

Deactivation of Implantable Cardioverter Defibrillator (ICD)

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1. Introduction

Every individual with an ICD in situ should be aware that there may encounter circumstances when the appropriateness of the defibrillator component provided by the device should be assessed. This may be due to advanced illness or could also be down to patient, family and/or carers choice. Discussion can initially take place with any healthcare professional directly involved in the patients care. Once it has been identified as a possibility it may then also be appropriate for the patient and/or their NOK to have a discussion with a Heart Failure nurse, Cardiologist or Cardiac Physiologist. It is always beneficial for this to take place in advance to ensure that the patient is informed and their best wishes can be taken into account. It also ensures timely deactivation can take place.

If the discussion takes place when the patient lacks capacity to make a decision, please adhere to the local mental capacity act - policy and guidance available on:

<http://staffroom.ydh.yha.com/policies-and-procedures/corporate-policies-and-procedures>.

Further guidance regarding lack of capacity is also included in section 3.

N.B Deactivation will routinely take place within the cardiorespiratory department for an outpatient.

1.1. **Indications for deactivation of an ICD:**

- Patient's best interests/wishes.
- Patient/NOK wishes in advanced illness or frailty
- While an active DNACPR order is in force except for the rare situation where immediate defibrillation is still likely to give net benefit but any delay (such as would be inevitable from external CPR) would not be advisable

1.2. **Points of discussion may include:**

- Withdrawal will not result in immediate death but the defibrillator component of the device will not be provided in the event of a dangerous heart rhythm.
- Deactivation will not alter any pacemaker function of the device.
- Deactivation is achieved using an external programmer and is not painful.
- It will only take a matter of minutes and is usually done at an outpatient appointment within the Cardiorespiratory department at York hospital.
- If a patient is unable to attend the hospital then arrangements can be made for a domiciliary visit.
- Multi-organ failure associated with electrolyte disturbance may be pro-arrhythmic and result in the in the device delivering multiple shock therapies.
- Inappropriate shocks are uncomfortable for the patient and any family member that may witness them.
- The decision on deactivation is always reversible if that is what is deemed to be the patient's wishes or in their best interest.

NB: After death the ICD generator would need to be removed if cremation is planned. If the ICD has not been deactivated prior to death this will need to be done by the Cardiorespiratory team at the hospital prior to the device being explanted. Arrangements for this to occur will be made by the Funeral Directors/Mortuary staff at the hospital. It would be helpful if they are alerted to the situation when attending to the body.

2. Information to be offered to the patient / carer

BHF guide -

- **“Deactivating the shock function of an implantable cardioverter defibrillator (ICD) towards the end of life”**

(See Appendix 1)

Documentation of leaflets given, or offered and declined must be recorded in the relevant documentation.

If the patient declines deactivation please document reasons for this in the box provided so that all healthcare professionals are aware of this decision. If appropriate, review this decision as/if the patient’s condition deteriorates.

If the patient’s condition deteriorates rapidly and it is not appropriate to arrange an appointment within the department please refer to proforma for deactivation at the patient’s home.

