

Ambulatory Monitoring Services

*Please amend to suit your purpose.

Inclusion criteria:

1. Presented to ED/AMU with palpitations
2. ECG normal
3. Has Apple® / Android phone or tablet
4. Aged 18 years or older
5. Underlying cardiac arrhythmia possible



Exclusion criteria:

1. Non-ambulant
2. Patient requires hospital admission
3. Prior diagnostic ECG
4. Should represent ED or attend GP if symptoms
5. Recent MI/severe heart failure/unstable angina
6. Patient unwilling or unable to use the AliveCor's Kardia personal ECG and app
7. Cardiac pacemaker/ other implanted electronic device
8. Likely secondary cause for palpitations (e.g. anxiety, sepsis)

Procedure to arrange Ambulatory care clinic appointment:

1. **Check** phone/tablet compatibility
2. **Book patient** into Ambulatory care clinic
3. **Advise patient** to bring their smartphone / tablet to Ambulatory care clinic appointment
4. **Advise patient** to bring their app store password with them to Ambulatory care clinic appointment
5. **Give patient** advice leaflet about ambulatory care
6. **Ensure** Thyroid/FBC and UEs arranged

Ambulatory care patient information for patients with palpitations

You are being investigated for the cause of your illness. We are specifically looking for the cause of your palpitations.

The medical team looking after you have decided that you are well enough to go home while we wait for your diagnostic test to be arranged.

You will return to the Ambulatory care on ____/____/_____
at: _____:_____hours

When you return to the Ambulatory clinic, you will be given an AliveCor ECG device that will be linked to the Kardia app that with direction you will download onto your phone or tablet. We will not enter any identifiable details into this app. Have the device for 1 month after which time you will return to the clinic, and our medical team will review the ECG tracings that you have recorded along with your symptom diary.

If you have not recorded an ECG that diagnoses the cause of your palpitations, you may be asked to keep the device for a further 2 months.

You should return to the Emergency Department if you develop a further episode of palpitation that makes you feel unwell or that is associated with chest pain, collapse or blackout.

If you have a further palpitation but do not have associated chest pain, collapse or blackout, there is no need to return to the Emergency Department or see your GP before you are seen in the Ambulatory clinic again.

Ambulatory Clinic Checklist

Ambulatory clinic checklist	√	Comments/action
Visit 1		
1. Retake history and exam		
2. Check phone/tablet compatibility		
3. Download AliveCor Kardia app to patient's phone/tablet		
4. Give patient AliveCor/Kardia personal ECG		
5. Record number of AliveCor/Kardia personal ECG		
6. Give Patient Instruction NHS use guide 2		
7. Ask patient to state explicitly that this is their phone and they will only use it to record their own palpitations. They will not lend it to anyone else for this purpose		
8. Give Patient a copy of Patient Symptom Diary		
9. Book patient into Ambulatory care clinic in 4 weeks		
Visit 2		
1. Interrogate AliveCor/Kardia app on patient's phone and Patient Symptom Diary		
If no symptomatic ECGs then: 2. Arrange further appointment in Ambulatory care clinic in another 8 weeks (steps 3-7 not required)		
If symptomatic ECGs then: 3. Email patient's ECG to an NHS email account and insert into patient's EPR		
4. Repeat 12-lead ECG		
5. AliveCor personal ECG Returned (note number)		
6. AliveCor Device Cleaned		
7. Patient advised and referred back to GP (Sinus, Sinus tachy, ectopic beats) or to Cardiology (SVT, Atrial Fibrillation, Atrial flutter, Atrial tachycardia)		

More information is available about the Kardia device at alivecor.co.uk/

Appendix: Troubleshooting Guide

Problem	Solution
<p>My MobileECG is not working.</p>	<p>Ensure that the Kardia app has access to the iPhone microphone:</p> <ol style="list-style-type: none"> 1. Tap on iPhone “Settings” 2. Tap on “Privacy” 3. Tap on “Microphone” 4. Ensure that “Kardia” is turned on (the background of the slider is green) <p>Change the battery (we will have put a new battery in for you so the battery is unlikely to have failed)</p> <ol style="list-style-type: none"> 1. Expose the battery door at the back of the personal ECG: <ol style="list-style-type: none"> a. Remove the case from the smartphone or tablet by pushing the iPhone through the camera cut out, while peeling back the personal ECG from this corner. <p>OR</p> <ol style="list-style-type: none"> b. Remove the personal ECG from the attachment plate: <ol style="list-style-type: none"> 1. KardiaMobile: Place your thumbs on the electrodes and press down firmly. Turn counterclockwise about 45 degrees to "unlock" the personal ECG. Once it's "unlocked", the personal ECG can then be lifted out of the plate. 2. Use your thumbs to slide the personal ECG toward the open end of the plate. 3. Remove the battery door: <ol style="list-style-type: none"> a. KardiaMobile 6L: Use a 1.6mm Phillips screwdriver, press down firmly and turn counterclockwise to remove the screw in the battery door. 4. Remove the used battery and replace it with a new CR02016 coin cell battery matched to your model. 5. Orient the battery with the positive terminal up, so that you can see the writing. <p>Remove the protective sticker from the battery, as applicable.</p>
<p>I have a lot of artifact, noise or interference in my recording.</p>	<p>Try the following tips for acquiring the best quality ECG recording:</p> <ul style="list-style-type: none"> • Clean the electrodes on the personal ECG with alcohol-based sanitizer. • If hands are very dry, use a water-based lotion before recording. • When recording from the hands, relax the arms and hands to reduce muscle noise. Rest the forearms and hands on a flat surface and let the personal ECG rest on the hands. Do not squeeze the personal ECG. • Ensure that your smartphone or tablet is not charging/syncing and you are not using headphones with your smartphone or tablet during the recording.
<p>I have a lot of artifact, noise or interference in my recording.</p>	<ul style="list-style-type: none"> • Make sure that both the smartphone or tablet and the user remain still during heart tracing recordings. Movement during recordings will cause noise in the tracing. • Try recording from the chest, right under the pectoral muscle in the mid line.

<p>The heart tracing appear upside down.</p>	<p>In the future, ensure that the left hand contacts the electrode closer to the top of the smartphone or tablet, and the right hand contacts the electrode closer to the bottom of the smartphone or tablet. To invert a recording on your smartphone or tablet, see “Invert the ECG recording” under “Recording Adjustments”.</p>
<p>I forgot my password and I’m unable to reset it.</p>	<p>On the Forgot Password screen, enter your email address and click Submit. Follow the reset instructions in the email. Please note the reset link contained in the email is only active for a short while.</p>
<p>I see large spikes at the start of my recording</p>	<p>Large amounts of noise/artifact can be seen for the first few milliseconds of a recording when the Enhanced Filter is looking for your heartbeat. This is a very rare problem that lasts until your first heartbeat is seen in the app and doesn’t affect the rest of your recording.</p>

Adapted from Chest, Heart and Stroke, Scotland with thanks



Instructions: How to email patient's ECG to an NHS email account

- Go into patient's app
- On home screen, Press 'History'
- Select ECG of interest
- Press envelope icon in top right of screen
- Press 'Share pdf'
- Skip password protection
- Email to Ambulatory care clinic
- Print out ECG once emailed to Ambulatory care clinic PA
- Write patient's identifier on ECG
- Send paper copy to Medical Records Department with request to scan and finish at upload

