Advanced Care Paramedic

Medical Directives

ALS PCS 5.1

Hamilton Health Sciences

CENTRE FOR PARAMEDIC EDUCATION AND RESEARCH

2023 - v1

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The Emergency Health Services Branch of the Ministry of Health Version 5.1 of the ALS Patient Care Standards will now be the standard of care. These standards and guidelines include significant advances to the paramedic scope of practice since they were last published. As the ALS PCS is a living document, this Medical Directive book may not be an accurate reflection of the current scope of practice and/or ALS PCS. Paramedics are to refer to the CPER website for access to the most up to date version of the ALS PCS and to their certification letter for currently authorized medications and procedures.

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Note: This Paramedic guide contains content from the Ministry of Health Advanced Life Support Patient Care Standards, version 5.1 dated February 1, 2023. To access the full document please refer to www.CPER.ca.

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ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

Introduction

ADVANCED LIFE SUPPORT PATIENT CARE STANDARDS

Levels of Paramedics

In Ontario, there are 3 levels of qualification for paramedics which lead to Certification as a: Primary Care Paramedic (PCP), Advanced Care Paramedic (ACP), and Critical Care Paramedic (CCP). The qualification for each are set out in Ontario Regulation 257/00 made under the *Ambulance Act*, RSO 1990, c A-19. The qualifications for each include a requirement that the paramedic be authorized by a Medical Director of a Regional Base Hospital (RBH) to perform the controlled acts set out in Schedules 1, 2 and 3 to O. Reg 257/00.

A paramedic may be authorized by the Medical Director to perform controlled acts from the Schedule immediately above their Certification. In this circumstance, the paramedic is required to perform the controlled act to a specific standard as set out in the *Advanced Life Support Patient Care Standards* (ALS PCS). All advanced medical procedures that are not listed as controlled acts in Schedules 1, 2 and 3, shall also be performed as set out in the ALS PCS.

Purpose of Standards

The ALS PCS reflects current practices for paramedics in Ontario and provides benchmarks for paramedic performance. It also communicates the standards of practice and care by paramedics in Ontario to paramedics, patients, other disciplines and the public in general. In the provision of ALS PCS care, paramedics are required to ensure patient care and documentation is provided in accordance with all appropriate Standards as indicated in O. Reg. 257/00.

Comprehensive Care

Although two patient care standards exist, both Standards represent a continuum of care that is to be followed in an integrated fashion during a call for service. While initiating and continuing treatment prescribed by these Medical Directives, a paramedic must ensure that the patient simultaneously receives care in accordance with the BLS PCS. It is acknowledged that there may be circumstances and situations where complying with ALS PCS is not clinically justified, possible, or prudent *(e.g.* multiple crews on scene, trapped patient, extenuating circumstances, competing patient care priorities). When treatment deviates from the standards, a paramedic must document the care provided, including reasoning for deviating from the ALS PCS.

Format of the ALS PCS

This document is comprised of a Preamble section and seven (7) sections: Section 1 -PCP Core Medical Directives: Section 2 -ACP Core Medical Directives: Section 3 -PCP Auxiliary Medical Directives: Section 4 -ACP Auxiliary Medical Directives: Section 5 -Chemical Exposure Medical Directives: Section 6 -Certification Standard, and Section 7 -Research Trial Standard.

Use of the Medical Directives by Paramedics

These Medical Directives apply to paramedics who are authorized by a RBHP Medical Director to provide patient care. Delegation of controlled acts in the ALS PCS to paramedics falls under the exclusive oversight of the RBH P. Critical Care Paramedics and Advanced/Primary Care Flight Paramedics will perform controlled acts in accordance with the Base Hospital (RBHP) Medical Directives issued by the Ornge Base Hospital Medical Director(s).

General Structure of a Medical Directive

All Medical Directives follow the same format and are comprised of the following sections:

Indication:	The general medical complaint or problem to which the Medical Directive applies.
Conditions:	Clinical parameters that must be present for a procedure to be performed or for a medication to be administered.
Contraindications:	Clinical parameters that if present, preclude the performance of a procedure or the administration of a medication.
Treatment:	Description of the type of procedure to be performed or the dosing of a medication.
Clinical Considerations:	Key clinical points that provide general guidance to the proper performance of a procedure or the administration of a medication.

