected) versus 74% (pre-existing AF)(p=NS), similar to metropolitan and non-randomised control practices. The incremental cost-effectiveness ratio (ICER) for population-based screening was AU$16,578/quality adjusted life year gained and AU$84,383/stroke prevented compared to no screening. National implementation would prevent 147 strokes/year. Increasing the proportion screened to 75% would prevent 177 additional strokes/year.

Conclusions

An AF screening program in rural practices, supported by eHealth tools, screened 34% of eligible patients and was cost-effective. OAC treatment rates were relatively high at baseline, trending upwards during the study. Increasing the proportion screened would prevent many more strokes with minimal ICER change. eHealth tools, including data reports, may be a valuable addition to future programs.

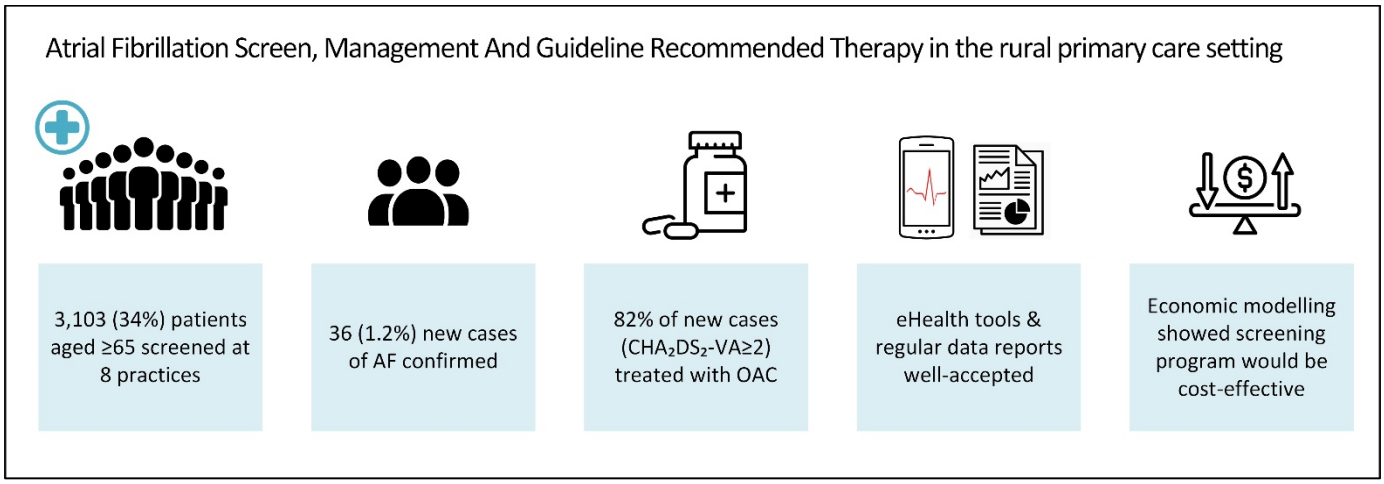
Clinical Trial Registration

URL: www.anzctr.org.au. Unique identifier: ACTRN12618000004268.

Keywords

Digital health, general practice, primary care, rural, stroke prevention, cost effectiveness

Graphical abstract



Clinical Perspective

What is new?

- This study extends the evidence base in rural areas by demonstrating that a screening program using eHealth tools in the rural general practice setting can successfully screen 34% of eligible atrial fibrillation (AF) patients with guideline-indicated treatment rates >80% for screen-detected AF cases.
- Economic modelling showed the program was cost-effective compared to no screening.
- Oral anticoagulant (OAC) treatment rates for eligible patients were higher than previous studies at baseline (>70%) and were trending upwards during the study (around 80%).

What are the clinical implications?

- eHealth tools, particularly customised data reports as part of an audit and feedback system, may be a valuable addition to screening programs
- Half the practices screened 40-50% of eligible patients, suggesting this may represent a 'ceiling' of patients captured by opportunistic AF screening programs in the general practice setting.
- Increasing the proportion screened would prevent many more strokes with minimal change to the incremental cost-effectiveness ratio (ICER).

