

Emergency Deactivation of Implanted Cardioverter Defibrillators and Cardiac Resynchronisation Therapy Defibrillators for patients at the end of life in their usual place of residence

Implantable cardioverter defibrillators (ICDs) and cardiac resynchronisation therapy defibrillators (CRT-Ds) are implanted devices that treat life threatening arrhythmias (ventricular tachycardia and ventricular fibrillation) to prevent sudden cardiac death. They do this with a shock function and a pacemaker function.

The shock function should be deactivated when a patient is at the end of life as shocks for arrhythmias that happen in the dying phase are very unlikely to benefit the patient but will cause pain and distress.

The best way for an ICD/CRT-D to be deactivated is with planned re-programming by cardiac physiologists while the patient is still able to attend hospital outpatients. This disables the shock function while pacing remains intact. This can be arranged at the patient's regional implant centre or local hospital depending on the circumstances. Refer to local and national guidance about when and how to arrange this.

If a situation arises where a patient is dying imminently at home and is not well enough to attend hospital outpatient a magnet can be applied externally over the ICD for emergency deactivation. Ideally a cardiac physiologist would then come to the patient to re-program the device but this is not possible during the COVID 19 pandemic.

The decision to apply a magnet should be medically led although a magnet could be applied by any healthcare professional under remote medical supervision if a doctor is not available to attend.

Magnet Locations

West Cheshire

- Hospice of the Good Shepherd, Gordon Lane, Backford, Chester, CH2 4DG, 01244 851091
- G.P. Out of Hours, Urgent Treatment Centre, Countess of Chester Hospital, 01244 385111

South/Vale Royal

- St Luke's Hospice, Grosvenor House, Queensway, Winsford, CW7 1BH, 01606 555489
- G.P. Out of Hours, Leighton Hospital Urgent Care Centre, 01270 273533

East Cheshire

- East Cheshire Hospice, Milbank Drive, Cheshire, SK10 3DR, 01625 610364
- G.P. Out of Hours, Macclesfield District General Hospital, 01625 619937
- Macclesfield District General Hospital Coronary Care Unit, 01625 421000

Contacts for local Cardiac Physiologists and Regional Implant Centres

- Countess of Chester Hospital CRV department: 01244 365208 or 01244 365000
- Mid Cheshire Foundation Trust 01270 612188 or 01270 255141 or 01270 215444 ext2674
- Macclesfield District General Hospital 01625 661711 or 01625 421000
- Liverpool Heart and Chest Hospital 0151 6001711 or email pacemaker.icd@nhs.net
- Royal Stoke Hospital 01782 675403/404 or 01782 715444
- Wythenshawe Hospital 0161 2914615 or 0161 998 7070

Link to national guidance

ICD deactivation at the end of life: principles and practice

<https://www.bhf.org.uk/information-support/publications/living-with-a-heart-condition/icd-deactivation-at-the-end-of-life>

Link to Video demonstrating application of a magnet to deactivate an ICD/CRT-D

<https://youtu.be/7248st4h5AQ>

Standard Operating Procedure for emergency deactivation of ICDs/CRT-Ds in the community
Version 1 July 2020

Standard Operating Procedure for emergency use of a magnet to temporarily deactivate an ICD or CRT-D in the community setting for an imminently dying patient

1. Discuss rationale for applying the magnet with the patient if possible and those important to the patient
2. Obtain a magnet (see above for locations)
3. If possible check the patient's ID card which should confirm the make of the ICD/CRT-D. If this is not available this can be checked with the regional centre where the device was implanted if practical to do so, see above for contact numbers.
4. Place the magnet directly on the patient's skin over the bump of the ICD/CRT-D. This is usually on the left side of the chest just below the clavicle but a small number of devices are implanted under the skin in the left chest wall.
5. If device made by Medtronic and Boston Scientific (the large majority of implants in the region) position the magnet directly over the centre of the ICD/CRT-D. For devices made by Abbott/St Jude's Medical and Biotronik position the magnet offset from the centre of the device. If it is not possible to quickly identify the make of the device position the magnet over the centre as this will deactivate the shock function of the majority of ICDs/CRT-Ds.



6. The majority of devices (Medtronic and Boston Scientific) will emit a continuous or intermittent beeping noise after the magnet is applied. This indicates the shock function has been successfully disabled. If a Medtronic or Boston Scientific device does not emit a beeping noise try adjusting the magnet position. The sound may be muffled by background noise and body habitus. If the device is made by Abbott/St Jude's Medical and Biotronik it will not emit any sounds to indicate it has been deactivated.
7. Secure the magnet in place (tegaderm dressings are a good choice but can also use surgical tape)
8. Do not remove the magnet as it is only effective whilst in position

Applying a magnet does NOT cause death it just stops shocks occurring if the patient has an arrhythmia. The magnet stops the ICD/CRT-D delivering shock or anti-tachycardia therapy; it does NOT stop bradycardia pacing therapy. The magnet does not affect staff or relatives who may have active pacemakers

Most makes of ICD/CRT-D are deactivated for as long as the magnet is in place (Medtronic, Boston Scientific, and St Jude's Medical/Abbott). However, Biotronik devices (BIO) will reset after having a magnet in place for 8 hours. The magnet needs to be removed for a few seconds and reapplied after 7 hours to ensure the shock function of the device continues to be disabled.

After death

- Do not remove the magnet
- The ICD/CRT-D will still need to be switched off permanently. Please inform the Funeral Directors of the magnet's presence, and need to leave in place.
- Contact the local secondary care cardiac physiologists and let them know where the body will be so they can come and deactivate ICD/CRT-D.
- Please ensure the magnet is returned to where it is held for next emergency use.