All of these sections must be taken into account before and during the implementation of a Medical Directive.

Auxiliary Medical Directives

Additional ("Auxiliary") skills may be delegated through use of the Auxiliary Medical Directives. Delegation of Auxiliary Medical Directives by a RBH Medical Director to paramedics is optional and may be introduced after consultation and mutual agreement between the RBH and the certified ambulance service that employs the paramedic. Some PCP and ACP Medical Directives contain the phrase, "(if available and authorized)". This phrase qualifies the skill or procedure as optional (*i.e.* auxiliary) even if included in PCP or ACP Medical Directives.

Consent to Treatment in Non-Emergency Situations

Except in emergency circumstances described below, paramedics shall obtain consent prior to administering treatment. If a patient is incapable of consenting to the treatment being proposed by a paramedic, consent may be given or refused on his or her behalf by the patient's substitute decision-maker (SDM). Consent may be expressed or implied. Implied consent may be assumed where a person provides a physical indication that they consent to the treatment being proposed. For example, a patient who cannot speak but extends his hand to a paramedic after the paramedic indicates she is going to perform a simple procedure, such as a blood glucose determination, may be giving implied consent to the treatment.

The elements are required for consent to treatment:

- consent must be given by a person who is capable of giving consent with respect to treatment;
- consent must relate to the treatment;
- consent must be informed;
- consent must be given voluntarily; and
- consent must not be obtained through misrepresentation or fraud.

Consent to treatment is informed if, before it is given to the person, he or she has:

- received the following information that a reasonable person in the same circumstances would require in order to make a decision about the treatment:

- the nature of the treatment;
- the expected benefits of the treatment;
- the material risks of the treatment;
- the material side effects of the treatment;
- alternative courses of action;
- the likely consequences of not having the treatment; and

- received responses to his or her requests for additional information about those matters.

Valid consent requires that a person has the capacity to provide consent. A person is presumed to have the capacity to provide consent with respect to treatment and a paramedic may rely on that presumption unless the paramedic has reasonable grounds to believe that the person is capable with respect to the treatment. A paramedic must perform a capacity assessment if it is not reasonable in the circumstances to presume the person is capable of consenting to the treatment.

A patient is capable with respect to treatment if the patient is:

- Able to **understand** the information that is relevant to making a decision about the treatment or alternatives beings proposed; **and**

- Able to **appreciate** the reasonably foreseeable consequences of a decision or lack of decision with respect to treatment.

If a patient is incapable of consenting to a proposed treatment, and the paramedic is aware or is made aware that the person has a prior capable wish with respect to the proposed treatment, they must respect that wish (for example, if the person does not wish to be resuscitated).

Consent to Treatment in Emergency Situations

Where the person for whom the treatment is being proposed is apparently experiencing severe suffering or is at risk of sustaining serious bodily harm if the treatment is not administered promptly, it is considered to be an emergency.

For situations involving consent to treatment in emergency situations, a paramedic shall comply with the applicable directions contained in the *Basic Life Support Patient Care Standards* (BLS PCS).

Discharge from Care

If a paramedic is certified and authorized by their Regional Base Hospital to perform a prehospital discharge from care as per the applicable Medical Directives, the following applies. For the purpose of the applicable Medical Directives, a patient or substitute decision maker (SDM) present at the scene, must be capable to make an informed decision about their treatment plan.

A paramedic authorized to perform a prehospital discharge from care shall:

1. Determine whether a patient may be treated in accordance with the Treat and Discharge component of the applicable Medical Directive,
2. Communicate a clinically reasonable differential diagnosis to the patient or SDM,
3. Discuss the following elements of a discharge treatment plan:
   a. The clinical situation related to the most likely diagnosis and/or differential diagnoses,
   b. The symptoms and signs alerting them to seek further medical care (i.e. clues that the condition is worsening or that the diagnosis may not be correct),
   c. Instructions regarding modifications(s) of activities of daily living following the health event,
   d. Where possible, provide additional contacts for follow up care,
   e. Instructions to call 911 back if their condition worsens or recurs, and
4. Ensure the patient has the necessary support to follow a discharge treatment plan. These supports may include:
   a. access to food,
   b. access to transportation,
   c. access to alternate health care follow up,
   d. a safe place to stay,
   e. responsible adult at the scene available to monitor the patient, and
   f. consideration of other apparent patient vulnerabilities.