Introduction

Internationally, opportunistic screening for atrial fibrillation (AF) in people aged ≥65 years is now recommended by most guidelines.[1, 2] Single-timepoint screening detects undiagnosed AF, which is often asymptomatic, in approximately 1.4% of people in this age group.[3] Guidelines generally recommend treatment with oral anticoagulants (OACs),[1, 2] which can reduce the risk of AF-related stroke by 64% for those at high risk ("sexless" CHA_2DS_2-VA risk score ≥2).[4]

Large gaps in screening and treatment exist in practice. A survey conducted by *The Economist* in 2017 reported that only 11% of people aged ≥65 years were screened in Australian general practices in the previous fortnight.[5] Our previous 2018 study using eHealth tools conducted in metropolitan general practices increased screening to 16% of eligible patients.[6] In terms of treatment, rates have historically been 50-60%. However, since non-vitamin K dependent OAC (NOAC) medicines were introduced, an increase in treatment rates has been reported in Europe (>77% in England[7] and >65% in Denmark[8]). This trend was also reflected in our 2018 metropolitan study, which reported a treatment rate of 71% for those diagnosed with AF prior to the study, increasing to >80% for those diagnosed during the study period.[6]

Australians living in rural areas have more limited access to health services and worse cardiovascular outcomes.[9] The ratio of GPs, specialists, and nurses per capita of population are significantly lower in rural areas than in metropolitan areas, and access to specialist cardiac care is more limited.[10, 11] Approximately 25% of the rural population suffers from cardiovascular diseases compared with 20% in metropolitan areas and the likelihood of hospitalisation and death resulting from cardiac events increases with the distance from

metropolitan areas.[12] General practices play a key role in supporting cardiac health in rural areas as they tend to provide a broader range of community services compared to metropolitan practices.[13]

Several of our previous studies showed opportunistic screening in primary care by general practitioners (GPs) and nurses was feasible.[6, 14, 15] A suite of customised eHealth tools, including an automated prompt and electronic decision support, were found to be promising.[6] These tools have been refined and enhanced with a quality improvement (QI) focus,[16, 17] and are designed to support all stages of screening.

This study aims to improve the proportion of patients screened and treated for AF using the refined eHealth tools and to inform strategies on AF screening implementation in the rural setting. In addition, this study provides the first cost-effectiveness analysis in Australian general practice.

Methods

This study was conducted in a convenience sample of 8 rural general practices from September 2018-July 2019 in rural New South Wales, Australia. Practices were required to be located outside a major city (generally categorised under the Australian Statistical Geography Standard - Remoteness Area ASGS-RA 2016[18] code 2 “inner regional Australia”) and were recruited by advertisements in Primary Health Network newsletters and by word-of-mouth. Participating practices provided written informed consent and patients provided oral consent for screening. This study was approved by the University of Sydney Human Research Ethics Committee (Project no. 2017/1017). Clinical trial registration: ACTRN12618000004268. The data and materials will not be made available to other researchers as data sharing is not permitted by our ethics committee approval. Researchers

interested in the data, methods, or analysis can contact the corresponding author for more information.

The methods for this study have been previously described in detail.[17] Briefly, GPs and/or practice nurses offered screening for AF with smartphone handheld single lead electrocardiograms (iECGs) (KardiaMobile) to eligible patients attending the practice for any reason. Eligible patients were those aged ≥65 years without an existing AF diagnosis who had not already been screened with the iECG within the past 12 months. All follow-up for those with abnormal screening results according to the iECG app ("possible AF" or "unclassified") and treatment decisions were at the discretion of the GP.

To support screening, practices were provided with the following eHealth tools (Figure 1):

- **Screening prompt:** an app located in a third-party hosting platform automatically extracted information from patients' electronic medical records. Using this information in real-time, a prompt appeared when an eligible patient's file was opened. The iECG automated screening result was also recorded in this app.
- **Electronic decision support (EDS):** for those diagnosed with AF (either by screening or otherwise), the EDS app (also located on the third-party hosting platform) calculated their CHA_2DS_2-VA stroke risk score and made guideline recommendations regarding treatment. This app was part of the HealthTracker suite of cardiovascular quality improvement tools.
- **Tailored clinical audit data for QI reporting:** customised, deidentified clinical audit data extracts were obtained monthly from participating practices. These data were used to report back to practices and included data on number and proportion

screened, the number of patients with new AF and the proportion treated according to guidelines.

Reimbursement

Practices were paid $1000 to cover study setup time and data extraction costs plus $10 per patient screened (paid per 100 patients to encourage greater numbers). This was intended to cover the costs of screening in the Australian "fee for service" context and to replicate a "real-world" fee if screening was covered by Medicare. Screening was free for patients, although any usual consultation fees applied.

