Olive View-UCLA MEDICAL CENTER

COUNTY OF LOS ANGELES
DEPARTMENT OF HEALTH SERVICES

Policy Title:	**CARDIOVERSION (ADULT AND PEDIATRIC)**		
Category:	1 - Provision of Care	**Policy No.:**	112
Originally Issued:	1/1/1990	**Update (U)/Revised (R):**	12/7/2018
Distribution:	**Hospital-Wide** ☒	**If not Hospital-Wide, Other:**	

PURPOSE:

To define the responsibilities of the Medical Staff participating in cardioversion.
To establish clear guidelines for performing adult and pediatric cardioversion. A Physician credentialed in moderate sedation or an Anesthesiologist must be present. In an emergent cardioversion with an unstable patient an attempt should be made to call an Anesthesiologist, but does not take precedence over delaying the cardioversion. Pre-medicate with sedatives whenever possible.

DEFINITION(S):

Cardioversion is the delivery of a synchronized, direct electrical current to the heart resulting in simultaneous depolarization of a critical mass of myocardium followed by repolarization. The expected outcome is effective contraction and cardiac output by re-establishing pacemaker function of the sinoatrial node. Cardioversion is indicated in all unstable tachycardias (rate > 150/min) with signs and symptoms related to the tachycardia.

Equipment

The equipment utilized to perform cardioversion includes:

Cardioverter/Defibrillator
- ECG Monitor with Recorder
- Conductive Gel Pads or Adhesive Pads (preferred)
- Pulse oximetry

Intravenous or IO sedatives or analgesic pharmacologic agents as prescribed
- IV or IO access

Emergency Cart/Emergency Equipment
- Airway resuscitation equipment
- Suction and intubation equipment
- Emergency medications

Emergency Pacing Equipment (overdrive suppression)

POLICY:

Adult and /or Pediatric cardioversion will be safely performed by a clinically competent physician credentialed in cardioversion and moderate sedation. **Cardioversion requires an informed consent (patient stable or a Certificate of Emergency signed by two licensed physicians (patient unstable).**

PROCEDURE:

I. PRE-PROCEDURE

A Registered Nurse certified in ACLS/PALS prepares the equipment, assists the physician, and monitors the patient during the procedure.

1. Obtain baseline 12 Lead ECG
2. Obtain IV or IO access
   - Emergency cardioversion is not delayed for placement of IV/IO device
3. Place patient in supine position
4. Provide supplemental oxygen to achieve SpO2 >94%
   - Disconnect source immediately prior to cardioversion to reduce risk of combustion
5. Place Emergency Cart at the bedside
6. Attach defibrillator/ECG monitor to patient
   - Select a lead, which provides a prominent (tall) 'R' wave and small magnitude 'T' wave; commonly Lead II
7. Assess baseline vital signs, cardiac rhythm, and LOC
8. Remove dentures if loose fitting
9. Administer premedication as ordered

II. VERIFICATION PRE- ELECTIVE CARDIOVERSION

1. Verify NPO for 6-12 hours prior to elective cardioversion
2. Evaluate recent serum electrolytes and digitalis levels
3. **Abnormal serum electrolyte levels and digitalis toxicity may** increase the risk of lethal dysrhythmias post cardioversion

III. CARDIOVERSION

1. Turn defibrillator on
2. Place conductive gel pads or adhesive pads on patient in 1 of 4 acceptable positions.

Placement of Adhesive Pads, Gel Pads or Paddles with conduction

1. Sternum paddle/pad is placed on the right superior-anterior chest; the apex paddle/pad is placed on the inferior-lateral left chest.

Note: This is the only position to be used with paddle placement.

2. The 3 alternative positions require the use of adhesive pads. They are the anterior-posterior, anterior-left infrascapular and the anterior-right infrascapular.

For patients with permanent pacemakers or implantable cardioverter-defibrillator: Paddle/adhesive pad/gel pad placement is 8cm or about 3 inches; but placement shouldn't delay procedure if cardioversion is emergently needed.

A. Place paddles firmly on the chest wall or ensure that self-adhesive pads have complete contact with the chest wall.
   - Paddles require approximately 25 lbs of pressure.

B. Engage synchronized mode by depressing the "synch" button on the defibrillator.
   - **Synchronized mode can be verified by observing a "marker" superimposed on the peak of the 'R' wave.**
   - If necessary, increase the gain until synch marker occurs with each 'R' wave.
   - Verify that synch mode is engaged prior to each countershock.
     - **Many defibrillators default to unsynchronized mode following each countershock.**

C. Charge the paddles/adhesive pad mode to the appropriate energy level by depressing the "charge" button.

American Heart Association 2010 Guidelines recommend:

Adult:
- Narrow regular: 50-100 J whether monophasic or biphasic
- Narrow irregular: 120-200 J biphasic or 200 j monophasic
- Wide regular: 100 J whether monophasic or biphasic

Pediatric:
- Initial dose: 0.5-1 J/kg
- Subsequent doses: 2J/kg

D. Confirm ECG rhythm on monitor and activate ECG recorder.
   - Announce, "charging defibrillator"; when charged to selected amount state in a firm chant, such as "I am going to shock on three" then count and say "all clear". When you and staff are clear, shock the patient and announce, "shock delivered".
   - **Electrical current may be transferred to staff through the bed, equipment or linen of incontinent patient.**

E. Depress the discharge buttons on both paddles **simultaneously.** Keep depressed until current is delivered.
- In the synchronized mode, there may be a delay before the charge is delivered.
- Observe monitor for conversion of the tachydysrhythmia.

If unsuccessful, repeat steps 1-5 utilizing the appropriate energy levels for subsequent shocks.

Ventricular fibrillation (VF) may develop after cardioversion. If VF occurs, disengage the synchronized mode and follow the procedure for defibrillation.

IV. POST-PROCEDURE

1. Obtain 12-lead ECG.
2. Assess the following:
   - Airway patency
   - Level of consciousness (reorient as needed)
   - Vital signs.
   - ECG rhythm continuously as ordered.
   - Presence of skin burns.

V. DOCUMENTATION

1. Progress Notes – Neurologic, pulmonary, and cardiovascular assessment is performed before and after cardioversion.
   - Event/procedure notation to include reason for cardioversion.
   - Time initiated and time ended.
   - Print out ECG tracing depicting the cardiac rhythm before and after cardioversion.
   - Unexpected outcomes and nursing interventions.
   - Patient's response/outcome and disposition condition of skin of the chest wall.
   - Patient/family education.

2. Medication Record
   - Premedication administered including name, dose, route, time given, effectiveness, and who administered the medication.
   - Additional medication given including all criteria above.

3. 12-Lead ECG and rhythm strips are to be placed in medical record.

ATTACHMENTS/FORMS:

None

REFERENCE(S)/AUTHORITY:

Lynn-McHale Wiegand, D.& Carlson, K., (2005). AACN Procedure Manual for Critical Care (5th Ed.), St. Louis. Missouri: Elsevier, Inc.

American Heart Association, (2010). *Journal of Circulation*. Dallas, Texas.

2010 Handbook of Emergency Cardiovascular Care for Health Care Providers. American Heart Association. Dallas, Texas.

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