Electrical Therapy

Purpose: To provide a procedure for the performance of appropriate electrical therapy

Automatic External Defibrillation (AED)

Refer to the Automatic External Defibrillator (AED) procedure.

Manual Defibrillation

1. Indications:
   A. Ventricular fibrillation
   B. Pulseless ventricular tachycardia

Pre-Medical Control

PARAMEDIC

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. Verify shockable rhythm.
   E. Assure that no one is touching the patient.
   F. Defibrillate patient.
   G. Immediately initiate or resume CPR.
   H. Repeat defibrillations at 2 minute intervals if the patient remains in a shockable rhythm per protocol.
   I. Continue to treat the patient according to the appropriate protocol.

3. Precautions
   A. Dry the chest-wall if wet or diaphoretic.
   B. Nitroglycerin paste should be removed; paddles should not be placed over nitroglycerin patches.
   C. Avoid placing the paddles over a pacemaker or AICD.
   D. If visible muscle contraction of the patient did not occur, defibrillation did not occur; check equipment.
   E. If pediatric pads were used with an AED prior to ALS management,
      a. Either use the AED with their pediatric pads or
      b. Remove the pediatric AED pads and use non-attenuated pediatric pads for defibrillation.
4. Complications
   A. Accidental shock of adjacent individual
   B. Skin burns resulting from inadequate contact between paddles and skin or due to inadequate conducting gel or dry conductive pads.

Synchronized Cardioversion

1. Indications: Hemodynamically unstable patient with the following rhythms:
   A. Wide Complex Tachycardia (Presumed Ventricular Tachycardia).

B. Narrow Complex Tachycardia (Supraventricular Tachycardia (SVT), or Atrial Fibrillation.

2. Contraindications: Heart rate < 150 unless ordered by medical control

Pre-Medical Control
PARAMEDIC

3. Technique:
   A. Consider IV sedation per **Patient Sedation Procedure.**
   B. Turn on defibrillator (monophasic or biphasic)
   C. Attach monitor leads to the patient and ensure proper display of the patient's rhythm.
   D. Turn SYNC on, assure that QRS complex is marked
   E. Apply defibrillator paddles/pads according to manufacturer specifications.
   F. Charge defibrillator to energy level specified in appropriate protocol or according to manufacturer specifications.
   G. Check Rhythm.
   H. Assure that no one is touching the patient
   I. Cardiovert patient
   J. Recheck pulse and rhythm
   K. If rhythm does not convert, repeat cardioversion according to the appropriate protocol.
   L. Recheck the "sync mode" after each synchronized cardioversion as many defibrillators default back to unsynchronized mode.
   M. If ventricular fibrillation occurs, deactivate synchronized mode and defibrillate.

4. Precautions
   A. Same as for defibrillation
   B. In "sync" mode, the button(s) need to be held until a shock is delivered. If a shock is not delivered the first time, hold the buttons again.
   C. If a sinus rhythm is achieved by cardioversion, even briefly, and then reverts to previous rhythm, repeat the cardioversion at the same setting as was initially successful.

5. Complications
   A. Accidental shock of adjacent individual
   B. Skin burns resulting from inadequate contact between paddles and skin or due to inadequate conducting gel or dry conductive pads.

Transcutaneous Pacing (TCP)

1. Indications: Symptomatic Bradycardia with inadequate perfusion.

Pre-Medical Control
PARAMEDIC

2. Technique:
   A. Monitor rhythm.
   B. ECG electrodes must be in place, along with pacing pads or combo-pads, in order for the pacer to function.
   C. Apply pacing electrodes per manufacturer's instructions.
   D. Consider sedation, per **Patient Sedation Procedure.**

E. If QRS complexes are present, select a lead in which the QRS is the most positive or upright (so machine can sense their presence).
F. Set external pacemaker rate to 60 bpm to begin.
G. Initiate pacing and increase MA output until evidence of capture has occurred
H. Increase at increments of 20 MA for unconscious patients and 5 MA for conscious patients.
    a. Use minimal MA needed for mechanical capture.
I. Run an rhtyhm strip and save.
J. Assure adequate electrical and mechanical capture.
    a. Electrical:
        1. Visible pacer spike immediately followed by wide QRS and broad T waves.
    b. Mechanical:
        1. Palpable Pulses, improved LOC; improved BP; improved patient color
K. If mechanical capture is not obtained, contact medical control. Perform CPR if appropriate.

3. Precautions
    A. Use of transcutaneous pacemakers can cause painful muscle contractions. Consider the use of sedation in patients that are awake. See **Patient Sedation Procedure**

4. Contraindications
    A. Wet environment
    B. Burns to the chest (relative)

Special Considerations for Electrical Therapy:

1. Electrical therapy may not be successful in hypothermic patients; refer to **Hypothermia Cardiac Arrest Protocol.**