

 Musgrove Park Hospital		<h2>Policy/Guideline/Procedure</h2>
Title: Peri-operative management of patients fitted with Permanent Pacemakers (PPMs) and Implantable Cardioverter Defibrillators (ICDs).		
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Applies to: All those working with surgical patients with PPMs or ICDs.	Exclusions:	
Purpose: To clarify the peri-operative management of elective surgical patients with PPMs/ICDs.		

Key Points (see Appendix)

- Diathermy and other electronic devices may cause PPMs or ICDs to malfunction intra-operatively. This may lead to cessation of pacing or inappropriate defibrillation that could ultimately lead to death.
- If a patient has a PPM or ICD this must be highlighted at pre-assessment and on admission to hospital. This must be reiterated at the team briefing and WHO checklist immediately prior to surgery. The Cardiac Physiologists MUST be advised (except in the case of urgent out-of-hours surgery) so that the programmed settings can be reviewed and altered if necessary.
- PPMs should have been checked within 6 months of surgery.
- ICDs should have been checked within 3 months of surgery.
- If diathermy is necessary, **bipolar** diathermy should be used. Monopolar diathermy must only be used if absolutely necessary; in this event the exit plate must be as far from the device as possible. Use short bursts of less than one second on the lowest current possible.
- ICDs should have a magnet taped over them during the procedure. See magnet flow chart. An ICD with a magnet taped over it will not deliver a shock in the event of a ventricular arrhythmia.
- If a PPM is used for complete heart block, an alternative means of pacing must be available, for example external pacing.
- A magnet should be available so that in the event of diathermy-induced PPM inhibition, the magnet can be placed (and remain) over the PPM to initiate continuous pacing. However it is important to monitor the patient closely as magnet operation can vary between PPMs.
- All other electronic equipment must be kept as far from the patient as possible as any electronic magnetic field (including fields generated by microwaves) may reprogram the device.

Peri-operative Management of PPMs/ICDs

Pre-operative

POAC (Preoperative Assessment Clinic)

When a patient with a PPM/ICD is identified:

- Identify the indication for the device clearly in the documentation.
- Contact the Cardiac Physiologists (x2953) to:
 - Advise on the date of surgery.
 - Identify the last time the device was checked. If the device has not been checked recently (within past 6 months for a PPM and 3 months for an ICD) this will need to be arranged prior to surgery.
 - Check the programmed parameters and confirm if any changes are required for the duration of surgery.
 - Check what effect placing a magnet will have on the function of the device. This should be recorded in the notes.
 - Determine whether the leads are programmed to operate in unipolar or bipolar mode; a unipolar lead is more prone to detect interference.
- Inform the surgeon and anaesthetist that the patient has an implanted cardiac device.

SAL (Surgical Admission Lounge)

- Identify the patient with a PPM/ICD and confirm that the appropriate POAC checks have been adhered to.
- Reconfirm the device check date (within past 6 months PPM and 3 months for ICD).
- Inform the anaesthetist/surgeon if not checked.
- For patients with ICDs, inform the Cardiac Physiologist (x2953) of the likely time to theatre and duration of the procedure.
- Where possible, patients with ICD **should not be the last on the list** as the Pacing Department closes at 17:00 hrs.

Intra-operative

Theatres

- Patients with PPMs/ICDs should be highlighted at the safety briefing.
- Patients with PPMs/ICDs **should not be last on the list**.
- Identify the device location (left infra-clavicular/right infra-clavicular/abdominal wall).
- **Avoid diathermy wherever possible.**

If diathermy is essential

- Use **bipolar** diathermy if at all possible.
- Site the exit plate as far as possible from the PPM/ICD.
- Use the diathermy probe at least 15 cm away from the PPM/ICD.
- Use short bursts (one second or less) using smallest current necessary.

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- Have a magnet available to be applied to PPMs in the event of inhibition (pauses) caused by diathermy. A magnet will usually cause the PPM to switch to a continuous pacing mode. However it is important to monitor the patient closely as magnet operation can vary between PPMs (please note a magnet will have NO effect on the bradycardia functions of an ICD, if inhibition (pauses) is seen on an ICD patient, diathermy should be stopped).
- An ICD should have a magnet taped over it. See magnet flow chart. An ICD with a magnet taped over it will not deliver a shock in the event of a ventricular arrhythmia.
- It is advisable to have an alternative method of pacing and defibrillation for all patients.
- For patients dependent upon the PPM e.g. for complete heart block, then an alternative method for immediate pacing is mandatory.
- For patients with an ICD which has been programmed off, an alternative method for immediate defibrillation is mandatory.

Postoperative

Recovery (PACU)

- Identify the patient with PPM/ICD back from Theatre.
- Pulse oximetry and NIBP with ECG immediately available if required.
- Arrange PPM/ICD check-up ASAP by calling 2953 if any of:
 - The device settings have been adjusted for surgery
 - A magnet has been applied
 - Diathermy has been used

Ward

- Identify the patient with PPM/ICD back from Theatre.
- Pulse oximetry and NIBP with ECG immediately available if required.
- Arrange PPM/ICD check-up ASAP by calling 2953, if not performed in recovery, if any of:
 - The device settings have been adjusted for surgery
 - A magnet has been applied
 - Diathermy has been used

Out of hours

- If there is a need to operate on a patient in an emergency it must be realised that there is currently no out-of-hours pacing service. Advice may be sought from the consultant cardiologist on-call.
- The advice outlined above will apply here.
- Facilities for external pacing and defibrillation must be available and external pacing/defibrillation pads should be attached prior to the procedure if practical.
- If the device is a simple PPM then a magnet should be to hand.

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- If the device is an ICD then a magnet should be taped over the device at the start of the procedure to prevent inappropriate therapies being delivered.
- At the start of the next working day the pacemaker clinic should be contacted so that a pacing check can be arranged, if any of:
 - The device settings have been adjusted for surgery
 - A magnet has been applied
 - Diathermy has been used

**Please Also See Flow-Charts For ICDs, PPMs and
Magnet Application**