3. Lack of Mental Capacity

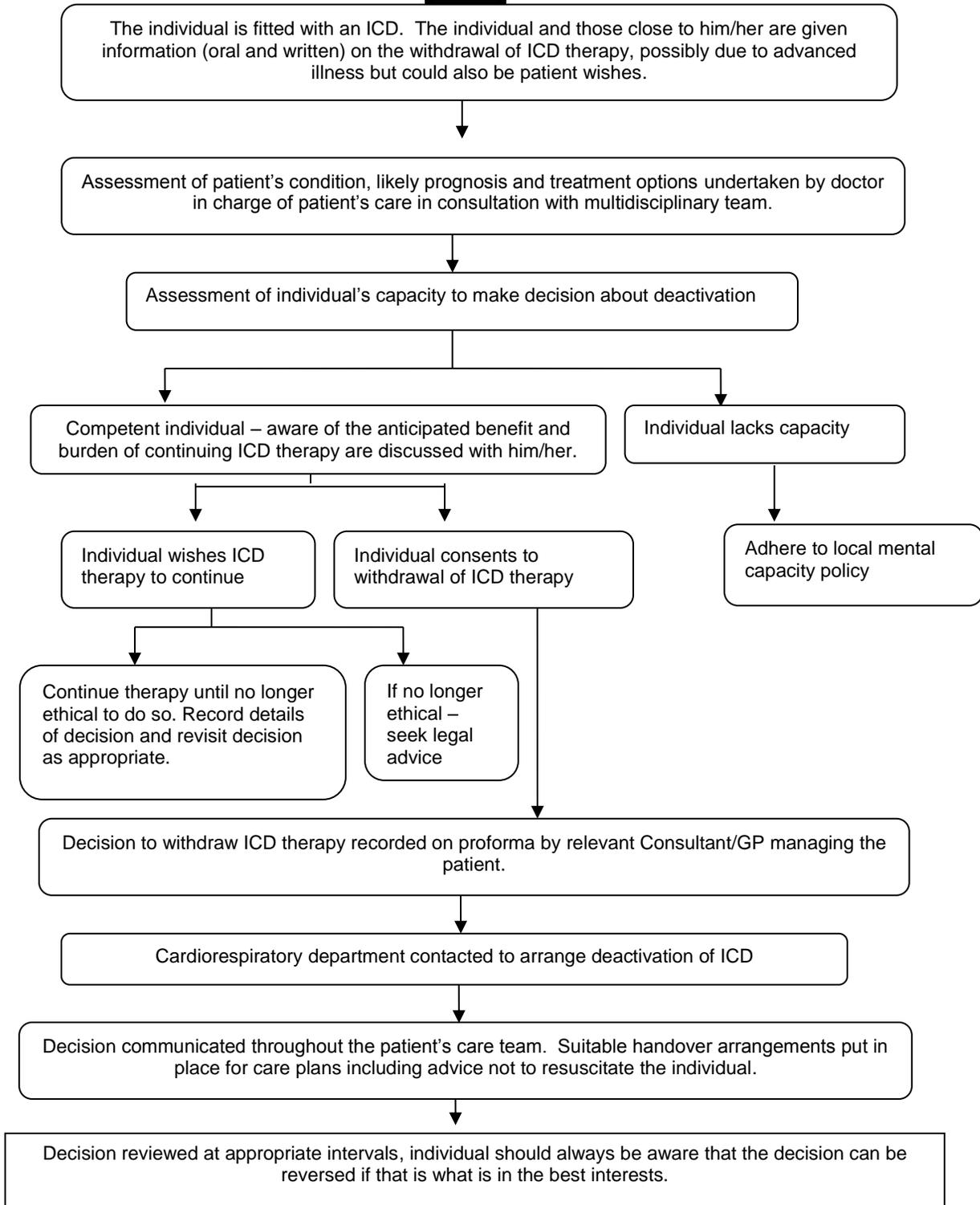
If the patient lacks capacity, ascertain whether the patient has made a lasting power of attorney. If you consider it is in the patients best interests to withdraw ICD therapy then consent of the attorney must be obtained.

The GMC Guidance “withholding and withdrawing life-prolonging treatments: Good practice in decision making” (GMC 2006) states that:

“When caring for a patient who lacks capacity clinicians have a duty to act in the patients ‘best interest’ and ‘where the determination relates to life sustaining treatment (the clinician) must not, in considering whether the treatment is in the best interests of the person concerned, be motivated by a desire to bring about his death” (Mental Capacity Act 2005 – MCA)

Every healthcare professional has a statutory duty to consult those close to the patient in order to gather any information that may be relevant to the decision. However the patient may not have a NOK or it may not be appropriate to contact them. In this situation the trust has a statutory duty to make a referral to an independent Mental Capacity Advocate, and to take into account his or her views in reaching a decision.

4. Algorithm 1 – Decision to withdraw the defibrillator function of an Implantable Cardioverter Defibrillator (ICD)



4.1. Record of discussions

Section 1

Describe assessment of patient's current condition, likely prognosis and treatment options.

Section 2

Describe discussions with patient on assessment, prognosis and treatment options including the anticipated benefit and burdens in continuing ICD therapy

Does the patient wish ICD therapy to be withdrawn?