Data collection and analysis

De-identified data extracts included demographic, iECG screening, medication and diagnostic information from the practices' electronic patient records. The data extracts were designed to collect data for all "active patients" of the practices, i.e. patients who had attended at least 3 times in the past 2 years and once in the past 6 months.

To provide additional context about broader screening and treatment trends, data from this study were compared with two other deidentified datasets: the "metropolitan group" and the "non-randomised control group". These comparator datasets were collected from other Australian studies also using the HealthTracker app, with prospectively collected data using the same data extraction tool and data fields. The metropolitan group was from our 2018 AF screening study[6] which included 8 metropolitan general practices. The non-randomised control group was comprised of 69 practices (64 metropolitan and 5 rural) that were using HealthTracker for general cardiovascular QI studies that did not involve AF screening. For the purposes of comparisons of treatment rates before and during the study period, the

non-randomised control group data were split into AF diagnoses prior to 1 January 2018 (baseline treatment rate) and AF diagnosed on or later than 1 January 2018 (AF diagnosed during the study period).

Descriptive analyses for the rural practices were carried out using Microsoft Excel. Descriptive analyses of non-randomised control data were performed using R Statistical Programming, V3.6.1.[19] Comparisons of treatment rates between groups were calculated using Fisher's exact test (2-sided p-values) performed using 2x2 contingency tables (GraphPad Prism V7.04, California, USA) with significance set a-priori at $p<0.05$. Although our protocol paper specified a chi-square test, Fisher's exact test was used as it was more accurate with the small numbers involved.

A detailed process evaluation was carried out using mixed methods, including semi-structured interviews with selected practice staff. This evaluation examined outcomes related to implementation success and the acceptability/competing demands of the screening program. Methods and results of this evaluation have been described elsewhere.[16]

Cost effectiveness analysis

The iECG screening program was evaluated by comparing population-based AF screening to no screening from an Australian health funder perspective. The economic model developed in the SEARCH-AF[20] pharmacy screening study was adapted to evaluate iECG screening in general practice. The model has previously been explained in detail.[20] Briefly, =the model compares the cost of iECG screening, diagnosis and treatment in general practice to diagnosed AF in the unscreened population of Australian men and women aged 65-84 years. That is, it compares population-based AF screening to no screening. It assumes a 'base rate'

of AF (both diagnosed and unknown) and follows a cohort of the population aged 65-84 years over 10 years with annual stroke events and all-cause mortality.

Stroke costs included hospitalisation, rehabilitation and other ongoing medical costs. For this study, the model was updated to include the cost of an echocardiogram for those diagnosed, the cost of major bleeding episodes for those on OAC treatment and a treatment regimen consistent with current trends (i.e. including NOACs prescribed at rates observed in the current study).

The model included the following key assumptions (full list included as Supplemental Table 1):

- The proportion screened was that observed in this study;
- The prevalence of diagnosed AF in the population aged ≥65 years was 4.4%;[3]
- The prevalence of unknown AF in the population aged ≥65years was 1.4%;[3]
- OAC and antiplatelet treatment rates were as observed for all patients diagnosed during the study period (both screen-detected and otherwise detected);
- The iECG test sensitivity was 97% and specificity was 92%;
- The cost per screen was $20; and
- For those diagnosed with AF, annual treatment and monitoring costs for those on OAC were AU$1063.78 = (warfarin) and AU$1401.73 (mean cost for NOACs), and included annual costs of medication, pathology, GP and specialist visits.

Costs for hospitalisation for stroke were obtained from Cadillhac et al[21] and were updated to 2019 prices using the Australian Health Price Deflator Index. In addition, a present value of 5.09 quality adjusted life years (QALYs) (gained over a lifetime) was used for each ischemic stroke prevented by screening.[21]

Results are presented in Australian dollars as an incremental cost-effectiveness ratio (ICER) per stroke avoided and per QALY gained for population-based screening compared to no screening. Sensitivity analyses were also performed for different proportions of patients screened, and for price reductions in NOAC medicines.

