



**Emergency Medical Assistants
Licensing Board**

**British Columbia Provincial
Examination Guidelines**

**Emergency Medical Responder
&
Primary Care Paramedic**

April 2025

Table of Contents

Introduction	5
Patient Assessment Model	6
Patient Assessment Model - Primary/Initial Survey Assessment Interventions	11
Critical History Questions	12
Assessing LOC Using AVPU	13
Abbreviations	14
Patient Care Report	17
Treatment Section	18
References	18
Wound Care	19
Preservation of Amputated Parts	20
Musculoskeletal Injuries	21
Hip Dislocation/Fracture	22
Fracture Management – Traction Splint	23
Pelvis binding	24
Spinal Management	25
Traumatic Brain Injuries	27
Burn Management	28
Hypothermia	29
Stroke	30
Abdominal Injuries	32
Congestive Heart Failure or Pulmonary Edema	33
Chest Trauma	34
Electrical Contact	35
Heat Exhaustion/ Heatstroke	36
Drowning/Near Drowning	37
Treatment Protocols	38
IV Procedures	38
IV Maintenance	39

IV Maintenance Rate Calculation	39
Adult CPR/AED	40
Child Infant CPR/AED	41
CPR/AED - Basic concepts:	42
Adult CPR/AED Basics:	43
Infant/Child CPR/AED Basics	43
Child (1 year of age to puberty) Sudden Cardiac Arrest	44
Treatable causes of cardiac arrest and transporting	45
Foreign Body Airway Obstruction	46
Cardiac Chest Pain	47
Nausea – Vomiting PCP	48
Shortness of Breath (SOB) With History of Asthma/COPD	49
Continuous Positive Airway Pressure (CPAP) PCP	51
CPAP Guidelines	52
Hypovolemia	54
Anaphylaxis	55
Suspected Narcotic Overdose	56
Diabetic Emergencies	57
Drug Monographs	58
Acetaminophen	58
Aspirin (ASA)	60
D ₁₀ W (Dextrose 10% in Water)	61
Dexamethasone	62
Dimenhydrinate	63
Diphenhydramine	64
Entonox (Nitrous Oxide)	65
Epinephrine	66
Glucagon	67
Ibuprofen	68
Ipratropium	70

Methoxyflurane (Pentrox)	71
Naloxone (Narcan).....	72
Nitroglycerin	73
Ondansetron.....	75
Oral Glucose.....	76
Salbutamol	77
Tranexamic Acid.....	78
EMA Licensing Board Examinations	79
Practical Examination Grading Criteria	80
Practical Exam Reviews	81
Written Exam Reviews	81
Exam Accommodations.....	82
EMR Examination Requirements	83
Scheduling EMR Examinations	85
PCP Examination Requirements	86
Scheduling PCP Examinations	88
Applying for a Licence	89
Licence Fees	89
How to Pay your Licence Fees	90
Licence Applications.....	91
EMA Licensing Board Examination Policies	92
Change Index	93

Introduction

For the purposes of licensure and licensing examinations, the information contained within this document supersedes all previous applicable protocols and procedures.

Research and development in emergency health services is continuous and these guidelines will be updated to reflect best practice. The most current version of this document is available through the EMA Licensing Branch [website](#).

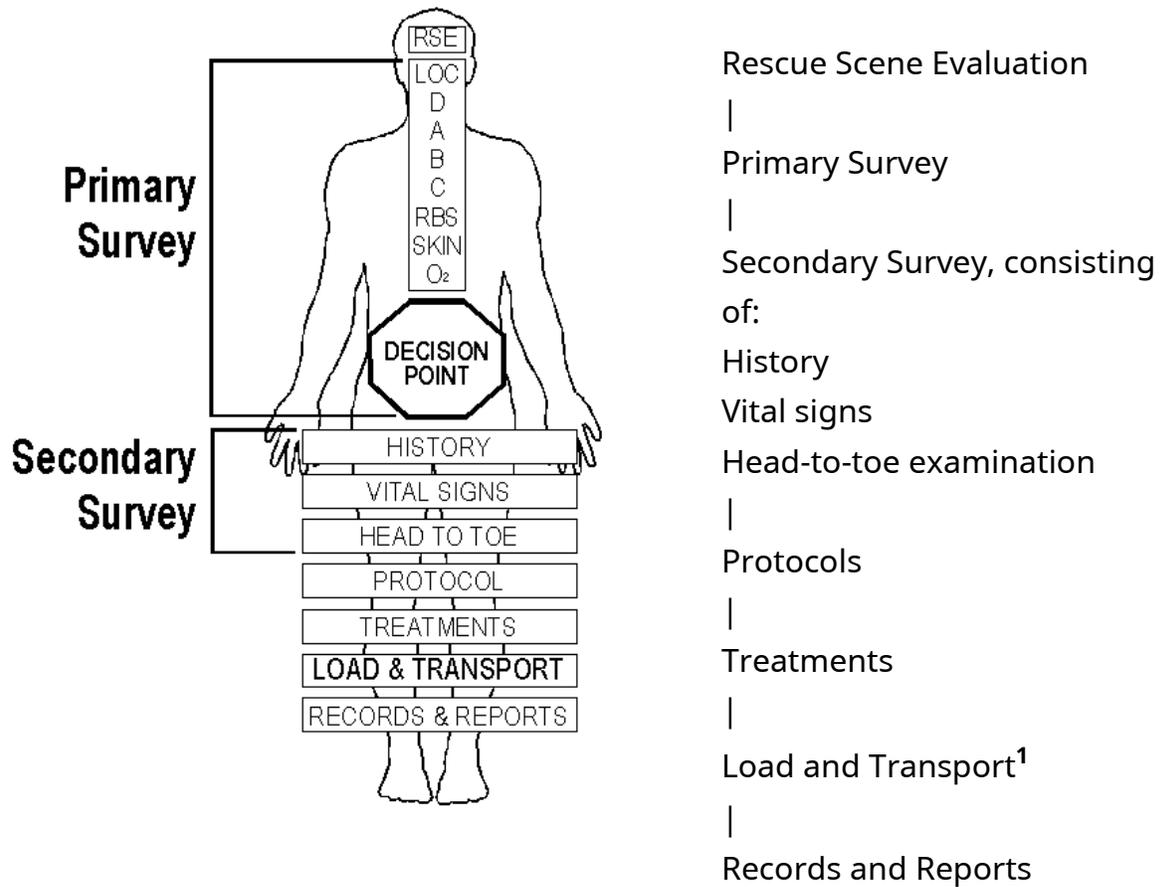
The Board identifies an EMR candidate as someone who has completed a Board recognized EMR certification program and a PCP candidate as someone who has completed a Board recognized PCP certification program. To find a Board recognized training program click [here](#).

This document covers:

- Treatment guidelines for EMR and PCP levels
- Examination policies
- Examination requirements and scheduling instructions
- Drug monographs
- Licence application instructions

Email Contact: clinicaladvisor@gov.bc.ca or getanexam@gov.bc.ca

Patient Assessment Model



¹This model depicts a generic management approach without consideration for patient condition. Depending upon patient condition (i.e. stable vs unstable) and the ability to provide definitive care, as outlined in protocols, load and transport may be appropriate any time after the “decision point”.

Findings in Unstable Adult Patients

For practical examination purposes patients who present with any of the criteria below should be considered unstable and transported appropriately.

Findings in the Primary Survey:

- Altered LOC or unconsciousness
- Difficulty maintaining the patient's airway
- Respiratory distress / accessory muscle use / respiratory arrest
- Absent radial pulses
- Cardiac arrest
- Hemorrhage requiring tourniquet application or wound packing
- Cool pale clammy skin secondary to suspected shock
- Suspected CVA
- Heat stroke
- Severe hypothermia
- Suspected cardiac chest pain
- Anaphylaxis

Anatomical Findings:

- Open or depressed skull fracture
- New onset neurological deficits
- Major penetrating trauma to the head, neck, torso, and extremities proximal to the knee or elbow
- Facial injury with potential airway compromise
- Two or more proximal long bone fractures
- Crushed, de-gloved, or mangled extremity
- Pulseless extremity (after 1 attempt at re-alignment fails to restore circulation)
- Amputation proximal to wrist or ankle
- Chest wall instability or deformity (i.e. flail chest)
- Unstable pelvis
- Major burns:
 - Partial thickness > 20% BSA
 - Full thickness > 10% BSA
 - Facial or airway burns (with or without inhalation injury)
 - Third degree burns involving the eyes, neck, hands, feet, groin
 - Burns that fully encircle a limb
 - High voltage electrical burns

Mechanism of Injury:

- Free fall from a height > 6 meters (~ 20 feet)
- High risk automobile crash:
 - Significant intrusion into the passenger compartment (>0.3m on occupant side or >.5m any site including roof)
- Ejection from the vehicle

- Death in the passenger compartment
- Auto versus pedestrian / cyclist at > 30kph
- Motorcycle crash > 30kph

Patient Assessment Model – Guidelines

The Patient Assessment Model consists of seven components, each of which has multiple steps. The sequence of these components may vary based on the nature and flow of the call. The following table lists the steps and the purpose of each component.

COMPONENT	STEPS	PURPOSE
Rescue Scene Evaluation	<ul style="list-style-type: none"> • Hazards • Environment • Mechanism of injury • People • Additional resources • General Impression 	The purpose of the RSE is to ensure that the scene is safe for the crew and patient and to provide information about the potential nature and extent of the patient's injuries or condition.
Primary Survey	<ul style="list-style-type: none"> • LOC • Spinal Precautions • Airway • Breathing • Circulation • Rapid Body Survey • Survey interventions <ul style="list-style-type: none"> ▪ Skin ▪ Oxygen ▪ Airway ▪ Position ▪ Bandage ▪ Pelvic Binder ▪ Blanket (warmth) • Transport Decision 	The purpose of the primary survey is to identify and manage life- and limb-threatening injuries and conditions.
Secondary Survey	<ul style="list-style-type: none"> • History • Vital signs • Head-to-toe examination • Functional inquiry (PCP required) 	The purpose of the secondary survey is to identify the patient's chief complaint, establish a baseline set of vital signs and gather information about the patient's injuries and condition.
Treatments	<ul style="list-style-type: none"> • Wound Care • Fracture management • Spinal management • Burn management • Management of specific injuries and conditions 	Treatments are first aid procedures that aim to arrest injury progression (burns, hemorrhage) or support sustained injuries (fracture and spinal management).
Protocols	<ul style="list-style-type: none"> • Various 	Protocols are preset algorithms guiding the EMA through administration of medications or the application of medical equipment.

EMA Licensing Board
Ministry of Health
British Columbia Provincial Examination Guidelines

COMPONENT	STEPS	PURPOSE
Load and Transport	<ul style="list-style-type: none"> • Load the stretcher into the ambulance • Reassess the ABCI (injuries) after each major move • Prepare the ambulance and equipment (i.e. lighting, temperature, resuscitation equipment, etc) • Consider bringing additional resources (i.e. First Responders) • Transport mode • Notification if appropriate 	
Records and Reports	<ul style="list-style-type: none"> • Hand off report • Documentation 	Reports are used to gather or give information regarding the patient's status and treatment. Forms are used to record assessment and treatment of a patient.

Patient Assessment Model - Primary/Initial Survey Assessment Interventions

PRIMARY SURVEY INTERVENTION	INDICATIONS
Cervical spine stabilization	<ul style="list-style-type: none"> • Meets NEXUS or Canadian C-Spine indications • Obvious injury above the level of the clavicles • Unconscious patient where trauma cannot be reasonably ruled out
Obstructed airway procedures	<ul style="list-style-type: none"> • Absence of respiration • Inability to ventilate the patient
Airway maintenance and suctioning	<ul style="list-style-type: none"> • Decreased level of consciousness (LOC) • Presence of fluids or potential obstructions in upper airway
Ventilating the non-breathing patient	<ul style="list-style-type: none"> • Absence of respirations
Assisting inadequate or failing respirations	<ul style="list-style-type: none"> • Abnormally fast or slow respirations • Distressed respirations • Shallow or labored respirations, especially in the presence of decreasing LOC, cyanosis, or decreased O₂ Saturations.
Sealing open chest wounds	<ul style="list-style-type: none"> • Open chest wounds
Performing CPR	<ul style="list-style-type: none"> • Absence of carotid pulse
Controlling hemorrhage	<ul style="list-style-type: none"> • Major hemorrhage
Binding pelvis	<ul style="list-style-type: none"> • Suspected fracture due to mechanism or unstable pelvis, including shock like symptoms with MOI.
Stabilizing fractures	<ul style="list-style-type: none"> • Suspected fractures
Realigning limb fractures	<ul style="list-style-type: none"> • Fractured limbs that are grossly deformed or with no distal pulses
Initiating cooling of burns	<ul style="list-style-type: none"> • Major burns
Oxygen	<ul style="list-style-type: none"> • Altered LOC • Respiratory distress • Trauma • Evidence of shock (e.g., tachycardia, tachypnea, pallor, cyanosis) • Hypoxia NYD
Gradual warming	<ul style="list-style-type: none"> • Hypothermia
Rapid cooling	<ul style="list-style-type: none"> • Hyperthermia

Critical History Questions

MVA

- Location of patients
- Which vehicle was the patient in?
- How many vehicles are involved
- Type of vehicle(s)
- Impact speed
- Exterior damage
- Interior damage/Compartment Intrusion
- Type of restraints
- Initial position and condition of patient
- Loss of consciousness
- Condition of other patients – fatality in same vehicle
- Vehicle equipped with airbags – were they deployed

Fall

- Where from
- Height
- Free fall or hit other objects during fall
- Landing surface
- Position of patient at impact – what hit first
- Initial position and condition of patient
- Has the patient moved or been moved since the incident?
- Any loss of consciousness
- Cause of fall

Pedestrian Struck

- What hit them – size, weight
- Velocity of vehicle
- What part of the vehicle hit what part of patient?
- Damage to vehicle
- Distance patient thrown
- Initial position and condition of patient
- Has the patient moved or been moved since the incident?
- Any loss of consciousness
- Condition of vehicle occupants

Shooting

- Type of firearm
- Range
- Angle of shot
- Type of bullet if possible
- Entrance and exit wounds
- Initial position and condition of patient
- Loss of consciousness

Stabbing

- Type of weapon/object
- Size – length and width of weapon
- Type of wound – slashed or stabbed
- Number of wounds
- Other injuries
- Initial position and condition of patient
- Loss of consciousness

Assessing LOC Using AVPU

A	Alert	Patient is awake, talking and should be able to maintain own airway. May need help if there is a c-spine concern and complaining of nausea or has an oral bleed.
V	Verbal	Patient responds to verbal stimulus but is drowsy. May consider placing patient semi-prone if injuries permit.
P	Pain	Patient responds only to pain stimuli. Must monitor airway closely and intervene, as necessary. Should be semi-prone, injuries permitting.
U	Unresponsive	No response to stimuli. This patient is unable to protect own airway. You must intervene and very closely monitor patient's airway.

