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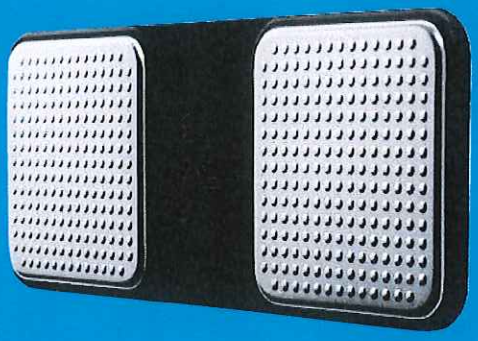
Kardia

AliveCor®



Introducing the Kardia™ Mobile ECG

Innovative technology to improve patient outcomes

Kardia™ Mobile is a hand-held, clinical quality, single channel (Lead I) ECG recorder. It is small, lightweight and simple to use, giving health professionals and their patients the ability to perform accurate ECG recordings at the surgery or on-the-go.

The Kardia™ Mobile device includes automated software that instantly confirms normal sinus rhythm or the detection of atrial fibrillation (AF). With the option to attach to a smartphone, it is ideal for capturing arrhythmia during normal activities, without the need for wires and patches. The free Kardia™ app can securely store and upload traces that can be printed, emailed or accessed remotely by health professionals. Kardia™ Mobile is not linked to a particular device or patient so can be easily transferred between practice staff or family members. It can be used in several clinical settings including routine appointments/patient registration, health screening events, investigation of symptomatic patients and monitoring of patients with known conditions. The ease-of-use, cost-effectiveness and benefits, in terms of peace of mind for symptomatic patients and early detection of potentially life-threatening arrhythmia, has led to selection of this technology by the **NHS Innovation Accelerator** programme for systematic adoption throughout the NHS.

" We have been using Kardia™ Mobile clinically since its launch and it is difficult to imagine now working without it. We hold annual heart screening events and have a team of cardiac nurse specialists who all use the device in the day to day clinical practice. They run independent clinics and it is really helpful to get a quick assessment of the person's heart rhythm"

Dr Andrew Mitchell, Consultant Cardiologist, Jersey General Hospital

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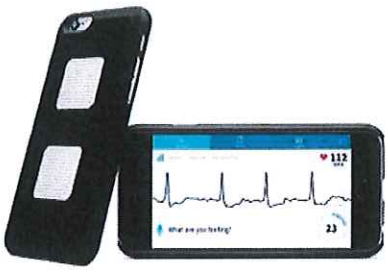
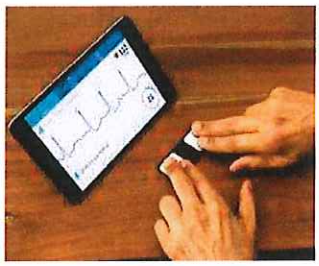
HOW DOES KARDIA™ MOBILE WORK?



Kardia™ Mobile is used within a metre radius of a mobile device, such as a smartphone or tablet, or can be attached directly via an adhesive attachment plate or an integrated phone case. It uses ultrasound to transmit the ECG recording to the device where the installed Kardia™ app (available through Apple or Android) records an ECG trace, including a measure of average heart rate, with the option to add notes or tags to each recording (voice-to-text or manually). In-built software will notify the user whether the trace is 'normal', 'possible AF detected' or 'unclassified' (if the ECG is abnormal, i.e. outside the range for sinus rhythm, but not AF). To access all services, doctors and their patients are both required to set up an AliveCor account on their Kardia™ app. Doctors can link to the account of their patient through the secure Provider Dashboard (Login at eu.alivecor.com) and via the Kardia Pro Platform (available from late 2016). When Wi-Fi or mobile connection is available, the traces will automatically upload to the AliveCor cloud server. The user can save the trace, email or create a PDF to print.

TAKING A READING



Kardia™ Mobile incorporates two electrodes. For a Lead I recording, one or two fingers should be placed on each electrode for at least 30 seconds. Within a few seconds the ECG trace appears on the screen. If the trace is of low amplitude, there is an additional option for taking a Lead II recording by placing the left-hand electrode on the left knee and fingers of the right hand on the right-hand electrode. This may improve the amplitude, improving visibility of the P wave thus making interpretation easier for patients with situations such as vertical heart axis. A third option is taking an Anterior Precordial Lead recording by placing the device on the lower left side of the chest, with the bottom of the phone pointing towards the centre of the body. Note that the automated analysis should not be relied upon for these alternative positions. A brief appointment with a healthcare assistant is usually sufficient for training patients and instructions for use are also contained in the user manual. Applying hand sanitizer prior to use may improve contact and warming up cold hands can help for those with poor circulation or conditions like Raynaud's.

HOW SENSITIVE/ACCURATE IS IT?

In a study where patient-recorded traces were interpreted by Electrophysiologists sinus rhythm was accurately detected 97% of the time and AF/flutter 100% of the time.[1] Kardia™ Mobile has also demonstrated a high degree of accuracy in studies versus 12-lead ECG.[2,3] The automated software has an overall accuracy of 97% using 12-lead ECG as a reference,[2] and 98.5% sensitivity and 91.4% specificity using a cardiologists' diagnosis from the Kardia™ Mobile reading as the reference.[4]

FLEXIBILITY FOR DIFFERENT PATIENT SETTINGS

Kardia™ Mobile is an ideal tool for screening in the community or primary care. It can also be used to aid diagnosis, to rule-out AF in symptomatic patients or for regular monitoring of at-risk patients, e.g. after ablation procedure.[1] Palpitations are a common trigger for secondary referral but are difficult to capture during a 12-lead ECG. Traditional options for ambulatory recording include the Holter monitor, which has limited success for intermittent symptoms, and the invasive implantation of a subcutaneous loop recorder. Since many patients have smartphone access 24 hours a day, these traditional monitors could be replaced by Kardia™ Mobile in some instances, especially low-risk palpitations with infrequent symptoms or patients requiring a less invasive method of ECG recording.

" The high negative-predictive values suggest that this test is a good 'rule-out' test for AF in a population with a prevalence of AF, such as we have in England"

J. Williams et al. 2015[5]

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