
Franciscan Health System

Regional Perioperative Services

Policy Subject: Cardiac Implantable Electronic Device (CIED) Policy

Last Reviewed Date: 8/2010

Effective Date: September 1, 2012

Next Review Date: 9/2015

Purpose: To outline the perioperative nursing management of patients who have Cardiac Implantable Electronic Devices (CIEDs), and are scheduled for a surgical procedure.

Background/Supportive Data:

- Addendum A Outpatient CIED Pathway.
- Addendum B Inpatient CIED Pathway.
- Addendum C Emergency CIED Pathway.
- CIEDs are electronic devices that are designed to detect electrical activity from the heart. CIEDs have become very complex, and can perform a number of important functions, including the treatment of bradycardia, heart failure, and life-threatening arrhythmias.
- CIEDs can also detect electrical signals from other sources. In the operating room, these non-cardiac sources of electrical activity are known as Electromagnetic Interference (EMI).
- EMI may be detected by the CIED and cause inappropriate function of the device. CIED malfunctions caused by EMI may be life threatening to patients. Rarely, EMI may damage the CIED, or cause device “reset.”
- It is felt that either a member of the patient’s personal device team, or, in the absence of a member of the patient’s personal device team, a covering cardiologist, is the most appropriate person to provide guidance (in the form of specific orders) for the perioperative management of CIEDs.
- An anesthesia provider must manage all surgical cases involving the care of patients with CIEDs.

Content:

PREOPERATIVE PHASE

- All patients having a CIED should be identified prior to surgery during the Surgery Scheduling/Preadmission process.
- All patients with a CIED having a surgical procedure (with the exception of patients having emergency surgery) should have a copy of the FHS “Surgical Clearance for Cardiac Implantable Electronic Device (CIED)” order set faxed to either 1) a member of their primary device team, or, 2) the FHVA cardiologist on call (after office hours and on weekends).
- One must consider if the procedure and positioning will make the CIED physically inaccessible during surgery. It is critical to communicate to the cardiologist that many patients with Internal Cardiac Defibrillators (ICDs) undergoing procedures in the prone and lateral procedures will require reprogramming of their ICD. Likewise, in patients with pacemakers, it is critical to communicate to the cardiologist that patients who are pacemaker-dependent undergoing procedures in the prone and lateral positions will possibly require preoperative reprogramming of their device to an asynchronous pacing mode.

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- It is critical to notify the patient's device cardiologist of situations where the surgical field may involve the skin overlying the CIED, or the procedure will occur within six inches of the CIED generator. This makes temporary magnet placement over the device impossible. In these cases, it will be necessary to reprogram all ICDs. It may also be necessary to reprogram pacemakers in patients who are pacemaker-dependent.
- In the "Inpatient CIED Pathway", the anesthesia provider should obtain the device make and identification number, the device type (can be obtained from the patient's device card), and a copy of a 12-lead EKG. These will then be faxed with the "Surgical Clearance for Cardiac Implantable Electronic Device (CIED)" order set by the OR charge nurse/House Supervisor.
- Completed copies of the FHS "Surgical Clearance for Cardiac Implantable Electronic Device (CIED)" will be placed on the chart by the Preanesthesia nursing staff, or the OR charge nurse ("Inpatient CIED Pathway"). For inpatients, the OR charge nurse/House Supervisor will notify the anesthesia provider when the completed "Surgical Clearance for Cardiac Implantable Electronic Device (CIED) order set" is available for review.
- For non-emergency surgery, the primary device cardiologist must have interrogated the CIED within the six months prior to surgery.
- The Pre-Admit Clinic RN, the OR charge nurse (see "Inpatient CIED Pathway"), or the PACU/ICU nurse (see "Emergency CIED Pathway") will notify the device representative if preoperative device reprogramming or postoperative device interrogation is necessary.
- Patients who have had an ICD's anti-tachycardia function reprogrammed to "off" preoperatively must have both continuous EKG monitoring and the immediate availability of defibrillation capability.
- Patients who have had their pacemakers reprogrammed to an asynchronous mode preoperatively must have continuous EKG monitoring until reprogrammed.
- For emergency cases, please see the "Emergency CIED Pathway."

INTRAOPERATIVE PHASE:

- The patient should be continuously monitored with EKG (to monitor rhythm) and either pulse oximetry or an arterial catheter (to insure perfusion).
- External pacing and defibrillation capability should be immediately available. Defibrillation/pacing pads should be placed on high-risk patients (e.g., patients with history of frequent ICD discharge; patients with minimal underlying heart rhythm).
- The electrocautery dispersion pad should be placed as far from the axis (imaginary line connecting the device generator and the heart) of the CIED as possible. Electrocautery dispersion current should never flow across this axis, if possible.
- A magnet must be immediately available (and located within the anesthetizing site) for any patient with a CIED having a surgical procedure.
- In cases requiring electrocautery, surgeon should use either bipolar electrocautery or harmonic scalpel when feasible.
- Short bursts of electrocautery should be used whenever possible.

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POSTOPERATIVE PHASE:

- All patients with a CIED that has been either reprogrammed, or had a magnet applied to the device during surgery will be admitted to a cardiac-monitored site until the device has been reprogrammed by the product representative to preoperative settings (in the case of a device that has been reprogrammed preoperatively), or has been interrogated by the product representative to insure restoration of preoperative settings (in the case that a magnet has been applied to the device).
- All patients being treated with the “Emergency CIED Pathway” must have their device interrogated by a product representative prior to discharge from a cardiac-monitored site.
- The product representative must document restoration of preoperative device settings after reprogramming/interrogation of a device postoperatively. This documentation must include date, time, interrogation strip and name of individual performing reprogramming/interrogation.
- Every CIED that has been reprogrammed preoperatively must be reprogrammed to its preoperative settings postoperatively by a product representative.
- It is only necessary for a device to be interrogated by a product representative postoperatively if 1) a device has had a magnet applied, or 2) the “Emergency CIED Pathway” has been utilized.

References/ Supportive Data:

1. Crossley GH et al. The heart rhythm society expert consensus statement on the perioperative management of patient with implantable defibrillators, pacemakers and arrhythmia monitors: Facilities and patient management. The document was developed as a joint project with the American Society of Anesthesiologists (ASA), and in collaboration with the American College of Cardiology (ACC), the American Heart Association (AHA), and the Society of Thoracic Surgeons (STS). *Heart Rhythm* 8: 1114-1154, 2011.
2. Practice advisory for the perioperative management of patients with cardiac implantable electronic devices: pacemakers and implantable cardioverter-defibrillators: an updated report by the American Society of Anesthesiologists task force on perioperative management of patients with cardiac implantable electronic devices. *Anesthesiology* 114: 247-61, 2011.

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Approved By (May be any one or more of below):
Regional Perioperative Leadership Team