

7.129 SYNCHRONIZED ELECTRICAL CARDIOVERSION EMSAC AUGUST 2026

INDICATIONS

- Narrow or wide complex monomorphic **Tachycardia** causing the patient to be unstable with signs of shock including any of the following:
 - Hypotension (Adults: SBP <90mmHg)
 - Acute altered mental status
 - Ischemic chest discomfort
 - Acute heart failure
- **Polymorphic ventricular tachycardia**
- ~~Adults: Persistent tachycardia typically >150 bpm, causing one or more of the following hemodynamically unstable conditions: Altered mental status, hypotension (systolic <90mmHg, signs or shock, ischemic chest discomfort, shortness of breath, or pulmonary edema likely due to the arrhythmia.~~

Pediatric:

~~Persistent tachycardia typically >220 bpm (infants), >180 bpm (child) for narrow complex and >120 in infants and children for wide complex tachycardias.~~

CONTRAINDICATIONS

- ~~None~~ Pulseless
- Sinus tachycardia (Identify and treat underlying cause)
- Hemodynamically stable patients

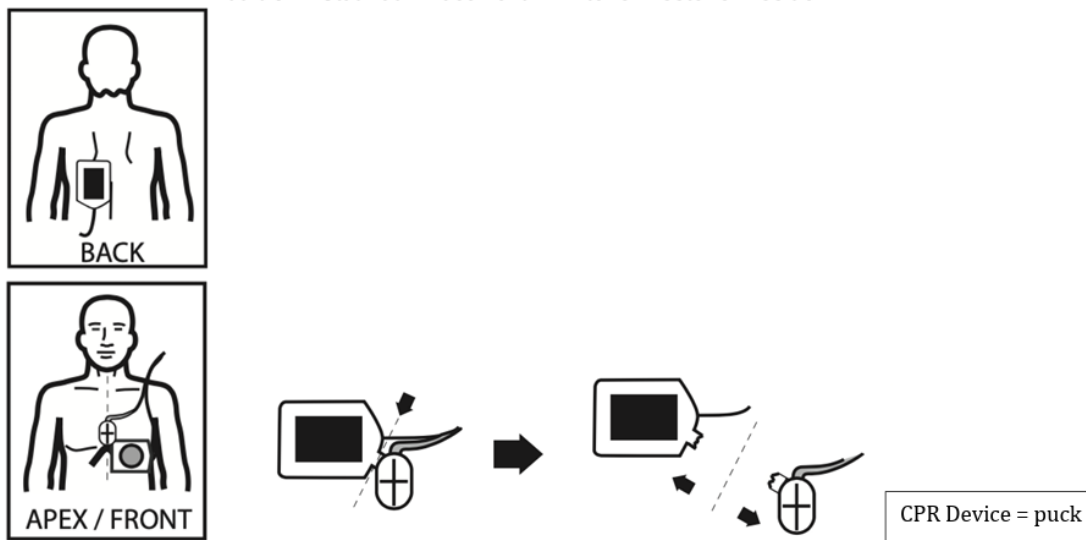
PROCEDURE TECHNIQUE

1. Apply cardiac monitor leads to identify tachyarrhythmia that requires synchronized cardioversion (12-lead ECG if available)
2. Strongly consider sedation with **midazolam** prior to procedure
3. Place pads in anterior/posterior ~~lateral~~ position (preferred- See Figure 1) to clean, dry skin
 - a. Separate CPR device (puck) from **back** pad
 - b. AVOID pad placement overlying ~~if unable or patient has~~ pre-existing implanted device such as pacemaker or **Automatic Implantable Cardioverter-Defibrillator (AICD)**; ~~place pads anterior/posterior position.~~

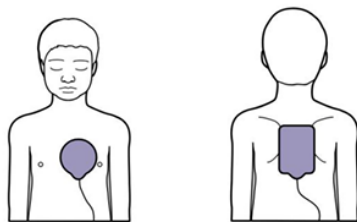
Figure 1: Anterior-Posterior Pad placement for Adults and Pediatrics in electrical cardioversion

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Adult CPR Stat Padz Placement in Anterior-Posterior Position



Pediatric OneStep Electrodes With Green Connector Placement



4. Attach cables to the monitor
5. Assure safe environment- evaluate risk of sparks, combustibles, oxygen-enriched environments
6. Select "Sync" button on monitor
 - a) ~~Monitor will be in "sync" when sync cursor is above each R wave~~
7. Select energy level
 - a. Adult patients: 100-200J (200J preferred for atrial fibrillation/flutter)
 - b. Adult patients: Polymorphic VT: unsynchronized, high energy-shock (defibrillation)
 - c. Pediatric patients: 1J/Kg
8. Charge monitor
9. Verbalize "all clear" and visually ensure that all individuals are clear of the patient, stretcher and any equipment connected to the patient. ~~team members and equipment (e.g Oxygen tank, monitor etc.) from patient.~~
10. Press and hold "shock" button until shock is delivered
11. Reassess rhythm, patient pulse, and blood pressure
12. For persistent tachyarrhythmia with signs of shock, administer a second and subsequent synchronized shock:
 - a. Adult patients: 150J, then 200 J

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b. Pediatric Patient: 2J/Kg

CONSIDERATIONS

- **Synchronized** Electrical cardioversion is safe to perform in pregnant patients

DOCUMENTATION

1. EMS Personnel responsible for procedure
2. Time of insertion
3. Initial and serial vital signs
4. Patient reassessment post-procedure
5. Complications, if applicable

~~— 8. If patient needs additional cardioversion ensure “sync” button is on as some monitors will default to turn the “sync” feature off after each cardioversion.~~

As a general guideline:

~~— Adults:~~

- ~~— a) Narrow QRS and regular: start at 70J*~~
- ~~— b) Narrow QRS and irregular: start at 120J*~~
- ~~— c) Wide QRS and regular: start at 100J*~~
- ~~— d) Wide QRS and irregular: attempt to sync, if unable, defibrillate: 120J*~~
- ~~— * Increase in step wise fashion if previous shocks are ineffective~~

Pediatric:

- ~~— a) Begin with 0.5 J/kg.~~
- ~~— b) If previous cardioversion is ineffective subsequent doses at 2J/kg.~~
- ~~— c) Refer to length based resuscitation tape for weight approximation.~~

~~— CONSIDERATIONS~~

- ~~— A. Strongly consider **Midazolam** prior to cardioversion. Do not delay Midazolam to start an IV.~~
- ~~— B. Midazolam is not contraindicated if SBP is ≤ 90 if used for pre-procedural sedation.~~
- ~~— C. Cardioversion is safe in pregnant patients.~~
- ~~— D. Remove medication patches or place pads to assure pads are not over patches.~~