Yes / No

If No document reason's given below:

5. Request for deactivation of Implantable Cardioverter Defibrillator (ICD) Proforma

Patient's Name _____ Date of birth _____

NHS Number _____ Hospital Number _____

1. The multi-disciplinary team has agreed that it is no longer in the patient's best interest to maintain ICD support

.....signed (Hospital/Hospice Consultant/ GP

.....date

2. This has been discussed and agreed with the patient

.....signed (Consultant/Hospice Consultant / GP/HFSN)

.....signed Patient

.....date

3. Request sent to Cardiorespiratory investigation department (01904 726525 or email yorkcardiacdevices@york.nhs.uk) for the following:

Where to see patient

Pacemaker clinic

Hospice

Home

Hospital ward (state which)

.....

4. Deactivation

Date

Persons present

Signature of person deactivating the device

Print name:

6. Deactivation of ICD in a community setting i.e. home/hospice

In the event of rapid deterioration in the patient's condition the Cardiorespiratory department will provide a service in the patient's place of care to deactivate an ICD.

****Please note this will only be considered if the patient is no longer well enough to attend the department i.e. bed bound and in the last few days/weeks of life****

Best practice remains that those patients with an active ICD who have completed a DNACPR form should also have a discussion with a relevant member of the care team regarding deactivation of the device. The deactivation of an ICD will not result in any change in the patient's condition or pacemaker function but will prevent any unnecessary shock delivery that is deemed inappropriate in an end of life situation.

The patient's heart failure nurse should ideally be involved in the deactivation process. If the patient is not known to the team they can be contacted on 01904 726159 for advice/support. There is no guarantee that the heart failure nurse team will be able to attend at the time of deactivation. If they are unable to attend the HF team will provide telephone support and reassurance to community staff that may not be familiar with devices etc.

6.1. Procedure for deactivation of ICD in a community setting

1. Individual identified that wishes or requires to have their ICD deactivated
 - They have been given the appropriate literature to read and discuss with family members/carers
 - Deactivation has also been discussed with NOK if suitable
 - Communication has been made to a Cardiologist, HF nurse or Cardiac Physiologist regarding the individual and the possibility of deactivation.
2. Request form completed as per protocol
3. Patient deemed to be unsuitable to attend hospital for deactivation
4. Cardiorespiratory staff will review request and liaise with relevant community staff member to arrange visit
5. Transport of equipment and technical staff will be arranged by Cardiorespiratory department
6. Community staff member to meet Cardiorespiratory staff at patient home/care setting at a day and time that has been agreed.
7. Community staff to provide support for patient and family
8. Cardiorespiratory staff responsible for application of electrodes and programmer to deactivate the tachycardia therapies.
9. Relevant care records to be completed
10. Report added to CPD by Cardiorespiratory to highlight that the defibrillator function of the device is now deactivated.

7. Emergency deactivation – Magnet application

Guidelines for magnet application to temporarily deactivate an implantable cardioverter defibrillator (ICD) at end of life:

1. If the patient is at home and the ICD starts to deliver therapy, arrangements will need to be made with ambulance control to have the patient taken to A&E for magnet deactivation.
2. If the patient is in a hospice or care home alert the senior nurse that a magnet will be required.
3. Obtain verbal consent to use the magnet from the patient if possible and record this in the notes. This is not essential in an emergency situation, when clinical staff will make a 'best interests' judgement for the patient.
4. The magnet is safe for all staff to use: it should not affect staff or relatives who have pacemakers. It is safe to touch a patient even if their ICD is delivering shock therapy – no shock will be transmitted to yourself.
5. Place the magnet over the generator box, usually located in the sub clavicular region on the left of the sternum. It should be easily visible on examination. Ensure that the magnet is secured in place with tape.
6. The doctor/nurse should explain to the patient and or family that the ICD is now deactivated (referring to the important points of discussion in section 1.2)
7. Contact the Cardiorespiratory department at your local hospital to alert them to the situation. They may be able to then manually deactivate the ICD at a domiciliary visit if this is required.
8. After death:
 - Do not remove the magnet until the device has been deactivated. After death, movement of the body may stimulate the ICD to deliver further electrical impulses/shocks. These are no danger, but may obviously alarm family, staff and morticians.
 - The funeral directors will need to have the device permanently deactivated before they can care for the body further (as explained above). Give them a copy of the contact details for the Cardiorespiratory department at York hospital – 01904 726525.
 - A post mortem cannot be performed until deactivation of the device has occurred.