Outcomes

Key study outcomes were:[17]

- The proportion of screened patients with confirmed new AF
- The proportion of AF and screened patients where the EDS was accessed
- The proportion of AF patients diagnosed during the study period in the OAC recommended category (CHA_2DS_2-VA risk score ≥2)[1] who were prescribed OAC according to guidelines
- Baseline AF prevalence in patients aged ≥65 years compared to metropolitan and non-randomised control groups
- New screen-detected AF incidence at the end of the study period in patients aged ≥65 years, compared to metropolitan and non-randomised control groups
- Rates of OAC and antiplatelet treatment at baseline and completion for patients in the OAC recommended category, compared to metropolitan and non-randomised control groups

Results

Screening, diagnosis and treatment

Eight general practices were recruited and screened a total of 3,103 eligible patients (mean age 75.1 ± 6.8 years, 47% male) during the study period. The median screening period was

4.6 months (range 1.7-7.5 months). Practices screened a mean of 34% (median 35%) of eligible patients (range 9-51% per practice), with 4/8 practices screening >40% of eligible patients (Figure 2). In general, screening was highest in the first 1-2 months, and declined thereafter. The mean proportion of all eligible patients who attended the practices during the study period was 94%.

GPs (n=22) screened 31% (range 1-182 per GP) of patients and nurses (n = 40) screened 69% (range 1-192 per nurse). According to the iECG automated algorithm (as entered into the app by GPs/nurses), 83% of screenings were normal, 13% were unclassified and 4% were possible AF.

In total, 36 (1.2%) new cases of screen-detected AF were confirmed (mean age 77.0 years, 64% male, mean CHA_2DS_2-VA=3.2) (Table 1). The proportion of screen-detected AF patients with at least one non-age or gender risk factor was 83%, and the proportion in the OAC recommended category (CHA_2DS_2-VA≥2) was 94%. Characteristics and CHA_2DS_2-VA groups for those with screen-detected AF, otherwise-detected AF (during the study period) and those with AF detected before the study are presented in Table 1.

OAC treatment rates of patients with AF with CHA_2DS_2-VA≥2 were 82% (screen-detected), 75% (otherwise-detected during study period) and 74% (pre-existing AF), with no significant differences between treatment rates in the screen-detected and other groups (Table 1). The EDS was accessed for 54/1337 (4%) of all patients aged ≥65 with AF and for 4/36 (11%) of new screen-detected AF patients.

AF prevalence and treatment rates compared with metropolitan and non-randomised controls groups

The baseline prevalence of AF in the rural, metropolitan and practices and non-randomised control groups ranged from 9-12% (Table 2).

There were no significant differences between the rural and metropolitan practices' treatment rates of those with AF detected prior to the study or during the study (screen-detected and otherwise-detected) (Table 2). Likewise, the treatment rates in the rural practices were similar to those in the non-randomised control practices at baseline and during the study period (Table 2). The OAC treatment rates in all 3 cohorts tended to increase from baseline (Table 2), in contrast to antiplatelets.

Cost-effectiveness analysis

Our cost-effectiveness modelling showed that for population-based AF screening for Australian men and women aged 65-84 years, assuming a 34% screening participation rate, with a treatment rate of 82%, and test sensitivity 97% and specificity of 92%, the ICER per QALY gained was AU$16,578 and the ICER per stroke avoided was AU$84,383 compared to no screening.

Increasing the screening participation rate has a negligible effect on the ICER but substantially increases the number of strokes prevented, i.e. effectiveness (Table 3). Increasing the screening participation rate from 34% to 50% raises the number of strokes prevented from the base case of 147 per year to 216 per year (or 1467 to 2157 over 10 years). With a 75% screening participation rate, a total of 324 strokes are prevented each year (or 3235 strokes over 10 years) when compared to the no screening scenario. For population-based screening, lowering the cost of NOAC treatment decreases the ICER per

QALY gained to AU$14,997 (12.5% price reduction) or AU$13,416 (25% price reduction) compared to no screening.

Discussion

This study investigated the impact of an AF screening program in rural general practices using a smartphone iECG together with a suite of custom-designed eHealth tools designed to increase the proportion screened and treated for AF in accordance with guidelines. GPs and nurses at participating practices screened a total of 3103 eligible patients and 36 (1.2%) new cases of AF were confirmed, with 82% prescribed OAC according to guidelines.

