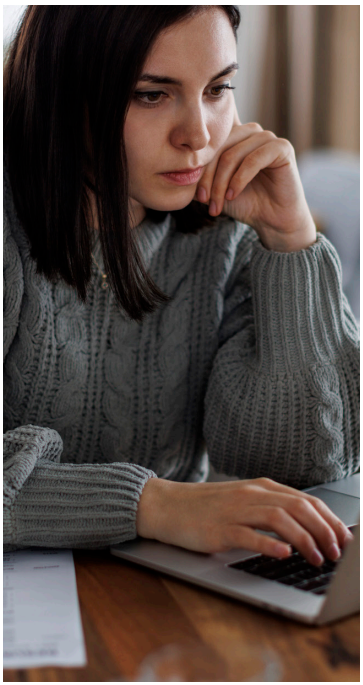
Arrhythmia Alliance
www.heartrhythmalliance.org

Remote monitoring


Working together to improve the diagnosis, treatment and quality of life for all those affected by arrhythmias

Glossary

Arrhythmia An abnormal heart rhythm

Catheter A long, thin, flexible tube or wire that is put into a blood vessel and threaded to your heart

Defibrillation The use of a therapeutic, high energy shock to stop dangerously fast heart rhythms

Implantable cardioverter defibrillator (ICD) A small device used to help treat arrhythmias

Insertable Cardiac Monitor (ICM) A small thin device inserted under the skin to record your hearts' activity

Pacemaker A small device that is placed in the chest to help control abnormal heart rhythms (arrhythmias)

Important Information

This booklet is intended to be used by people who have, or are about to have, an Implantable Cardioverter Defibrillator (ICD), pacemaker or insertable Cardiac Monitor (ICM) implanted. It may also be useful to obtain copies of the booklets 'Pacemaker patient information' or 'CRT/ICD/S-ICD patient information' for further information on the implant procedure and implants themselves. The information in this booklet should be used in addition to the information given to you by your doctors, nurses, and cardiac physiologists. If you have any questions about any of the information\ provided in this booklet, please ask your nurse, doctor, or cardiac physiologist.

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What is remote monitoring?

The term remote monitoring means exactly what it implies: monitoring your heart and implanted device while you are at home, and 'remote' from the care team at your hospital. Remote monitoring of pacemakers, ICDs and ICMs uses a special transmitter. Using an integrated aerial, the implant automatically sends medical and technical information from your heart, to your doctor, arrhythmia nurse and the cardiac physiologists who are treating you, usually via your remote monitoring device which may be connected through a mobile phone or internet link. This allows your heart rhythm specialists to monitor your condition based on accurate, up-to-date clinical information at any time – not just when you are at the hospital.

Remote monitoring will not replace the first visit after the device is implanted, which is important to check that the wound is well-healed, and you may still need to attend the clinic on an annual or 18-monthly basis as certain tests or any change of the settings cannot be carried out remotely. However, if all is well, and no problems are detected, it may take over the routine checks on your device, which relieves you from having to visit the hospital.

How does remote monitoring work?



Information will be sent from your device via whatever transmission system you are linked to by arrangement with your implanting centre. This is usually on a three to six monthly basis but can also be done more or less frequently. The information received at the centre will allow them to look at any changes that may have occurred in your heart rhythm or with the battery and the lead status.

To send the signals from your ICD or pacemaker you will need a special transmitting device. This will either be a box that sits by your bedside or a mobile phone with the manufacturer's software on it. Most monitors use mobile networks in your area to find the strongest signal to connect to the system.

If you own a smartphone, you might be able to use this to send your clinic transmissions via the manufacturer's app from your app store.

Your clinic will be able to advise the best system to use and will guide you through set-up process and/or give you relevant helpline numbers who can also help.

The type of transmitter you receive will depend on which company made your implantable device. Your implanting centre will provide you with full details of how to send transmissions and also a helpline number to call if you experience problems.

The transmitter works similarly to a mobile phone and automatically forwards the data to a computerised server. The data is coded during transmission in order to maintain confi dentiality. The pacing/ICD clinic staff are then able to view and evaluate the data on a special, secure internet site.

Can remote monitoring be used with any ICD or pacemaker?



Pacemaker/ICD

Pacemakers and ICDs are very complex medical devices and are subject to continual evaluation and improvement. Unfortunately, at the time of writing, not all devices have the option of remote monitoring.

Most ICDs that are currently being used are compatible with remote monitoring but it is still not available for most pacemakers. This may change in the future.