Abbreviations

♀	Female	COPD	Chronic obstructed pulmonary disease
♂	Male		
↓	Diminished, decreased, lower	CP	Chest Pain
↑	Elevated, increased, upper	CPR	Cardiopulmonary resuscitation
>	Greater than	CSF	Cerebral spinal fluid
<	Less than	CT (CAT)	Computed tomography
=	Equals	CVA	Cerebrovascular accident
≠	Not equal	D ₅ W	Dextrose 5% in water
i, ii, iii	One, two, three	D ₁₀ W	Dextrose 10% in water
∅	None, not present, not found	DNR	Do not resuscitate
abd	Abdomen	DOA	Code 4, Dead on arrival
AED	Automatic external defibrillator	DPU	Discharge planning unit
AE, A/E	Air entry	Dx	Diagnosis
ac	Before meals	ECG, EKG	Electrocardiogram
am	Before noon	ECU	Extended care unit
ANU	Ambulance not used	EEG	Electroencephalograph
AOB	Alcohol on breath	EP	Emergency physician
approx	Approximately	ER, ED	Emergency room, department
ASA	Acetylsalicylic acid, Aspirin	ET	Endotracheal
ASAP	As soon as possible	ETA	Estimated time of arrival
bG	Blood glucose	FR	First responder
bid	Twice a day	Fx, #	Fracture
BM	Bowel movement	GI	Gastrointestinal
BP	Blood pressure	GOA	Gone on arrival
c	With	Gtt	Drop
°C	Degree centigrade	Hb	haemoglobin
C-section	Caesarean section	Hct	Hematocrit
CP	Chest pain	H ₂ O	Water
C/C	Chief complaint	Hg	Chem symbol for Mercury
‰, c/o	Complains of	Hr	hour
Ca	Cancer	Hs	Evening, at bedtime

CABG	Coronary artery bypass graft	Hx	History
CAD	Coronary artery disease	ICN	Intensive care nursery
cath	Catheter	IDDM	Insulin dependent diabetes mellitus
CBC	Complete blood count	IM	Intramuscular
cc	Cubic centimeter	IV	Intravenous
CCU	Cardiac care unit	Kg	Kilogram
CHF	Congestive heart failure	q am	Every morning
CIS	Critical incident stress	QID/qid	Four times per day
CNS	Central nervous system	q1h, q2h	Every hour, every two hours
CO ₂	Carbon dioxide	R, resp	Respirations
L 1	First lumbar vertebrae	RBC	Red blood cells
l, L	Litre	RLQ	Right lower quadrant
lg	Large	RUQ	Right upper quadrant
LLQ	Left lower quadrant	per	through, by
LOC	Level of consciousness	PERL	Pupils, equal, react to light
LUQ	Left upper quadrant	PERLA	Pupils, equal, round, react to light and accommodation
MCG, mcg	Microgram	PO	By mouth, oral
MCI	Multi-casualty incident	post-op	Post operative
mEq/L	Milliequivalents per litre	pre-op	Pre-operative
mg	Milligram	prn	As needed, as required
MI	Myocardial infarction	pt	Patient
ml, mL	Millilitre	Rx	Medications
MO	Mental observation point	R/O	Rule out
MRI	Magnetic resonance imaging	s, w/o	Without
MVA	Motor vehicle accident	SA	Sinoatrial node
NIDDM	Non-insulin dependant diabetes mellitus	SC, sc	Subcutaneous
Nitro	Nitroglycerin	SCN	Special care nursery
NKA	No known allergies	SIDS	Sudden infant death syndrome
NPO	Nothing by mouth	SOB	Shortness of breath
NS, N/S	Normal Saline	SL, sl	Sublingual
NYD	Not yet diagnosed	Stat	Immediately

		SV	Stroke volume
N ₂ O ₂	Nitrous Oxide (Entonox)	Tab	Tablet
O ₂	Oxygen	T-2	Second thoracic vertebrae
OB, OBS	Obstetrics	TIA	Transient ischemic attack
od	Once per day	tid	Three times per day
OD	Overdose	TPR	Temperature, pulse, respiration
OR	Operating room	TKO/TKVO	To keep vein open
OTC	Over the counter	TIA	Transient ischemic attack
U/K	Unknown	TPN	Total parenteral nutrition
P	Pulse	Tx	Treatment
palp	Palpation	Tx	Transmit
PAU	Psychiatric assessment unit	Vag	Vaginal
pc	After meals, after food	Yr	Year

Patient Care Report



BRITISH COLUMBIA

Ministry of Health

EMA LICENSING EVALUATIONS
PATIENT CARE REPORT

PATIENT NAME			AGE	DOCTOR	RESPONSE #	DATE OF EVALUATION (MM / DD / YYYY)									
CHIEF COMPLAINT / DESCRIPTION OF INCIDENT			ATTENDANT NAME		TIME CALL DISPATCH	_____									
			DRIVER NAME		TIME AT SCENE	_____									
MECHANISM OF INJURY / HISTORY OF ILLNESS			LEVEL APPLIED FOR		TIME TO HOSPITAL	_____									
			TRAINING INSTITUTION		TIME AT HOSPITAL	_____									
RELEVANT PAST MEDICAL HISTORY			PHYSICAL EXAM		TIME CLEAR	_____									
			STATE OF CONSCIOUSNESS		_____										
MEDICATIONS			H & N		_____										
			CHEST		_____										
ALLERGIES			C.V.S.		_____										
			ABD.		_____										
			BACK		_____										
			EXT.		_____										
			C.N.S.		_____										
			BLOOD LOSS		_____										
CARE GIVEN		AIRWAY		OXYGEN		PAIN ASSESSMENT		FRONT		BACK		PUPILS			
<input type="checkbox"/> CONTROL BLEEDING <input type="checkbox"/> DRESS WOUND <input type="checkbox"/> CPR <input type="checkbox"/> AED <input type="checkbox"/> SPINAL IMMOBILIZATION <input type="checkbox"/> IV THERAPY <input type="checkbox"/> PATIENT COMFORT/ REASSURANCE <input type="checkbox"/> FRACTURE MGMT		<input type="checkbox"/> CLEARED <input type="checkbox"/> POSITIONED <input type="checkbox"/> SUCTIONED <input type="checkbox"/> ASSISTED <input type="checkbox"/> ORAL AIRWAY		<input type="checkbox"/> MASK <input type="checkbox"/> NON-REBREATHER <input type="checkbox"/> BVM <input type="checkbox"/> POCKET MASK <input type="checkbox"/> NASAL CANNULA _____ OXYGEN LPM								R L <input type="checkbox"/> <input type="checkbox"/> EQUAL <input type="checkbox"/> <input type="checkbox"/> REACT <input type="checkbox"/> <input type="checkbox"/> DILAT. <input type="checkbox"/> <input type="checkbox"/> CONST. <input type="checkbox"/> <input type="checkbox"/> RT. LG. <input type="checkbox"/> <input type="checkbox"/> LT. LG. <input type="checkbox"/> <input type="checkbox"/> OTHER			
GCS				VITAL SIGNS						PROTOCOLS					
TIME	E	V	M	TOTAL	PULSE	RESP.	SpO ₂	BLG	TEMP.	BP	SKIN				
										/					
										/					
										/					
										/					
										/					
										/					
										/					
ADDITIONAL TREATMENTS AND COMMENTS															

HLTH 1801 2023/03/31

Treatment Section

The intent of the Treatment Section is to provide guidelines for many of the treatments that are carried out on a regular basis where protocols do not normally exist. If you require further information or detail you should refer to the appropriate training manual or references below.

References

- Advanced Cardiovascular Life Support (ACLS) Provider Manual (2020 Guidelines). Canadian Heart and Stroke Foundation
- Airway Management in Emergencies (The Infinity Edition) – Kovacs G. and Law A
- Basic Life Support Manual (2020 Guidelines) – Heart and Stroke
- Handbook of Emergency Cardiovascular Care for Healthcare Providers (2020 Guidelines) – American Heart Association
- International Trauma Life Support for Emergency Care Providers (2020) 9th Edition
- Nancy Caroline's Emergency Care in the Streets (Eighth Edition)
- Brady Emergency Medical Responder – A Skills Approach Canadian Edition 4th Edition
- Canadian Red Cross – Emergency Care
- [The National Occupational Competency Profile \(NOCP\) for Paramedics](#)
- [Emergency Medical Assistants Regulation](#)

Wound Care

INDICATIONS

- Open and closed wounds

Interventions For All License Levels

In the Primary:

- Expose and examine
- Control major hemorrhage with direct pressure, patient positioning, and part positioning (if it does not aggravate other injuries or conditions)¹
- If direct pressure does not control the bleeding, and the wound is in an area amenable to tourniquet application, apply a tourniquet proximal to the wound to control hemorrhage.
- If direct pressure does not control the bleeding, and the wound is NOT in an area amenable to tourniquet application (i.e. junctional hemorrhage), consider wound packing.

Note: Do not pack wounds on the neck, chest, or abdomen.

- Bandage the bleed once hemorrhage has been controlled

In the Protocol Component:

- Provide analgesia, when / if it is appropriate based on patient presentation

In the Treatment Component:

- Clean and dress minor wounds
- Bandage minor wounds
- Apply cold, if required
- Assess distal circulation²³
- Bandage major wounds (if not already done)⁴

¹ Methods of hemorrhage control, in order of preference, include:

Direct pressure

Pressure dressing

Positioning the part (elevation of the injured part). Should be done only if it will not aggravate other injuries or conditions.

Positioning the patient (at rest and supine if other injuries and conditions permit)

Tourniquet (note the time and do not release once applied)

Extremity wound packing if bleed cannot be controlled.

² Absence of distal circulation may indicate a limb threatening injury or condition. Re-align grossly deformed limbs to the anatomical position if needed to facilitate transport. If the limb is pulseless distal to an injury one attempt can be made to re-align the limb to the anatomical position. If circulation returns the patient can be treated as stable. If the limb remains pulseless the patient should be managed as unstable

³ Cold may be applied if the distal circulation is not impaired. Cold may be applied earlier (i.e. at the end of the primary survey) provided the attendant has checked and compared the circulation in the injured limb with the circulation in the uninjured limb.

⁴ Embedded objects should be stabilized in place, unless impairing the airway. Immobilize limbs if there are large wounds or wounds over joints.

Preservation of Amputated Parts

When a part of the body is completely avulsed (torn off) or amputated (cut off) it is important to try and preserve the amputated part in optimal condition to maximize the chances of successful reattachment. Once the patient's injuries have been stabilized, turn your attention to the amputated part, which will also require careful care, as outline below:

Procedure

- 1) Rinse the amputated part with cool sterile water to remove any gross contaminates/debris
- 2) Wrap the part loosely in saline-moistened sterile gauze.
- 3) Place the amputated part inside a plastic bag and keep it cool in a protective container.
- 4) Transport with the patient.

Key Points

- 1) Do not warm the amputated part.
- 2) Never place the part in water.
- 3) Never place the part directly on ice.
- 4) Never use dry ice to cool the part.

Musculoskeletal Injuries

INDICATIONS

- Suspected fractures
- Suspected dislocations
- Suspected severe sprains

Interventions For All License Levels

In the Primary:

- Expose and examine
- Control major hemorrhage
- Stabilize fractured limb(s), pelvis or hip
- Check distal pulse(s), reassess throughout call
- Realign grossly deformed or pulseless limb(s)
- Bind pelvis if appropriate
- Apply cold

In the Protocol Component:

- Provide analgesia prior to movement, in stable, appropriate patients

In the Treatment Component:

- Apply traction if appropriate
- Immobilize the joints above and below the injury site
- Reapply cold if appropriate
- Elevate if appropriate

Hip Dislocation/Fracture

A patient with a hip dislocation is considered to have a limb-threatening injury if there is neuro or vascular impairment. All hip dislocations are in the Rapid Transport Category

Isolated hip fractures would be rapid transport if there is neuro or vascular impairment.

Interventions For All License Levels

- Quickly support the injured limb using helpers, rolled blankets, and ties.
- Move the patient onto a firm, blanketed stretcher, or spinal device. Secure the patient to the stretcher or spinal device to eliminate motion in the affected hip. Early medical reduction of this dislocation is essential to avoid serious long-term complications.
- Conduct any remainder of the secondary survey en route to hospital. Maintain a regular check of the vital signs, the patient's general condition, and the state of distal pulses and neurological function in the affected limb. If a dislocation is suspected and if the hip spontaneously reduces during treatment or transportation, notify medical oversight.
- Pain Management

Fracture Management – Traction Splint

INDICATIONS

- Suspected mid-shaft femur fractures in stable patients.