Refusal of Treatment

If a patient refuses treatment, either in whole or in part, a paramedic shall comply with the applicable directions contained in the BLS PCS.

Intravenous (IV) Access and Therapy by Primary Care Paramedics

There are 2 types of authorization for PCPs IV cannulation and therapy.

“PCP Assist IV” is authorization for a PCP to cannulate a peripheral IV at the request and under the direct supervision of an ACP. The patient must require a peripheral IV in accordance with the indications listed in the Intravenous and Fluid

Therapy Medical Directive - Auxiliary. The ACP will perform all IV therapy in accordance with the Intravenous and Fluid Administration Medical Directive once intravenous access is obtained. PCPs authorized in PCP Assist IV are not authorized to administer IV therapy.

"PCP Autonomous IV" is authorized for a PCP to independently cannulate an IV according to the Intravenous and Fluid Therapy Medical Directive – Auxiliary. PCPs authorized in PCP Autonomous IV are authorized to administer IV therapy according to applicable Medical Directives.

Authorization for each type shall meet the requirements established by the provincial Medical Advisory Committee.

Home Medical Technology and Novel Medications

As community care advances, new home medical technologies and novel medications are being introduced for home use by highly trained patients and caregivers. They are generally used by patients with complex medical histories who may require emergent interventions which are not described in, or aligned with, the BLS PCS or ALS PCS.

A "home medical technology" is an external or internal mechanical device prescribed by a member of a regulated health profession for the purpose of treating a medical condition.

A "novel medication" is a self/caregiver-administered medication prescribed by a member of a regulated health profession that is required to treat patients with generally rare and unusually complex chronic medical conditions which are often end stage. The medication may be self/caregiver-administered by any route into any part of the body.

These can be encountered unexpectedly by paramedics without any prior knowledge that these technologies or medications are being used in the community. Paramedics may not be familiar with the use of these technologies or medications, even though they may be required to provide care.

In some cases, when Base Hospital Medical Directors are alerted to these devices, medications or care requirements, a local medical directive may be issued to guide

specific care for these patients. Such directives should be followed until further consideration by the Medical Advisory Committee. A paramedic may assume patients or caregivers have knowledge about the technology or medication if they confirm that they were trained in its use and/or administration. A paramedic should advise the patient or caregiver to follow any specific steps or provide any advice about restarting/stopping the device or novel medication. A paramedic may only assist a patient within the authorized paramedic skill set.

When care requirements are uncertain, but the patient is stable, transport the patient. If the patient is unstable, consider patching to the BHP. Alternatively, consider contacting the responsible member of a regulated health profession.

A paramedic may follow written advice provided by their Base Hospital Medical Directors even if this advice is outside the conditions and contraindications of the BLS PCS and ALS PCS.

Patching

A paramedic shall patch to the Base Hospital when:

- a medical directive contains a mandatory provincial patch point;

OR

- an RBH introduces a mandatory BH patch point;

OR

- for situations that fall outside of these Medical Directives where the paramedic believes the patient may benefit from online medical direction that falls within the prescribed paramedic scope of practice;

OR

- there is uncertainty about the appropriateness of a medical directive, either in whole or in part.

In cases where a treatment option requires the prior authorization by the BHP (*i.e.* mandatory provincial patch point or mandatory BH patch point) AND the BHP cannot be reached despite reasonable attempts by the paramedic to establish contact, a paramedic may initiate the required treatment without the requisite online authorization if the patient is in severe distress and, in the paramedic's opinion, the medical directive would otherwise apply. Clinical judgement must be applied and an acceptable standard of care must be met. This may be based on peer and expert review. In such cases, a paramedic should continue attempts to contact the BHP after the treatment has been initiated. All patch failures must be reported in a timely

manner in accordance with local policy and procedures. Paramedics should document the attempts to patch to the BH on the Ambulance Call Report (ACR).

