

Targeted AF detection in COVID-19 vaccination clinics

Guidance for developing a standard operating procedure

May 2021

Purpose of this document

This document brings together learning from several pilot sites which have been carrying out targeted detection of atrial fibrillation (AF) in COVID-19 vaccination clinics. The aim is to provide guidance for systems wishing to develop a standard operating procedure for offering targeted rhythm checks for AF detection in mass vaccination clinics. There is significant variation in the management of these clinics so one standard model cannot apply. Systems wishing to adopt targeted AF detection in their vaccination clinics are encouraged to use this document to help them identify the best model of delivery for them.

GIRFT and the Oxford AHSN are keen to continue to share learning from this work. Please [use this case study form](#) to share the model that you are using to detect AF in your vaccination clinics.

Background

The impact of atrial fibrillation (AF)

Atrial fibrillation (AF) is estimated to cause around a quarter of all strokes. Strokes caused by AF tend to be severe and are more likely to be fatal or leave people with significant impairment.

It is estimated that around 250,000 people in England have undetected AF. Most of them will be at significantly increased risk of a stroke. Once AF has been diagnosed, people can be counselled on their stroke risk and if indicated, can be offered oral anticoagulation therapy which has been shown to be effective at preventing AF related stroke¹.

An irregular pulse, indicative of AF, can be detected by a simple pulse check, or via a range of detection devices such as single lead ECGs, blood pressure monitors that detect irregular pulse or smartphone apps that use photoplethysmography. Currently NICE recommends that people with suspected AF have the diagnosis confirmed via a 12-lead ECG².

Why carry out targeted AF detection in COVID-19 vaccination clinics?

Improved identification of AF and the prescribing of oral anticoagulant therapy to those at high risk of an AF related stroke has led to improvements in the number of these strokes³. However, the pandemic has had an impact on the identification of new cases of AF. Many risk factors for cardiovascular disease (CVD) are picked up through standard face-to-face primary care appointments, and these have been significantly reduced during 2020/21. A recent UK study in a deprived urban population showed a 43% reduction in new diagnoses of circulatory system diagnosis (including but not limited to AF) between March and May 2020⁴ and a 30-52% decrease in the prescription of new CV medications during the same period. For AF, a Danish study showed a 47% drop in registered new onset AF cases during the national lockdown⁵.

The large numbers of people in the 65 and over age group attending COVID clinics for second injections and potential booster injections at a later date presents a significant opportunity for targeted AF detection in this high-risk cohort. Pre-pandemic, many older people would have had their pulse checked by a primary care health care professional at least once a year. This may not

¹ <https://pubmed.ncbi.nlm.nih.gov/29982405/>

² <https://www.nice.org.uk/guidance/cg180/chapter/1-Recommendations#diagnosis-and-assessment>

