Operational Guidelines for the deactivation of Implantable Cardioverter Defibrillators (ICDs) in adult inpatients who may be approaching the end of life in UH Bristol NHS Foundation Trust

Background

Implantable Cardioverter Defibrillators (ICDs) help reduce the risk of sudden death caused by ventricular tachycardia or ventricular fibrillation. The ICD has several functions. These include:

a) delivering an electrical charge to the myocardium when it senses either fast ventricular tachycardia or ventricular fibrillation, allowing a normal heart rhythm to be resumed
b) delivering small electrical `pulses' to provide fast or slow ventricular pacing. Fast pacing (anti-tachycardia pacing) may be used as an initial treatment to correct some ventricular tachycardias. If unsuccessful, the ICD is programmed to progress to deliver a shock.

Many patients with ICDs enjoy a prolonged life expectancy with a reasonable quality of life. However, for some patients, the shocks from the device can cause physical suffering, and even the thought of the device shocking can cause severe anxiety.

When terminal illnesses such as end stage heart failure or cancer are diagnosed, patients may find the additional stress of anticipating an ICD shock an unnecessary burden, particularly as the ICD shock will have no impact on the underlying illness. Furthermore, the incidence of arrhythmias may increase with the development of electrolyte imbalance, hypoxia and pain, potentially leading to an increase in shock therapy. Multiple shocks are not conducive to a peaceful death. For these patients deactivating the device is a sound medical, ethical and legal decision.

Indications for ICD Deactivation (as used by the Arrhythmia Alliance)

ICD deactivation will be considered if any of the following criteria are met:

- Patient preference in advanced disease
- Imminent death (ICD activation inappropriate in the dying phase)
- Withdrawal of anti-arrhythmic medications
- DNACPR (Do Not Attempt Cardio-Pulmonary Resuscitation) form signed

Discussions for ICD Deactivation

The continued activation of an ICD when a patient is dying delivers shocks to the patient, which can be distressing to patients, relatives and carers. The discussion regarding deactivation should ideally take place prior to implantation in order that the patient has time to consider their wishes for the future. Whenever the discussion takes place, it should ideally be an open discussion between patient, next of kin and supervising cardiologist, nurse specialist and/or cardiac physiologist and take place whilst the patient is able to be involved in the decision making process.

If any of the indications for deactivation above apply, the health care professional responsible for the patient should be encouraged to initiate this discussion. The ***British Heart Foundation*** have produced a helpful discussion document for healthcare professionals entitled ***`Implantable Cardioverter Defibrillators in patients who are reaching end of life'***, which helps to identify some of the issues that should be included in such discussions (e.g. if situation changes, decision can be revised, likely outcome in current situation if device remains active). The decision remains the patient's (as long as the patient has capacity to make that decision). If a patient lacks capacity, clinicians have a duty to act in the patient's 'best interests'.

The content and outcome of such discussions MUST be documented in patient medical notes, pacing notes and any shared care documentation (see also the pathways on p3+4).

Deactivating the ICD

The patient and next of kin should be made aware that by deactivating the ICD the device will no longer provide shocks in the event of life threatening arrhythmias. **Deactivation of the defibrillator mode of an ICD does not deactivate the pacing mode and in itself does not end a patient's life but will allow for a natural death without the risk of unnecessary shocks.** Turning off the device is not a painful procedure and only takes a matter of seconds to complete. This is usually carried out by a cardiac physiologist.

It is important to avoid last minute decisions, but if immediate action is necessary, the ICD can be deactivated by taping a magnet to the skin over the device. This is only effective while the magnet is in place; once the magnet is removed, the device becomes active again.

