Implantable defibrillator (ICD) Patient information pack

Royal Free Hospital
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Your device follow-up

You will receive a letter confirming your appointment, so it is important you keep us informed of any change of address. You should arrive at the cardiology investigations unit reception 10 minutes before your appointment time. Please ensure you allow adequate time for travel and parking (parking charges apply in the patient car park).

Your follow-up appointment will take place with cardiac physiologists who will ask you questions about your health, relating to the device and perform a device check. Please ensure you bring a list of your current medications with you to this appointment.

The clinic appointment should last between 10-30 minutes, although on some occasions it may be necessary to get an x-ray or a specialist doctor to examine you, which will extend your visit time.

Follow-up frequency
You will be followed up in the cardiac rhythm management clinic on a regular basis.

Patients with an ICD require frequent follow-up and will generally be seen every three to six months.

If you have any problems before your scheduled appointment, please contact the department and your appointment may be brought forward.

Patient support
The department is open Monday to Friday, 9am-5pm. During these hours, please contact the department on the telephone number at the end of this information booklet and leave your query with a member of staff – please have your hospital number available when you call.

Cardiac rhythm management (CRM) department – location
The cardiology investigations unit is located on the ground floor at the Royal Free Hospital, opposite the blood testing department and next to the oncology out-patient department.

Members of the CRM team
The CRM service consists of cardiac consultants, specialist physiologists and cardiac nurses. You will be under the care of a cardiac consultant and your device follow up will be performed by a cardiac physiologist.

How to contact us
Cardiology Investigations Unit
Royal Free Hospital
Pond Street
London, NW3 2QG

Telephone: 020 7794 0500 ext 31995/33583
Monday to Friday, 9am-5pm
Your implanted device

If you hear your device beeping
Your device will perform daily checks on specific parameters. These are similar to the tests completed in the follow-up clinic. The device also has the capacity to emit an alarm tone audible to you/vibrate to alert you if any of these monitored measurements are changing. If you hear the alert tone or feel your device vibrate, it does not mean that your device is functioning incorrectly.

You should contact the department between 9am-5pm for you to attend clinic to identify why the alarm has been triggered. Out-of-hours you should attend the emergency department (ED) for a member of staff to examine your device.

NB: If you experience a problem during working hours, and you have a device with a home monitor, we will advise you to perform a download via your home monitor. Out-of-hours you should contact the on-call cardiac registrar (see page 22 for contact details).

If you have received therapy:
If you believe you have received shock therapy from your device, please contact the department within working hours. Should you receive therapy out of working hours please follow these guidelines:

• If you receive only one therapy and feel well, please contact the department within working hours the next day.

• If you receive multiple therapies while feeling well please call an ambulance to attend the emergency department.

• If you receive a therapy while feeling symptomatic and feel unwell subsequently please call an ambulance to attend accident and emergency.

If you have symptoms of palpitations/dizziness/loss of consciousness
Please contact the department during working hours if you experience the above (see page 22). If these symptoms occur and do not resolve, or you continue to feel unwell please call an ambulance and attend the emergency department (ED).

Atrial and ventricular defibrillators and driving
You must tell the DVLA if you have an atrial or ventricular defibrillator. You can be fined up to £1,000 if you do not tell the DVLA about a medical condition that affects your driving. You may be prosecuted if you’re involved in an accident as a result.

Caring for your wound
Following your device implant, the team will inform you of how to look after your wound.

Your stitches will normally dissolve gradually by themselves. Your nurse will inform you if they need to be removed, with advice as to when and where to have this done (usually by the practice nurse at your GP surgery).
If you experience any of the following symptoms in or around your wound site, or if you are concerned in any way, please contact the department between the hours of 9am and 5pm, Monday to Friday for advice:

- redness
- soreness
- raised appearance
- any discharge
- signs of infection
- hot to touch.

As your follow-up care device team, we are best placed to deal with any wound concerns. Please find our contact details on page 22.

Additional supportive information

Dental and medical procedures

When scheduling any dental or medical procedure not related to your implantable defibrillator it is important to inform the dentists, doctors, and technicians that you have a heart device. They may need to consult with your cardiologist before performing any procedures.

Even though most dental and medical procedures are unlikely to affect the function of your device, some may require precautionary measures that prevent or minimise any effects.

Assuming the equipment is properly maintained and used as designed, many procedures are unlikely to affect your heart device and can be performed including:

- Dental x-rays and dental procedures, including the use of dental drills and ultrasonic probes used to clean teeth.
- Diagnostic x-rays, routine chest x-rays, and mammograms.
- Diagnostic ultrasound, including bone density tests, when the transducer head is not directly over the heart device. For therapeutic ultrasound, ask the clinician to keep the transducer 6 inches/15cm from your device.
Procedures not recommended under normal circumstances

Some procedures produce high levels of electromagnetic interference (EMI). Your physiologist and your consultant cardiologist or electrophysiologist must discuss your procedure beforehand in order to weigh up the risks and benefits of the procedure.

