

Electrical Therapy

Purpose: To perform appropriate electrical therapy.

Automated External Defibrillation

Note: This procedure is to be used in conjunction with the appropriate protocol by pre-hospital providers.

MRF/EMT/SPECIALIST/PARAMEDIC

1. Indications: pulseless/apneic patient > 8 years old and > 60 lbs.
2. Contraindications: valid DNR order, or obvious death.
3. Technique:
 - a. Confirm absence of pulse and respiration.
 - i. If pulse is absent initiate or continue CPR until arrival of AED.
 - ii. Access ALS response if available.
 - iii. Turn on and apply AED.
 - iv. Follow AED voice prompts.
 - v. Do not touch patient during analysis or defibrillation.
 - vi. If patient is not converted from V-Fib after the first defibrillation, a second and third shock may be delivered by the AED.
 - vii. If patient is not converted with third shock, perform CPR for 1 minute and analyze.
 - viii. If indicated, the AED will deliver up to 3 additional shocks.
 - ix. Continue to alternate between 1 minute of CPR and sets of 3 shocks as appropriate until ALS arrives or the patient converts to perfusing (pulsed) rhythm
 1. For BLS transport, begin transport following second cycle of shocks.
 2. AED should not analyze or shock in a moving vehicle.
 - b. Continue monitoring patient after successful defibrillation.
 - c. Upon arrival of an ALS unit:
 - i. If manual defibrillator and AED arrive at same time, use AED.

PARAMEDIC

- ii. If an AED is in place, leave in place until initial ALS interventions have been performed.
- iii. The manual monitor/defibrillator should be attached before the AED is disconnected.

Manual Defibrillation

Note: This procedure is to be used in conjunction with the appropriate protocol by Paramedics only.

1. Indications: ventricular fibrillation, pulseless ventricular tachycardia
2. Technique:
 - a. Turn defibrillator on
 - b. Apply defibrillator paddles/pads according to manufacturer specifications.
 - c. Charge defibrillator to energy level specified in appropriate protocol or according to manufacturer specifications.
 - d. Check rhythm
 - e. Defibrillate patient
 - f. Recheck pulse and rhythm
 - g. If VF or pulseless VT persist, provide additional defibrillation per protocol.

Synchronized Cardioversion

Note: This procedure is to be used in conjunction with the appropriate protocol by Paramedics only.

1. Indications: unstable patient with a pulse requiring cardioversion
2. Contraindications: heart rate < 150 unless ordered by medical control
3. Technique:
 - a. Consider IV and sedation per protocol
 - b. Turn synchronizer switch "on". Assure QRS complex is marked.
 - c. Apply defibrillator paddles/pads according to manufacturer specifications.
 - d. Charge defibrillator to energy level specified in appropriate protocol or according to manufacturer specifications.
 - e. Check Rhythm.
 - f. Cardiovert patient
 - g. Recheck pulse and rhythm
 - h. If rhythm does not convert, re-cardiovert according to the appropriate protocol.
 - i. If ventricular fibrillation occurs, deactivate synchronized mode and defibrillate.

Transcutaneous Pacing

Note: This procedure is to be used in conjunction with the appropriate protocol by Paramedics only.

1. Indications: bradycardias/heartblock with inadequate perfusion
2. Technique:
 - a. Monitor EKG
 - b. Consider sedation per protocol.
 - c. Apply Pacing Electrodes (anterior – posterior preferred)
 - i. One pad to left anterior chest and one pad beneath left scapula or per manufacturer specifications.
 - ii. Pads may also go on antero-lateral (lead II position)
 - d. Assure adequate amplitude of QRS complexes.
 - e. Set external pacemaker rate to 70 B.P.M.
 - f. Rapidly dial up at increments of 10-20 MA until capture occurs.
 - i. Use only minimal MA needed for mechanical capture.
 - g. Assure adequate electrical/mechanical capture.
 - i. Electrical: Visible pacer spike immediately followed by wide QRS and T-wave.
 - ii. Mechanical: improved pulses, LOC, BP
 - h. If mechanical capture is not obtained, contact medical control. Perform CPR if appropriate.

Special Considerations for Electrical Therapy:

1. Early defibrillation is a high priority goal.
2. Dry the chest wall if wet or diaphoretic.
3. Remove medication patches.
4. Avoid placing the paddles/pads over a pacemaker or internal defibrillator.
5. If visible muscle contraction of the patient did not occur, defibrillation did not occur, inspect equipment.
6. Avoid physical contact with patient during defibrillation/cardioversion.
7. Electrical therapy may not be successful in hypothermic patients; refer to hypothermia protocol.
8. If a sinus rhythm is achieved by cardioversion and reverts to the previous rhythm, repeat the cardioversion at the same setting as was initially successful.

9. Clip/shave hair (if pads won't adhere)
10. Transcutaneous pacing may be performed in pulseless electrical activity.

Pediatric Considerations:

1. Infant paddles are to be used until 1 year of age or up to 10 kilograms.
2. Defibrillation may be performed pre-medical control.
3. Cardioversion and transcutaneous pacing post medical control.