If a BHP directs a paramedic to perform an assessment or intervention that exceeds the paramedic's scope of practice, the paramedic must advise the BHP of such and notify the physician that he or she cannot comply with the direction as it exceeds his or her scope of practice. In such cases, a paramedic should ask the BHP to provide alternative direction.

Incident Reporting

Paramedics shall adhere to their ambulance service policies and the *Ontario Ambulance Documentation Standards* (incorporated by reference in Ontario Regulation 257/00) for incident reporting. Paramedics shall also adhere to additional RBH policies regarding reporting of clinical care incidents to the RBH.

Responsibility of Care

While on scene, the highest level paramedic shall assess the patient and make a decision on the level of care required, and on the level of paramedic required for the care of the patient. The highest level paramedic is the ultimate patient care authority on the scene. If there is any disagreement between paramedics, the Base Hospital physician may be contacted. It is expected that when an intervention has been performed, the paramedic most appropriate for that intervention will remain responsible for the patient.

In all patient care, the highest level of paramedic is responsible for the care of the patient, including decisions on the level of care required during transport. A paramedic may choose to assign aspects of care and procedures to an alternate level paramedic, as long as the care and procedures are within that paramedic's scope of practice. Paramedics must alert the highest level paramedic of any change of patient status.

When transferring care from one level of paramedic to another, paramedics shall provide:

- current CTAS level;

- a history of the patient's current problem(s) and relevant past medical history;
- pertinent physical findings;
- a summary of management at scene/enroute;
- the patient's response to treatment, including most recent vital signs; and
- the reason for transfer in cases of inter-facility transfers.

The transfer of responsibility of patient care is a critical juncture along the clinical care continuum. When transferring patient care to another health care provider (e.g. nurse, physician, etc.), a paramedic must comply with BLS PCS regarding such transfers.

Research

Clinical research is fundamental to the practice of medicine and the development of safer, more effective treatment options for patients. At times, research protocols require temporary changes to patient care standards. Changes to patient care standards will be approved and introduced by the MOH.

Patient Care Model

Any patient care model subject to The Patient Care Model Standard (PCMS) requires approvals and training as per the PCMS. Paramedics shall assess and provide treatment to all patients in accordance with the ALS PCS and BLS PCS when patients do not completely meet the specific parameters of approved Patient Care Models.

Conventions

"Conventions" refers to a consistent application of terms throughout the Medical Directives based on definitions below.

The word 'consider' is used repeatedly throughout the Medical Directives. Where this word appears, it indicates that a paramedic shall initiate the treatment when the indications are first identified unless there is strong clinical rationale to withhold or delay treatment or other extenuating circumstances. A paramedic must document his or her justification for withholding treatment on the ACR.

Medication Doses and Administration

Medication doses may be either in per kilogram or fixed doses, depending on common clinical practice. The number of recommended medication doses may be administered regardless of any previous self-administration by a patient. When more than one route of medication administration is listed, the order of preference for route of administration is from left to right. Clinical circumstances for each case should determine the final route chosen.

Pediatric medication doses can vary slightly according to the source of expert opinion. The pediatric medication doses in the ALS PCS are the preferred doses. However, medication doses as determined by an up-to-date version of a widely accepted pediatric emergency tape (*e.g.* Broselow Tape) are an acceptable alternative. Use of a pediatric emergency tape shall be documented on the ACR when it is used to determine a pediatric medication dose.

Medication doses may be calculated based upon weight or other factors and result in a fraction that cannot be measured accurately. Depending on the delivery method used, medication doses may require rounding from the exact dose calculated. In these cases, the medication dose delivered will be rounded to the closest dose that can accurately be measured.

Age and Vital Signs

The general age cut off between adults and pediatrics is 18 years. There is a wide range of "normal" for vital signs in adults and especially pediatrics. As much as possible, ages for pediatrics and cut off points for vital signs have been kept consistent throughout the Medical Directives. However, clinical research and expert opinion have resulted in a number of exceptions which in each case has been deliberately chosen and is clearly noted in each Medical Directive. There is a deliberate gap in the definition of normotension and hypotension in adults.

ADULTS

Normotension SBP ≥100mmHg
Hypotension SBP <90 mmHg
Heart rate Heart rate is always in beats per minute according to a cardiac monitor when it is applied. In situations where a cardiac monitor is not indicated then the heart rate is equal to the pulse rate.