PROCEDURE

1. Assess distal circulation, sensation, and function.
2. Apply cold, if appropriate, ice on for 10 minutes, off for 5.
3. Give analgesia if not contraindicated.
4. Ensure that the patient is supine with the injured leg in line with the body.
5. Maintain manual stabilization after movement and reassess distal pulse

STAPLES Pneumonic for Sager Splints

6. **Size:** Place splint beside injured leg.
7. **Thigh:** Secure thigh strap/bandage
8. **Ankle:** Apply ankle harness above the malleoli.
9. **Padding:** Ensure adequate padding.
10. **Lbs.:** Apply traction: (once traction is applied, do NOT release traction)
 - Closed, mid-shaft fractures: 10% of patient's body weight to a maximum of 15 lbs. (7 kg).
 - Open, mid-shaft fracture: Maximum 5lbs.
11. **Elevate:** Elevate the bottom of sager to align the sager neutral with the leg. (Shoe under the wheel works well)
12. **Straps:** Stabilize limb to splint by applying three elasticized straps. Place a blanket between the legs and strap legs together.
13. **With each movement/reassessment of ABC's or vitals, traction should be reassessed and corrected if necessary.**

Pelvis binding

If a pelvic injury is suspected, or there is a high mechanism of injury in a patient, the pelvis should be bound with a commercial grade binder or three overlapping broad triangular bandages. Zap straps are NOT an acceptable form of binding. Align the centre of the belt with the greater trochanter. Tie the bandages tightly enough to support the pelvis but not cause pain. Do not roll the patient when applying the bandages.

The important principle is that the pelvis should be stabilized prior to transport. Binding the pelvis reduces overall pelvic volume and creates a tamponade effect, stabilizes fracture fragments reducing hemorrhage from the fracture sites, and improves patient comfort.

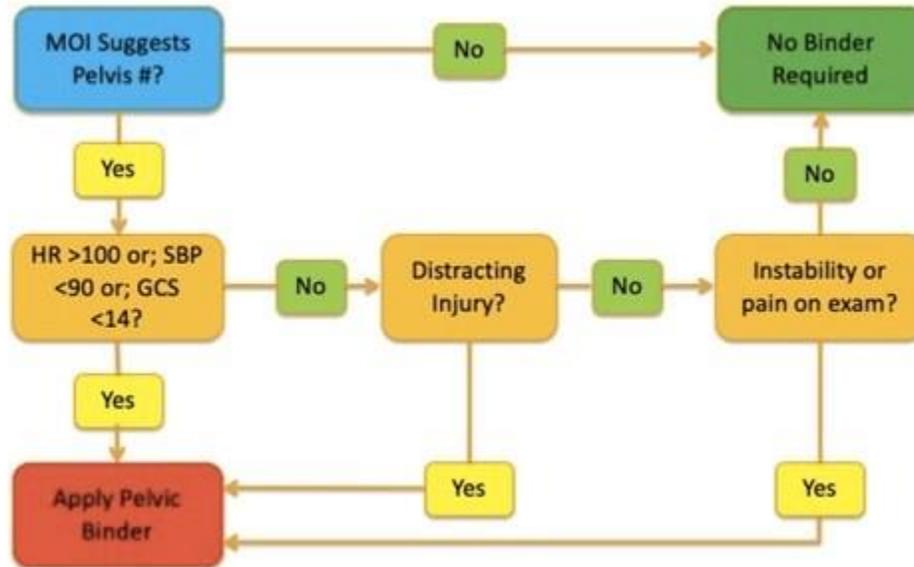
Indications

Major mechanism suggestive of pelvic fracture with any of the following:
Hemodynamic instability (heart rate > 100 or systolic blood pressure < 90 mmHg)
Pelvic pain on exam
Pelvic instability
Decreased level of consciousness
Major injury distracting from pelvic exam

Contraindications

Neck-of-femur ("hip") fractures
Falls from standing height or other simple falls

Use a commercial pelvic binder if available, it offers ease / speed of application and is effective at compressing the intra-pelvic space.



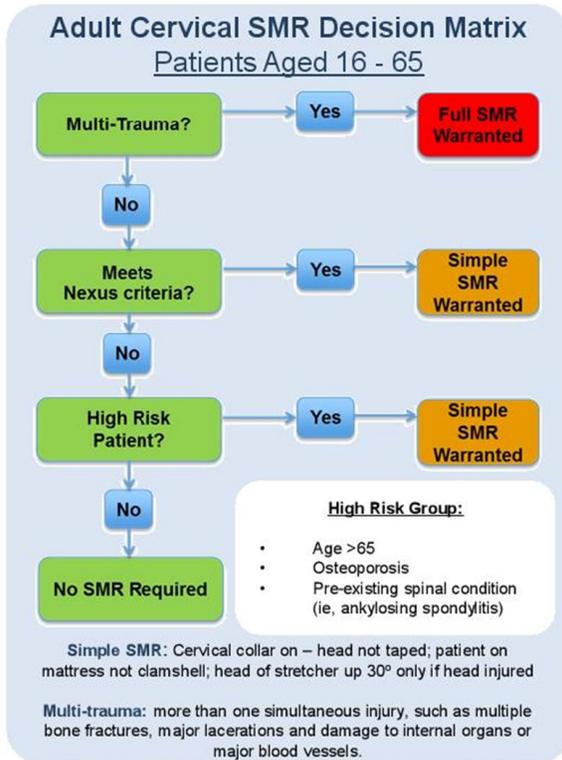
Spinal Management

INDICATIONS

- Follow the Nexus Criteria and the Canadian C-Spine Guidelines

Interventions for All License Levels

- Clinical indication(s) for spinal motion restriction
- Meets the NEXUS or Canadian C-Spine indications
- Manually stabilize the head and neck
- Apply hard collar
- Place patient on a spinal immobilization device
- Place foam rollers/Foam blocks
- Secure patient's body to spinal immobilization device if appropriate (Do not tape the head)



Modified NEXUS

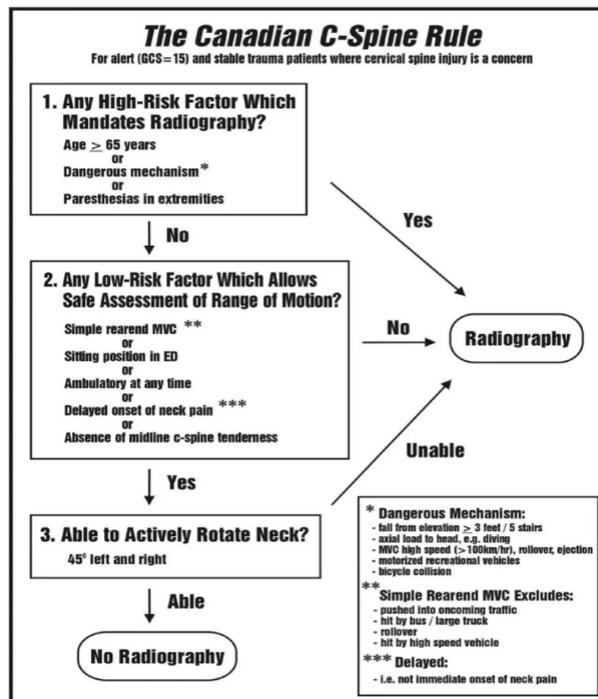
1. Is there midline tenderness?
2. Is there an altered LOC?
 - Must be alert and oriented x 3 (or 4)
3. Are there new focal neurological deficits?
4. Are they intoxicated?
 - Judgement and pain sensation must be intact
5. Is there a major distracting injury?
 - Significant enough to interfere with their ability to assess pain response when palpating spine

No to ALL FIVE questions – SMR is not warranted.

Thoracolumbar Injuries

If the patient does not require SMR as per NEXUS criteria, but has any of the following findings, do not sit the patient up or raise the head of the stretcher on the assumption that T/L spine injuries may be present:

- Dangerous mechanism of injury
- Fall from height >3m
- Axial load to head or base of spine
- High speed MVC (>100kph)
- Rollover MVC
- Pre-existing spinal pathology
- New back deformity, bruising, or bony midline tenderness on logroll



Traumatic Brain Injuries

Indications:

Any patient with head trauma and any altered level of consciousness should be suspected of having a traumatic brain injury.

Traumatic brain injuries can be further classified based upon the degree of disability, as measured by the Glasgow Coma Scale:

- A GCS \geq 13 is indicative of mild injury
- A GCS that falls between 9 and 12 is suggestive of a moderate injury
- A GCS \leq 8 is defined as a severe traumatic brain injury

Interventions of all License Levels

- Ensure adequate oxygenation (SpO₂ > 94%).
- If the patient is having difficulty maintaining respirations, assist with ventilations keeping the SpO₂ at > 94%.
- Elevate head of the bed to 30 degrees
- Loosen hard collar

Additional Primary Care Paramedic Interventions

- Maintain normal blood sugar levels (4.0-8.0 mmol/L)
- Maintain a blood pressure of > 120mmHg systolic
- IV – TKVO if systolic BP is > 120mmHg.
[TXA](#) is contraindicated for isolated TBIs.

Burn Management

Interventions of all License Levels

In the Primary Survey:

- Expose and examine
- Initiate cooling for 15-20 minutes
- Apply high flow oxygen if suspected inhalation injury or SOB
- Calculate BSA

In the Protocol Component:

- Consider pain management, if indicated.

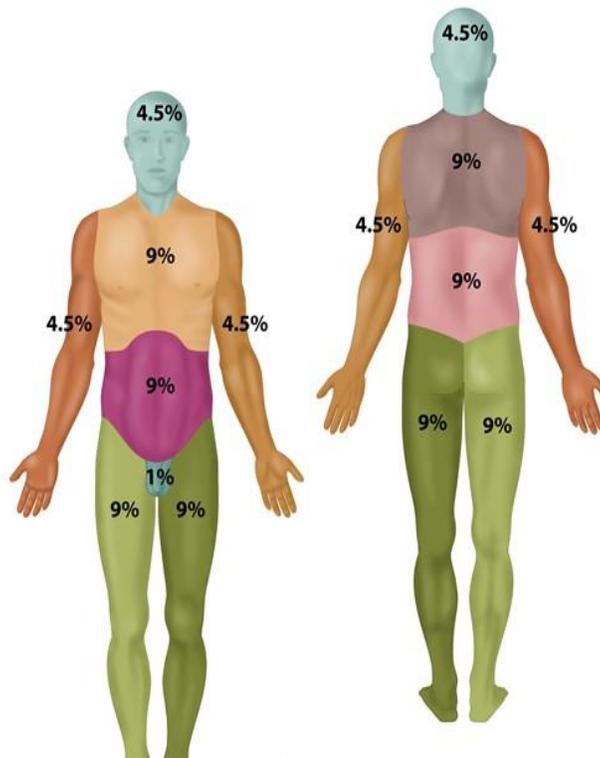
In the Treatment Component:

- Once cooling has finished, dress wound with sterile, nonstick, dry gauze.

Additional Primary Care Paramedic Interventions

- Initiate IV if indicated
- Hypotensive: 20ml/kg to a maximum of 2 litres.

Rule of Nines



It is recommended that patients with burns receive 15-20 minutes of cooling in the immediate aftermath of the burn. This is inclusive of any time bystanders have provided effective cooling measures. Cooling is also an important analgesic strategy in these patients. Burns should be cooled with cool (not cold) running water wherever possible, which may involve remaining on scene for over 20 minutes in patients without immediate life-threatening burns or injury, to access a source of cool running water. In patients requiring immediate conveyance, the use of cool saline may be sufficient to help limit the damage caused by the burn.

Hypothermia

INDICATIONS

- Suspected hypothermia because of mechanism of injury, history, presentation of the patient.

Interventions of all License Levels

- Assess and maintain the ABCs as necessary
- Take up to 30-45 seconds to determine pulselessness in the severely hypothermic patient.
- Remove wet and cold clothing and cover with blankets or dry clothing
- Take temperature if appropriate
- In the event of cardiac arrest apply AED and analyze, defibrillate up to three times if indicated, continue with CPR and rapid transport to the hospital. (After three defibrillations, do not pause CPR for analyzing or shocks)

Mild hypothermia (>32° C and <35° C) Moderate hypothermia (>28-<32)- Actively rewarm patient:

- Mild activity (if appropriate)
- Preheat the interior of the ambulance to 30°C
- Use hot packs wrapped in towels
- Warm blankets

Severe hypothermia (<28°C) - Do not actively rewarm the patient

- Insulate the patient to prevent further heat loss
- Heat ambulance to 30°C
- Avoid rough handling

Stroke

Indications

- Any neurological deficits
- Altered LOC or unconscious
- Difficulty maintaining airway
- Shortness of breath, noisy or absent respirations
- Weak, rapid or absent radial pulse

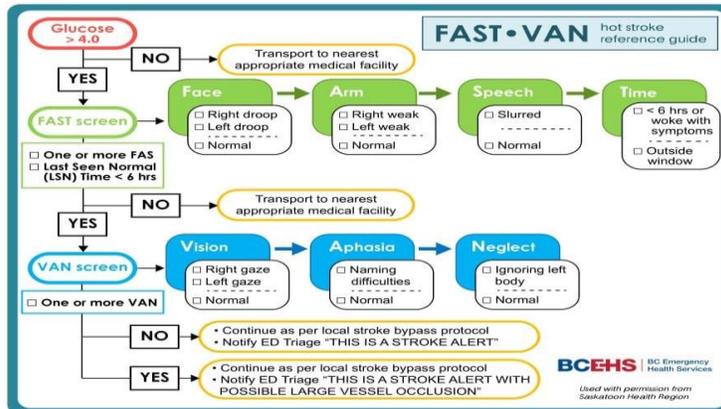
Interventions of all License Levels

- Assess and manage ABCs as required
- Provide supplemental oxygen to maintain SpO₂ ≥ 94%
- Position of patient
- Blood glucose check
- Accurate recognition (FAST-VAN)
- Timely Transport, Notify receiving facility while en route

Additional Primary Care Paramedic Interventions

(En route) Obtain vascular access: Vascular Access and Fluid Administration

- Select a site above the level of the wrist using a size 18 G, preferably on the right side

**REMEMBER: TIME IS BRAIN**

+ VISION =	Patient looking preferentially to one side ! Usually away from the hemiparesis
+ APHASIA =	Patient looks at simple objects but can't name them (e.g. pen, watch) ! Usually goes with right hemiparesis
+ NEGLECT =	Patient ignores left side when both sides are touched simultaneously ! Usually goes with left hemiparesis

NEGLECT STEP TESTING:

- **Provide Instructions** Ask patient to close their eyes and say aloud "left, right, or both" when arms are touched.
- **Perform Neglect Test** Touch right, then left, then both arms together—asking for a response after each stimulus.