- Once the ICD is permanently deactivated , remove the magnet from the patient's chest and clean it with soap and water

Contact the Cardiorespiratory department on 01904726525 if there are any issues with this guidance.

8. Definition of Abbreviations

AA - Arrhythmia Alliance

A/E - Accident and Emergency

BHF – British Heart Foundation

CPR – Cardio-pulmonary resuscitation

DNACPR – Do not attempt cardio-pulmonary resuscitation

GMC – General medical council

HCP – Health care professional

HF – Heart failure

ICD – Implantable Cardioverter Defibrillator

NOK – Next of kin

9. **Appendix 1** - “Deactivating the shock function of an implantable cardioverter defibrillator (ICD) towards the end of life”

Deactivating the shock function of an implantable cardioverter defibrillator (ICD) towards the end of life

A guide for patients and carers

This leaflet is for people who have an implantable cardiac defibrillator (ICD) and may be helpful also to their family or close friends.

It discusses when it may be best for you to have the shock function of your ICD turned off (deactivated). It may be important to consider this if you develop a terminal illness, become very frail or decide that you no longer wish to receive shocks from your ICD.

Your specialist nurse, cardiac physiologist, cardiologist or other member of the ICD team will be happy to discuss this. In fact, they may have mentioned this when you first received your ICD.

It is important that you and your family or close friends have the opportunity to discuss this so that everyone understands what is involved and you can make your own personal wishes clear.

What does an ICD do?

An ICD constantly monitors your heart to identify abnormalities of its rhythm that could cause you to collapse or die suddenly.

If one of these rhythms occurs the ICD will recognise it and either:

- pace your heart very quickly to interrupt the abnormal rhythm or
- deliver a shock to your heart to put the rhythm back to normal.

Whilst the shock only lasts for a split second, some people describe the shock as being very unpleasant or painful, similar to a “kick in the chest”. However, receiving a shock can also be reassuring, by showing that your ICD is working and preventing sudden death.

If your heart beats abnormally slowly your ICD may also work as a pacemaker to keep your heart beating at the correct rate. Some people have an ICD that is combined with cardiac resynchronisation therapy (CRT-D), which may help to improve the efficiency of the heart’s pumping action.

A member of your ICD team will be able to explain which type of ICD you have.

The pacemaker function, resynchronisation function and defibrillator (shock) function can be adjusted independently of each other. This will usually be done by a cardiac physiologist, using a similar programmer to the one used for routine checks on your ICD in the clinic.

Why would an ICD be deactivated?

In the future you may decide that you no longer wish to receive treatment from your ICD, particularly shock treatment. It is possible that your health may deteriorate and the focus of your care will be on your comfort rather than trying to prolong your life. For some people this may be due, for example, to progression of advanced heart disease or lung disease, or for others it may be due to development of a new problem such as advanced cancer or a severe stroke.

When someone’s health deteriorates in one of these ways they usually want to make sure that the last stages of their life are as comfortable as possible. If a person has an ICD and is at or nearing the end of their life there is a risk that they will receive shocks from their ICD, in particular during the last few hours or days of their life, causing distress

both to them and to their family. Receiving shocks from your ICD in those circumstances, when you are dying from an irreversible condition, is unlikely to prolong your life in a way that you would want.

Therefore, it is important that you discuss your preferences and wishes for your care and treatment with your healthcare team. This should include discussions about whether you wish to have your ICD deactivated, if so when you may wish that to happen, and also whether or not you would want to have attempted resuscitation.

It is best to consider and discuss your wishes whilst you are well enough to make choices. If you prefer not to do that, others may have to make those choices for you if your health deteriorates and you are too unwell to decide for yourself.

If these matters have not been discussed with you and you would like more information please talk to a member of your healthcare team. If that person cannot help you, ask them to contact someone who can, for example your Specialist Nurse or Cardiac Physiologist.

