

Guidelines for Management of Pacemaker/ICD Patients attending for Dermatological Surgery

Ref: CG-DERM/2022/010

Aim

The aim of these guidelines is to provide a concise summary of advice to enable safe surgery in patients with implanted electronic devices (IEDs) such as implantable defibrillators and pacemakers.

Purpose and Scope

To provide clear referenced advice for those undertaking or referring for skin surgery patients with implantable electronic devices.

Implanted electronic devices are increasingly encountered during cutaneous procedures. Dermatologists must be aware of the risks for patient injury and device damage or malfunction and must take precautionary steps to minimize the risk for their patients.

The use of diathermy in procedures can cause electromagnetic interference (EMI) and this can cause inhibition of pacemaker output or can be sensed by a defibrillator as VF (ventricular fibrillation) and potentially give rise to an inappropriate shock. The most common cause of EMI is monopolar electrocautery.

Device type

Device

Cardiac:

Permanent Pacemakers (PPM)
Implantable cardiac defibrillator (ICD)
Implantable Loop recorders (ILR)

Other e.g. implanted insulin device:

Contact the relevant department for advice

Mechanism of interference with implanted device.

- Interference can either be conducted or radiated (radiowaves)
- Inhibition of device by diathermy pulse. Commonly used devices in skin surgery include unipolar cautery/hyfreicator, bipolar cautery.

Skin procedures not requiring cautery can be performed at the Florence Nightingale Community Hospital (FNCH) without further details from the RDH IED department. These include:

- Punch biopsy

Skin procedures which require cautery are to be booked into the RDH Daycase surgical list and the further below steps followed and proforma sent to the RDH IED department BEFORE the date of the procedure. These include:

- Curettage and cautery
- Shave excision/biopsy
- All excisions (includes secondary intention healing/direct closure, incisional biopsy, flaps and grafts)

Any patient with ongoing syncopal episodes despite PPM/ICD will need discussion with the operator prior to listing in order to ensure they are booked onto a list with an anaesthetist present or have been subject to an anaesthetic assessment prior to the procedure.

Pre- Booking Information

For Derby patients please review patients '**Pace-care**' visits in the results section of Lorenzo.

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f pacing dependent at VVI 30ppm "No" then can proceed on daycase list at RDH. If pacing dependent at VVI 30ppm "YES" then Patient may go into asystole if pacing stopped. Ensure operator aware before proceeding.

If non-Derby patient, they should have a PPM/ICD ID card – they are instructed to carry it at all times. This will have some of the following information:

- Name
- Hosp No
- Date of birth
- Pacemaker / ICD implanting centre
- Follow-up centre
- Device manufacturer

If the patient does not have a PPM/ICD ID card, will need to contact hospital/Cardiology team in charge of patients pacemaker checks. When the devices clinic has this information, they will be able to get details on the reason for implant, type of device and underlying rhythm to ensure that, if needed, the device is programmed and deactivated appropriately for diathermy use. Please complete the attached proforma (see appendix B) and send it to the Advanced Clinical Physiologists' by email: katie.stevenson@nhs.net and sascha.siniara@nhs.net . Ext: 89011

Pre Procedure - Pacemaker

Patients with a pacemaker do not need a routine pre-procedure or post procedure check. If the patient is not pacemaker dependent it is unlikely that diathermy will cause a problem.

If the patient is pacemaker dependent (VVI at 30ppm), diathermy may cause temporary cessation of pacing function with consequent loss of cardiac output. Taping a magnet over the device will cause it to function in VOO mode (ie it will pace regardless of diathermy or other external interference). **Thus it is recommended that any pacemaker dependent patient has a magnet placed over the unit for the duration of the skin procedure.** When this is removed the pacemaker will return to normal function. The devices clinic do not need to be contacted about such patients, but are available for advice where necessary on 89011.

Pre Procedure– Implantable defibrillators (ICD's)

Diathermy could inhibit pacing function, which is not maintained in VOO mode in an ICD. ICD sensing can be deactivated by taping a magnet firmly in place over the palpable device. Taping a magnet over the device will temporarily disable the ICD and will make diathermy safe. The magnet application will not affect pacemaker function however, there is a small risk of the pacing output being inhibited by diathermy. Note: Some ICDs produce an audible tone upon magnet application (sometimes a brief tone and sometimes on every R wave) which indicates that the device has been deactivated and the magnet is correctly placed. This is NOT the defibrillator getting ready to fire. Any time the magnet is removed the ICD will perform normally and will deliver normal function.