This study featured a unique suite of integrated, customised eHealth tools, to support all stages of AF screening and treatment in general practice. These tools were refined following our metropolitan study,[6] and included an automated screening prompt (with improved visibility and reliability), an EDS app to guide treatment, deidentified data extracts and with regular QI 'audit and feedback' reporting to practices. We are not aware of any other studies that include tools to cover all stages of AF screening and treatment, including customised feedback. In particular, the refined screening prompt and the improved QI reporting were useful and motivating for participating GPs and nurses.[16]

Proportion screened and treated

Practices screened 34% of eligible patients who attended during the study period, which is substantially higher than the 16% achieved in our metropolitan study.[6] Half of the study practices were able to screen >40% of eligible patients, although 51% was the maximum reached. It appeared that even practices with very broad uptake and high motivation across staff were not able to capture more than 50% of eligible patients, which GPs and nurses indicated was largely due to time constraints and technical issues (eg difficulty taking a

reading on some patients).[16] Key features of the most successful practices included leadership from a senior GP 'screening champion', clear protocols for follow-up of abnormal results for nurse-led screening and allocating sufficient staff time for screening. These are discussed in detail in our qualitative realist evaluation.[16]

A recent study of AF screening in 184 Canadian practices was able to screen 42% of eligible patients.[22] In addition, a study from the Netherlands where patients aged ≥65 years were screened in 10 general practices during influenza vaccination sessions captured 35% of eligible patients, which is almost identical to our study.[23] These results suggest 40-50% may be a 'ceiling' of eligible patients captured by an opportunistic screening program in general practice.

As with the metropolitan study, treatment rates were high at baseline (>70%), compared to historical Australian data, and increased during the study. The treatment rates were highest for screen-detected AF (>80%). These treatment rates and trends very similar to those in the non-randomised control practices. These rates are higher than previously reported in Australia, which were around 55-60%[24] prior to the introduction of NOACs (preferred by the Australian guidelines[1]). Our results show a similar trend to recent European treatment rates of around 65%-80%[8, 25, 26] since the introduction of NOACs.

Our results also show a decline in antiplatelet prescription for those not on OAC. Of the patients diagnosed during the study period (aged ≥65 years with CHA_2DS_2-VA≥2) who were not prescribed OAC (n=20), only a minority were prescribed antiplatelets alone (n=7) with the remainder on no therapy (n=13). Of the 7 patients prescribed antiplatelets alone, 2 of these patients were prescribed antiplatelets before being diagnosed with AF (one of whom had cardiovascular disease) and another 3 of these patients also had cardiovascular disease,

which may be the reason antiplatelets were prescribed. This suggests that prescription of antiplatelet alone for AF may be declining, as was recently reported in a US study,[27] and that effectively the prescribing decision is becoming "OAC or no treatment".

Rural setting

This study extends the evidence base in rural areas and shows a screening program in the rural general practice setting can successfully screen a large number of eligible AF patients with guideline-indicated treatment rates over 80% for screen-detected AF cases. A screening program using pulse palpation in rural general practice in Ireland achieved similar reach to our study (30% of the general practice population aged ≥65 years screened) although OAC treatment rates were lower (65%).[28] The authors noted important differences regarding the density of population in rural studies compared to metropolitan, with implications for rural patients' access to primary and secondary care.

Prevention programs suitable for rural areas are particularly important, given that people living in these areas tend to have worse cardiovascular outcomes and less access to specialist medical services.[9] Rural general practice is potentially an ideal setting for implementation of innovative primary care-based cardiac programs, such as ours, which contribute to upskilling GPs in cardiac care, training nurses to provide cardiac education/screening, and use of novel technology.

Cost-effectiveness

Our cost-effectiveness modelling showed that for population-based AF screening in general practice for Australian men and women aged 65-84 years, the ICER per QALY gained was AU$16,578 and the ICER per stroke avoided was $84,383 compared to no screening. Increasing the proportion screened from 34% to 75% would prevent an additional 177

strokes per year (or 1,768 strokes over 10 years) with a negligible effect on the ICER. These figures are higher than for SEARCH-AF,[20] largely driven by increased uptake of OAC treatment rates and in particular, the higher prescription rates of NOACs. The increased proportion of people treated with OAC reduces the ICER, although this is offset by the higher cost of treatment with NOACs. These figures are well within accepted thresholds of Australian government health expenditure.[29] This is consistent with several other studies, which found AF screening to be cost-effective[30] or even cost-saving[31].

Importantly, while we were able to screen 34% of eligible people with these tools (and have suggested that 40-50% may be a 'ceiling' of patients captured with opportunistic screening programs), these analyses highlight the impact of increasing the proportion screened in terms of stroke prevention and the need to consider new approaches to break the 40-50% barrier.