Process for deactivation for patients in hospital – See pathway, p3+4

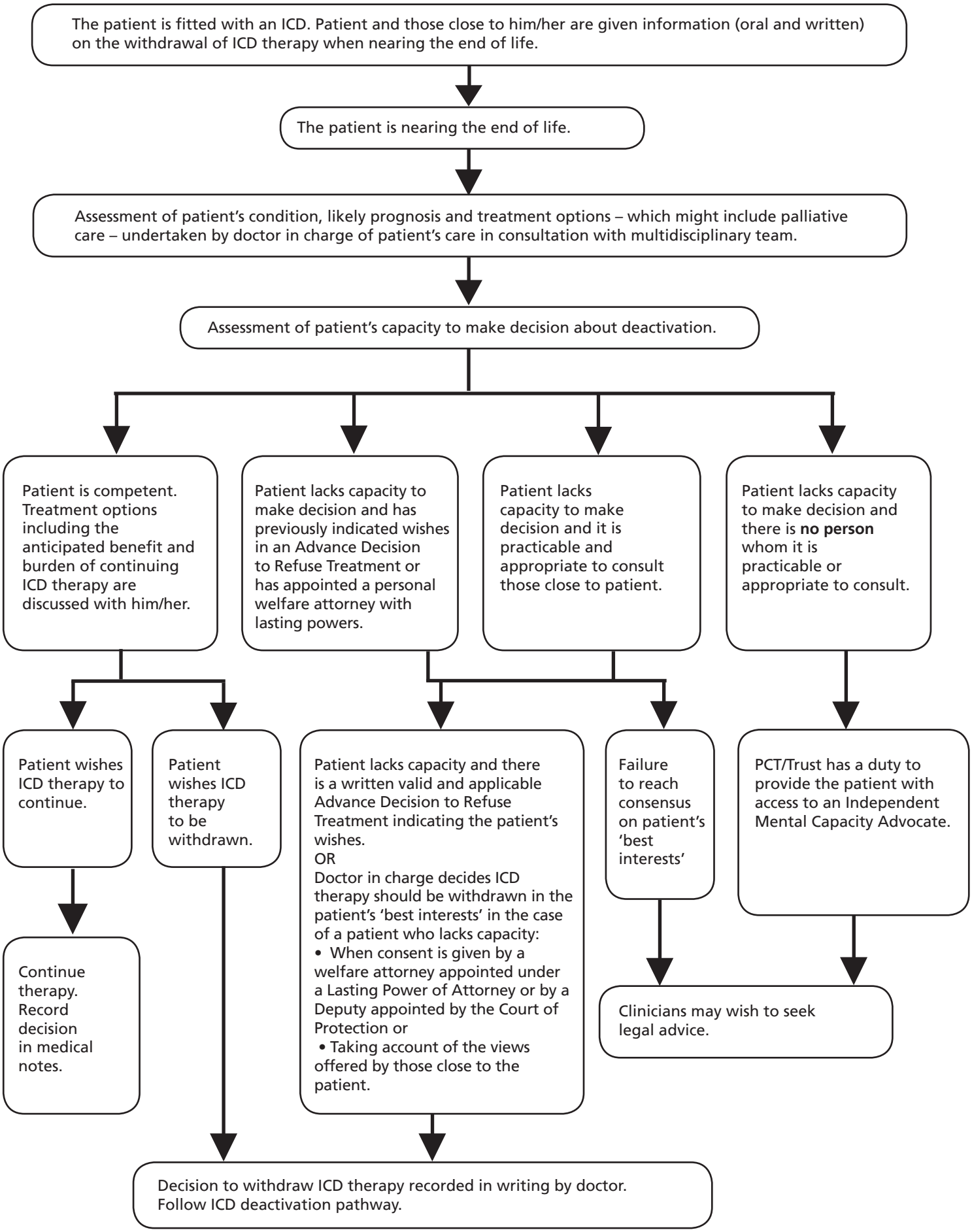
Ethical and legal issues
Patients must be fully informed of their options. A patient's right to request withdrawal of life sustaining medical interventions, including ICDs, is both legal and ethical. Withdrawal of a life sustaining medical intervention with the informed consent of a patient or legal surrogate is not physician-assisted suicide or euthanasia.

The ***Arrhythmia Alliance*** has produced an information leaflet entitled "***ICDs in Dying Patients***". A form for inclusion in patient's medical records will be provided.

After the patient dies
When a patient with an ICD dies, the device requires deactivation before removal by mortuary or undertaker staff. Relatives and healthcare staff should be made aware that cremation is not possible with an ICD in situ.

Useful links
Arrhythmia Alliance: www.arrhythmiaalliance.org.uk
British Heart Foundation: www.bhf.org.uk
National end of life care programme: www.endoflifecareforadults.nhs.uk/strategy/strategy/care-planning
GMC: Treatment and care towards the end of life 2010: www.gmc-uk.org/publications/standards_guidance_for_doctors.asp
St Peter's Hospice website: www.stpetershospice.org.uk
UHBristol end of life policy: http://connect/ClinicalCare/ClinicalSupport/endoflifecare/Pages/default.aspx

Making the decision to withdraw Implantable Cardioverter Defibrillator (ICD) therapy in an adult patient at end of life



Pathway for the deactivation of Implantable Cardioverter Defibrillators (ICD) in adult patients who may be approaching the end of life in hospital