

 Shared health Soins communs Manitoba	M05 - EPINEPHRINE (ADRENALINE)	
	Version date: 2025-04-15	Effective date: 2025-04-30 (07:00)
ERS HIGH-ALERT MEDICATION (A03)		

INDICATIONS
<ul style="list-style-type: none"> • Cardiac arrest (table A) • Newborn resuscitation (table B) • Push-dose pressor support (table C) • Anaphylaxis, refractory anaphylaxis, or anaphylactic shock (table D) • Beta blocker or calcium channel blocker toxicity (table E) • Bradycardia (table F) • Asthma / bronchospasm (table G) • Croup (table H)

WARNINGS
<ul style="list-style-type: none"> • For preparation instructions refer to H10 (DOUBLE-CHECK DILUTION CALCULATIONS)

TABLE A: CARDIAC ARREST	
INTRAVENOUS (INTRAOSSEOUS) INJECTION	ICP / ACP
<p><u>NOTE</u>: USE CARDIAC EPINEPHRINE (0.1 MG/ML)</p> <p>ADULTS:</p> <ul style="list-style-type: none"> • Administer 1 mg (10 ml) by rapid push & follow with flush • Repeat every 3 to 5 minutes as required <p>INFANTS / CHILDREN / ADOLESCENTS:</p> <ul style="list-style-type: none"> • Administer 0.01 mg/kg (0.1 ml/kg) by rapid push & follow with flush • Maximum per dose = 1 mg (10 ml) • Repeat every 3 to 5 minutes as required 	
ENDOTRACHEAL ²	ACP
<p><u>NOTE</u>: USE 1 MG/ML CONCENTRATION</p> <p>ADULTS:</p> <ul style="list-style-type: none"> • Dilute 2 to 2.5 mg (2 to 2.5 ml) in 10 ml of sterile saline • Instill & rapidly ventilate for 5 breaths • Repeat every 3 to 5 minutes as required 	

INFANTS / CHILDREN / ADOLESCENTS:

- Dilute 0.1 mg/kg (0.1 ml/kg) in 2.5 to 5 ml sterile saline
- Maximum per dose = 2.5 mg
- Instill & rapidly ventilate for 5 breaths
- Repeat every 3 to 5 minutes as required

TABLE B: NEWBORN RESUSCITATION**INTRAVENOUS (INTRAOSSEOUS) INJECTION**

ACP

NOTE: USE CARDIAC EPINEPHRINE (0.1 MG/ML)

UP TO 5 DAYS:

- Administer 0.01 mg/kg (0.1 ml/kg) by rapid push & follow with a flush of 0.5 to 1 ml saline
- Maximum per dose = 0.03 mg
- Repeat every 3 to 5 minutes as required

ENDOTRACHEAL ²

ACP

NOTE: USE CARDIAC EPINEPHRINE (0.1 MG/ML)

UP TO 5 DAYS:

- Administer 0.1 mg/kg (1 ml/kg) directly into the endotracheal tube
- Ventilate with several breaths to distribute into the lungs
- Maximum per dose = 0.4 mg
- Repeat every 3 to 5 minutes as required

QUICK DOSING GUIDE FOR NEWBORN RESUSCITATION**INTRAVENOUS (INTRAOSSEOUS) INJECTION****ENDOTRACHEAL ³**

kg	mg	ml	kg	mg	ml
≤ 1	0.01	0.1	≤ 1 kg	0.1	1
1 - 2	0.02	0.2	1 - 2	0.2	2
≥ 3	0.03	0.3	2 - 3	0.3	3
			≥ 4	0.4	4

TABLE C: PUSH-DOSE PRESSOR SUPPORT ³

INTRAVENOUS (INTRAOSSEOUS) INJECTION	ACP
<p><u>NOTE</u>: REFER TO H10 FOR THE CORRECT DILUTION</p> <p>ADULTS:</p> <ul style="list-style-type: none"> Administer 10 to 50 mcg by slow push over 1 to 2 minutes Repeat every 3 to 5 minutes as required If ongoing blood pressure support is required, transition to a continuous vasopressor infusion as soon as possible 	