Magnet application: there may be cases where it is felt that magnet placement is contraindicated due to a) the proximity to the surgical site or b) movement of the patient, c) large body habitus. In these cases the ICD can be programmed off by the Physiologists from pacing clinic pre-operatively, but must be programmed back on post op. **These cases need to be booked in advance with pacing clinic.**

Pre Procedure - Loop recorders

There is a possible risk of the data being lost during the procedure. Therefore contact the cardiac physiology department if they wish to download the data before the procedure. Also remind the patient to note the procedure date and time into their diary. This will help the cardiac technician interpret any abnormalities recorded.

During Daycase Procedure

For patients with implanted devices and diathermy use:

- The patient needs pulse oximetry monitoring.
- Have a magnet in Daycase room (King's Treatment Centre).
 - If patient has been assessed as being PPM dependent or has an ICD in situ then magnet should be used.
 - If patient is not PPM dependent, then a magnet is not required.
- Diathermy Use
 - Only bipolar diathermy
 - If inhibition occurs stop diathermy
 - Keep all cables away from the implant site
 - Use the lowest effective power setting and briefest application possible. Short bursts (<5s) of bradycardia will be tolerated, and may not even be noticed.
 - Caution within 5cms of the device.

Post Checks

If there have been any clinical concerns during the procedure, a cardiac physiologist may be able to do a device check before discharge. In this event, theatre staff would need to telephone the devices clinic to arrange on Ext: 89011.

IED/PPM cutaneous surgical emergencies:

If a patient's heart rate is low but the other pulse oximetry readings are satisfactory and the patient is stable then discuss with cardiology on call and contact the cardiac physiology department to arrange a pacemaker check before discharge.

If the patient is not stable (e.g. loss of consciousness, very bradycardic or tachycardic, no palpable pulses, desaturating) then:

1. Call the resuscitation team on 2222
2. If the patient has no palpable central pulses, start chest compressions and 15L O2 via non rebreather mask, attach defibrillator pads.
3. If it is an ICD, remove the magnet. This should allow the ICD to deliver a shock if required.
4. While awaiting the team, provide shock via an external defibrillator if indicated as per the usual ALS guidelines. Do not wait for ICD to shock.
5. Stop using cautery implements, as they may be causing pacemaker malfunction or damage. If concerned about pacemaker damage contact the cardiology IED team at 89011