Neglect is positive when patient is only able to identify that the right side was touched, when both sides were touched at the same time

DON'T FORGET:

1. Perform and document a glucose check to rule out stroke-mimics
2. Provide oxygen for suspected stroke patient when O₂ sats < 94%
3. Transport patient to appropriate hospital with your best attempt at an on scene time of < 20 minutes
4. Pre-hospital IV placed if possible (without delay of transport)
! Preferably above hand, using a 20 gauge IV (or larger)
5. Pre-notify the ED with stroke alert as per algorithm
! Pt Name • PHN • DOB • Sex • LSN 00:00 • FAST VAN Findings • ETA (Remember SBAR)
6. Document the onset of symptoms time in the box provided
7. Ensure you note the correct impression code on the PCR/Siren
8. Document pertinent neurological signs and symptoms on the PCR.

Abdominal Injuries

Interventions of all License Levels

- Control external hemorrhage
- Limit patient movement to reduce clot disruption
- Protect against heat loss
- Cover extruded bowel or eviscerated abdominal contents with moist, sterile dressings followed by an occlusive layer
- Do not place back in abdominal cavity.
- Position of comfort
- Transport

Additional Primary Care Paramedic Interventions

En route

- Obtain vascular access and correct hypoperfusion
- [TXA](#), if indicated

Congestive Heart Failure or Pulmonary Edema

Indications

- Drowning
- Congested Heart Failure
- Cardiogenic shock
- Exposure to toxins

Interventions of all License Levels

- Keep the patient at rest and avoid exertion during transfers. Bring equipment to the patient, including lifting and transfer devices.
- Position patient sitting upright with legs hung down.
- Keep the patient warm and protect from further heat loss
- Provide supplemental oxygen to keep SpO₂ ≥ 94%
- Assist ventilations if altered LOC or SpO₂ <94%
- Transport

Additional Primary Care Paramedic Interventions

On scene

- Consider continuous positive airway pressure
- If positive pressure ventilation by bag-valve mask is required, consider use of PEEP valve (5 cmH₂O to start)

Chest Trauma

Interventions of all License Levels

- Control any bleeding with gauze
- Assist oxygenation and ventilation if necessary
- Seal open chest wound with a three-sided occlusive dressing or commercial chest seal (monitor closely for development of tension pneumothorax, relieve if necessary)
- **MANUALLY** Stabilize flail chest
- Position the patient ASAP

Additional Primary Care Paramedic Interventions

Enroute

- Vascular access if required
- [TXA](#) if indicated

Electrical Contact

Paramedic safety is critical: do not approach electrical sources or downed power lines until qualified personnel have deemed the scene safe

Interventions of all License Levels

- Consider spinal motion restriction
- If in cardiac arrest: begin compressions and follow appropriate guidelines for resuscitation
- Supplemental oxygen as required
- Flush and decontaminate the affected areas with sterile saline
- Do not cool burns longer than 15-20 minutes, including decontamination time
- Dress injuries as required
- Identify types of current and duration of contact
- Estimate total surface area using Burn Estimation Charts
- Initiate conveyance; consider intercept with additional resources
- Consider utilization of the ambulance heater during conveyance if significant body surface area cooling is required.
- If there is no inhalation injury, consider analgesia to effect

Additional Primary Care Paramedic Interventions

- Obtain vascular access
- If hypotensive: Consider other causes of shock
 - Fluid bolus: 20ml/kg to a maximum of 2 litres, reassessing every 500 ml

Heat Exhaustion/ Heatstroke

Interventions of all License Levels

- Move patient to a cool area if appropriate
- Remove all clothing on patient
- If available, begin convective cooling with air conditioning set to maximum cold in conjunction with any other interventions
- Application of cold, wet towels to head, torso, and thighs to promote evaporative cooling
Immersion of feet and legs in a bucket or basin of ice water
- Continue cooling efforts for a minimum of 10 minutes prior to beginning conveyance to hospital.
- Initial vital signs must include blood glucose measurement if decreased LOC.
- The most aggressive cooling method available should be applied during transport and continue until the recommended treatment endpoints are reached.
- Continue evaporative cooling with soaked towels (head, torso and thighs).
- Begin or continue convective cooling with AC of ambulance on maximum cold.

Additional Primary Care Paramedic Interventions

- Consider the need for fluid replacement in patients with signs and symptoms of dehydration.

Drowning/Near Drowning

Interventions of all License Levels

- Apply spinal motion restriction as indicated based on the mechanism of injury
- Keep the patient at rest
- Position the patient sitting up
- Remove wet clothing and dry the patient
- Avoid rough handling
- Maintain body temperature
- Perform basic airway management and initiate intermittent positive pressure ventilations (IPPV) if required to support failing respirations
- If the patient is in cardiac or respiratory arrest, immediately commence resuscitation according to the appropriate guideline

Additional Primary Care Paramedic Interventions

- Use PEEP or CPAP if indicated

Treatment Protocols

IV Procedures

INDICATIONS

In pre-hospital care, the primary indications for IV therapy are to:

- Replace fluids and electrolytes due to hypovolemia and burns
- Administer medications

Please refer to the relevant training level for specific indications within a protocol.

PROCEDURE

1. Candidates should maintain aseptic techniques throughout the procedure.
2. Gather and prepare equipment:
 - a. Select and inspect the catheter device
 - b. Select and inspect the IV solution and administration set
 - c. Prime the IV tubing
3. Choose and prepare an appropriate site
4. Initiate IV
5. Connect IV tubing and infuse solution
6. Calculate and maintain an appropriate flow rate
7. Secure the IV

IV Maintenance

1. Ensure that the appropriate solution is running.
2. Calculate and maintain the appropriate flow rate.
3. Monitor flow rate and amount of solution.
4. Reassess patient condition and IV on a regular basis (i.e., q 5–15 min):
 - a. Reassess ABCs and injury sites.
 - b. Reassess vital signs.
 - c. Inspect the IV site, tubing, and solution bag.
 - d. Observe for complications and take appropriate measures as necessary.
 - e. Maintain an appropriate flow rate.
 - f. Change solution bag if required.

IV Maintenance Rate Calculation

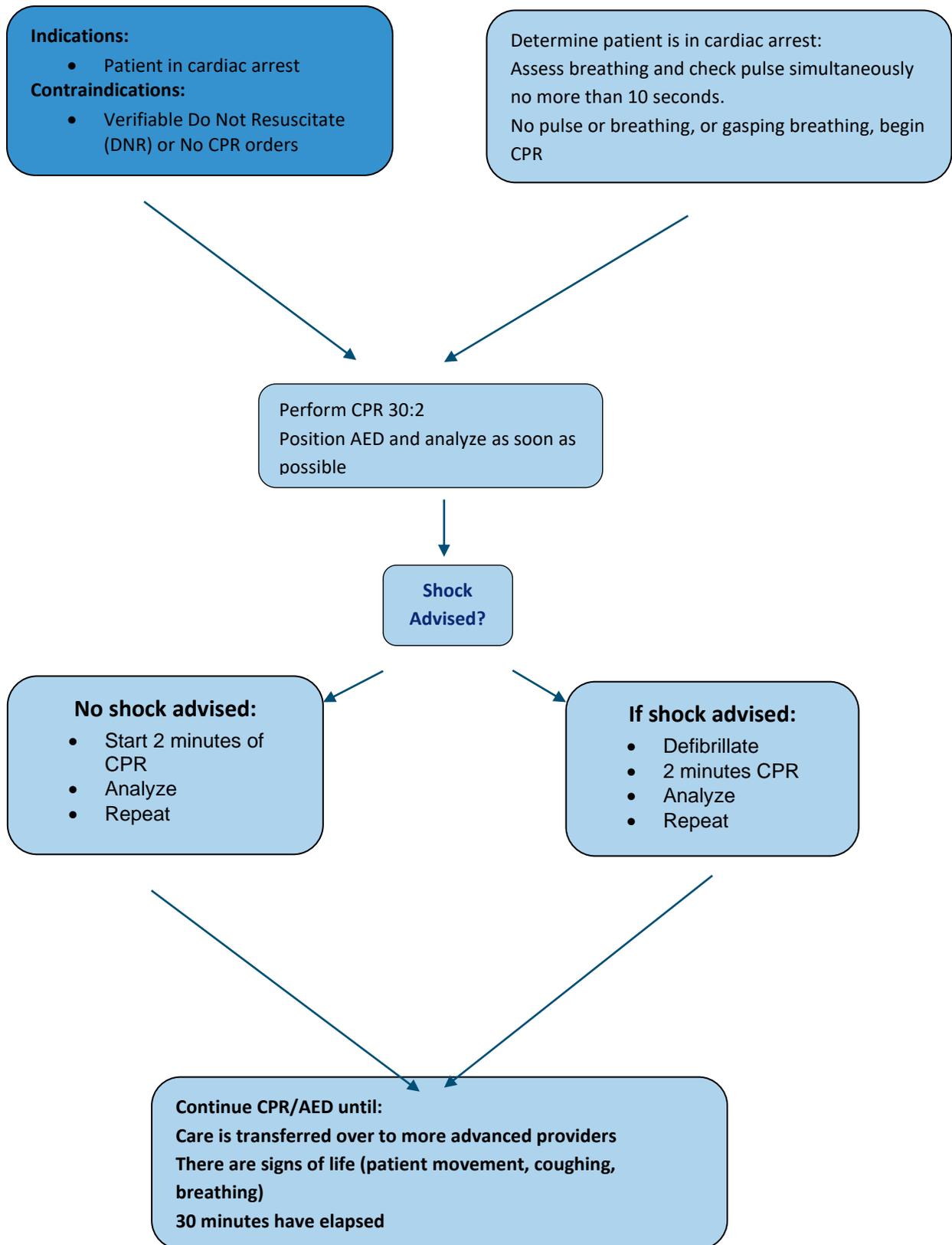
Some protocols may contain a reference to a maintenance rate. This maintenance rate is approximately 75 mL/hr. Two common administration sets are used: 10 gtts/mL and 60 gtts/mL. To calculate flow rates, the following formula is used:

$$\text{gtts per minute} = \frac{\text{volume to be infused} \times \text{set rate}}{\text{time in minutes}}$$

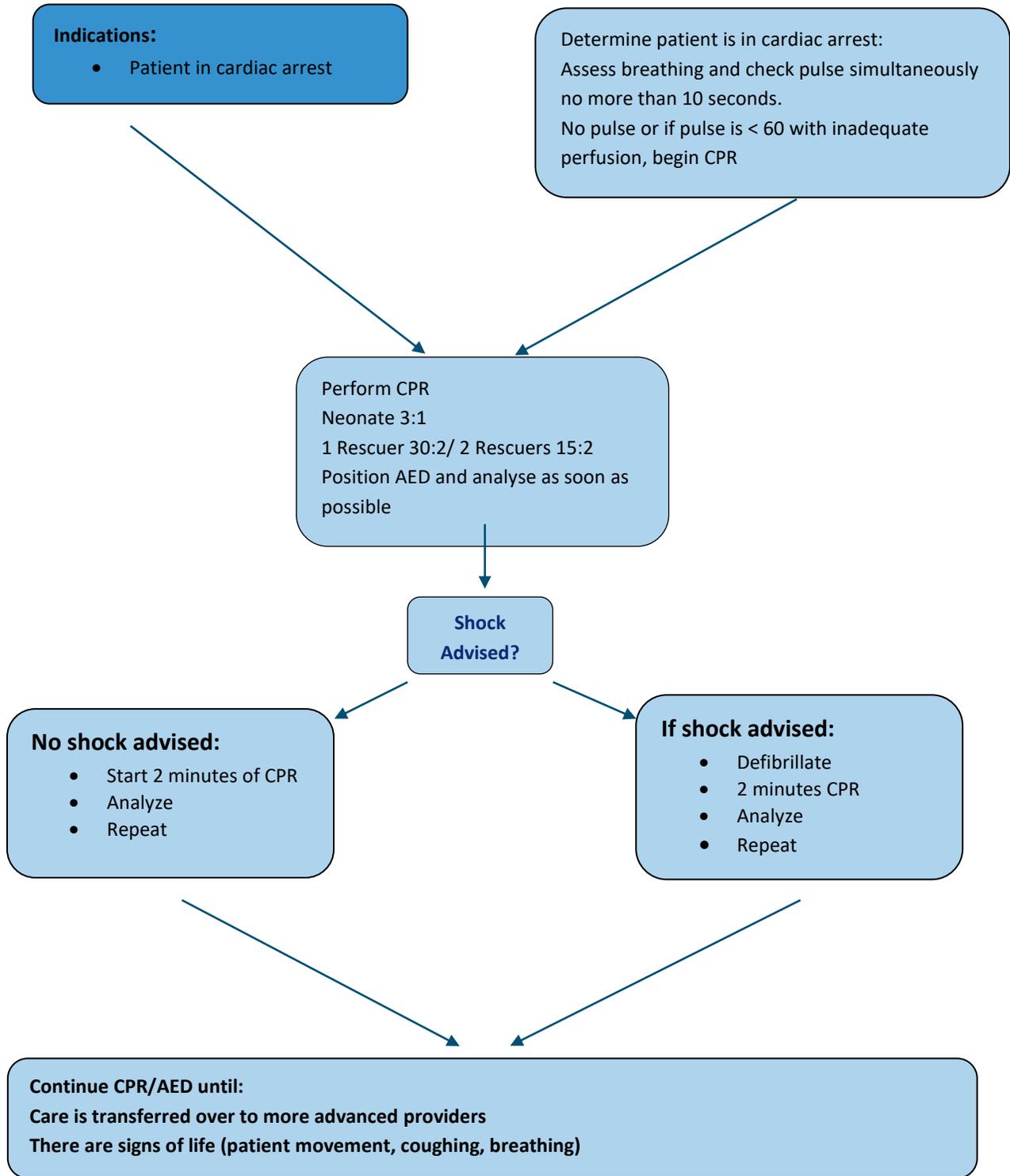
Examples:

- To infuse 500 mL NS over 12 hours using a macro-drip set (10 gtts/mL):
$$\frac{500 \text{ mL} \times 10 \text{ gtts/min.}}{12 \text{ hours} \times 60 \text{ min.}} = \frac{5000}{720} = 7 \text{ gtts/min}$$
- To infuse 25 mL 5% $D_{10}W$ in 60 minutes using a micro-drip set (60 gtts/mL):
$$\frac{25 \text{ mL} \times 60 \text{ gtts/min.}}{60 \text{ min.}} = \frac{1500}{60} = 25 \text{ gtts/min.}$$

Adult CPR/AED



Child Infant CPR/AED



CPR/AED - Basic concepts:

- Early CPR is an essential component to successful outcome from cardiac arrest.
- CPR should be provided with as few interruptions as possible (keep interruptions to less than 5 seconds).
- Change operators every 2 minutes (where possible) to maintain maximum efficiency.
- Pulse checks during analyze but must be done with ROSC. (e.g., spontaneous breaths, cough, eyelid movement, vocalization).
- CPR is more effective while you are stationary (i.e., trying to move the patient while performing CPR results in a deterioration of effective CPR) Intra-arrest patient transport with ongoing CPR may occur for the following situations: paediatrics, hypothermic, traumatic, or treatable causes after discussion with medical oversight.
- Move a patient early in your management while performing CPR only if the patient is in a dangerous environment or if you believe you cannot perform CPR effectively because of the patient's position or location.
- Early defibrillation is an essential component to successful outcome from cardiac arrhythmias that are responsive to defibrillation.
- The concepts of early CPR and early defibrillation should coexist, and one should not impede the other.
- Complete recoil after each compression.
- Avoid hyperventilation.
- Once high-quality cardiac arrest management is initiated a SGA can be inserted, for PCPs.

When to consult with medical oversight during a cardiac arrest:

- after 20 minutes of working a cardiac arrest
- when a treatable cause is identified
- when the patient arrests during transport

Adult CPR/AED Basics:

- Immediately activate the emergency response system (if appropriate) and get an AED (if available).
- Optimum chest compression rate is 100 -120 per minute with a depth of 5.0 to 6.0 cm
in a normal adult (adjust to 1/3 to ½ the chest diameter for smaller and bigger patients).
- Ratio is 30:2 (one or two rescuers).
- Apply and use the AED as soon as possible.
- Single shocks – resume CPR immediately following delivery of a shock, and during charging phase.
- No Shock Advised – resume CPR immediately.
- Continue resuscitation efforts on scene if one is capable (or, if AED is employed, until the patient recovers, advanced care providers take over (e.g., BCAS, physician) or you are presented with a valid “Do not Resuscitate” or No CPR order.
- Initiate a call to medical oversight at 20 minutes of high-quality CPR or if a treatable cause is found earlier, to determine transport or other treatments.

Infant/Child CPR/AED Basics

- Due to the size of an infant’s head in relation to its body, use a pad (if available) under the shoulders to facilitate neutral position.
- Effective ventilation/oxygenation is very important for optimal CPR.
- Assess for pulse using the brachial rather than the carotid artery.
- If alone, immediately start CPR for 5 cycles (about 2 minutes) before activating the emergency response system (if appropriate) and applying the AED (NOTE: for a *witnessed collapse* – alone or not, immediately activate the emergency response system [if appropriate] and get an AED [if available]).
- Start CPR if there is no pulse or if the heart rate is less than 60 beats per minute with signs of poor perfusion (e.g., pale skin color or severe mottling, cyanosis, usually accompanied by a decreased or falling level of consciousness and extremely unwell or toxic appearance, often with a history suggestive of respiratory illness or sepsis).
- Optimum chest compression rate is 100 – 120 per minute with a depth of 1/3 to ½ the chest diameter.
- The ratio is 30:2 for one rescuer and 15:2 for two rescuers.
- Single shocks – resume CPR immediately following delivery of a shock, and during charging.
- No Shock Advised – resume CPR immediately.

- For a child 0 - 8 years of age, switch to child AED pads (if available). If not available, you may use the adult pads and deliver the adult joules.
- If the defibrillation pads, when placed in the normal anterior/lateral chest position, are within 2.5 cm (one inch) of each other, they may need to be shifted to an anterior/posterior configuration.

Child (1 year of age to puberty) Sudden Cardiac Arrest

- Most cardiac arrests in children are not due to sudden rhythm disturbances. On rare occasions a child is in ventricular fibrillation. Specifically, cases with a history of previous cardiac problems, electrocution or a sharp blow to the precordial area followed by collapse (commotio cordis).

Neonate (Up to 28 days)

- 3:1 Compression ratio
- No AED

Newborn (floppy, limp, not breathing or heart rate <100 beats per minute)

1. Dry, stimulate, keep warm for 30 seconds
 - If heart rate <60 bpm move to step 2.
2. Ventilate with BVM on room air for 30 seconds
 - If heart rate <60 bpm move to step 3.
3. Ventilate with BVM with 100% oxygen attached for 30 seconds.
 - If heart rate <60 bpm move to step 4.
4. Chest compressions with ventilations and 100% oxygen until heart rate is above 60 bpm.

Asphyxia arrest

- Asphyxia arrest is due to hypoxia. Causes may include overdose, hanging, airway obstruction, smoke inhalation and drowning. If alone with an AED, give 5 cycles of CPR (about 2 minutes) before applying the AED. If two rescuers: apply the AED while providing one-person CPR for 5 cycles (about 2 minutes) then analyze.

Treatable causes of cardiac arrest and transporting

- CPR should continue until ROSC is achieved, further efforts are deemed futile, or the rescuers can no longer continue resuscitation due to fatigue or scene hazard.
- The main principle is that the decision to transport is multi-factorial, relies on available history and physical examination to give clues about reversible causes, and consultation with medical oversight.
- The exception to the above is consideration of transport with CPR in progress at the 20 min mark where a consultation with medical oversight should occur to discuss any suspected reversible cause. If that consultation results in an apparent reversible cause, then transport can be considered. Such causes include but are not limited to:

Hypovolemia	Tension pneumothorax
Hypoxia	Tamponade, cardiac
Hydrogen ion (acidosis)	Toxins (including anaphylaxis)
Hypo/Hyperkalemia	Thrombosis, pulmonary
Hypothermia	Thrombosis, coronary

Suctioning

- Suction should be applied for 10-15 seconds in the adult
- 10 seconds in the paediatric patient
- 5 seconds in an infant

Foreign Body Airway Obstruction

- Stabilize head and neck, if necessary
- Assess Level of Consciousness (AVPU scale)
- Assess & manage ABC's as required
- Suction, AED and BVM

Unwitnessed Unconscious FBAO

If respirations absent:

- Attempt one ventilation, if no air entry or air blows back, reposition head and attempt ventilation, if no air entry, begin chest compressions.
- Continue cycle of 30 compressions to 2 vents inspecting for object in mouth prior to ventilating.
- If foreign body is seen in mouth, remove it.

Witness Conscious to Unconscious FBAO

- Partial obstruction, have patient cough forcefully
- Full obstruction, chest thrusts, back slaps, and abdominal thrusts are feasible and effective for relieving severe foreign body airway obstruction in conscious (responsive) adults and children >1 year of age. Alternating between two techniques in sets of five, is acceptable.
- For an infant, deliver repeated cycles of 5 back blows followed by 5 chest compressions until the object is expelled
- If abdominal thrusts are not effective, consider chest thrusts
- Patient collapses, start CPR with chest compressions (do not perform a pulse check)
- After 30 compressions, open the airway
- Do not perform blind finger sweeps
- Attempt to give 2 breaths and continue with cycles of chest compressions, checking airway.
- If foreign body is seen in mouth, remove it.

Complete RBS
Transport

Cardiac Chest Pain

INDICATIONS

- Patients whose presentation is suggestive of cardiac chest pain.

Interventions of all License Levels

- Place the patient in a position of comfort, as permitted by clinical condition; in general, limit patient movement
- Complete a primary survey and apply oxygen as required to maintain SpO₂ ≥ 94%
- Administer [Acetylsalicylic acid](#), chewed and swallowed, if not already done prior to EHS arrival
- Initiate transport (transport immediately if able to do so. Delegate crew members to prep egress if not)
- Obtain a history (including pain assessment) and baseline set of vital signs
- Administer [Nitroglycerin](#) if appropriate (transport after the first dose if not already done)
- Medical oversight consultation is required prior to [Nitroglycerin](#) administration if no prior prescription or if more than 3 doses are required.

Additional Primary Care Paramedic Interventions

- Obtain vascular access with running intravenous fluid
- Consider [Dimenhydrinate](#) for nausea

If pain is completely relieved, but returns:

- Re-initiate [Nitroglycerin](#) administration¹
- Continue with assessment, treatment, and vital signs q 5 minutes.

If pain persists beyond 3 doses of Nitroglycerin, or if the SBP falls below < 110mmHg:

- Administer [Entonox](#) 5 minutes after the last dose of [Nitroglycerin](#).
- Continue with assessment, treatment, and vital signs q 5 minutes
- After 30 minutes from the first dose of [Nitroglycerin](#), this protocol may be repeated after stopping [Nitrous Oxide](#) for 5 minutes

¹ If pain is completely relieved for more than 5 minutes, you may re-initiate the Nitroglycerin component, (but not the Aspirin component) of the Chest Pain Protocol if the patient's pain returns.

Nausea – Vomiting PCP

INDICATIONS

Patients experiencing the sensation of nausea or vomiting. Not indicated for prophylactic use without direction from medical oversight.

Interventions of all License Levels

- Keep the patient at rest in a position of comfort
- Maintain patient in position of comfort consistent with the need to protect the patient's airway

Additional Primary Care Paramedic Interventions

- Consider vascular access
- Consider dimenhydrinate
- Consider ondansetron
- Treat hypotension from volume loss:
 - Fluid bolus: 20ml/kg to a maximum of 2 litres, reassessing every 500 ml
 - Reassess after every bolus; target systolic blood pressure of 90 mmHg

Stable patients may be treated with anti-emetics on scene. Unstable patients will be treated enroute to hospital.

Continue to manage and be aware of possible vomiting, position patient appropriately and have suction ready.

Shortness of Breath (SOB) With History of Asthma/COPD

Interventions of all License Levels

- Place the patient in a position of comfort, as permitted by clinical condition; in general, this will be a seated position with the patient leaning forward; limit patient movement
- Complete a primary survey and provide supplemental oxygen as required to maintain $SpO_2 \geq 94\%$ (caution: may not be achievable)
- Auscultation
- Initiate transport (transport immediately if able to do so. Delegate crew members to prep egress if not)
- Obtain a history and a baseline set of vital signs
- [Salbutamol](#) by nebulizer or MDI (transport after the first dose if not already done)
MDI and spacer use is strongly recommended for patients with signs of influenza-like illness, or other infectious respiratory conditions

Additional Primary Care Paramedic Interventions

- [Salbutamol](#) with ipratropium (Both salbutamol and ipratropium can be combined in the same nebulizer for co-administration purposes. Note: ipratropium is a single dose administration, while salbutamol may be repeated).
- For severe disease or imminent respiratory failure: administer intramuscular [EPINEPHrine](#)
- [Epinephrine](#) via intramuscular injection should be considered for a patient with $SpO_2 < 90\%$ and/or moderate to severe symptoms of bronchospasm that are unresolved with the use of [Salbutamol](#) administered by MDIs or nebulizer treatment
- Consider [dexamethasone](#)
- Consider CPAP

Oxygen Administration

Do not use an adult face mask with a flow rate of less than 6 L/min, as this would deliver less oxygen to the patient than room air.

A non-rebreather mask is indicated for carbon monoxide poisoning and smoke inhalation.

Administration of oxygen to COPD patients is by nasal cannula at 1-3 L/min (following acute care treatment with high flow oxygen, if required). Use of high flow oxygen for COPD patients complaining of SOB is indicated.

Oxygen should be titrated based on pulse oximetry aiming for an O₂ Saturation of 94% if the patient is not SOB or in shock. Patients who are SOB, in shock, or have CO poisoning require high flow O₂

- Titrate O₂ flow rate to a maximum of 15 L/min to achieve SpO₂ of 94%
- Switch to a non-rebreather mask with a flow rate of 15 L/min
- Add a nasal cannula underneath the non-rebreather mask with a flow rate of 15 L/min
- Consider the application of CPAP (PCP)
- Consider assisted ventilations (including the use of PEEP for PCPs)
- Record changes to SpO₂ through treatment application

Continuous Positive Airway Pressure (CPAP) PCP

CPAP is a non-invasive means to increase the oxygen diffusion across the alveolar membrane by increasing the functional residual capacity and increasing alveolar surface area.

This can help to decrease a patient's work of breathing, and decrease oxygen consumption, while increasing their oxygen supply.

CPAP application has been shown to reduce intubation requirements and mortality.

CPAP should be considered in patients who remain short of breath with low oxygen saturation despite the administration of a bronchodilator, or in patients who present with other causes of shortness of breath (CHF, pulmonary edema, near drowning, pneumonia).

