

# Cardiac Arrest – Pulseless Electrical Activity Protocol

revised October 2008



---

## Preamble

Cardiac arrest with pulseless electrical activity indicates the presence of cardiac electrical activity in the absence of cardiac contractile activity. This can occur due to a variety of conditions. Unless the underlying condition is identified and corrected, the patient is not likely to be resuscitated. This protocol manages some of the potentially correctable causes of pulseless electrical activity.

Potential causes of pulseless electrical activity include hypovolemia, hypoxia, acidosis, hyper / hypokalemia, hypothermia, drug overdose, cardiac tamponade, tension pneumothorax, and coronary or pulmonary artery thrombosis.

## Requirements

1. Fully licensed Technician-Paramedic.
2. Certification in tracheal intubation or one of the double-lumen airways protocols by the Medical Director.
3. Certification in cardiac arrest – pulseless electrical activity protocol by the Medical Director.
4. Certification in other “cardiac arrest” protocols as determined by the Medical Director.
5. Current certification as an advanced cardiac life support provider.

## Indications

1. Patient with cardiac electrical activity on the cardiac monitor but absent vital signs or evidence of spontaneous circulation.

## **Contraindications**

1. Patient age less than 16 years.

## **Drug Doses and Frequencies**

1. epinephrine

IV: 1 mg IV bolus; repeat q3-5minutes prn

ETT: 2 mg diluted in 10 ml normal saline; repeat q3-5minutes prn

2. atropine

IV: 1 mg IV bolus; repeat q3-5minutes prn

ETT: 2 mg diluted in 10 ml normal saline; repeat q3-5minutes prn

maximum total dose by any route: 0.04 mg / kg

## **Procedure**

1. Perform patient assessment and record vital signs.
2. Assess that patient meets criteria for this protocol.
3. Ensure there are no contraindications to use of this protocol.
4. Initiate and continue cardiopulmonary resuscitation (CPR).
5. Monitor ECG and confirm pulseless electrical activity.
6. Consider possible causes. If a particular cause is identified and can be managed using an alternate emergency treatment protocol, go to that protocol and begin treatment.
7. Intubate (using endotracheal tube or double-lumen airway) and ventilate.
8. Initiate large-bore intravenous with normal saline, infusing wide open.
  - patient should be reassessed for return of vital signs every 500 ml
  - when a maximum of 2 liters has been reached, infuse at TKVO.
9. If patient is a known dialysis patient, or if a fistula is noted, go to Cardiac Arrest Dialysis protocol.
10. Administer epinephrine. Repeat every 3-5 minutes prn.

11. Administer atropine if heart rate is less than 60 per minute and there is no pulse.  
Repeat every 3-5 minutes prn until the maximum dose has been reached.
12. Reassess rhythm and pulse after each intervention.
13. Initiate transport.
14. Notify the receiving facility of patient's current condition, any changes in condition, and estimated time of arrival.

### **Documentation Requirements**

The following information must be documented on the patient care report form:

1. Patient's presenting signs and symptoms, including vital signs.
2. Indications for protocol use.
3. Dose(s), time(s), routes(s), and effect(s) of medications used.
4. All cardiac rhythm strips.
5. Repeat assessment and vital signs, as indicated.
6. Changes from baseline, if any, that occur during treatment or transport.
7. Signature and license number of EMS personnel performing any transfer of function skills.

### **Certification Requirements**

1. Attend in-depth classes and lectures on static and dynamic rhythm interpretation.
2. Demonstrate an understanding of the pharmacology, mechanism of action, and potential side effects of epinephrine and atropine.
3. Demonstrate competency during practical scenarios incorporating variations of the cardiac arrest – pulseless electrical activity protocol.
4. Pass a written examination.
5. Pass practical scenarios incorporating variations of the cardiac arrest – pulseless electrical activity protocol.

6. Certification is by the Medical Director.

### **Recertification Requirements**

1. Review class and recertification is done every 12 months.
2. A record will be kept to document all cases where this protocol is used.
3. Advanced cardiac life support provider certification must be kept current.

### **Decertification**

1. Decertification is at the discretion of the Medical Director or the Provincial Medical Director, Emergency Medical Services, Manitoba Health & Healthy Living.

### **Quality Assurance Requirements**

1. Appropriate quality assurance policies must be in place. The Medical Director or designate must review all instances where this protocol is used. As a minimum, the following must be assessed:
  - i) appropriateness of implementation
  - ii) adherence to protocol
  - iii) any deviation from the protocol
  - iv) corrective measures taken, if indicated
2. Yearly statistics for protocol use compiled and forwarded to Emergency Medical Services, Manitoba Health & Healthy Living.