

## APPENDIX: 11

## TITLE: Electrical Therapy Procedures and Guidelines

REVISED: July 01, 2024

- I. **General:** This document provides general guidance when administering electrical therapy to a patient. It is written for the Zoll X Series of Monitor /defibrillators, and the Zoll AED3 BLS automatic external defibrillators (AEDs). Due to different devices and situations, it may have to be modified as needed.
- II. **Automatic External Defibrillators (AEDs):** The following procedure is generic and should be used unless the manufacturer's instructions are available and give specific recommendations not covered here. Most AED units are self-instructional when power is turned on. Most cardiac monitors used in ACCESS have an AED function.
  - a. **Indications:** AED use is indicated for:
    - i. Cardiac Arrest
    - ii. AED pads may be placed but not turned on if the provider believes that cardiac arrest is imminent.
  - b. **Considerations:** THIS SECTION IS FOR BLS PERSONNEL WHEN A PARAMEDIC IS NOT PRESENT, AND AN AED IS IMMEDIATELY AVAILABLE. An ACCESS ALS Provider (i.e. an approved and credentialed ACCESS paramedic) may modify this procedure based on clinical judgment.
    - i. An AED may be used in place of a manual defibrillator (or a manual defibrillator may be used in AED mode) as needed to allow other essential care to be done.
    - II. If a public access defibrillator (PAD) is utilized before your arrival, switch from the PAD to your defibrillator and proceed with protocol as time and circumstances permit.
    - III. Use device energy settings. Follow the procedure outlined in protocol *C-02A Adult Cardiopulmonary Arrest – BLS and AEMT Algorithms*
  - c. **AED Use In Children and Infants:** For attempted defibrillation of children 1 to 8 years of age with an AED, the rescuer should use a pediatric dose-attenuator system if one is available.
    - i. **Children 1-8 years:** If the rescuer provides CPR to a child in cardiac arrest and does not have an AED with a pediatric dose-attenuator system, the rescuer should use a standard AED.
    - ii. **Children > 8 years:** Use adult pads and settings.
    - iii. **Infants (< 1 year of age),** a manual defibrillator is preferred. If a manual defibrillator is not available, an AED with pediatric dose attenuations is desirable. *If neither is available,* then an AED without a dose attenuator (using adult settings and/or pads) may be used. When using adult pads, they should be placed in anterior/posterior placement.

d. **AED Pad / Paddle Placement** The anterior-posterior and anterior-lateral locations are generally acceptable in patients with implanted pacemakers and defibrillators. In patients with implantable cardioverter-defibrillators or pacemakers, pad or paddle placement should not delay defibrillation. It might be reasonable to avoid placing the pads or paddles directly over the implanted device.

e. Dose

i. As set in AED.

ii. ACCESS approved defibrillation settings for Zoll AED3 BLS are **200 J BiPhasic**

**III. Manual Defibrillation:** Manual defibrillation should be incorporated into the broader high-performance CPR procedure.

a. Manual Defibrillation is indicated for:

i. Ventricular Fibrillation

ii. Pulseless Ventricular Tachycardia

iii. Pulseless Polymorphic Ventricular Tachycardia (AKA Torsades De Pointes)

iv. Where synchronized cardioversion is indicated but delayed or unavailable.

v. Defib pads may be placed if the provider believes that cardiac arrest is imminent, or as indicated in a specific protocol (i.e. STEMI).

b. Dosage: The following settings are approved with the Zoll X Series monitor/defibrillators. The settings may have to be modified for other devices.

i. Adults:

1. 200j Biphasic Defibrillation followed by immediate CPR.

ii. Pediatrics:

1. 2j/kg Biphasic Defibrillation followed by immediate CPR.

2. Subsequent Defibrillation at 4j/kg.

**IV. Synchronized Cardioversion:**

a. Synchronized Cardioversion is typically indicated for

i. Rapid-rate rhythms ( such as atrial fibrillation, atrial flutter, PAT, ventricular tachycardia with pulses) that cause altered mentation, severe hypotension, shortness of breath, severe pulmonary edema,

ii. Other clinical indications as described in protocol.

- b. Considerations:
- i. Ensure “SYNC” button is pressed between each desired synchronized shock.
  - ii. When possible, patients should have venous access prior to
  - iii. If Synchronization is not obtained, or is delayed/unavailable, proceed with unsynchronized cardioversion (i.e. defibrillation) at the same settings
  - iv. *Consider* sedation/analgesia with before cardioversion if it will not cause unnecessary delays and patients hemodynamic status allows
  - v. Sedation/analgesia before cardioversion is highly desirable, but not mandatory. In the event IV access cannot be obtained, or sedation/analgesia is contraindicated, then cardioversion may be performed.
- c. Dosage:
- i. Adults:
    1. 200j Biphasic synchronized cardioversion
  - ii. Pediatrics:
    1. 0.5 j/kg Biphasic synchronized cardioversion
    2. Subsequent synchronized cardioversion at 1j/kg then 2k/kg, and then 4 j/kg repeated as needed.

## V. TRANSCUTANEOUS PACING (TCP):

- a. Transcutaneous Pacing is indicated for:
- i. Symptomatic and hemodynamically unstable bradycardia (rate < 50 bpm). Providers should differentiate between asymptomatic and symptomatic, and stable vs. unstable.
  - ii. Mobitz II second-degree AV block
  - iii. Third-degree AV block, bilateral or alternating BBB
  - iv. When atropine is ineffective or contraindicated
  - v. other clinical indications as described in protocol.
- b. Considerations:
- i. When possible, patients should have venous access prior to TCP.
  - ii. *Consider* administering pharmacological therapy (i.e. Atropine) while preparing TCP. (nothing should delay TCP in an unstable patient)
  - iii. Consider sedation/analgesia with transcutaneous pacing if it will not cause unnecessary delays and patients hemodynamic status allows.
  - iv. Sedation/analgesia before TCP is highly desirable, but not mandatory. In the event IV access cannot be obtained, or sedation/analgesia is contraindicated, then TCP may be performed.
- c. Dosage
- i. Start at 80 ppm and 30 mA, titrate to mechanical capture
  - ii. Adult and pediatric dosing for TCP is identical.

**Electrical Therapy**