Device Clinic
Cardiology Department
Wishaw General

Protocol for patients with Cardiac Implantable Electronic Devices (CIEDs) undergoing Surgery

In line with the recent updated guidelines for the management of patients with CIEDs around the time of surgery the following protocol has been implemented. Our aim is to facilitate the safe and effective management of patients with cardiac devices and to reduce the incidence of adverse outcomes during surgery. This is important to improve the quality of care and the patient experience.

Planned Surgical Procedures with patients with CIEDs – these patients should be identified at Pre Assessment. All patients are given a registration card for their device and should always carry it with them. This will be needed to identify their device.

Pacemakers / ICD / CRT are highly sophisticated electronic medical implants which incorporate complex pacing functions which monitor and respond to very small electrical signals sensed in the heart. Defibrillators are programmed to mainly treat arrhythmias such as VT or VF through pacing or shock delivery. Some devices provide resynchronisation of the left and right sides of the heart and pacemakers treat bradycardia but also can give treatment for cardiac arrhythmias. Interference generated by monopolar surgical diathermy/electrocautery can be sufficient to temporarily inhibit the device output or increase the pacing rate. The release of substantial energy may also cause devices to enter a safety mode of operation with limited function or to be reset to manufacturers default settings. With ICDs there is a possibility that the interference signal may be misinterpreted by the device as VT or VF and cause inappropriate initiation of therapy. The presence of these devices may present problems therefore precautions need to be considered prior to procedures to ensure correct management of CIED patients

Pre – operative device check requirements – Implant centre details and device details will be needed

PACEMAKER

- Normal follow-up assessment has been carried out at appropriate intervals and is not overdue
- Check within 12 months
- Satisfactory and stable measurements

ICD/CRT

- Normal follow-up assessments carried out at appropriate intervals and not overdue.
- Satisfactory and stable measurements
- Within 6 months

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If the patient has any issues ongoing with their device, pre op and post op check should be done

A copy or verbal report from another Hospital with evidence of recent follow-up is required – if not available pre op check necessary

Pre- Assessment Guidance

- Identify patients with CIEDs and ensure that they have all details required.
- Request a Device check from Cardiology Department, giving sufficient notice to staff to accommodate (ideally this should be done at PA – check arranged for the day of surgery)
- Please note that physiologists are only available Mon to Fri, 9am to 5pm.

Pre-operative management Criteria – General Procedure

Check to be done if (pacemaker)

- Patient dependant
- Patient has Rate response on
- No follow-up guidance available
- If device check is out with 12 months
- Diathermy used near cardiac device
- On-going issues with device
- Prolonged diathermy to be used

Prior to surgery the anaesthetist and surgeon involved should discuss the implications of the patient having an implanted device. Where surgical diathermy/electrocautery cannot be avoided, the surgical team should follow the guidance.

For patients where the implantable defibrillator is deactivated the patient should be monitored at all times with defib pads attached and the surgeon in charge/anaesthetist is aware that he/she is now responsible for monitoring the patient and initiating resuscitation if required.

- Availability of cardio-pulmonary resuscitation, temporary external/transvenous pacing, and external defibrillation equipment.
- Availability of appropriate cardiac personnel
- Monitoring the patients ECG from the outset of surgery and before the induction of anaesthesia
- If using an ECG monitor which has a ‘paced’ mode give careful consideration to whether the use of this mode would be advantageous or not. (In the unlikely event of pacing pulses failing to capture the heart, an ECG monitor set to ‘paced’ mode may misinterpret the pacing spikes as the patients QRS complex and incorrectly display a heart rate when the patient is actually in asystole.

- Where detectable pacemaker inhibition occurs the surgeon should be informed immediately and diathermy either used intermittently or discontinued
- Where the use of monopolar diathermy/electrocautery is used

1. Limit it to short bursts
2. Ensure that the return electrode is anatomically positioned so that the current pathway between the diathermy electrode and return electrode is as far away for the device as possible
3. Ensure that the monopolar or bipolar diathermy /electrocautery equipment are kept away from the site of implant

ICD to be de-activated in most cases.

Patients with implantable loop recorders require interrogation before and after procedure.

Post-operative management

- Interrogate and restore all previous settings of the device and document.
- Give follow-up instructions
- Send report to follow-up hospital

If diathermy is used at a site near the device a post op check should be done.

Surgery	Site	Pacemaker	ICD
General Surgery	Lower abdomen, lower limbs or upper arms distal to the elbow	General procedures	Deactivation
	Head, neck, upper abdomen or upper limb proximal to the elbow	General Procedures	Deactivation
Dermatology	As General Surgery	General procedure	Deactivation
Cardiac Surgery		Reprogramming required	Deactivation
Ophthalmic Surgery	As General Surgery	General Procedure	Deactivation
Endoscopy procedure		As General procedure.	Deactivation
Dental Surgery		As General Procedure	Deactivation
Electroconvulsive Therapy		Check within one month at follow-up Hospital.	Deactivation
EMG		Re-programming required if near pacemaker site otherwise general procedures	Deactivation

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Post Op checks required if the device was re-programmed or if adverse advent occurred

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