NHS Western Isles podiatrists helping in the detection of atrial fibrillation: an audit

Citation: Campbell L (2023) NHS Western Isles podiatrists helping in the detection of atrial fibrillation: an audit. *The Diabetic Foot Journal* 26(2): 8–11

Key words

- Atrial fibrillation
- Ischaemic stroke
- Cardiac health
- Role of podiatry

Article points

1. Most podiatry patients will exhibit risk factors for AF, so it is important to be aware of these.
2. Early detection and treatment of AF is vital.
3. Modifiable risk factors could be addressed during routine podiatry consultations to help improve outcomes.

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Atrial fibrillation (AF) is one of the most common cardiac arrhythmias and can remain unnoticed until complications occur; the most significant complication being a stroke. AF is a modifiable risk factor for stroke but increases the risk of its occurrence fivefold when untreated. Those who have had an AF-related ischaemic stroke are often worse affected as a result. AF related ischaemic strokes are nearly twice as likely to be fatal as non-AF ischaemic strokes and are associated with more recurrence and more severe functional deficits. It is estimated that 50,000 people in Scotland are living with AF that are currently undiagnosed and thus not in a position to lessen their stroke risk as a result; a situation described as a ticking time bomb due to these individuals being blissfully unaware. The Heart disease Action Plan 2021 which was the 2021 Scottish Government plan to tackle cardiac health advised that more than 106,000 people had been diagnosed with AF. The report prioritised the detection, diagnosis and management of AF in addition to other risk factors.

In general, the scale of heart disease in Scotland has heightened as the incidence of conditions like AF, heart failure and heart valve disease have increased. This is thought to be partly as a result of an ageing population alongside increased survival from acute coronary events as a result of improved detection.

The causes of AF vary considerably, many are modifiable and can include, but are not limited to things such as:

- Lifestyle choices (e.g. obesity/alcohol/smoking/physical inactivity)
- Hypertension (even borderline)
- Lipid profile
- Acute infection
- Diabetes mellitus and vascular disease.

The majority of podiatry patients will exhibit these, so it is important we are all aware and feel able to tackle and discuss with our patients these areas of public health in a meaningful way to help optimise outcomes and help make every contact count, whether in a podiatry setting or other healthcare profession. Risk factors also associated with an increased risk of AF include being male, increasing age and Caucasian ethnicity.

Caffeine is not a risk factor but is often blamed for palpitations, which are one of the most obvious symptoms of AF. According to NHS Inform, this is where the heart feels like it's pounding, fluttering or beating irregularly, often for a few seconds or possibly a few minutes. As well as an irregular heartbeat, the heart may also beat very fast (often considerably higher than 100 beats per minute). Other symptoms include tiredness and being less able to exercise, light headedness or feeling faint, breathlessness and chest pain. It's important to note, some people (particularly older people) don't experience any symptoms and, if they do, they are often put down to ageing, so are easily dismissed. Many people as a result are diagnosed by chance or opportunistically during other assessments.

The early detection and treatment of AF is vital if we are to limit the significant implications on patients' health and wellbeing, and that of their families, plus also reduce the subsequent impact on NHS resources. The modifiable risk factors as previously mentioned could be addressed during routine podiatry consultations as standard;

likewise, any other AHP consultation. The Scottish Allied Health Professions Public Health Strategic Framework Implementation Plan, covering 2022 to 2027, which has evolved from a 2019 document that outlined a four-nation/UK-wide approach to public health, aims to help AHPs widen and further develop their role in public health, encouraging innovative approaches to care to improve the health of our country. Again, reinforcing the message that making every contact or appointment count, which applies to all of us, and would also extend to other health professions outwith AHPs.

The extremely practical way a podiatrist can make a difference in detecting AF, which I recently found out that other AHP colleagues had no idea we did, is by observing cardiac arrhythmias using our Dopplers, which Podiatrists use routinely as part of a lower limb vascular assessment. Ultimately, if your heart has a funky rhythm, your foot pulse will have too!

Historically, any arrhythmias detected by Podiatrists using Dopplers were reported to GP practices so that a 12-lead ECG could be carried out (when no existing diagnosis of AF was known). Excitingly, the podiatry team in the Western Isles have been the first to expand on this skill by using a device called a Kardia Mobile, which effectively performs a single lead ECG at the time an arrhythmia is observed.

The Kardia device (there will be other brands available) is very small, lightweight, and easily portable and syncs with an app downloaded to smartphones or tablets, meaning it is easily used both in clinic and out in the community; it works reliably even in our most remote areas. The Kardia assessment generally takes less than a minute, the reading itself taking 30 seconds. Kardia use is all-encompassing in that there are no exclusions, as everyone who attends a podiatrist or has the podiatrist attend them if domicile will have access to this quick point of care test, thus equitable and fair for everyone.