TABLE D: ANAPHYLAXIS, REFRACTORY ANAPHYLAXIS, OR ANAPHYLACTIC SHOCK

AUTOINJECTOR	EMR / PCP / ICP / ACP
<p>6 YEARS & OLDER:</p> <ul style="list-style-type: none"> Inject 0.3 mg (orange autoinjector) in the anterolateral thigh Repeat once in 10 minutes if required <p>UP TO 6 YEARS:</p> <ul style="list-style-type: none"> Inject 0.15 mg (green autoinjector) to anterolateral thigh If a pediatric autoinjector is not available, use the adult dose Repeat once in 10 minutes if required 	
INTRAMUSCULAR INJECTION	PCP / ICP / ACP
<p><u>NOTE</u>: USE 1 MG/ML CONCENTRATION</p> <p>ADULTS / ADOLESCENTS:</p> <ul style="list-style-type: none"> Inject 0.5 mg in the anterolateral thigh Repeat every 10 minutes as required <p>INFANTS / CHILDREN:</p> <ul style="list-style-type: none"> Inject 0.01 mg/kg (0.1 ml/kg) in the anterolateral thigh (<i>see the quick dosing guide below</i>) Repeat every 10 minutes as required 	
INTRAVENOUS (INTRAOSSEOUS) INJECTION	ACP
<p><u>NOTE</u>: REFER TO H10 FOR THE CORRECT DILUTION</p> <p>ADULT:</p> <ul style="list-style-type: none"> Administer 10 to 50 mcg by slow push over 1 to 2 minutes Repeat every 3 to 5 minutes as required 	

INTRAVENOUS (INTRAOSSEOUS) INFUSION			ACP		
<u>NOTE:</u> REFER TO H10 FOR THE CORRECT DILUTION					
ALL AGES:					
<ul style="list-style-type: none">• Begin the continuous infusion at 0.1 mcg/kg/min• Titrate in increments of 0.05 mcg/kg/min every 2 to 3 minutes to the response targets• Maximum infusion rate = 2 mcg/kg/min					
QUICK PEDIATRIC IM DOSING GUIDE FOR ANAPHYLAXIS					
Weight (kg)	Dose (mg)	Volume (ml)	Weight (kg)	Dose (mg)	Volume (ml)
5 - 10	0.1	0.1	31 - 35	0.35	0.35
11 - 15	0.15	0.15	36 - 40	0.4	0.4
16 - 20	0.2	0.2	41 - 45	0.45	0.45
21 - 25	0.25	0.25	≥ 46	0.5	0.5
26 - 30	0.3	0.3			

TABLE E: BETA BLOCKER OR CALCIUM CHANNEL BLOCKER TOXICITY ⁴	
INTRAVENOUS (INTRAOSSEOUS) INFUSION	ACP
NOTE: REFER TO H10 FOR THE CORRECT DILUTION ALL AGES: <ul style="list-style-type: none"> Begin infusion at 0.1 mcg/kg/min Titrate in increments of 0.05 mcg/kg/min every 2 to 3 minutes to response target Maximum infusion rate = 2 mcg/kg/min 	

TABLE F: BRADYCARDIA	
INTRAVENOUS (INTRAOSSEOUS) INJECTION ³	ACP
NOTE: REFER TO H10 FOR THE CORRECT DILUTION ADULTS: <ul style="list-style-type: none"> Administer 20 to 50 mcg by slow push over 1 to 2 minutes Repeat every 3 to 5 minutes as required 	
NOTE: USE CARDIAC EPINEPHRINE (0.1 MG/ML) INFANTS / CHILDREN / ADOLESCENTS: <ul style="list-style-type: none"> Administer 0.01 mg/kg (0.1 ml/kg) by slow push over 1 to 2 minutes Repeat every 3 to 5 minutes as required 	