Bradycardia HR <50 BPM
Tachycardia HR ≥100 BPM
Tachypnea RR ≥28 breath/min

PEDIATRICS

Age	Respiratory Rate	Heart Rate
0-3 months	30-60	90-180
3-6 months	30-60	80-160
6-12 months	25-45	80-140
1-3 yr	20-30	75-130
6 yr	16-24	70-110
10 yr	14-20	60-90

Normotension SBP ≥ 90 mmHg + (2 x age in years)
Hypotension SBP < 70 mmHg + (2 x age in years)
Weight (kg) (age x 2) + 10

HYPOGLYCEMIA

Age	Blood glucose level
<2 yr	<3.0 mmol/L
≥2 yr	<4.0 mmol/L

Level of Awareness (LOA):
The word 'altered' refers to a GCS that is less than normal for the patient.

The word 'unaltered' refers to a GCS that is normal for the patient.
This may be a GCS <15.

Commonly Used Abbreviations

The following abbreviations, in alphabetical order, appear in the Advanced Life Support Patient Care Standards:

A

ACP	Advanced Care Paramedic
AED	Automated external defibrillation

ALS	Advanced Life Support
ALS PCS	Advanced Life Support Patient Care Standards
ASA	Acetylsalicylic acid
AED	automated external defibrillation

B

BHP	Base Hospital Physician
BLS PCS	Basic Life Support Patient Care Standards
BP	blood pressure
BPM	Beats per minute
BVM	Bag-valve-mask

C

CCP	Critical Care Paramedic
COPD	Chronic obstructive pulmonary disease
cm	Centimeter
CPAP	Continuous positive airway pressure
CPR	Cardiopulmonary Resuscitation
CTAS	Canadian Triage and Acuity Scale
CVA	Cerebral vascular accident
CVAD	Central venous access device

D

DKA	Diabetic ketoacidosis
DNR	Do Not Resuscitate

E

ECG	Electrocardiogram
ED	Emergency Department
$ETCO_2$	End tidal carbon dioxide
ETT	Endotracheal tube

F

FiO_2	Fraction of inspired oxygen

G

g	Gram
GCS	Glasgow Coma Scale
gtts	Drops

H

H_2O	Water
HR	Heart rate
Hx	History

I

IM	Intramuscular
IN	Intranasal
IO	Intraosseous
IV	Intravenous

J

j	Joule

K

kg	Kilogram

L

LOA	Level of awareness
LOC	Level of consciousness

M

Max.	Maximum
MAC	Medical Advisory Committee
mcg	Microgram
MDI	Metered dose inhaler
mg	Milligram
Min.	Minimum
min	Minute
mL/kg	Milliliter per kilogram
mmHg	Millimeters of mercury
MOH	Ministry of Health
ms	Milliseconds

N

N/A	Not applicable
NaCl	Sodium chloride
nare	Nostril
NEB	Nebulized
NPA	Nasopharyngeal airway

NSAID	Non-steroidal anti-inflammatory drug

O

OBHG-MAC	Ontario Base Hospital Group - Medical Advisory Committee
OPA	Oropharyngeal airway

P

PCP	Primary Care Paramedic
PEA	Pulseless electrical activity
PPV	Positive Pressure Ventilation
PO	by mouth/oral
PRN	as needed

Q

q	every

R

RBHP	Regional Base Hospital Program
ROSC	Return of spontaneous circulation
RR	Respiratory rate

S

SAED	Semi-automatic external defibrillation
SC	Subcutaneous
SL	Sublingual
SBP	Systolic blood pressure
SpO_2	Saturation of peripheral oxygen
STEMI	ST-segment elevation myocardial infarction

T

TBI	Traumatic brain injury
TCP	Transcutaneous pacing
TOP	Topical
TOR	Termination of Resuscitation

U

URTI	Upper respiratory tract infection

V

VF	Ventricular Fibrillation
VT	Ventricular Tachycardia
VSA	Vital signs absent

W

WNL	Within normal limits

Reference and Educational Notes

The RBHs have created a companion document of reference and educational notes intended to assist paramedics in implementing these Medical Directives. This will facilitate regular updating of these notes without having to issue frequent changes to the standards. It is expected that paramedics have mastered the relevant information as part of initial training and certification and have maintained their knowledge through continuing education and self-study. The reference and educational notes do not define a standard of care; however, they should be considered useful in ensuring that an appropriate standard of care is met.