Who will make a decision to deactivate my ICD?

This decision will usually be made by you, supported by your healthcare team and, if you wish, by your family or others who are close to you. You may want to have several discussions to make sure that you are happy with the decision and that deactivation of your ICD can be carried out in the right place and at the time that you feel is right for you.

Please remember that deactivation of an ICD is reversible. That is, the ICD shock function can be turned back on (re-activated) if you change your mind or if your condition improves.

Sometimes a decision to deactivate an ICD has to be made as a matter of urgency by the doctor responsible for your care. This would usually be necessary if you become very ill and are unable to make choices about your treatment yourself. Any such decision would be made in your best interests and would be handled with care and sensitivity. Whenever possible, this would be undertaken with advice from your family or other people who know you well, unless you have stated that you do not want them involved.

Discussing your views and preferences in advance will help to make sure that any decisions that are made for you are the ones that you would have wanted.

How is an ICD deactivated?

There are two ways of deactivating the shock function of your ICD:

1. Using a programmer similar to the one used in the clinic for routine checks on your ICD. The shock function is turned off but all the other functions remain active. This means that if your heart beats too slowly, the pacemaker function will still work. If your ICD also provides CRT, this will continue to help the pumping action of your heart. Deactivation takes only a few minutes and is usually done by a physiologist or ICD nurse, usually in the clinic or occasionally at home.
2. If deactivation is needed urgently and it is not possible to arrange immediately for your ICD to be deactivated using a programmer, it can be deactivated by using a large magnet. The magnet is placed on the skin directly over the ICD and secured with adhesive tape.



This will stop the ICD delivering shocks. For some people it will be necessary to remove the magnet momentarily and tape it back in place every 7 hours.

When a magnet is used for urgent deactivation, it is best regarded as an emergency, temporary arrangement. In most cases the ICD should be deactivated with a programmer as soon as this can be arranged.

It is important to remember that although the shock function of the ICD is deactivated, the pacemaker function is still working, either for treatment if your heart beats too slowly or for resynchronisation therapy for heart failure.

These pacemaker functions can be disabled too, but this is hardly ever necessary because:

- you are unlikely to be able to feel the tiny electrical signals that pace the heart, so pacing does not cause pain or discomfort;
- you are likely to feel worse if your heart beats too slowly or if the pacemaker function is withdrawn when it has been helping to reduce symptoms from heart failure.

Where will the ICD be deactivated?

Whenever possible it is recommended that an ICD is deactivated in your local ICD or Pacemaker Clinic. This is most likely to be at the hospital where you attend for your regular checks on your ICD.

If you are too unwell to attend a clinic and you are in a nursing home, a hospice, community hospital or your own home it may be possible to arrange deactivation there. However, this would need to be planned carefully so that a physiologist can attend. If you decide that you would like your ICD deactivated but think that you would be unable to attend a clinic please ask what arrangements can be made for you locally.

Who should I discuss this with?

It is usually best to talk about deactivation of an ICD when you are well and active so that all the people who care about you understand what the decision involves, the reasons for considering it and the reasons for the decision you make.

The people that you want to discuss this with may include:

- your family, partner or carers;
- your cardiologist or heart failure consultant;
- your heart failure nurse if you have one;
- your General Practitioner (GP);
- your palliative care specialist if you have one;
- your cardiac physiologist or arrhythmia nurse;
- your pastoral care adviser if you have one.

These people can help you, if you wish, together with your family or others close to you to reach a decision about ICD deactivation that you are comfortable with.

If your family, partner or carers need further information or explanation about deactivation, a member of the healthcare team will provide this if you wish them to.

Summary

Deactivation of an ICD:

- Is completely painless;
- Will make no difference to how you feel, other than making sure that you do not receive shocks that may be painful;
- Will not cause death but in time allows a natural death - it simply means that as you reach the last stages of your illness you will remain free from shocks;

Is a reversible process and if the situation changes or you wish to change your mind it can be turned on again ("reactivated")

If you decide that you do not wish to have your ICD deactivated it will be left active.

The decision can be reconsidered and discussed at any stage as your condition changes or if you wish to change your mind.