It is used on all patients when an irregular pulse is identified, and there is no known diagnosis of AF. The generated PDF with the waveform is then sent to the Cardiac Specialist Nurse team or, if in the community, sent as soon as signal allows (the device does not need internet coverage to operate, only to send PDF in email). Using Kardia in conjunction with Cardiac Nurse expertise was an obvious and cost-saving way of both enhancing Podiatric assessment and avoiding potentially unnecessary further testing for the majority of patients in whom an arrhythmia was detected.

If, on the rare occasion a Kardia is either not possible or fails, then the GP surgery would be notified as before. The Cardiac Specialist Nurses report that the initiative works really well from their perspective too and has not negatively impacted their existing workload. This algorithm has streamlined the process for both patients and clinicians as it efficiently identifies those who require further investigation quickly and captures the moment of arrhythmia in a timely way, which is particularly pertinent for paroxysmal AF, which can be more transient in presentation, so sometimes the opportunity to capture it is at the time an arrhythmia is identified rather than a few weeks after the event, which previously was the case before our new way of working. Please see Appendix 1 for the algorithm.

Figure 2: A Bohler walker.

In the Western Isles, we don't have a cardiac physiologist, and so often is the case in health care, maybe more so in remote areas, it's a case of looking and assessing what we do have and trying to make it work rather as be defeated! I think the Western Isles model is sustainable and effective, and I'm unsure if that in itself is new and pioneering, or whether utilising the skills of Cardiac Specialist Nurses rather than Cardiac Physiologists has been tried elsewhere?

The device is not diagnostic, however, so even when AF is displayed as the outcome, follow-up 12-lead ECG would be required; it can, however, rule out AF after Specialist Cardiac Nurse approval. The cardiac nurse team requested that all readings be sent to them, irrespective of whether the Kardia device recognised normal sinus rhythm or not.

To offer context to our audit findings particularly in relation to the causes and risk factors of AF previously listed; the NHS Western Isles serves a population of about 26,500 and just over a quarter of whom are 65 years or older. Nearly 7% of the Western Isles population have

Table 1. Total number of Kardia usages since March 2021.

Year	Kardias performed	Excluded (incomplete data)	12 lead ECG avoided	AF confirmed	Already Known AF	Awaiting Confirmation of AF
2021	39	8	23	2	2	3
2022	49	9	29		3	5
2023 (to 16th May)	22	2	15		1	4

diabetes. Of those 65 years or older, 43% are male, whilst 57% Female and 99% identifying as Caucasian according to the 2011 census.

Seven Podiatrists were operating from clinics based in three locations on separate islands during the audit period and each had been issued with a Kardia mobile device, to be used when an arrhythmia is detected.

Table 1 outlines the total number of Kardia usages during the audit period.

Excluded data generally related to incidences of error in which the pathway had not been properly followed and information was unavailable to the auditor (i.e. Cardiac nurse instruction). The 'Kardias performed' column is the grand total of incidences Kardia was used in clinic prior to any exclusions. For accuracy in data interpretation, further basic analysis has been calculated following exclusions, of which there were 19.

Approximately 3% of the total podiatry patient contacts since March 2021 required point of care testing using Kardia (this percentage did not significantly change following the exclusions as both incidences rounded up or down to 3%).

91 Kardias in total are included in the data set and the number of 12-lead ECGs avoided during the audit period was 67; thus equating to nearly 74% of assessments carried out. Just under 20% required follow-up 12-lead ECG. The remainder had an existing diagnosis of AF, which clinicians were unaware of, therefore would not have required 12-lead ECG.

12 outcomes remain unknown due to inability to establish if AF had been diagnosed following subsequent ECG or further investigation results.

The audit cohort comprised of 52 males (57%) and 39 females (43%) forming the basic demographic with a median age for each year being: 78, 79.5 and 78 years. The total age range is 10-95 years (10-year-old was an outlier, and there were a couple of teenagers also who had Kardia performed). The average age over the period is just over 76 years.

There have been 2 confirmed new diagnoses of AF, to date, as a result of this initiative. This equates to just over 2% of the total Kardia usages at the point of care by Podiatry.

Of these two confirmed new AF diagnoses, one was asymptomatic but was believed to have had a silent heart attack and was urgently flown to the mainland for further testing and query if surgery required. AF was later diagnosed and treatment then was optimised. The second was an inpatient who subsequently was diagnosed with heart failure.