Limitations

The proportion of "non-normal" results according to the iECG device algorithm was relatively high at 17% ('possible AF' 4%, 'unclassified' 13%). This added to the workload substantially for practices, as was also noted in a recent Canadian study,[22] as all of these patients require some degree of follow-up. In relation to the 'possible AF' readings, it is likely that some were paroxysmal AF (AF not present on a subsequent 12 lead ECG) or false positives (e.g. due to sinus arrhythmia, multiple atrial ectopics or a poor quality trace). It is also possible that some AF diagnoses were not recorded in the clinical system (see below). In relation to the 'unclassified' results, previous studies have usually reported lower rates closer to 10%.[6, 14] Improvements in the device algorithm (eg to identify sinus tachycardia/bradycardia) and training staff in techniques to take clearer readings will reduce

this burden. We note the research team were not able to review the iECGs, and relied on GPs/nurses to manually enter the device's interpretation into the AF app. The iECG automated algorithm has been reported to have a sensitivity of 97% and specificity of 92%.[20]

The EDS was only used for a low proportion of patients. This is probably because it was in a separate app and was not accessed by GPs as it required extra clicks. Ideally, an EDS would need to be a more integral part of the electronic medical record system. Alternatively, an automatic calculation of patients' CHA_2DS_2-VA scores in the electronic medical record would assist, particularly if it included an alert to review treatment when the score changed (especially when it exceeds a treatment-recommendation threshold).

The study relied on deidentified data collected from practices. This was routinely collected general practice data, with all its inherent limitations. For example, if GPs recorded a diagnosis of AF in the free-text notes section instead of adding it as a condition from a drop-down list, this would not be caught in our data, meaning our figures may underestimate the true rate of AF detected during the study. In addition, these data were limited to 'active patients' due to the definition in the data collection tool. 'Active patients' were defined as those who had attended the practice at least three times in the past 2 years and once in the last 6 months. Therefore, our data may be biased towards people with more chronic conditions requiring more frequent attendance at the practice.

Conclusions

An AF screening program in rural general practices, supported by eHealth tools, screened 34% of eligible patients, with 82% of new screen-detected cases treated according to guideline. Half the practices screened 40-50% of eligible patients, suggesting this may

represent a ‘ceiling’ of patients captured by opportunistic AF screening programs. OAC treatment rates were higher than previous studies at baseline and were trending upwards during the study. Increasing the proportion screened would prevent many more strokes with minimal change to the ICER. This may require new methods to break through the ‘ceiling’ captured by numerous opportunistic programs. eHealth tools, particularly customised data reports as part of an audit and feedback system, may be a valuable addition to future screening programs.

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Figure legends

Figure 1 – Screening process and eHealth tools adapted from our 2018 metropolitan study[6]

Figure 2 – Screening flowchart

Tables

Table 1

Table 1 – characteristics and stroke risk of those with AF aged ≥65 years

	Screen-detected AF (n=36)	**Otherwise-detected AF during study period** (n=58)	**Baseline: AF diagnosed before study** (n=1243)
Age in years (mean ± SD)	77.0 ± 6.1	77.0 ± 8.4	79.2 ± 7.8
Male, n (%)	23 (64%)	32 (55%)	662 (53%)
Mean CHA_2DS_2-VA	3.2	3.3	3.7
CHA_2DS_2-VA ≥2, n (% of total)	34 (94%)	55 (95%)	1223 (98%)
CHA_2DS_2-VA ≥2 and prescribed OAC, n (% of those with CHA_2DS_2-VA ≥2)	28 (82%)	41 (75%) p=0.444†	908 (74%) p=0.326†
≥1 non-age or gender risk factors, n (% of total)	30 (83%)	54 (93%)	1178 (95%)

AF, atrial fibrillation; SD, standard deviation; CHA_2DS_2-VA: C, congestive heart failure/left ventricular dysfunction; H, high blood pressure; A_2, age >75 years; D, diabetes; S_2, stroke/transient ischemic attack/thromboembolism; V, vascular disease [coronary artery disease, myocardial infarction, peripheral artery disease, aortic plaque]; A, age 65 – 74 years; † p-value for comparison to screen-detected AF

Table 2

Table 2: Treatment rates and comparisons between groups: patients aged ≥65 years with AF