Any patient who is unable to maintain their own respiratory effort is unlikely to benefit from CPAP. These patients will require assisted ventilation via BVM. It is important to monitor the patient closely for any deterioration as CPAP will no longer be the appropriate therapy for these patients. If patients do not have any contraindications, a PEEP valve should be added to the BVM to increase oxygenation to $\geq 94\%$

CPAP Guidelines

<p>INDICATIONS:</p> <ul style="list-style-type: none"> • Any patient \geq 13 years of age in significant respiratory distress • Awake and following commands • Maintains a patent airway • Exhibits all the following <ul style="list-style-type: none"> RR > 24 SpO₂ < 94% (on O₂) Accessory muscle use <p>Consider the use of CPAP in adult patients with respiratory distress, including but not limited to:</p> <ul style="list-style-type: none"> • Congestive heart failure or acute cardiogenic pulmonary edema • Asthma • Submersion injuries • Pneumonia • Chronic obstructive pulmonary disease 	<p>CONTRAINDICATIONS:</p> <ul style="list-style-type: none"> • Patient 12 years and less • Decreased level of consciousness, or inability to follow commands • Respiratory arrest or hypoventilation • Patients who are in imminent or actual respiratory failure (i.e., whose respirations are slow, feature shallow tidal volumes, and whose level of consciousness is falling) are not candidates for CPAP; these patients must be ventilated with a bag-valve mask (and may benefit from PEEP use) • Unable to fit a mask to patient's face • Vomiting or any other risk of aspiration • Traumatic cause of respiratory distress • Tracheostomy • Suspected or known pneumothorax • Systolic blood pressure < 90 mmHg
<p>CPAP Use</p> <ol style="list-style-type: none"> 1. Start at 5L/min with CPAP valve at 5 cm/H₂O 2. Obtain facial seal 3. Reassess patient and vitals 4. Repeat in 2.5cm/H₂O increments to max. CPAP of 10 cm/H₂O 	<p>If patient deteriorates: Remove CPAP and use BVM with assisted ventilations (consider PEEP valve if indicated)</p>
<p>PEEP Use</p> <ol style="list-style-type: none"> 1. Attach the PEEP valve to the exhaust port on the bag-valve mask. 2. Set the dial on the PEEP valve to 5 cmH₂O. 3. Establish and maintain a good mask seal. Begin ventilating at an appropriate rate, usually no more than 8-10 breaths per minute. 4. Monitor oxygen saturation and blood pressure for changes. 5. PEEP may be increased in increments of 2.5 cmH₂O to a maximum of 10 cmH₂O. 	<p>If patient becomes hypotensive (<90 systolic) or goes into cardiac arrest. Remove PEEP valve.</p>

EMA Licensing Board
Ministry of Health
British Columbia Provincial Examination Guidelines

CPAP Setting (cmH₂O)	5	6	7.5	10	12.5	15
Set oxygen flow (LPM)	5	6	7	8	9	10
PEEP Setting (cmH₂O) BVM 15 lpm	5	6	7.5	10	12.5	15

Hypovolemia

INDICATIONS

Patients with all the following:

- Hypovolemia¹
- Systolic BP < 90 mmHg²
- Other clinical signs of shock
- Patients with burns > 20% BSA (partial and full thickness)

Interventions of all License Levels

- Control external hemorrhage
- Splint pelvis/fractures, if clinically indicated
- Position the patient supine to support blood pressure
- Keep the patient warm and protect from further heat loss
- Administer supplemental oxygen to maintain SpO₂ ≥ 94%

Additional Primary Care Paramedic Interventions

En route or time delay

- Obtain vascular access
- Consider fluid bolus to correct hypoperfusion or hypotension if clinically indicated
 - Fluid bolus: 20ml/kg to a maximum of 2 litres, reassessing every 500 ml
- Consider tranexamic acid in cases of shock secondary to blood loss and hypovolemia secondary to occult bleeding

¹Obtain evidence of loss of a significant quantity of blood or body fluids to support a diagnosis of hypovolemia.

²The Hypovolemia protocol may be used for patients with BP > 90 mm Hg if shock is anticipated because of the mechanism of injury, the nature and extent of the injuries or the patient's condition.

Anaphylaxis

INDICATIONS

Patient with suspected anaphylaxis,¹including all the following:

- Signs of anaphylaxis²
- History of an allergy
- Exposure to an allergen
- Unstable: Syncope, decreased LOC, or hypotension (BP < 90 mmHg), or respiratory distress

Interventions of all License Levels

- Position supine to improve blood pressure and do not walk the patient
- Remove allergen (e.g., scrape off any stinger(s) / stop drug administration)
- Complete a primary survey and provide airway management and supplemental oxygen as required to maintain SpO₂ ≥ 94%
- Delegate crew members to prep egress
- Obtain a history and a baseline set of vital signs
- Administer [Epinephrine](#)
- Transport and continue assessment / treatment en route

Additional Primary Care Paramedic Interventions

- Obtain vascular access and fluid administration if patient remains hypotensive or hypo perfused
 - Fluid bolus: 20ml/kg to a maximum of 2 litres, reassessing every 500 ml
- Treat bronchospasm after epinephrine has been administered with Salbutamol
- Administer [Diphenhydramine](#) to mitigate medium-term effects and limit histamine response

¹ If anaphylaxis is anticipated because of prior history, nature of exposure or patient's condition, you may consider contacting medical oversight for orders.

² Respiratory (SOB/wheezes cough/stridor), abdominal (N/V/D/Pain), hypotension (or decreased LOC), urticaria, and/or angioneurotic edema, and/or hypotension/shock.

Suspected Narcotic Overdose

INDICATIONS

Beyond a decreased level of consciousness and depressed respiratory drive, as demonstrated by both decreased rate and limited tidal volume, signs and symptoms of an opioid overdose can include:

- Pinpoint pupils (miosis)
- Hypotension
- Hypothermia
- Tachycardia

Interventions of all License Levels

- Complete a primary survey, ensuring that:
 - The airway is managed with positioning, suctioning, and adjunct insertion as needed
 - Ventilations are supported as required. Consider the use of two person BVM techniques
 - Oxygen is administered to maintain $SpO_2 \geq 94\%$
- Obtain a history and a baseline set of vital signs (including blood glucose level)
- If blood glucose $\leq 4\text{mmol/L}$, consider diabetic protocol
- Administer [Naloxone](#)
- Transport and continue assessment / treatment / protocol en route

Additional Primary Care Paramedic Interventions

- In cases of continued unconsciousness and apnea, consider establishing vascular access and giving naloxone intravenously

Diabetic Emergencies

INDICATIONS

Known diabetic patients with decreased LOC whose history suggests hyperglycemia or hypoglycemia.

Decreased LOC patients without a known cause.

Interventions of all License Levels

- Complete a primary survey, ensuring that:
 - The airway is managed with positioning, suctioning, and adjunct insertion as needed
 - Oxygen is administered to maintain $SpO_2 \geq 94\%$
 - The patient is positioned in the lateral or 3/4 prone position if needed
- Delegate crew members to prep egress
- Obtain a history and a baseline set of vital signs (including blood glucose level)
- Evaluate for stroke signs and symptoms
- Correct suspected hypoglycemia $BGL < 4.0$ mmol/L: For patients with sufficient mentation to maintain an airway, apply [glucose gel](#) to oral mucosa

Emergency Medical Responders Interventions

- For patients with insufficient mentation or an unprotected airway administer [glucagon](#)
- Transport and continue assessment / treatment en route

Additional Primary Care Paramedic Interventions

- Obtain vascular access
- Correct confirmed hypoglycemia: [D10W](#): 10-25 g (100-250 ml of 10% solution)
- [Glucagon](#) if unable to obtain IV access
- Transport and continue assessment / treatment en route (after the first bolus of D10 or the [Glucagon](#) has been administered)

Drug Monographs

Acetaminophen

Classification:	Analgesic Antipyretic
Mechanism:	Acetaminophen inhibits prostaglandin synthetase in the central nervous system, reducing pain and pyrexia.
Indication:	Mild to moderate pain and pyrexia (PO/IV)
Contraindications:	<ul style="list-style-type: none"> • Hypersensitivity to acetaminophen or any component of the formulation • Severe hepatic impairment or severe active liver disease • Do not administer if acetaminophen has been given within the past 4 hours (from all sources), or if total acetaminophen intake within the last 24 hours exceeds the daily maximums (refer below for maximums). • Do not administer acetaminophen if an overdose is suspected, indicated by symptoms such as nausea, vomiting, or right upper quadrant pain
Onset:	<p>Oral: Onset: 30 minutes Peak: 1-3 hours Duration: 4 hours</p> <p>Intravenous: Onset: 15 minutes (matching rate of administration) Peak: 1 hour Duration: 4-6 hours (analgesia) and > 6 hours (antipyresis)</p>
Dose:	<p>Oral Administration Analgesia and antipyresis</p> <ul style="list-style-type: none"> • 500 - 1,000 mg PO • May repeat once after 4 hours • 24-hour maximum dose, from all sources and all routes of administration: 4,000 mg • In patients with suspected or known liver dysfunction (e.g., advanced chronic liver disease, cirrhosis, heavy alcohol use) or malnutrition, the 24-hour maximum should be lowered to 2,000 mg. • May be used concurrently with ibuprofen for analgesia <p>Intravenous administration Analgesia and antipyresis</p>

	<ul style="list-style-type: none">• ≥ 50 kg: 1000 mg IV q 6h as required (see above for daily maximums)• Infuse 1000 mg/100 mL bag undiluted over 15 minutes using a standard 10 gtts/ml IV set (66 gtts/min)
Cautions:	Hepatic impairment, heavy alcohol use, chronic malnutrition, and hypovolemia

Aspirin (ASA)

Classification:	Platelet inhibitor Antiplatelet
Mechanism:	Inhibits the formation of platelets from clumping together to form clots
Indication:	Chest pain or atypical symptoms consistent with cardiac ischemia/AMI (Note: ASA should be after the RBS if it is indicated, and the cautions and contraindication are followed) ASA is the only medication that vitals are not required prior to administration.
Contraindications:	<ul style="list-style-type: none"> • Inability to swallow/Allergy to Aspirin • Active peptic ulcer or gastrointestinal bleeding • Patient has already taken their recommended Aspirin dose prior to your arrival. • Patients with a history of asthma induced by the administration of salicylates or NSAIDS. • Pediatric patients with viral symptoms
Onset	20 minutes- One hour if chewed
Dose	160 mg PO
Route	Oral
Cautions:	Recent internal bleeding Known bleeding diseases Patient is currently taking anticoagulant agents Recent surgery Possibility of pregnancy

D₁₀W (Dextrose 10% in Water)

Classification:	Anti-hypoglycemic agent Carbohydrate substrate
Mechanism:	Immediate source of glucose and H ₂ O for nutrient deprived cells Transient osmotic diuretic
Indication:	Suspected or known hypoglycemia Altered level of responsiveness Coma or seizure NYD
Contraindications:	None
Onset	IV - Immediate
Dose	10-25 g (100-250 ml of 10% solution)
Route	IV
Cautions:	Extravasation causes tissue necrosis

Dexamethasone

Classification:	Anti-inflammatory agent, systemic corticosteroid
Mechanism:	Suppresses neutrophil migration, decreasing production of inflammatory mediators, and reversing increased capillary permeability.
Indication:	Adjunctive treatment for croup and bronchospasm secondary to asthma or chronic obstructive pulmonary disease
Contraindications:	<ul style="list-style-type: none"> • Systemic fungal infections • Hypersensitivity to dexamethasone or other corticosteroids
Onset:	Onset: minutes to hours; dependent on indication and route of administration Peak: 8 hours (IM); 1-2 hours (PO) Duration: short (IV)
Dose:	Adult Dose All indications: 8 mg IV/IO/IM/PO. PO preferred. Pediatric Dose Follow weight-based dosing All indications: 0.5 mg/kg IV/IO/IM/PO, to a maximum of 16 mg. PO preferred. May combine with juice to improve palatability.
Route:	8 mg IV/IO/IM/PO. PO preferred.
Cautions:	<ul style="list-style-type: none"> • May cause hypercortisolism, particularly in younger children or when used for long periods of time at higher doses. • Dexamethasone should not generally be used for adrenal insufficiency as it does not provide any mineralocorticoid activity. • Use with caution in patients with heart failure or hypertension: dexamethasone has been associated with fluid retention and electrolyte disturbance. • Corticosteroids have been associated with myocardial rupture when used in acute myocardial infarction. • Dexamethasone crosses the placenta. Some studies have found an association between corticosteroid use in the first trimester with oral clefts and decreased birth weights.