The Podiatrists (including the technophobes!) have wholeheartedly embraced this device as they quickly discovered the all-round value and benefits of Kardia assessment to the patients, our service and our colleagues in Primary Care. It was very easy to roll out, user-friendly and works well and reliably in our remote and rural setting. The use of Kardia is now firmly embedded in our routine practice. Our colleagues in primary care have overall been supportive and encouraging of this initiative, highlighting that any initiative which will save precious time in GP surgeries is greatly appreciated.

It is hoped that our study can develop and, in the future, could determine the following:

- Correlation between comorbidities present within the patient group
- Financial savings of 12-lead ECGs avoided
- Perceived benefit to patients (evidenced by logging individual patient experiences)
- Further enhance the algorithm to eliminate those with existing AF diagnosis slipping through the net, which we have nearly completed.

In the current financial, post-COVID climate (where resources are stretched and unnecessary patient contact is discouraged) we perceive multiple benefits including earlier access to treatment, improved use of technology in routine assessment, avoidance of unnecessary appointments and unnecessary travel (for some of our most remote patients, this could save anything up to a 50-mile round trip or several hours of bus travel to access their nearest health centre).

At the time of writing, NHS Western Isles Podiatry services were the only NHS podiatry team to currently use the device and I believe NHS Borders and NHS Fife now use it too, which is great! Kardia really has become a staple and embedded part of our routine vascular assessment and we would unhesitatingly encourage other boards to adopt its use. It is hoped articles such as this will help promote its use to others whilst raising awareness of AF and the part podiatrists can play in helping detect it.

As a podiatrist, which can be a profession often overlooked and, arguably, perhaps not respected as much as we could be, there are many ways we can contribute to health and public health awareness. However, it is up to us to develop and promote our skills to demonstrate our innovation and true value as healthcare professionals. I hope if there are any podiatrists or indeed any other health care professional that has read this that is not sure how to recognise an arrhythmia, or what to do if they find one, they feel inspired to learn and to develop pathways locally. Everyone, together, can help detect the estimated 50,000 Scots who currently have undiagnosed AF to try to catch these ticking time bombs early before they detonate. ■

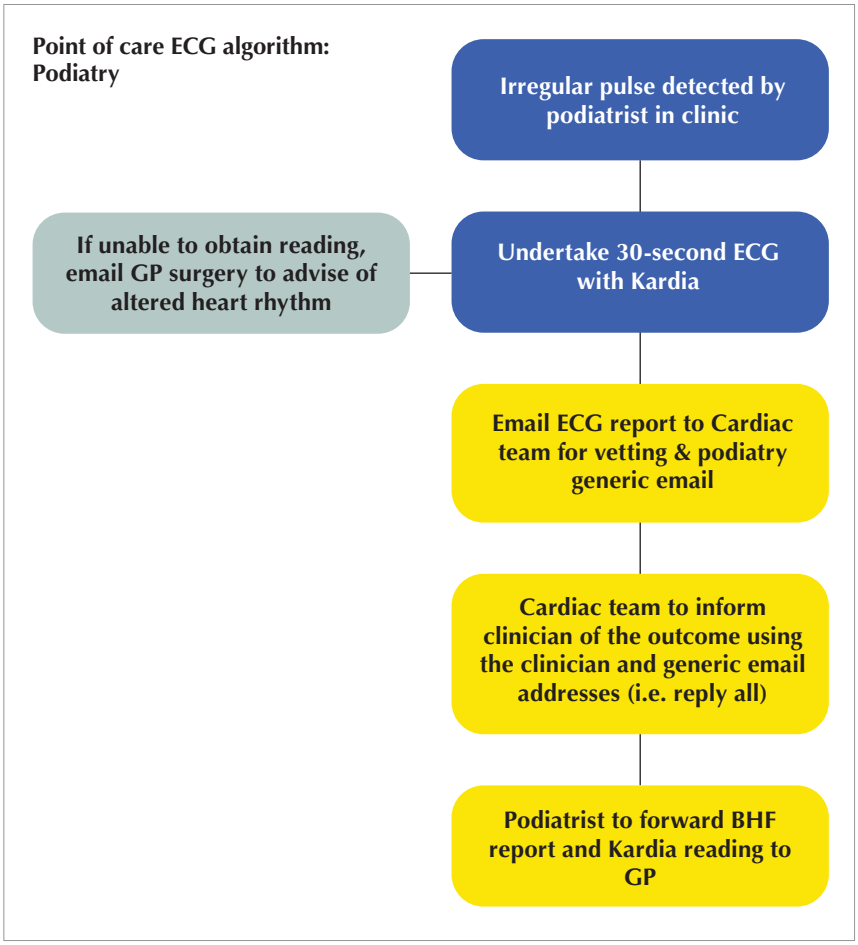

Figure 1. NHS Western Isles Podiatry Services Kardia Algorithm.

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