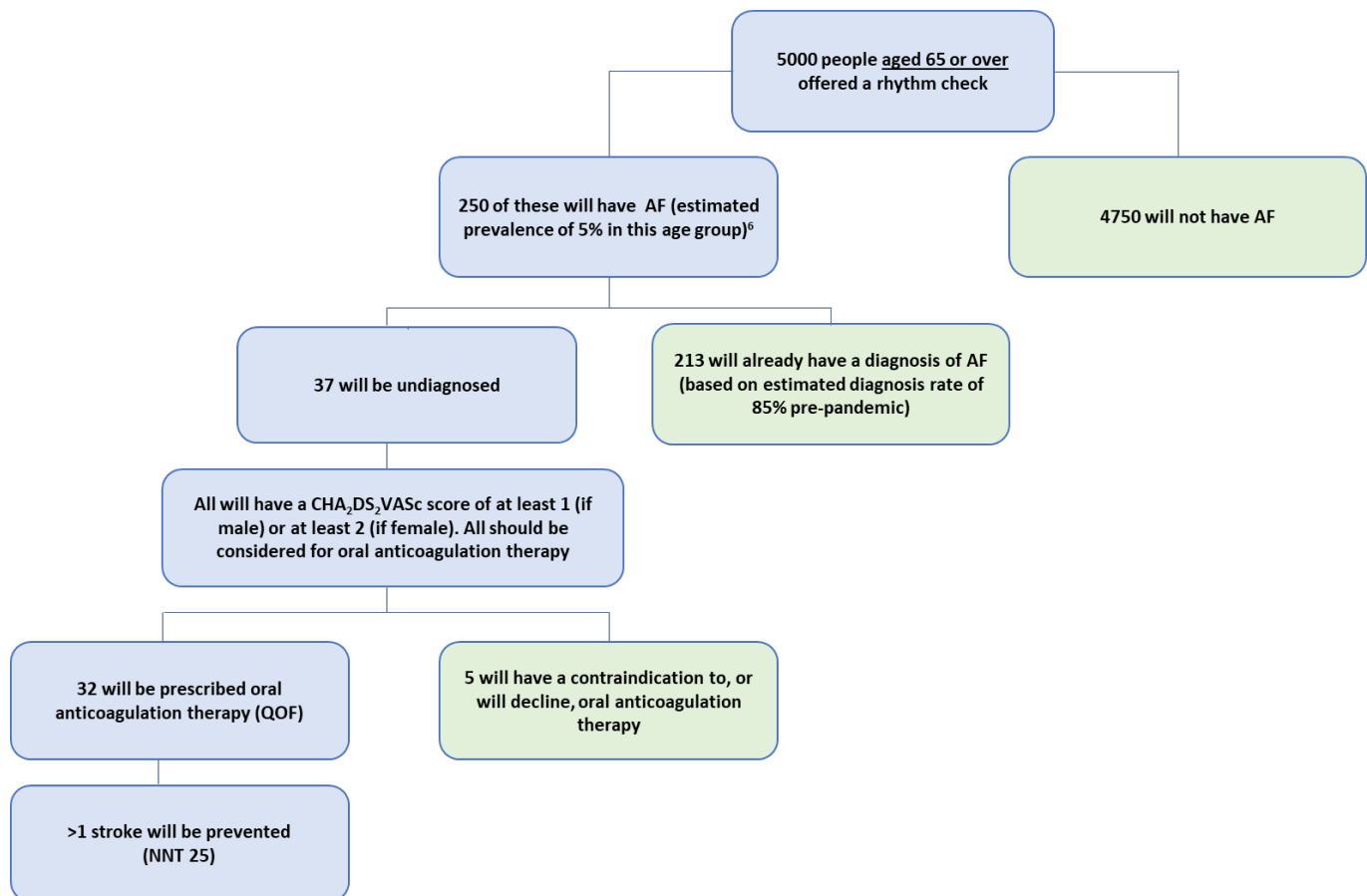
³ <https://pubmed.ncbi.nlm.nih.gov/29982405/>

⁴ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7511209/>

⁵ <https://doi.org/10.1093/eurheartj/ehaa494>

have happened during the pandemic and so it is appropriate to offer an AF check at vaccination clinics.

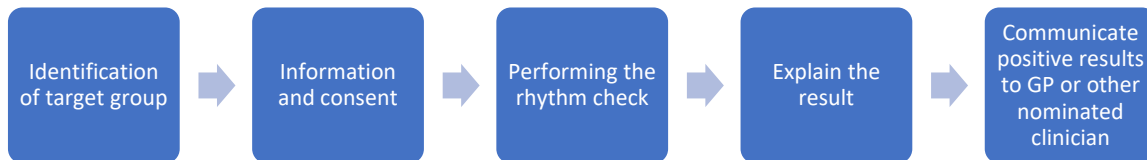
It is estimated that one stroke will be prevented in the first year for every 5000 people aged 65 and over who are offered a rhythm check.



This approach has been piloted in several sites since March 2021 and has been found to be effective in detecting AF and acceptable to patients and staff. These sites report that offering a rhythm check has not affected the throughput or efficiency of the vaccination clinics.

Basic pathway for AF detection in vaccination clinics

The basic pathway for AF detection in vaccination clinics is shown below. Each step of the pathway has several options to be considered.



Target group

The European Society of Cardiology (ESC) recommends opportunistic detection of AF by pulse taking or ECG rhythm strip in people aged 65 and over⁶.