	Rural practices (n=8)	**Metropolitan practices (n=8)**	**Non-randomised control practices (n=69)**
Total active* patients aged ≥65 years	10,896	13,679	30,116
Baseline AF prevalence	12%	11%	9%
Baseline: AF detected prior to study with CHA_2DS_2-VA≥2			
Total, n	1223	1306	1875
Prescribed OAC, n (%)	908 (74%)	933 (71%) p=0.118†	1450 (77%) p=0.052†
Prescribed antiplatelet alone, n (%)	178 (15%)	213 (16%)	248 (13%)
Not prescribed OAC or antiplatelet, n (%)	137 (11%)	160 (12%)	177 (9%)
Screen-detected AF during study period with CHA_2DS_2-VA≥2			
Total, n	34	18	N/A
Prescribed OAC, n (%)	28 (82%)	15 (83%) p>0.999†	N/A
Prescribed antiplatelet alone, n (%)	1 (3%)	1 (6%)	N/A
Not prescribed OAC or antiplatelet, n (%)	5 (15%)	2 (11%)	N/A

	Rural practices (n=8)	**Metropolitan practices (n=8)**	**Non-randomised control practices (n=69)**
All AF detected during study period (screen-detected + otherwise-detected) with CHA_2DS_2-VA≥2			
Total, n	89	64	399
Prescribed OAC, n (%)	69 (78%)	54 (84%) p=0.312†	333 (83%) p=0.218†
Prescribed antiplatelet alone, n (%)	7 (8%)	3 (5%)	29 (7%)
Not prescribed OAC or antiplatelet, n (%)	13 (15%)	7 (11%)	37 (9%)

*active patients are those who attended the practice at least 3 times in the last 2 years and once in the last 6 months

† p-value for comparison to rural practices

AF, atrial fibrillation; OAC, oral anticoagulant; CHA_2DS_2-VA: C, congestive heart failure/left ventricular dysfunction; H, high blood pressure; A_2, age >75 years; D, diabetes; S_2, stroke/transient ischemic attack/thromboembolism; V, vascular disease [coronary artery disease, myocardial infarction, peripheral artery disease, aortic plaque]; A, age 65 – 74 years.

Table 3

Table 3: Cost effectiveness of population-based AF screening compared to no screening and sensitivity analyses over 10 years

	BASE CASE				
Screening participation rate	**34%**	**50%**	**60%**	**70%**	**75%**
Number of strokes prevented	1467	2157	2588	3020	3235
Net cost [ICER] per stroke prevented compared to no screening	$84,383	$83,304	$82,922	$82,649	$82,540
Net cost [ICER] per QALY gained compared to no screening	$16,578	$16,366	$16,291	$16,238	$16,216
NOAC price reduction	**-**	**12.5%**	**25%**		
Screening participation rate	34%	34%	34%		
Number of strokes prevented	1467	1467	1467		
Net cost [ICER] per stroke prevented compared to no screening	$84,383	$76,336	$68,289		
Net cost [ICER] per QALY gained compared to no screening	$16,578	$14,997	$13,416		

ICER, incremental cost effectiveness ratio; QALY, quality adjusted life year; NOAC, novel anticoagulant; $ = AU$