Dimenhydrinate

Classification:	Anti-Emetic Antihistamine Anti-Cholinergic Anti -Vertigo
Mechanism:	Diminishes vestibular (labyrinth) stimulation from motion Inhibits cholinergic stimulation in vestibular and reticular system
Indication:	Prevention or control of nausea, vomiting, and vertigo
Contraindications:	Known hypersensitivity or allergy to Dimenhydrinate
Onset	IM 20-30min. IV – Most immediate
Dose	1 mg/kg to a maximum dose of 50mg Contact ER if patient appears to be under 25kg
Route	IM – Administered undiluted IV – Dilute with NS and inject over 1-2 minutes. If administering 50 mg of Dimenhydrinate for IV injection, draw up 50mg of Dimenhydrinate using a 10 mL syringe then draw up the additional 9mL of NS. Mix the medication and administer slowly over 2 minutes. (25 mg/min)
Metabolism:	Metabolized in the liver Excreted in the urine
Adverse Effects:	CVS: tachycardia, palpitations Respiratory: thickening of bronchial sections CNS: Dizziness, drowsiness, excitation, headache, restlessness GI: Anorexia, dry mouth GU: Dysuria Ocular: Blurred vision
Cautions:	Glaucoma (increased intraocular pressure) Asthma/COPD Cardiovascular disease (Hypertension, ischemic heart disease) Prostatic hyperplasia and urinary obstruction Elderly Pregnancy

Diphenhydramine

Classification:	Antihistamine
Mechanism:	Antihistamine with anticholinergic and sedative side effects. Antihistamines appear to compete with histamine for cell receptor sites on effector cells.
Indication:	Adjunct treatment of allergic reactions Motion sickness
Contraindications:	Known hypersensitivity or allergy to antihistamines Neonates
Onset	IM Rapid
Dose	25- 50 mg
Route	25 – 50 mg IV , 25-50 mg PO
Adverse Effects:	Urticaria, drug rash Hypotension
Cautions:	Narrow angle glaucoma Stenosing peptic ulcer

Entonox (Nitrous Oxide)

Classification:	Non-Narcotic Analgesia
Mechanism:	Potent analgesic and a weak anaesthetic
Indication:	Relief of pain Cardiac related chest pain where nitroglycerin will be of no value or is contraindicated Isolated extremity injuries, pain associated with burns.
Contraindications:	Inability to comply Inability to ventilate an enclosed treatment area Decompression sickness Altered level of Consciousness Pneumothorax Air embolism Inhalation injury Nitroglycerin used in the last 5 minutes
Onset	Rapid
Dose	Inhalation – Self administered
Route	PO – Self administered
Adverse Effects:	Light-headedness, dizziness, sedation, drowsiness, disorientation Nausea and / or vomiting
Cautions:	Shock Abdominal distention Depressant drugs COPD Facial injuries
Before using Entonox, you must have done the following:	Completed a primary survey Investigated the pain complaint, including severity Obtained a baseline set of vital signs, including oxygen saturation Conducted a history and physical examination sufficient to rule out the contraindications for use of Entonox Invert cylinder 3 X If in the ambulance) Turn on vehicle ventilation system (intake and output

Epinephrine

Classification:	Sympathomimetic
Mechanism:	<p>α 1 effects - Vasoconstriction</p> <p>β 1 effects – Increased HR, increased force of cardiac contraction</p> <p>β 2 effects - Bronchodilation</p>
Indication:	Anaphylaxis, severe bronchospasm
Contraindications:	There are no absolute contraindications to EPINEPHrine use in life-threatening situations such as anaphylaxis
Onset	IM 5 – 15 minutes, IV Immediate
Dose	<p>Adult:</p> <p>0.5 mg IM every 5 minutes; may repeat up to 3 times (Anaphylaxis)</p> <p>0.5 mg IM every 5-20 minutes for severe bronchospasm with impending arrest (PCP)</p> <p>Paediatric:</p> <p>0.01 mg/kg IM to a maximum of 0.5 mg; may repeat up to 3 times</p> <p>0.01 mg/kg IM to a maximum of 0.5 mg for severe bronchospasm with impending arrest</p>
Route	IM
Cautions:	Further hypotension if administered too quickly

Glucagon

Classification:	Glucose elevating agent
Mechanism:	Accelerates the breakdown of glycogen to glucose in the liver
Indication:	Hypoglycemia When IV access attempts have been unsuccessful
Contraindications:	Allergy of hypersensitivity to glucagon
Onset	Onset: 15 minutes Peak: 15 minutes Duration: 90 minutes
Dose	IM: 0.5 - 1 mg IN: 3mg, repeat after 15 mins if no clinical response
Route	IM/IN
Cautions:	Nausea or vomiting, hypokalemia, urticaria, respiratory distress, hypotension

Ibuprofen

Classification:	Analgesic Antipyretic Nonsteroidal anti-inflammatory
Mechanism:	Inhibits prostaglandin synthesis, reducing pain, inflammation, and pyrexia.
Indication:	Mild to moderate pain and pyrexia
Contraindications:	<ul style="list-style-type: none"> • Hypersensitivity to ibuprofen or other nonsteroidal anti-inflammatory drugs • Active GI hemorrhage or ulcers • Pregnancy (first, second, or third trimesters)
Onset:	Oral: Analgesic effects: Onset: 30-60 minutes Peak: 1-2 hours Duration: 4-6 hours Antipyretic effects: Onset: 30 minutes to 2.5 hours Peak: 2-4 hours Duration: 6-8 hours
Dose:	Adult dosages <ul style="list-style-type: none"> • 300-400 mg PO; may repeat every 4-6 hours; maximum daily dose 1,200 mg/day PCP: Pyrexia <ul style="list-style-type: none"> • 300-400 mg PO; may repeat every 4-6 hours; maximum daily dose 1,200 mg/day Pediatric Considerations And Dosing Follow weight-based dosing Mild to moderate pain <ul style="list-style-type: none"> • 10 mg/kg PO; may repeat once after 6 hours; maximum daily dose 40 mg/kg/day PCP: Pyrexia <ul style="list-style-type: none"> • For temperatures < 39°C: 5 mg/kg; may repeat every 4-6 hours • For temperatures ≥ 39°C: 10 mg/kg; may repeat every 4-6 hours • Maximum daily dose 40 mg/kg/day
Route:	Oral administration

Cautions:	Alternative treatment options should be considered in patients with a history of gastrointestinal, renal, or significant cardiovascular disease: ibuprofen, and all NSAIDs, have the potential to cause significant adverse reactions. The risk appears to increase with dose, duration of therapy, and underlying risk factors.
-----------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Ipratropium

Classification:	Anticholinergic bronchodilator
Mechanism:	Ipratropium antagonizes the activity of acetylcholine in bronchial smooth muscle, producing bronchodilation and muscle relaxation
Indication:	Severe bronchospasm in asthma and chronic obstructive pulmonary disease
Contraindications:	Known hypersensitivity to ipratropium or any formulation components
Onset:	Onset: 3-15 minutes Peak: 1.5-2 hours Duration: 6 hours
Dose:	<p>Adult Dose</p> <ul style="list-style-type: none"> • 500 mcg via nebulizer Both salbutamol and ipratropium can be combined in the same nebulizer for co-administration purposes. Note: Ipratropium is a single dose, salbutamol may be repeated). • 160 mcg via metered-dose inhaler (8 x 20 mcg sprays) • MDI and spacer use is strongly recommended for patients with signs of influenza-like illness, or other infectious respiratory conditions <p>Pediatric Dose PCP: Severe bronchospasm in asthma *Not for use in neonates < 30 days* 250 mcg via nebulizer (1/2 nebule) 80 mcg via MDI (20 mcg x 4)</p>
Route:	Inhaled
Cautions:	<ul style="list-style-type: none"> • Ipratropium is intended to act synergistically with salbutamol as part of a management plan for bronchospasm. It is not indicated for episodes of acute bronchospasm as monotherapy. • Use with caution in patients with narrow- angle glaucoma, as it may increase intraocular pressure • Use with caution in patients with prostatic hyperplasia or bladder neck obstruction as it may cause urinary retention

Methoxyflurane (Penthrox)

Classification:	Inhaled fluorinated hydrocarbon volatile anesthetic
Mechanism:	Methoxyflurane is a fast-acting inhaled fluorinated hydrocarbon volatile anesthetic. Unfortunately, like many anesthetic agents, the exact mechanism of action is not known.
Indication:	Self-administered relief from pain in conscious, hemodynamically stable patients
Contraindications:	<ul style="list-style-type: none"> • Patients less than 18 years of age • Pregnancy, intended pregnancy, or current breast-feeding • Inadequate patient understanding or lack of cooperation • Decreased level of consciousness or head injury • History of clinically significant renal impairment, e.g., reduced renal output • History of liver dysfunction following previous exposure to halogenated anesthetics • Current use of tetracycline antibiotics • Personal or genetic history of malignant hyperthermia • Muscular dystrophy
Onset:	Onset: 1-3 minutes / 8-10 regular breaths Duration: approximately 25 minutes per 3 mL dose / 3-5 minutes once discontinued
Dose:	3 mL self-administered via inhaler; may repeat after 20 minutes; maximum total volume 6 mL
Route:	Inhaled
Cautions:	Consider the CHECK mnemonic: <ul style="list-style-type: none"> • Cardiac instability or respiratory depression • Hypersensitivity • Consciousness (i.e., altered level of consciousness) • Kidneys -- signs of kidney failure or renal impairment • Adult dosages

Naloxone (Narcan)

Classification:	Narcotic antagonist
Mechanism:	Reverses the effects of opioids including respiratory depression, sedation, hypotension Antagonizes the opioid effects by competing for the same receptor sites.
Indication:	To reverse respiratory depression/depressed mental status secondary to actual or suspected narcotic use.
Contraindications:	Allergy or known hypersensitivity
Onset	IV – 1 minute, IM 3 minutes, IN 3 minutes
Dose	0.4mg (IM or IV) 0.4mg (IM or IV) after 3 minutes if SpO ₂ of ≥ 94% and ventilating > 10 have not been achieved. 0.8mg (IM or IV) after 3 minutes if SpO ₂ of ≥ 94% and ventilating > 10 have not been achieved. 2.0mg (IM or IV) after 3 minutes if SpO ₂ of ≥ 94% and ventilating > 10 have not been achieved. 3mg IN
Route	IM, IV, IN
Adverse Effects	Reversal of narcotic effect and combativeness Signs and symptoms of severe drug withdrawal Hypotension, hypertension Nausea, and vomiting, sweating, tachycardia
Cautions:	Patient combativeness May precipitate withdrawal symptoms

Nitroglycerin

Classification:	Antianginal, vasodilator
Mechanism of Action	Reduces cardiac oxygen demand primarily by dilating blood vessels resulting in decreased blood flow (preload) to the heart from the body, decreased resistance to the heart's pumping (after load). Dilation of coronary arteries results in increased blood flow to cardiac tissue.
Indications:	Chest discomfort that appears cardiac in nature.
Contraindications:	<ul style="list-style-type: none"> Systolic BP < 110 mmHg, known allergy or sensitivity to Nitrates, HR <50 and >150, and if patient has used Viagra or Levitra in the past 24 hours or Cialis in the last 48 hours.
Onset, Dose, Route:	Rapid onset via sublingual route (60 seconds) with 30-minute duration. Dose depends on strength of patient's prescription. EMAs are to give one dose (q 3-5 mins) provided systolic blood pressure remains > 110.
Metabolism:	Rapidly metabolised in the body by the liver and excreted by the kidneys.
Adverse Effects:	<ul style="list-style-type: none"> Induces hypotension, dizziness, weakness, headache, nausea, and vomiting
Cautions:	<ul style="list-style-type: none"> Hypotension frequently occurs, especially in the elderly and must be expected. Ensure patient is not at risk to fall. Repeat vitals and drug until pain is relieved, to a maximum of 3 doses in any 30-minute period (providing the systolic BP remains > 110; irrespective of any Nitro taken by the patient prior to your arrival). The patient has used Viagra at any time in the past, (beyond the 24-hour contraindication limit) there may be some cause for very careful monitoring of the patient's blood pressure.
Notes:	<p>Medical oversight required if the patient does not have a prescription. If using Nitro spray, do not shake the container prior to administration.</p> <p>Nitroglycerin comes in forms other than spray and/or tablet, none of which are approved for EMA use. If your patient has a Nitro patch applied, it does not change the Nitroglycerin protocol.</p> <p>If you have given Nitro and are now using Entonox, if hospital arrival is not imminent 20 min following your last Nitro, discontinue Entonox, resume high flow O₂ and administer additional Nitro as per protocol.</p>

	<p>If pain is completely relieved for more than 5 min, you may initiate the chest pain protocol again if the pain returns. This is considered a new episode and Nitro can be given. This is applicable even if Nitro has already been administered for the initial episode.</p>
--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Ondansetron

Classification:	Antiemetic
Mechanism:	Selectively inhibits type 3 serotonergic receptors, suppressing nausea.
Indication:	Relief of moderate to severe nausea and vomiting
Contraindications:	<ul style="list-style-type: none"> • Known allergy or hypersensitivity to ondansetron • Congenital long QT syndrome • Phenylketonuria (PKU)- Ondansetron ODT may contain aspartame which should be avoided in patients with phenylketonuria. Ondansetron injections can be safely administered in this population. • Relative contraindication in first trimester pregnancy. • Please note that some Indigenous people may have a higher prevalence of Long QT Syndrome due to a genetic variation. It is advisable to inquire with Indigenous patients whether they or their family have been diagnosed with Long QT Syndrome. If so, dimenhyDRINATE is the recommended antiemetic for this patient population.
Onset:	Onset: 15-30 minutes Peak: 1 hour Duration: > 5 hours
Dose:	Adult Dose: 4mg PO Pediatric Dose: 2mg PO 6months-4 years 4mg PO for 4 years and older
Route:	Oral administration
Cautions:	Carefully assess patients prior to administering ondansetron. Evaluate the type and intensity of the nausea, as well as the efficacy of relief following administration. Closely monitor patients for signs of respiratory depression or CNS effects, particularly in elderly patients or those with hepatic or renal impairment.

Oral Glucose

Classification:	Direct Glucose source
Mechanism:	Absorbed into the bloodstream resulting in increased blood glucose levels, thereby providing an increased level of glucose for use by cells.
Indications:	Known or suspected hypoglycemia in a conscious patient where there is no risk of aspiration or choking
Contraindications:	Only for patients with sufficient mentation to maintain an airway
Onset:	
Dose:	15 g glucose PO Repeat at 5 minutes as necessary; no limit
Route:	Oral administration
Adverse Effects:	May increase airway management problems
Cautions:	Patient must be able to maintain their own airway.