If a person is over 65 and has AF they are at an increased risk of a stroke and should be considered for oral anticoagulation therapy. Therefore, for this group, there is a benefit in having AF detected. The evidence for opportunistically checking for AF in asymptomatic people aged under 65 is less clear. **Therefore, it is recommended that the target group is people aged 65 and over.**

Information and consent

People should be provided with information about targeted rhythm checks and should be given time to review it. Information could be provided in advance of the appointment or could be handed out at check in.

The AF Association has developed [information leaflets](#) that can be given to people, along with posters and videos that could be shared. The Stroke Association also has [information leaflets](#).

Many vaccination centres, primary care networks, GP practices and community leaders are producing videos to encourage vaccination uptake and to explain the vaccination process. These videos could be used to explain that people aged over 65 will be offered a rhythm check and explain the process.

In SALT Hill, Slough, people in the target group were given a leaflet to explain the reason why a rhythm check was being offered. They were able to indicate their initial agreement at reception and were then given a sticker to share with the vaccinator and time to read the leaflet. At the vaccination station the vaccinator took verbal consent, using an agreed script.

⁶ <https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Atrial-Fibrillation-Management>

The person carrying out the rhythm check should obtain verbal consent before performing the check.

Performing the rhythm check

Single-lead ECG devices

Single-lead devices available within the UK market include Kardia Mobile, MyDiagnostick, imPulse, Zenicor-ECG and ZioXT (see [appendix 1](#) for details). Single-lead devices have a similar sensitivity to manual pulse checking but a higher specificity, leading to fewer false positives. They are also simple to use, with non-clinical or volunteer staff able to use them. To date, most pilot sites have used the Kardia Mobile device. Specific information about the Kardia Mobile device can be found [here](#). This includes how to set up the Kardia mobile app on personal/organisational smartphones and [privacy notices](#) that should be shared with patients.

It is recommended that a single-lead ECG device be used to detect AF.

NICE guidance requires a 12-lead ECG for diagnosis of AF. European Society of Cardiology guidance does allow definitive diagnosis of AF following physician review of a single-lead ECG recording of ≥ 30 seconds. However, the quality of a single-lead trace can be variable and not all physicians may be confident reviewing these.

It is recommended that NICE guidance is followed and a 12-lead ECG is used to confirm the diagnosis of AF.

Manual pulse checking

Manual pulse checking, when carried out correctly, has a similar sensitivity but a lower specificity than single lead ECG⁵ for detecting AF. Manual pulse checking alone will result in a higher number of false positives. It also requires additional direct contact between the person carrying out the check and the person being checked and so may increase anxiety around infection risk. **If manual pulse checks are used, consider offering people found to have an irregular pulse a second rhythm check with a single-lead ECG device.** This is a pragmatic option that will reduce the number of false positives referred for 12-lead ECG compared to manual pulse checking alone. This option would only require one or two single-lead devices per vaccination clinic.

Who should perform the rhythm check?

In some centres, the vaccinators perform the rhythm check prior to giving the vaccine. The check is carried out whilst while the vaccinator is asking questions prior to giving the vaccine.

In other centres, AF Association volunteers are on hand to offer a rhythm check after the vaccine has been given.

Explaining the result

Explaining regular rhythm found

If no irregular rhythm is detected, the practitioner carrying out the check should explain that no signs of AF were detected.

Explaining an irregular rhythm

If an irregular rhythm is detected the practitioner should explain this to the patient and explain what will happen next in the diagnosis pathway. Some pilot centres have developed a standard script to be delivered to patients.

In vaccination clinics in Suffolk, AF Association volunteers carry out the rhythm check and are trained to answer patients' questions

Consider what support patients may need to manage any anxiety following the finding of an irregular rhythm; as a minimum this could include information leaflets.

In the Frimley Health and Care Integrated Care System vaccination clinics, patients who are identified with an irregular rhythm have the opportunity to talk to the senior clinician in overall charge of the session. This clinician is able to explain what the irregular rhythm may mean, that it is not a definitive diagnosis of AF and that this information will be conveyed to the patient's GP.