These include:
- cautery (used during most surgeries to stop bleeding) and lithotripsy (used to break down kidney stones)
- transcutaneous electrical nerve stimulators (TENS is used for treating pain), when used on the torso
- CT/CAT scans, depending on the type of scanner being used.
- electrolysis (for removal of unwanted hair), depending on the method used, the location, and the placement of the electrical grounding plate if used.
- radiation therapy, depending on the amount of accumulative radiation exposure. Usually the doctors can direct the radiation beam to miss the device. If not, the pacemaker or implantable defibrillator could be moved, or a new heart device implanted at an alternative site.

Possible adverse effects can be minimised, or your ICD could be programmed differently for the procedure.

Procedures not recommended
- MRI (magnetic resonance imaging) scans
- diathermy (high frequency, short wave, or microwave).

MRIs

MRIs and your implantable device
Along with CT scans, x-rays, and ultrasounds, MRIs are highly effective diagnostic tests. However, the use of MRI technology has not been considered safe for persons with pacemakers and implantable defibrillators.

Is it harmful for me to have an MRI?
Manufacturers do not consider MRI scans to be safe for patients with pacemakers and implantable defibrillators and do not recommend its use for these patients.

What could happen to my heart device during an MRI?
An MRI could change the settings and/or temporarily affect the normal operation of your device. It could also cause a life-threatening irregular heart rhythm and/or tissue damage due to heating of the lead wire(s).

The following types of electromagnetic fields produced by MRI equipment may affect the normal operation of your device:
- Alternating magnetic fields can introduce conducted current into the lead wire(s) and cause a potentially life-threatening arrhythmia.
- Radiofrequency energy emitted by the MRI machine can cause the lead tip in your device to heat up, potentially damaging tissue around the lead tip that could result in loss of pacing.
- The complex magnetic fields may be strong enough in some MRI machines to change the settings of your device to standard settings.

Can I have a partial extremity MRI (eg a scan of my limbs)?
Manufacturers do not recommend the use of an MRI scan, even for partial extremity.

Can I have an MRI if my device is programmed off?
Manufacturers do not recommend the use of an MRI scan even if your device is programmed off. The risks previously described would not be minimised even if your ICD is programmed off.
Can I have an MRI if my device has been removed?
Manufacturers do not recommend undergoing an MRI if the lead wire(s) are still implanted. Most risks are still present, including initiating an irregular heart rhythm and/or heating of the lead wire(s) that can cause tissue damage around the lead tip.

Magnets
Do magnets affect pacemakers and defibrillators?
Items that have electric and magnetic components have an ‘electromagnetic’ energy field around them. Even though most electromagnetic fields in the home environment will rarely affect the function of a pacemaker or implantable defibrillator, it is recommended you keep any item containing magnets away (at least 6 inches/15 cm from your device).

The reason for this is because there is a small magnetically activated switch built into the device. This internal switch is designed to close when a magnet of enough strength is placed over it.

When the internal switch is closed in the pacemaker, the pacemaker paces the heart at a continuous pre-set rate, which could be different than the rate your doctor programmed.

When the internal switch is closed in an implantable defibrillator, it prevents it from delivering treatment therapies.

Removing the magnet returns the device back to its previous, normal programming.

Guidelines for using items with magnets around the home:
As a general rule, maintain a minimum distance of 6 inches/15 cm between any household item with magnets and your device.

By maintaining this distance you are safely able to use items such as:
• decorative fridge magnets,
• large home stereo speakers
• small gas engines
• handheld massagers or massage chair cushions
• magnetic therapy products such as massagers, chair pads, bracelets, knee wraps, back supports, slippers, or insole shoes.

The use of magnetic mattress pads and pillows is not recommended.

Anti-theft detectors and airport security systems
Can I go through store anti-theft detectors and airport security systems?
Yes. Anti-theft detectors used in stops and libraries usually only generate electromagnetic interference (EMI) fields that can ‘sense’ embedded ‘tags’ on the merchandise being protected.

It may be possible, under unique circumstances, for these interference fields to affect the operation of an implanted defibrillator. Significant effects from the interference is unlikely to occur if you pass ‘normally’ through the detectors because the interference field ends as soon as you walk through (or move away from) the anti-theft equipment.

It is recommended that you:
• maintain awareness of anti-theft detectors
• walk through these at a ‘normal’ walking speed
• do not linger close to the detection system equipment.
If you are near an anti-theft system and experience adverse symptoms, promptly move away from the equipment. Your implantable defibrillator will resume its previous state of operation when you move away from the equipment.