Salbutamol

Classification:	Bronchodilator Sympathomimetic
Mechanism:	Selective β_2 stimulation resulting in bronchodilation and some degree of vasodilation Some β_1 effects with repeated doses.
Indication:	<ul style="list-style-type: none"> • Bronchospasm associated with asthma, bronchitis, or emphysema. • Bronchospasm and wheezing secondary to other causes, such as anaphylaxis
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity or allergy to Salbutamol • Hemodynamically uncontrolled tachyarrhythmias >120 bpm
Onset	5 minutes
Dose	Nebulize Age >1 year: 5 mg Age < 1 year: 2.5 mg MDI: Adult: 4 x 100 mcg via metered dose inhaler; repeat as required Paediatrics: < 10 kg: not indicated 10-20 kg: 5 x 100 mcg per course; may repeat up to 3 times > 20 kg: 10 x 100 mcg per course; may repeat up to 3 times
Route	Nebulized, Metered Dose Inhalers (MDI)
Cautions:	Coronary disease COPD patients with degenerative heart disease Diabetes

Tranexamic Acid

Classification:	Hemostatic agent/Antifibrinolytic Agent
Mechanism:	Prevents clot degradation by competing for TPA receptor sites
Indication:	<ul style="list-style-type: none"> • Major trauma patients after initiation of the hypovolemia protocol • Signs of shock in association with mechanism of injury or physical findings suggestive of occult or ongoing bleeding
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity or allergy to TXA • If time is greater than 3 hours after injury • Patient < 12 years • Isolated TBIs
Medical oversight consult required	<ul style="list-style-type: none"> • Epistaxis • Post partum hemorrhage
Onset	Immediate
Dose	2gram – 2000 mg
Route	TXA – Deliver 2 gram (2000 mg) IV push over 1 minute
Cautions:	Further hypotension if administered too quickly

EMA Licensing Board Examinations

The EMA Licensing Board (Board) licenses candidates that have completed a training program recognized by the Board and passed the examinations approved by the Board. The Board also licenses applicants licensed in jurisdictions outside of British Columbia (BC) and may require an applicant to complete an examination when the Board determines that the applicant's qualifications, examinations, or training required for their authorization to practice in the other jurisdiction are not equivalent to those required in BC for the category of licence sought. In addition, the Board may require that a former EMA successfully complete examinations to have a licence suspension removed or a licence reinstated.

The purpose of the examination process is to ensure that candidates possess the necessary knowledge, abilities, skills, aptitudes, and judgements for entry to practice into the paramedic and first responder professions in BC.

Candidates have **three attempts** to successfully complete each of the required examinations. Candidates that are unsuccessful at the examinations after three attempts are required to submit proof of successful completion of a new recognized training program to be eligible to begin the exam process again.

If a candidate has failed the practical exams 3 times and taken a new program, they can be exempt from the written and/or jurisprudence exam under the following circumstances:

- The candidate has completed the written and/or jurisprudence exams within 6 months of successfully completing the new training program, and
- The candidate received 85% or higher on their first attempt at the written and/or jurisprudence exams.

Practical Examination Grading Criteria

The evaluations use percentage-based marking criterion to evaluate candidate performance. Candidates enter each practical evaluation with 100%. The deductions are taken from each component or criterion where deficiencies are noticed and documented. Criteria are weighted according to both the severity and relevance of their impact in the scenario and 70% is required to pass. The full grading criteria can be found [here](#).

The criteria are grouped into 3 categories.

Major Deficiency***

- Failing to perform a skill or task when indicated by patient presentation.
- Failing to meet the standards required for the skill.
- Performing an indicated skill or task with multiple or gross errors regardless of the outcome to patient care.
- Performing a non-indicated skill to the detriment of patient care either directly or by cause of delay.
- Incorrect sequencing of skills or tasks resulting in detriment to patient care.

Moderate Deficiency**

- Performing an indicated skill or task with single or minor errors with the potential to be detrimental to patient care.
- Performing a non-indicated skill with the potential to be detrimental to patient care either directly or by delay.
- Incorrect sequencing of skills or tasks not resulting in detriment to patient care.
- Performing skills or tasks detrimental to staff, patient, and other safety but without detriment to patient care.
- Failure to provide critical information in a record or report.

Minor Deficiency*

- Performing an indicated skill or task appropriately but with insufficient evidence to justify the action.
- Performing a skill or task with single or minor errors without detriment to patient care.
- Failure to provide non-critical but pertinent information in a record or report.

Practical Exam Reviews

A candidate may request **one** clinical review of their practical exam results within 5 days of the exam date, requests for a review that are received more than 5 days after the exam date **will not** be accepted.

The request for review **must** include all pertinent details of the grounds on which the candidate is appealing and may be submitted via the [Request for Practical Exam Review](#) form or via email submission to getanexam@gov.bc.ca.

The candidate will be informed of the results of the review within 2 weeks of submission and remedial exams will be scheduled **after** the review is completed if required.

All reviews are final and multiple reviews per exam are not permitted.

If the candidate still believes the EMA Licensing Branch/Board response is unfair, unreasonable, or inconsistent with relevant policy, procedures or legislation, you may wish to raise your concerns with the Office of the Ombudsperson. The Ombudsperson is an independent Officer of the B.C. Legislature who impartially investigates complaints from the public to ensure people are treated fairly in the delivery of government services.

For more information, visit their website www.bcombudsperson.ca or call 1-800-567-3247.

Written Exam Reviews

If a candidate has been unsuccessful twice at the EMALB online written examination, they may request feedback by contacting getanexam@gov.bc.ca.

Exam Accommodations

Online Examinations

Candidates with protected characteristics (e.g., disability, family status, religion) are entitled under provincial human rights legislation to reasonable accommodation in testing arrangements that provide for fair and valid assessment. EMALB will consider accommodation requests for online examinations while ensuring the integrity of the examination and ensuring that the examination tests the required competencies; that is, the knowledge, skills, abilities, attitudes, and judgments required for the safe and effective practice of an entry level primary or advanced care paramedics.

To be granted an accommodation for the online examinations, the application must submit a note from an authorized health care provider who can provide direction on required accommodations or and Individualized Education Plan (IEP) that clearly state what accommodations are required.

Candidates are responsible for all costs associated with obtaining documentation to support the request for accommodation.

Practical Examinations

There are **no accommodations** available for practical examinations. Candidates must be able to perform the required skills.

EMR Examination Requirements

Jurisprudence Examination

All licensing candidates at the EMR, PCP, ITT, ACP, or CCP level are required to successfully complete the jurisprudence examination. The jurisprudence examination consists of 25 questions and there is no time limit to complete. 80% is required to pass.

When you have completed your examination, you will receive your mark. In the interest of examination security, you **will not** be able to view the full examination once it has been completed. If you are unsuccessful on your first attempt, you may re-attempt the exam at any time. If you are unsuccessful on your second attempt, you will be required to wait **5 days** before attempting the exam for a third and final time.

Written Examination

Board approved written examinations for EMRs are administered by the EMA Licensing Branch.

EMRs that are trained in BC and applying for initial licensure are required to successfully complete the online written examination. The EMR written examination consists of 200 questions with 2.5 hours to complete. 75% is required to pass.

EMRs applying for licence reinstatement or applying from out of country may also be required to successfully complete the online written examination.

When you have completed your examination, your results will be available immediately. In the interest of examination security, you **will not** be able to view the full examination once it has been completed. If you are unsuccessful on your first attempt, a remedial exam you may re-attempt the exam after **2 days**. If you are unsuccessful on your second attempt, you may re-attempt the exam after **5 days**.

Practical Examination

IMPORTANT: EMR practical examinations will not be scheduled until after both the online written and jurisprudence exams have been successfully completed.

EMR candidates are required to successfully complete two practical scenarios, which consist of one medical and one trauma call.

When a candidate is unsuccessful in a practical scenario, remedial exams are assigned as follows:

When an EMR candidate fails:	The EMR candidate is assigned:
• a practical medical scenario	➤ another medical scenario if the candidate scores less than 70% on the scenario
• a practical trauma scenario	➤ another trauma scenario if the candidate scores less than 70% on the scenario

Scheduling EMR Examinations

1. Submit electronically the [Application for Licence](#) form to register for exams and choose your preferred practical exam location.
2. Contact your training provider and ensure they have your consent to send your certificate to getanexam@gov.bc.ca.
3. Obtain a **basic BCeID**. **Please use only lowercase characters in your BCeID username.** (If you already have a **basic** BCeID and password you may skip this step).
4. Please use your **basic** BCeID username and password to create a new account in the [online learning system](#) (it may take up to 2 weeks to be granted access).
5. Successfully complete both the EMR written and jurisprudence exams online.
6. Once your online exams have been successfully completed the branch will schedule your practical examination.

PCP Examination Requirements

Jurisprudence Examination

All licensing candidates are required to successfully complete the jurisprudence examination. The jurisprudence examination consists of 25 questions and there is no time limit to complete. 80% is required to pass.

When you have completed your examination, you will receive your mark. In the interest of examination security, you **will not** be able to view the full examination once it has been completed. If you are unsuccessful on your first attempt, you may re-attempt the exam at any time. If you are unsuccessful on your second attempt, you will be required to wait **5 days** before attempting the exam for a third and final time.

Written Examination

Board approved written examinations for PCPs are administered by the [Canadian Organization of Paramedic Regulators \(COPR\)](#).

PCPs that are trained in BC and applying for initial licensure are required to successfully complete the COPR entry to practice written examination.

PCPs that are applying from out-of-country may also be required by the Board to complete the entry to practice examination provided by COPR as part of the licensure requirements. Please click [here](#) for the full COPR exam schedule

The COPR entry to practice examination is developed and assembled according to the [examination blueprint](#). The examination handbook and study guide are available on the [COPR exam page](#). In addition, COPR offers preparatory tests that are designed to simulate the actual entry to practice examinations on a smaller scale. The preparatory tests are available [here](#).

COPR Written Examination and Preparatory fees are established by, and payable to, COPR.

Candidates that require special accommodation for the COPR entry to practice examination should read the [Entry to Practice Examinations Testing Accommodation Policy](#).

Practical Examination

PCP candidates are required to successfully complete two practical scenarios, which consist of one medical and one trauma call.

When a candidate is unsuccessful in a practical scenario, remedial exams are assigned as follows:

When an PCP candidate fails:	The PCP candidate is assigned:
<ul style="list-style-type: none">• a practical medical scenario	<ul style="list-style-type: none">➤ another medical scenario if the candidate scores less than 70% on the scenario
<ul style="list-style-type: none">• a practical trauma scenario	<ul style="list-style-type: none">➤ another trauma scenario if the candidate fails if the candidate scores less than 70% on the scenario

Scheduling PCP Examinations

Registration for PCP examinations is done through COPR and EMALB separately, please read the instructions below carefully to ensure that you register for all your examinations.

Entry to Practice Written Examination (COPR)

Registration for the COPR entry to practice examination is done through the COPR application portal on their website. Review the [COPR website](#) for the following and register for your entry to practice exam:

1. Read the Entry to Practice Examinations Handbook
2. Read the Guidelines Regarding Special Accommodation for Candidates with Disabilities
3. Read the COPR Examination Study Guide
4. Register for the COPR entry to practice exam

Practical and Jurisprudence Examinations (EMALB)

1. Submit electronically the [Application for Licence](#) form
2. Read the Board [examination policies](#)
3. Contact your training provider and ensure they have your consent to send your certificate to getanexam@gov.bc.ca
4. Obtain a **basic BCeID**. **Please use only lowercase characters in your BCeID username.** (If you already have a **basic** BCeID and password you may skip this step)
5. Please use your **basic** BCeID username and password to create a new account in the [online learning system](#) (it may take up to 2 weeks to be granted access)

Applying for a Licence

Licence Fees

Payment of the licence fees as set out in the Emergency Health Services Regulations is required to obtain your licence. Licence fees are required when you have successfully completed all examinations but can be paid at any time throughout the application process. To speed up the licensing process, you may also complete all the licensing requirements at any time during your evaluation process. You may request a refund in writing for any licence fees you submit if you are unsuccessful in the evaluation process.

Licence Category	Licence Fee (if written examination is required)	Licence Fee (if practical examination is required)	Licence Fee (if both written and practical examinations are required)	Licence Renewal Fee
Emergency Medical Responder	\$ 50.00	\$ 400.00	\$ 450.00	\$ 50.00
Primary Care Paramedic	\$ 50.00	\$ 400.00	\$ 450.00	\$ 50.00
Advanced Care Paramedic	\$ 50.00	\$ 500.00	\$ 550.00	\$ 50.00
Critical Care Paramedic	no fee	no fee	no fee	\$ 50.00
Infant Transport Team	no fee	no fee	no fee	\$ 50.00

There are no licence fees associated with emergency medical assistant first responder licensing, student licensing, or initial licensing for applicants transferring from another province.

How to Pay your Licence Fees

Licence fees can be paid using the following methods:

- Visa, Visa Debit, MasterCard, or American Express, by completing the [EMA Licence Payment](#) form
- Cheque or Money order made payable to the Minister of Finance, including your full name, licence level and current mailing address.

Regular mail to:
Emergency Medical Assistants Licensing
Branch
Ministry of Health
PO Box 9625 Stn Prov Govt
Victoria BC V8W 9P1

Or courier to:
EMA Licensing Branch
Ministry of Health
1515 Blanshard Street, 1st
Floor
Victoria BC V8W 3C8

Licence Applications

Emergency medical responder and primary care paramedic licenses are valid for five years and require [yearly continuing competence submissions](#).

You are eligible for a licence when you have successfully completed all exams for your licence level.

To apply for your licence, follow these steps:

1. Pay the applicable fees ([see above](#)).
2. Undergo a [criminal record check](#) within 12 months of the licence application.

EMA Licensing Board Examination Policies

[EMALB 2011-01 Candidate Code of Conduct \(PDF, 287KB\)](#)

[EMALB 2012-02 Failure to Attend and Late Cancellation of Examinations \(PDF, 286KB\)](#)

[EMALB 2018-03 Examination Order Requirements for Emergency Medical Responders \(PDF 138KB\)](#)

EMA Licensing Board [Policy Page](#)

Change Index

Date	Editor	Change
2025-04-01	kf	Page 74 updated Nitro contraindications from HR >50 and < 150 to HR < 50 and >150
2025-04-16	AC	All fluid bolus' changed to 20ml/kg to max of 2 litres, reassessing every 500mls.