If a single-lead ECG device is used there is the possibility that irregularities other than AF may be detected (e.g. bradycardia or tachycardia). There should be protocols in place so that patients are given appropriate immediate advice and that the findings are communicated to the agreed onward referral pathway, whether primary or secondary care.

Follow-up

Once an irregular rhythm indicative of AF has been detected there needs to be a clear pathway for informing the patient's GP, or another designated clinician who is able to act on the finding. Possible models include:

1. Vaccination centre directly informs GP

One early adopter centre is using Kardia Mobile to carry out the rhythm check. When a potential case of AF is detected the vaccinator seeks verbal consent from the patient to share the abnormal heart rhythm strip with their GP surgery, along with their date of birth and NHS number. These details are sent from the vaccinator's NHS.net account to the NHS.net account of the clinical supervisor (the clinician in charge of the session) to maintain patient confidentiality. At the end of each session, the clinical supervisor sends an email with the heart rhythm strip attached to the relevant GP practice, explaining that the patient has had an irregular rhythm detected and that urgent follow-up is required. An audit is undertaken on a monthly basis to ensure that all patients detected in this way receive a follow-up appointment.

At another centre, volunteers offer patients an rhythm check and if an abnormal rhythm is detected, the GP leading the session (who will be from the same practice) is informed and the trace shared via secure email.

2. Vaccination centre provides the patient with a letter to share with the GP

The AF association has devised a [letter](#) for people who have had an irregular rhythm detected to take to their GP practice as soon as possible.

3. Vaccination centre arranges secondary care follow-up in a defined clinic

One acute trust is planning to carry out rhythm checks in mass vaccination clinics. If an irregular rhythm is detected patients will be referred for a 12-lead ECG at a clinic designated for this purpose. During this clinical assessment, arrangements are made for discussion of risk and benefit of oral

anticoagulation and prescription if required. Responsibility is then transferred to the person's GP for continued care.

Additional considerations

Infection control

Advice should be sought from infection control teams on the latest recommendations for cleaning of devices to reduce infection risk. This may change as the pandemic progresses and it is important that advice is up to date.

Most people will not have AF and it is important that correct infection control measures are put in place so that the benefit of the rhythm check outweighs the infection risk.

Some single-lead devices can simply be cleaned with sanitising wipes; the manufacturer specifies the instructions for cleaning.

See [national infection control guidance for vaccination clinics](#).

Broader health checks

Having embedded targeted AF detection into their vaccination clinics, some sites have added blood pressure checks and HbA1c testing. Learning from the pilot sites suggests that an incremental approach, starting with rhythm checks, builds staff confidence and alleviates any concerns about the impact on clinic flow and throughput.

The throughput through the vaccination clinics provides an excellent opportunity to offer CVD prevention advice. An exemplar flyer can be found [here](#).

Support for primary care

Consider whether primary care teams will need additional support around anticoagulation initiation. This could include refresher education sessions with specific focus on counselling patients on the risks and benefits of oral anticoagulation therapy as well as the importance of adherence.

Case studies

Salt Hill, Slough

Salt Hill vaccination centre in Slough has been delivering rhythm checks since February 2021. Vaccination take-up from the community was excellent and this presented a real opportunity to detect CVD risk factors and offer general health advice.

On arrival at the vaccine centre, patients in the target group are given a leaflet to explain that they will be offered a rhythm check and the reasons for doing so. At the vaccination station the vaccinator asks if they have any questions about this.

The check is carried out using a Kardia Mobile device (sanitised along with the rest of the vaccination station between each patient). Vaccinators use the app on their own phones but the patient does not touch the phone. If potential AF is detected the vaccinator asks the patient whether they consent to the result, their NHS number, their date of birth and their heart rhythm strip to being emailed to their practice.

The vaccinator sends the heart rhythm strip along with NHS number and date of birth via secure NHS.net email to the clinical supervisor of the vaccination session. At the end of the session the clinical supervisor sends the information on to the relevant practice, again via NHS.net email.

The registered practice then contacts the patient to arrange a 12-lead ECG and onward management.

To date, 4,350 patients have been offered a heart rhythm check and 13 potential AF cases detected.