Figures

Figure 1

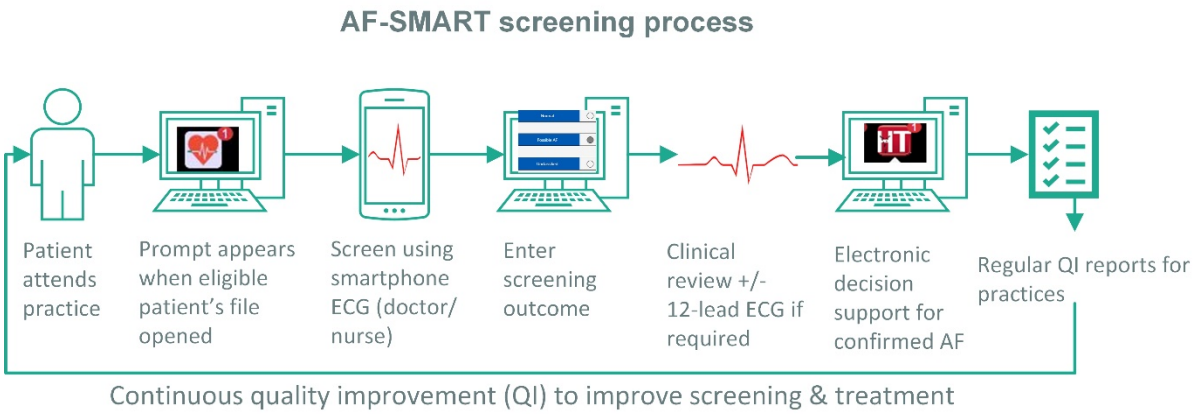
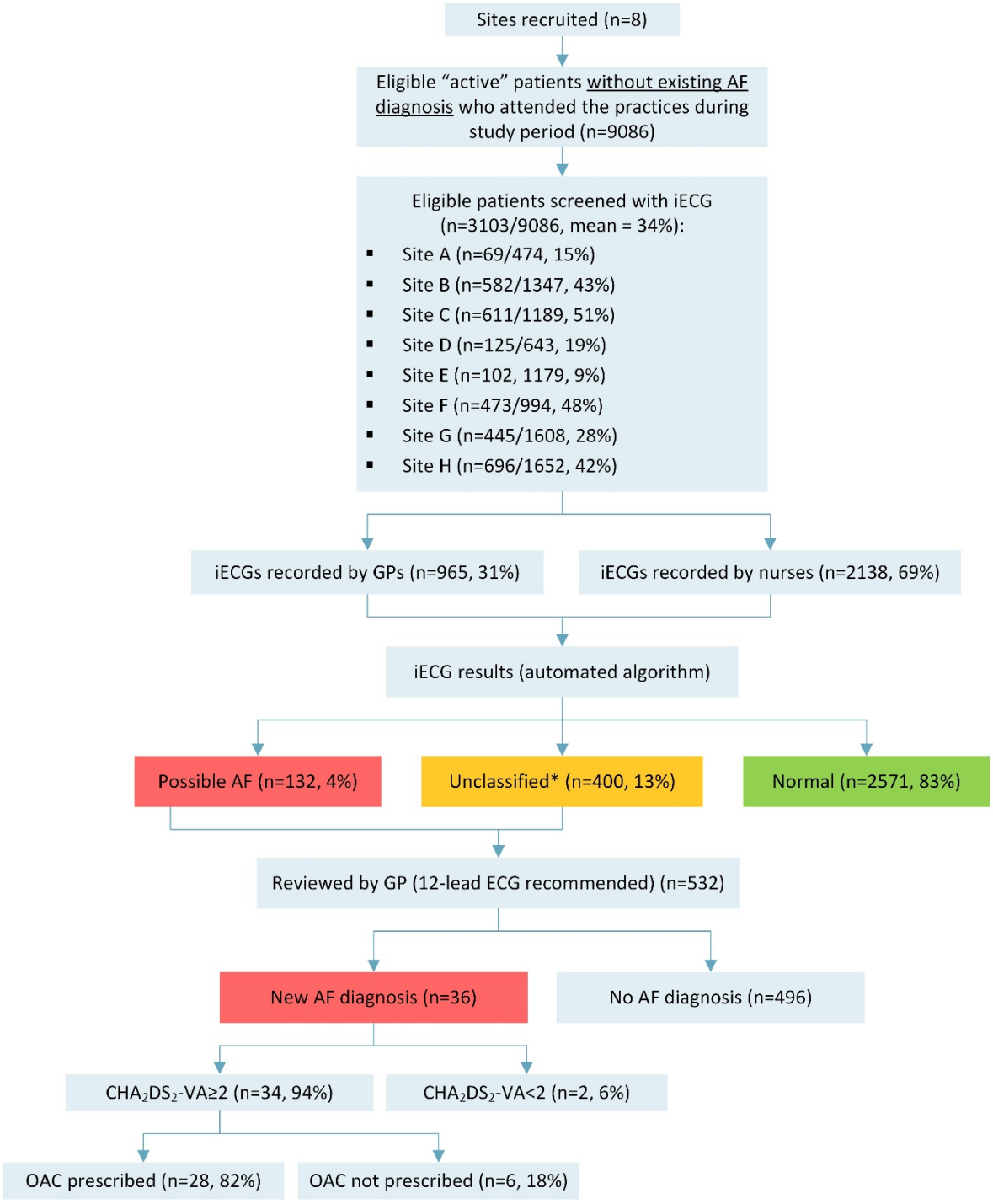


Figure 1 – Screening process and eHealth tools adapted from our 2018 metropolitan study[6]

1 Figure 2



* Unclassified results may be due to sinus bradycardia, sinus tachycardia, left or right bundle branch block, multiple ectopic beats or other arrhythmias

2

3 **Figure 2 –** Screening flowchart

4