

# Bradycardia (Unstable) Pediatric Protocol

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## **Preamble**

In contrast to adults, bradycardia in pediatric patients is an indicator of a severely compromised patient. Bradycardia is rarely a sudden event and does not often result from a primary cardiac cause. When it does occur, bradycardia is usually a preterminal condition leading to cardiorespiratory arrest.

The management of a pediatric cardiopulmonary arrest patient is similar to that of adult ACLS, with particular emphasis ensuring airway maintenance, proper oxygenation and ventilation, establishing vascular access, and treatment of reversible causes.

## **Requirements**

1. Fully licensed Technician-Advanced Paramedic.
2. Certification in tracheal intubation – pediatric – protocol by the Medical Director.
3. Certification in cardiac arrest – pediatric bradycardia protocol by the Medical Director.
4. Certification in the remaining “cardiac arrest” protocols for pediatric patients by the Medical Director.
5. Certification in intraosseous cannulation and infusion protocol (if a treatment option).
6. Current certification as an advanced cardiac life support provider.
7. Current certification as a pediatric advanced life support provider.

## **Indications**

1. Bradycardic patient (ventricular rate less than 60 beats per minute) with any one of the following:
  - evidence of poor perfusion
  - hypotension
  - respiratory distress

## **Contraindications**

1. Patient age 16 years or greater.

## **Drug Dose and Frequency**

1. epinephrine

IV / IO\*: 0.01 mg / kg IV/IO\* bolus; repeat q3-5minutes prn  
ETT: 0.1 mg / kg diluted in normal saline to a total of 3-5 ml  
repeat q3-5minutes prn

2. atropine

IV / IO\*: 0.02 mg / kg IV/IO\* bolus  
minimum dose administered must be 0.1 mg  
repeat once prn  
ETT: same as the IV dose  
dilute in normal saline to a total of 3-5ml  
dose may be repeated once prn

maximum single dose by any route: 0.5 mg (age 0-9)  
1.0 mg (age 10-15)

maximum total dose: 1.0 mg (age 0-9)  
2.0 mg (age 10-15)

- \* intraosseous route is not permitted unless approved for use by the regional EMS medical director and the EMS personnel is certified in the intraosseous cannulation and infusion protocol

## **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 basic life support treatment measures, including supplemental oxygen.
  - these take precedence over management using this protocol
5. Initiate CPR if the heart rate remains less than 60 per minute and there is evidence of severe cardiorespiratory compromise despite adequate oxygenation and ventilation.
6. Initiate cardiac monitoring. Confirm cardiac rate and determine rhythm. If, at any time, a rhythm other than bradycardia appears, continue as per protocol for that rhythm.
7. Intubate and ventilate if indicated.
8. Establish intravenous line of normal saline, TKVO.
  - intravenous fluids may be infused at a different rate if indicated
  - consider intraosseous cannulation only if indicated, intraosseous route is approved for use by regional EMS medical director, and the EMT is certified in intraosseous cannulation and infusion protocol
9. Administer epinephrine as per drug dose and frequency regimen, if indicated.
10. Administer atropine as per drug dose and frequency regimen, if indicated.
11. Initiate transport, unless other emergency condition required immediate treatment.
12. Monitor and reassess patient en route.
13. Notify receiving facility of patient's condition and medication used.

## **Documentation Requirements**

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

1. Patient's presenting signs and symptoms, including vital signs and initial cardiac rhythm.
2. Indications for protocol use.

3. All cardiac rhythm strips.
4. Dose(s), time(s), route(s), and effect(s) of atropine used.
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 and mechanism of action of atropine.
3. Pass a written examination.
4. Pass practical scenarios incorporating variations of the bradycardia (unstable) – pediatric protocol.
5. Certification is by the Medical Director.

### **Recertification Requirements**

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

### **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.