Having embedded rhythm checks into normal practice within the COVID vaccination clinics the team is now piloting wider health checks. During April 2021, 230 people were given a full NHS health check or a general health assessment. A further 229 people had their blood pressure checked.

58 new cases of elevated blood pressure (BP) were detected.

Three new high HbA1c levels were detected, indicative of diabetes.

All patients receiving the health check or assessment are advised on how they can reduce their risk of developing CVD. Referrals are made to weight management, smoking cessation and falls prevention programmes as appropriate. Referrals to the NHS Diabetes Prevention Programme are made via the GP. After the health check is complete a report is emailed to the GP, containing details of results with read codes.

Suffolk

In Suffolk, AF Association ambassadors are working with local practices to offer rhythm checks post-vaccination.

After the vaccine has been administered, people are offered a rhythm check using a Kardia mobile device. The AF Association ambassador explains the use of the Kardia mobile ECG and provides AF Association resources for those who express an interest.

If a normal rhythm is detected people are provided with the AF Association 'Know your pulse' leaflet to encourage them to regularly check and be aware of their heart rhythm.

If possible AF is detected people are informed of the result and asked for their consent to share this with their GP. On receiving this consent, a standard letter is sent to the GP practice, ideally including a print-out of the single-lead ECG.

The feedback from people offered a pulse rhythm check to date has been very positive and people have been receptive to the 'know your pulse' campaign and the importance of pulse checking.

During the first three sessions 817 people accepted the offer of an opportunistic pulse rhythm check. Forty-seven people with no previous history of AF had an irregular rhythm (5.75%). People with an irregular rhythm were followed up by their GP.

A full [project review document](#) has been produced.

COVID Crisis Rescue Foundation (CCRF) Vaxi Taxi

COVID Crisis Rescue Foundation (CCRF) Vaxi Taxi Project, is 'Getting London Vaccinated' by offering community vaccination pop-ups in familiar locations for harder to reach cohorts, including people who are homeless, rough sleepers, asylum seekers, sex workers and those living in

temporary accommodation, to ensure those eligible and most vulnerable are not left behind in vaccination efforts.

The majority of people in the vulnerable groups being served by the vaccination pop-ups are either not registered with a GP or have not seen their registered GP for many years, and so have not had access to physical health checks. The CCRF launched its first community vaccination pop-up to include health checks on 12 April 2021 at a day centre in South London which provides substance misuse services. The Vaxi Taxi project team (including cardiology nurses and health champions) took the opportunity to offer people a health check including a blood pressure check and a manual pulse check. Other health screening was on offer, including hepatitis C testing. A specially designed CCRF 'Cardio Card' was given to the person, including their BP measurement and BP target, and people were encouraged to sign up to a GP practice. The link between hypertension and cardiovascular health was explained to people, as was the importance of having regular blood pressure and pulse checks.

Several people attending had very high blood pressure. The implications and urgency of this were explained to them and they were directed to a local walk-in-centre and a GP practice that was accepting new registrations. People with moderately raised blood pressure were encouraged to register with a GP or visit their GP and take their 'Cardio Card'. The option of visiting a pharmacy to check their blood pressure was also discussed.

One irregular pulse was detected through manual pulse checking and the person was offered an immediate rhythm check on Kardia mobile. This showed no signs of current AF. The person was reassured and advised on self-checking and symptom awareness.

68 people were vaccinated at the South London event and half of these accepted the offer of a health check. The health checks were positively received and delivered with expertise and compassion to this highly vulnerable group. The CCRF plans to build on this successful first health check clinic by adding in dental, dermatology and podiatry checks to subsequent clinics. They are also scoping the potential for offering point of care cholesterol checks.

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Case studies provided by

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Appendix I

Single-lead devices:

Kardia Mobile - <https://www.alivecor.com/kardiamobile/>

MyDiagnostick - <https://www.mydiagnostick.com/>

imPulse - <https://www.astute.global/products/plessey-impulse-hand-held-sensor/>

Zenitor ECG - <https://zenitor.com/zenitor-ekg/>

Zio - <https://irhythmtech.co.uk/the-proven-ambulatory-cardiac-monitoring-service/>



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