**Airport security systems**

These are less likely to affect the operation of a pacemaker or implantable defibrillator. However, airport security systems (both the walk-through archways and handheld wands) are metal detectors. When you walk through the security archway at a normal walking speed, it may detect the metal of your pacemaker or implantable defibrillator.

Because the metal detector cannot determine whether or not you are carrying a dangerous metal object (such as a weapon), you may be asked to undergo additional search methods. If so, it is helpful to show staff your device identification card. If you have a pacemaker, ask to be cleared with a hand held screening wand held away from the pacemaker, or request a hand search.

If you have an implantable defibrillator, ask for a hand search because a screening wand has the potential to cause shock therapy.

**Mobile phones**

Many pacemakers and implantable defibrillators are engineered specifically to resist the effects from mobile phones, but technology is constantly changing. Studies have shown that to avoid any potential effects, individuals using mobile phones are advised not to hold the phones directly over their pacemaker or implantable defibrillator.

Some studies have shown that when certain mobile phones are held too close (within 6 inches/15cm) to some heart devices, there may be some temporary effects. Potential effects are due to the radiofrequency signal of the phone. Any effect is temporary and moving the phone away will return the pacemaker or implantable defibrillator to its previous state of operation.

**The following standard guidelines are recommended:**

- Maintain a distance of 6 inches/15cm between a hand-held personal mobile phone and your device. For phones transmitting above three watts (such as some portable and mobile phones), a distance of 12 inches (30cm) between the antenna and your device is advised.
- Hold the phone to the ear opposite the side of your device.
- Do not carry the phone in a breast pocket (if your device is implanted in your chest) or on a belt (if your device is implanted in your abdomen) over or within 6 inches/15cm of your device as some phones emit signals when they are turned on but not in use. Storing the phone in a location opposite the side of your device is recommended.

**Tools**

Tools and equipment that use electricity and magnets have electromagnetic fields around them. Some power tools and machine shop equipment have the potential to affect the function of your heart device. Using the following guidelines will greatly reduce the effect operating certain tools will have on your device.

Higher powered industrial or commercial tools may call for additional safety margins – please contact the clinic if this is the case.

**Safety guideline tips**

For line-powered electric tools (i.e., plug into a wall socket) such as saws, drills, sanders and hedge trimmers.

- Maintain a 6 inch/15cm distance between the motor of the tools and your device implant site.
For general safety precautions:
• Be certain the tools are properly grounded and in good working condition.
• Avoid using the power tool in the 'locked on' position.
• A ground-fault-interrupt (GFI) outlet is a good safety measure to prevent a sustained electrical shock.

For battery-operated tools such as cordless screwdrivers, drills, and saws:
• Maintain a 6 inch/15cm distance between the tool and your device implant site.
• For gas-powered tools and garden equipment such as lawn-mower/tractors, snow/leaf blowers and weed eaters.
• Maintain a 12 inch distance between the components of the ignition system and your device implant site when operating the machinery.
• Do not work on the engine while it's running.
• Do not touch the coil, distributor, or spark plug cables of a running engine.

The use of a gas-powered chainsaw is not recommended because your hands and body come into close contact with the electric spark-generating components.

Welding and chainsaws
Unlike most other household power tools, welders and chainsaws are two tools that may have a higher tendency to temporarily affect the normal function of your device.

Chainsaws
The spark discharge of the ignition system of a petrol-powered chainsaw produces electromagnetic (EM) energy that may affect your device.

Effects may be caused by current inadvertently conducted into your body (leakage current), or by the EM field. You may not feel the leakage current passing from one hand to the other through your body but it may still affect the operation of your heart device.

Gas powered chainsaws that have the spark plug located near the handgrips pose a greater risk of conducting leakage current.

Your pacemaker could continuously pace your heart if it were to detect either leakage current or the radiated EM field. This may result in an irregular heart rate if your heart were beating on its own.

Your implantable defibrillator could deliver a shock if it detects either leakage current or the radiated EM field.

Some heart devices can be programmed to a rate-responsive mode. These types of heart devices have special sensors that detect changes in activity and increase or decrease your pacing rate accordingly. Rate responsive devices may sense vibrations generated by both electric and gas-powered chainsaws, increasing your pacing rate. These devices, however, are designed with a limit on how fast they will pace.

Most importantly, if you become light-headed or dizzy and lose control of an electric or gas-powered chain saw it could result in injury.

Welding
Because of the random nature of the EM energy generated during welding (including AC arc, DC arc, MIG, TIG, plasma) it is difficult to predict the effect on your heart device.
The EM energy generated from a welding arc can cause your ICD to continuously pace the heart. If your heart is beating on its own this may result in an irregular heart rate.