Many centres are currently evaluating the possibility of using remote technology in pacemakers, but not all devices have this option. If you have an ICD or Pacemaker that was implanted some years ago, then it is unlikely that you will be able to have a remote monitor.

Remote monitoring of ICMs

Patients who have ICMs implanted have devices which only monitor their heart rhythm and do not have leads connected to the heart. They act like an implanted ECG monitor for people who have suspected heart rhythm problems that cannot be diagnosed by the normal methods such as an ECG or 24 hr tape. ICMs work on a continuous loop recording that you can stop if you have symptoms with a special activator.

They can however be monitored via a remote monitor so that you can inform your hospital care team if you have symptoms and have activated your ICM. You will normally be given this monitor after your implant with instructions to contact the clinic if you have an event. Please note : DO NOT use an AliveCor Kardia Mobile with a pacemaker, ICD, S-ICD, CRT or similar implantable device.

The benefits of remote monitoring

By using remote monitoring technology, your doctor, arrhythmia nurse and physiologist can be kept up-to-date about changes in your heart rhythm or with the leads attached to your device. This enables them to schedule your hospital appointments or your remote follow-up appointments according to your personal needs.

Should you need to contact your follow up clinic because you are experiencing symptoms that cause you concern, they can evaluate your heart remotely and decide what course of action, if any, to take.



Travelling and remote monitoring

You should contact your follow-up clinic if you are travelling abroad, as some of the remote monitoring systems use diff erent telephone networks and so may not function in some countries. You may also choose not to take your remote monitor on holiday with you.



Frequently asked questions (FAQs)

Is remote monitoring safe?
Yes, remote monitoring/follow-up technology has been in use since 2000 and has been proven to be safe, secure, and reliable. A study has previously shown that patients whose ICDs used remote monitoring had significantly lower risks of death and rehospitalisation compared to those who did not.

Do I still need to attend the usual follow-up clinics?
You may not need to attend as frequently as you do currently. However, you will still need to attend the follow-up clinic if any changes to your programmed settings are required or to perform certain measurements that may be necessary. The interval between follow-ups is dependent on many factors, including your individual condition and the device implanted. It is very important that you attend all follow-up clinic appointments that may be recommended.

Where should I place my transmitter?
Your implanting centre will give full instructions on where to put your transmitter and how to send any messages.

Do I need any other equipment for remote monitoring / remote follow-up?
In order to send the signals from your ICD or pacemaker you will need a special transmitting device. This may look like a mobile phone or a small box which you will need to plug into your telephone line. This will be given to you if it is decided that you will have remote monitoring. You may also need a 'dongle' to help the box decode the signals but this will all be explained to you when you are given the equipment.

Is there a risk the encrypted data will be mixed up?
No. Your data cannot be mixed up during transmission. Your implant and transmitter are clearly allocated to each other using their respective serial numbers.

Is my data safe from unauthorised persons?
Yes. Your cardiac physiologist/arrhythmia nurse/doctor views your data via the internet through a secured connection. The server and all systems have been CE certified (European Conformity) and comply with the UK Data Protection Act.

Will I be able to access the data myself?
No. The information is only available to the medical team treating you; security measures ensure it is not accessible to anyone else.

Is there a danger from radiation during data transmission?
No. The implant transmits data with an extremely low power, on a frequency specially allocated to medical devices, so there is no danger.

How can I use my own smartphone?
You'll need to have a compatible smartphone with the latest Android or iOS software installed and the relevant app from your device manufacturer, which can be downloaded from the app store. You will need to ensure Bluetooth is turned on all the time with the relevant app running in the background. Your clinic will be able to explain more about this and check for compatibility.

Do I need the internet or a landline connection?
Many transmitters connect to the mobile network either via a dongle or internally via the transmitter itself. You do not need the internet or a landline connection in most cases, but your connection type will be explained when you are given the equipment.

Notes

This booklet has been written to support those diagnosed with an arrhythmia and their carers, who struggle to find information on this condition. Without donations and fundraising, we would not be able to provide support through our award-winning resources and helpline.

Please donate to support our vital work at
www.heartrhythmalliance.org/aa/uk/get-involved/donate

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"A simple to follow instruction booklet with step by step guidance which has helped me understand how my data is transmitted - thank you"

Charlotte, Devon

To view our patient resources, scan the QR code below:

Please remember that this publication provides general guidelines only. Individuals should always discuss their condition with a healthcare professional. If you would like further information or would like to provide feedback, please contact Arrhythmia Alliance.

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If you would like further information or would like to provide feedback please contact Arrhythmia Alliance.