INTRAVENOUS (INTRAOSSEOUS) INFUSION	ACP
<p>NOTE: REFER TO H10 FOR THE CORRECT DILUTION</p> <p>ADULTS:</p> <ul style="list-style-type: none"> • Begin infusion at 0.05 to 0.1 mcg/kg/min • Titrate in increments of 0.05 mcg/kg/min every 2 to 3 minutes to achieve target heart rate • Maximum infusion rate = 1 mcg/kg/min 	

TABLE G: ASTHMA / BRONCHOSPASM ⁵	
INTRAMUSCULAR	PCP / ICP / ACP
<p>NOTE: USE THE 1 MG/ML CONCENTRATION</p> <p>ADULTS / ADOLESCENTS:</p> <ul style="list-style-type: none"> • Use 1 mg/ml solution • Administer 0.5 mg by deep injection in the anterolateral thigh • Repeat once in 20 minutes if required <p>INFANTS / CHILDREN:</p> <ul style="list-style-type: none"> • Use 1 mg/ml solution • Administer 0.01 mg/kg (maximum per dose = 0.5 mg) by deep injection in the anterolateral thigh • Repeat once in 20 minutes if required 	

TABLE H: DOSING FOR CROUP	
NEBULIZER	PCP / ICP / ACP
<p>NOTE: USE 1 MG/ML CONCENTRATION</p> <p>UP TO 6 YEARS:</p> <ul style="list-style-type: none"> • Use 1 mg/ml solution • Add 0.5 ml/kg (maximum per dose = 5 ml) to sterile saline to yield a total volume of 5 ml • Administer over 15 minutes • If the first dose is ineffective, a second dose can be repeated after 15 minutes • If the time to medical care will be delayed, repeat every 2 hours as required ⁶ 	

NOTES
<ol style="list-style-type: none"> 1. Do not mix epinephrine with sodium bicarbonate. 2. Endotracheal administration results in lower coronary perfusion pressure, but may be an option if vascular access is delayed or cannot be obtained.

3. The safest way to administer a vasopressor is by continuous infusion, but establishing an infusion takes time. A critically low mean arterial pressure (MAP) or extreme bradycardia may be the final step before cardiovascular collapse and cardiac arrest, so rapid intervention is required.

Push-dose pressor support with epinephrine has been shown to be a safe and effective temporizing measure for immediate BP control in adults with shock.

Similarly, for the patient with bradycardia who may be on the verge of cardiac arrest, bolus epinephrine administration may be used as a bridge to establishing transcutaneous pacing (TCP) if atropine is contraindicated or ineffective.

4. Because of its propensity to cause tachycardia, epinephrine is an ideal agent in beta blocker or calcium channel blocker toxicity. A higher than usual dose may be required.
5. Intramuscular epinephrine is potentially useful in patients who cannot tolerate or cooperate with inhaled bronchodilators.
6. The effects of epinephrine for croup will generally last about 2 hours. Some children may experience a rebound with recurring or worsening symptoms after it wears off. Observe for rebound symptoms after administration.
7. When diluting epinephrine, the syringe must be clearly labelled with the final concentration.

LINKS

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| • A03 - High Alert Medications | • C12 - Beta Blocker & Calcium Channel Blocker Toxicity |
| • C02 - Advanced Cardiac Arrest | • D03 - Newborn Care & Resuscitation |
| • C05 - Bradycardia | • E01 - Croup |
| • C07.1 - Undifferentiated Adult Shock | • E03 - Anaphylaxis |
| • C07.2 - Undifferentiated Pediatric Shock | • E07 - Asthma & COPD |
| • C07.3 - Cardiogenic Shock | • F02.1 - Advanced Trauma Arrest |
| • C07.4 - Septic Shock | • H10 - ERS Medication Formulary |

APPROVED BY



Provincial Medical Director



Associate Provincial Medical Director

VERSION CHANGES (refer to X08 for change tracking)

- Addition of advanced work scope
- Addition of endotracheal dosing
- Addition of intravascular dosing for nonarrest
- Alignment of dosing for asthma & anaphylaxis
- Removal of “refractory” from asthma indication
- New indications: push-dose pressor support, bradycardia & newborn resuscitation

