REGION I EMERGENCY MEDICAL SERVICES
STANDING MEDICAL ORDERS
EMT – Intermediate

SMO: Pulseless Electrical Activity (PEA)

Overview: Pulseless Electrical Activity (PEA) refers to any semiorganized electrical activity that can be seen on the monitor screen although the patient lacks a palpable pulse. The definition specifically excludes Ventricular Fibrillation (VF), ventricular tachycardia (VT), and asystole. EARLY consideration and treatment of possible causes of PEA is essential (see treatment).

INFORMATION NEEDED
__History of arrest:
__Witnessed collapse: time down and preceding symptoms
__Unwitnessed collapse: time down and preceding symptoms if known
__Bystander CPR and treatments, including First Responder, AED or PAD defibrillation, given prior to arrival
__Past medical history: diagnosis, medications
__Scene: evidence of drug ingestion, hypothermia, trauma, Valid DNR form or medallion, nursing home or hospice patient

OBJECTIVE FINDINGS
__Pulseless
__Apneic
__Organized Electrical Activity on the monitor (**not** VT, V-Fib or Asystole)

TREATMENT
__Start CPR if indicated (See Guidelines for Determining Death in the Field Policy)
__Ensure adequacy of CPR
__Advanced Airway Management; confirm tube placement
__Assess for possible causes of PEA and administer corresponding treatments:

5 Reversible Causes ("H") and associated prehospital treatments
- Hypovolemia (give fluid bolus)
- Hypoxia (secure airway and ventilate patient)
- Hydrogen ion (acidosis) (secure airway, ventilate patient, consider sodium bicarbonate)

- Hyperkalemia/Hypokalemia (consider sodium bicarbonate)
- Hypothermia (warm patient)

5 Reversible Causes ("T") and associated prehospital treatments
- Tablets (drug overdoses) (secure airway, ventilate; see Drug Overdose Protocol)
- Tamponade (cardiac) (secure airway, ventilate)
- Tension pneumothorax (secure airway, ventilate, needle decompression)
- Thrombosis-heart (AMI) (secure airway and ventilate)
- Thrombosis- lungs (pulmonary embolus) (secure airway and ventilate)

TREATMENT (cont)

__IV of NS;
__Give 500cc fluid challenge, repeat if blood pressure not restored
__**Epinephrine 1mg IVP**; repeat q 3 to 5 min if blood pressure not restored
__Assess for possible causes of PEA and administer corresponding treatments
__If heart rate <60, give **Atropine** 1 mg IVP, repeat q 3 to 5 min. to a total dose of 3 mg
__**Sodium Bicarbonate 1mEq/kg IVP** for suspected hyperkalemia (history of renal failure, dialysis, or potassium ingestion), diabetic patient with possibility of DKA, or tricyclic or phenobarbital overdose
__If organized rhythm with hypotension (SBP < 90) develops, after treating reversible causes of PEA, administer fluid boluses of 500 cc each; titrate to SBP>90 mm Hg.

Documentation for Adherence to Protocol:

__CPR performed
__Intubation or BLS airway management performed
__Epinephrine administered
__If a cause is documented, appropriate treatment is given, e.g. Hypovolemia-fluid bolus

PRECAUTIONS AND COMMENTS

- Epinephrine, Atropine, Lidocaine and Naloxone may be administered via ETT. ET drug doses are double the standard IV dose. ET drugs should not exceed 10 ml for any single dose. Maximum total doses of drugs are also doubled for ETT administration. Relative effectiveness of ET drug administration is in question.
- External pacing has not been shown to be effective in most patients presenting in bradyasystolic cardiac arrest.

REGION I EMERGENCY MEDICAL SERVICES
STANDING MEDICAL ORDERS
EMT – Paramedic

SMO: Pulseless Electrical Activity (PEA)

Overview: Pulseless Electrical Activity (PEA) refers to any semiorganized electrical activity that can be seen on the monitor screen although the patient lacks a palpable pulse. The definition specifically excludes Ventricular Fibrillation (VF), ventricular tachycardia (VT), and asystole. EARLY consideration and treatment of possible causes of PEA is essential (see treatment).

INFORMATION NEEDED
__History of arrest:
__Witnessed collapse: time down and preceding symptoms
__Unwitnessed collapse: time down and preceding symptoms if known
__Bystander CPR and treatments, including First Responder, AED or PAD defibrillation, given prior to arrival
__Past medical history: diagnosis, medications
__Scene: evidence of drug ingestion, hypothermia, trauma, Valid DNR form or medallion, nursing home or hospice patient

OBJECTIVE FINDINGS
__Pulseless
__Apneic
__Organized Electrical Activity on the monitor (**not** VT, V-Fib or Asystole)

TREATMENT
__Start CPR if indicated (See Guidelines for Determining Death in the Field Policy)
__Ensure adequacy of CPR
__Advanced Airway Management; confirm tube placement
__Assess for possible causes of PEA and administer corresponding treatments:

5 Reversible Causes ("H") and associated prehospital treatments
- Hypovolemia (give fluid bolus)
- Hypoxia (secure airway and ventilate patient)
- Hydrogen ion (acidosis) (secure airway, ventilate patient, consider sodium bicarbonate)
- Hyperkalemia/Hypokalemia (consider sodium bicarbonate)
- Hypothermia (warm patient)

5 Reversible Causes ("T") and associated prehospital treatments
- Tablets (drug overdoses) (secure airway, ventilate; see Drug Overdose Protocol)
- Tamponade (cardiac) (secure airway, ventilate)
- Tension pneumothorax (secure airway, ventilate, needle decompression)
- Thrombosis-heart (AMI) (secure airway and ventilate)
- Thrombosis- lungs (pulmonary embolus) (secure airway and ventilate)

TREATMENT (cont)

__IV of NS;
__Give 500cc fluid challenge, repeat if blood pressure not restored
__**Epinephrine 1mg IVP**; repeat q 3 to 5 min if blood pressure not restored
__Assess for possible causes of PEA and administer corresponding treatments
__If heart rate <60, give **Atropine** 1 mg IVP, repeat q 3 to 5 min. to a total dose of 3 mg
__ **Sodium Bicarbonate 1mEq/kg IVP** for suspected hyperkalemia (history of renal failure, dialysis, or potassium ingestion), diabetic patient with possibility of DKA, or tricyclic or phenobarbital overdose
__If organized rhythm with hypotension (SBP < 90) develops, after treating reversible causes of PEA, consider fluid boluses of 500cc each and/ or **Dopamine** titrated to SBP>90 mm Hg. Start at 10mcg/kg/minute and titrate up in increments of 5mcg/kg/minute until SBP >90 or maximum of 20 mcg/kg/minute reached.

Documentation for Adherence to Protocol:

__CPR performed
__Intubation or BLS airway management performed
__Epinephrine administered
__If a cause is documented, appropriate treatment is given, e.g. Hypovolemia-fluid bolus

PRECAUTIONS AND COMMENTS

- Epinephrine, Atropine, Lidocaine and Naloxone may be administered via ETT. ET drug doses are double the standard IV dose. ET drugs should not exceed 10 ml for any single dose. Maximum total doses of drugs are also doubled for ETT administration. Relative effectiveness of ET drug administration is in question.
- External pacing has not been shown to be effective in most patients presenting in bradyasystolic cardiac arrest.