Appendix A: Examples of documents relating to device deactivation towards the end of life

Below are:

- Two algorithms to guide decision-making about deactivation of ICDs in people who have been identified as approaching the end of life:
  1. in a planned way
  2. in an emergency setting.

- Instructions for application of a ring magnet for emergency ICD deactivation.

- A link to documents developed by the Working Group specifically on deactivation of ICDs towards the end of life:

- A list of other relevant local or regional documents. These are provided for illustration and the content is not necessarily recommended by the authors of this document as conforming to all the standards defined herein.
A person with an ICD has been identified as being within the last days, weeks or months of their life.

YES

Does the person have capacity to make decisions about their care? Document the assessment.

YES

Explain and discuss advance care plans, including device deactivation and wishes about CPR* with the patient (and those close to them if the patient wishes).

Shared decision made to deactivate ICD?

YES

Arrange for a cardiac physiologist to deactivate the ICD. Provide clear written instruction to allow this. Document deactivation clearly and inform all healthcare team members that the ICD has been deactivated.

NO

Continue treatment. Continue to provide information and opportunity to reassess and reconsider the decision as appropriate.

NO

At review visits and at elective generator replacement ensure that patient has access to information about end-of-life decisions, including

Follow legal requirements in the UK nation of practice to involve relevant people, including when possible those close to the patient, in making a best-interests decision.^

Document detail and outcome of all discussions.

Ensure that all members of the healthcare team involved with the patient are informed and have access to current records when needed.

Best interests decision made to deactivate ICD?

YES

Ensure that the patient and those close to them have all relevant multidisciplinary support and that good communication is maintained with them and among healthcare professionals. Review decision and care plan at appropriate intervals to ensure that treatment goals remain appropriate.

NO

*A DNACPR decision does not automatically warrant ICD deactivation and vice versa.

^See “Cardiovascular Implanted Electronic Devices in people towards the End of Life, during Cardiopulmonary Resuscitation and after Death” and “Decisions relating to Cardiopulmonary Resuscitation” www.resus.org.uk/.
A person with an ICD has been identified as being within the last days, weeks or months of their life.

Is the person receiving inappropriate ICD shocks or are they receiving appropriate shocks and requesting ICD deactivation?

- **YES**
  - Does the person have capacity to make decisions about their care? Document the assessment.
    - **YES**
      - Explain/discuss device deactivation and wishes about CPR** with the patient (and those close to them if the patient wishes).
      - Shared decision made to deactivate ICD?
        - **YES**
        - Tape a ring magnet securely over the ICD to deactivate its rhythm detection and shock functions. It will still function as a pacemaker if this is needed.
        - Arrange for a cardiac physiologist to provide definitive deactivation of the ICD as soon as possible.
        - Ensure that the patient and those close to them have all relevant multidisciplinary support and that good communication is maintained with them and among healthcare professionals.
    - **NO**
      - Continue all relevant treatment. Continue to provide information and opportunity to reassess and reconsider the decision as appropriate.
      - Inform the cardiology/device service of the situation, discussion and current decision.

- **NO**
  - Emergency deactivation is not needed. Follow decision chart for non-emergency deactivation.

Follow legal requirements in the UK nation of practice to involve relevant people, including when possible those close to the patient, in making a best-interests decision. 

Does the person have capacity to make decisions about their care? Document the assessment.

- **YES**
  - Best-interests decision made to deactivate ICD?
    - **YES**
      - Document detail and outcome of all discussions.
    - **NO**
      - Explain/discuss device deactivation and wishes about CPR** with the patient (and those close to them if the patient wishes).

A DNACPR decision does not automatically warrant ICD deactivation and vice versa.

^ See “Cardiovascular Implanted Electronic Devices in people towards the End of Life, during Cardiopulmonary Resuscitation and after Death” and “Decisions relating to Cardiopulmonary Resuscitation” www.resus.org.uk.
How to de-activate an Implantable Cardiac Defibrillator (ICD) using a ring magnet*

Ring magnets are available from .................................................................
Please contact a Cardiac Physiologist on ......................... during office hours.

Magnets are also located in the following areas:

- .......... Hospital: Coronary Care Unit, Emergency Department, Admissions Unit and .......... Ward(s).
- Community: .......... Hospice.

1. Locate the patient’s ICD. (This may be located on the left or right side of the patient’s chest just below their clavicle, usually seen as a prominent protrusion; less commonly the device may be situated in the patient’s abdomen and is more difficult to locate)

2. Place the magnet directly on the skin over the ICD.

3. Secure magnet in place with suitable tape to prevent dislodgement from device.

4. With the magnet in place, tachyarrhythmia detection and shock therapy is suspended and the ICD will not deliver a shock.

5. If the device has an active audible alarm, this may sound when the magnet is first applied.

6. Magnet application does NOT affect the programmed pacemaker function of the device.

7. Magnet removal returns the device to its previously programmed operation.

*adapted with thanks from Wye Valley NHS Trust documents
In addition to this detailed guidance concerning management of all CIEDs towards the end of life, during CPR and after death, the Working Group has developed two short guides specifically on the subject of deactivation of ICDs towards the end of life:

1. A guide for patients and carers (information leaflet)
2. A brief clinical guide for healthcare professionals
   These may be adapted as necessary for local use.

Below are some examples of relevant documents, published by local, regional and national organisations (including one from Australia for comparison). These are presented in no specific order; they are provided for illustration purposes and do not necessarily fulfil all the recommendations of this joint document. At the time of publication of this guidance most documents are accessible from the internet addresses shown or using a search engine but the authors cannot confirm whether they represent the latest version of each document. Most policies refer specifically to ICD deactivation towards the end of life. Guidance on management of pacemakers and other electronic devices has not been included or has been developed separately.

South London Cardiovascular and Stroke Network.
Guidelines for deactivating implantable cardioverter defibrillators (ICDs) in people nearing the end of their life.
www.slcsn.nhs.uk/cardiac-hf.html

North of England Cardiovascular Network.
Operational policy for deactivation/reactivation of implantable cardioverter defibrillator (ICD).
http://www.nescn.nhs.uk/common-themes/end-of-life-care/

Greater Manchester & Cheshire Cardiac & Stroke Network.
Operational Policy for the deactivation/reactivation of Implantable cardioverter defibrillator (ICD).
http://www.gmccsn.nhs.uk/resources/

Eastern and Coastal Kent Community Services.
Implantable Cardioverting Defibrillator (ICD) De-activation at End of Life Policy.
Coventry and Warwickshire Cardiovascular Network.
ICD consent at implantation and deactivation at the end of life.
www.c-a-s-t-l-e.org.uk/media/9583/c_w_cardovascular_network_icd_deactivation_policy_sept_2012.pdf

New South Wales Agency for Clinical Innovation.
NSW Guidelines for Deactivation of Implantable Cardioverter Defibrillators at the End of Life.

Doncaster and Bassetlaw Hospitals NHS Trust.
Deactivation of Implantable Cardioverter Defibrillator (ICD) and Cardiac Resynchronisation Therapy (CRT) Devices Procedure.
www.dbh.nhs.uk

Arrhythmia Alliance.
CRT / ICD Patient Information.

Papworth Hospital NHS Foundation Trust.
Deactivating your ICD. A patient's guide.
www.papworthhospital.nhs.uk/content.php?/patients_visitors/patient_information/patient_leaflets

Papworth Hospital NHS Foundation Trust.
Implantable Cardioverter Defibrillators. Follow-up guide for patients.
www.papworthhospital.nhs.uk/content.php?/patients_visitors/patient_information/patient_leaflets