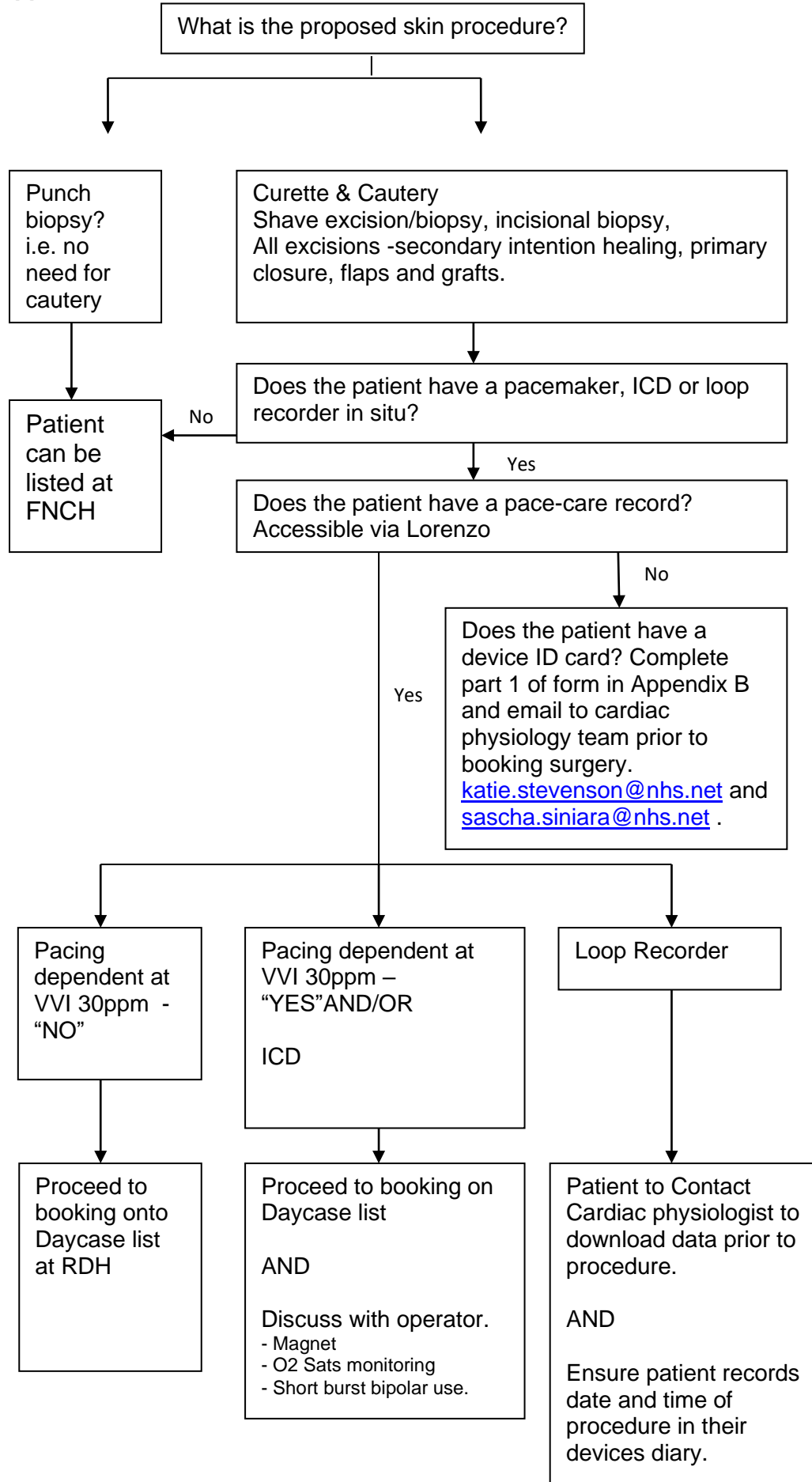
There is no risk to any healthcare professional performing CPR or touching the patient when an ICD delivers a shock. The Shock is internal and low-output (<40joules) so little or no current is present at the patient's skin.

Development of Guideline:	Dr Joelle Dobson, Specialist Registrar, Dr Perin Celebi Specialist Registrar, Dr Laura Adams Specialist Registrar Dr Kid Wan Shum, Consultant Dermatologist
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Key Contact:	Dr. Kid Wan Shum

References

1. British Society of Dermatology Surgery (BSDS) & British Heart Rhythm Society (BHRS) Guidance on Implanted Devices and Dermatological Surgery. July 2017. Available from <https://www.bsds.org.uk/uploads/BSDS%20BHRS%20Implanted%20Cardiac%20Devices%20Skin%20Surgery%20Oct17.pdf>
2. Cardiovascular implanted electronic devices in people towards the end of life, during cardiopulmonary resuscitation and after death. Guidance from the Resuscitation Council (UK), British Cardiovascular Society and National Council for Palliative Care March 2015. <https://www.resus.org.uk/sites/default/files/2020-05/CIEDs%20-%20guidance.pdf>

Appendix A:



Appendix B:

Pre-operative information on IED

Please complete part 1 and email to Advanced Clinical Physiologists' by email: katie.stevenson@nhs.net and sascha.siniara@nhs.net. They will complete part 2 and return it to the georgina.greenhough@nhs.net so any special preparation can be arranged (e.g. magnet availability or battery check).

PART 1: ask the patient if they have their implant card.

Patient label	Name: DOB: Hosp no:
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Pacemaker/ICD implant centre: _____

Follow up centre (can state same as above): _____

Device manufacturer: _____

Indication: _____

PART 2:

Is it near the end of the battery life? YES/NO (?or date of last check)

PPM:

Pacemaker dependent: YES/NO

Pacing rate: _____ bpm _____

Is a magnet on the device required during the procedure? YES/NO

ICD:

Is it pacing dependant? YES/NO

Is a magnet on the device required during the procedure? YES/NO

PPM with ICD:

Is it pacing dependant? YES/NO

Is a magnet on the device required during the procedure? YES/NO

Is a cardiac physiology appointment required before the procedure: YES/NO- if yes cardiac physiology to book