The intense EM energy generated when spot welding or starting a bead may cause your ICD to pause temporarily if it were pacing your heart.

Your implantable defibrillator could detect the EM energy from the welder (especially when spot welding) as a fast heart rhythm, causing it to deliver a shock.

**Will welding or using a chainsaw damage my implantable defibrillator in any way?**
No, the use of these tools will not cause any permanent damage or re-programming to your implantable defibrillator. Any potential effects will end when the welding is stopped or when the chainsaw is turned off.

**Sources of patient information and support groups**

**Arrhythmia Alliance**  
Website: www.arrhythmiaalliance.org.uk  
Telephone number (24hrs): +44 (0)1789 4507 87  
Email: info@heartrhythmcharity.org.uk  
Address: PO Box 3697, Stratford-Upon-Avon, Warwickshire, CV37 8YL.

**British Heart Foundation**  
Website: www.BHF.org.uk  
Main telephone number: 020 7554 0000  
Publication orders: 0870 600 6566  
The Heart Helpline: 0300 330 3311

**BHF Shop Enquiries: 01372 477 300**  
Address: BHF, Greater London House, 180 Hampstead Road, London NW1 7AW

**Medtronic**  
Website: www.medtronic.co.uk

**Boston Scientific**  
Website: www.bostonscientific.com  
(ensure that the website is the United States version – this is shown at the top of the page). Under medical area select ‘Cardiac Rhythm Management’ and then select ‘patients’ from the options bar on the side of page.

**St Jude Medical**  
Website: www.sjm.com
Travel insurance

Please be advised that all the companies listed will require you to complete a medical assessment questionnaire before processing your application.

Please remember if you are visiting Europe to collect an E111 form from the post office which entitles you to free emergency treatment in the EU.

Saga: 0800 015 0757
Saga will provide cover for pre-existing conditions. The premium is dependent on how long your trip is and where you are travelling to. Caveat on waiting list or treatment no cover provided.

Thomas Cook: 0871 360 2714
Thomas Cook will screen before agreeing to provide cover. Caveat on waiting list of treatment no cover provided. Additional premium required for patients with ICD’s dependent on age/country.

Good to go Insurance: 0844 334 0165
Good to go insurance will provide cover for pre-existing conditions. The premium is dependent on how long your trip is and where you are travelling to, they also take into consideration if you are travelling accompanied. They do not offer set based premiums or annual cover.

Aviva: 0800 015 2577
Aviva Insurance will provide cover for pre-existing conditions. The premium is dependent on how long your trip is and where you are travelling to. All applications will be considered on an individual basis.

Sainsbury’s Travel Insurance: 0845 070 1957
Been recommended recently by a number of patients.

En Route insurance: 0800 783 7245

JD Travel Consultants: 0844 247 4749

FlexicoverDirect: 0800 0939 495
www.flexicover.com
Been recommended for annual insurance cover.
Where to find us

Cardiac rhythm management department (CRM) – location
The cardiology investigations unit is situated on the ground floor at the Royal Free Hospital, opposite the blood testing department and next to the oncology out-patient department.

Members of the CRM team
The CRM service consists of cardiac consultants, specialised physiologists and cardiac nurses. You will be under the care of a cardiac consultant and your device follow up will be performed by a cardiac physiologist.

How to contact us
Cardiology Investigations Unit
Royal Free Hospital
Pond Street
London NW3 2QG

Telephone: 020 7794 0500 ext 33583
Monday to Friday, 9am-5pm

For more details about the hospital please visit:
www.royalfree.nhs.uk

Listening to your feedback

Below tells you what to do if you wish to compliment, comment, or raise a concern or complaint about NHS services at the Royal Free Hospital NHS Foundation Trust.

We are committed to providing consistently high quality and safe standards of care. We aim to make sure you get the right treatment, at the right time, and to the highest standard – every time.

We are always looking at ways to improve our services and ensure that you have the best possible experience with us.

Your thoughts and opinions are important to us because you can help us get it right by telling us what you think of our services and staff.

How to give us your feedback
You can tell us about your experiences in the following ways:
• Fill out the form on our website at www.royalfree.nhs.uk
• Email us at: rfh.pals@nhs.net
• Via the NHS Choices website: www.nhs.uk

We believe we can learn a great deal from your experiences by listening to what you have to say and taking action. Sometimes action will be taken immediately or we may use your comments and ideas to help improve the quality of care for other patients.
If you have any feedback on this leaflet, or you require a full list of references for it, please email: rf.communications@nhs.net.

This leaflet is also available in large print. If you need this leaflet in another format – for example Braille, a language other than English or audio – please ask a member of staff.

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