Airway/Breathing

ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

Orotracheal Intubation Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Need for ventilatory assistance or airway control;

AND

Other airway management is ineffective

CONDITIONS

Lidocaine Spray	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	Orotracheal Intubation

Orotracheal Intubation	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

CONTRAINDICATIONS

Lidocaine
Allergy or sensitivity to lidocaine
Unresponsive patient

Orotracheal Intubation
Age <50 years **AND**
current episode of asthma exacerbation **AND**
not in or near cardiac arrest.

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider topical **lidocaine** spray (to the hypopharynx) for orotracheal intubation when GCS is ≥ 4

	Route
	TOP
Dose	10 mg/spray
Max. dose	5mg/kg
Dosing interval	N/A
Max. # of doses	20 sprays

Consider **orotracheal intubation***:*

With or without intubation facilitation devices. The maximum number of intubation attempts is 2.

Confirm **orotracheal tube placement***:*

Method	**Method**
Primary	*Secondary*
$ETCO_2$ (Waveform capnography)	$ETCO_2$ (Non-waveform device)
	Visualization
	Ausculation
	Chest rise
	Esophageal detection device

CLINICAL CONSIDERATIONS

- An intubation attempt is defined as insertion of the laryngoscope blade into the mouth for the purposes of intubation.
- Confirmation of orotracheal intubation must use $ETCO_2$ (Waveform capnography). If waveform capnography is not available or not working then at least 3 secondary methods must be used. Additional secondary ETT placement confirmation devices may be authorized by the local medical director.
- ETT placement must be reconfirmed immediately after every patient movement.

*NOTE: Refer to page 27 for **Pediatric ET Tube Sizing Chart***

*NOTE: Refer to page 171 for **$ETCO_2$ Waveforms***

Nasotracheal Intubation Medical Directive – *AUXILIARY*

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Need for ventilatory assistance or airway control
AND
Other airway management is ineffective

CONDITIONS

Xylometazoline

AGE: N/A
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A
Other: N/A

Lidocaine Spray

AGE: N/A
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A
Other: Gag reflex

Nasotracheal Intubation

AGE: ≥8 years
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A
Other: Spontaneous Breathing

CONTRAINDICATIONS

Xylometazoline

Allergy or sensitivity to xylometazoline

Lidocaine

Allergy or sensitivity to lidocaine

Unresponsive patient

Nasotracheal Intubation

Age <50 years **AND** current episode of asthma exacerbation **AND** not in or near cardiac arrest.

Suspected basal skull fracture or mid-face fracture

Uncontrolled epistaxis

Anticoagulant therapy (excludes ASA)

Bleeding disorders

TREATMENT

5Rs *Patient • Drug Dose • Route • Time.*

Consider **xylometazoline 0.1% spray:**

	Route
	TOP
Dose	2 sprays/nare
Max. single dose	2 sprays/nare
Dosing interval	N/A
Max. # doses	1

Consider topical **lidocaine** spray (to the nares and/or hypopharynx):

	Route
	TOPICAL
Dose	10 mg/spray
Max. single dose	5 mg/kg
Dosing interval	N/A
Max. # doses	20 sprays

Consider **nasotracheal intubation:**

The maximum number of intubation attempts is 2.

Confirm **nasotracheal tube placement:**

Method	**Method**
Primary	*Secondary*
$ETCO_2$ (Waveform capnography)	$ETCO_2$ (Non-waveform device)
	Ausculation
	Esophageal detection device
	Chest rise

CLINICAL CONSIDERATIONS

- A nasotracheal intubation attempt is defined as insertion of the nasotracheal tube into a nare.
- Confirmation of nasotracheal placement must use $ETCO_2$ (Waveform capnography). If wave-form capnography not available or not working, then at least 2 secondary methods must be used
- ETT placement must be reconfirmed immediately after every patient movement.

Pediatric Oral Endotracheal Tube (ETT) Sizing Chart

Pediatric Endotracheal Tube Size & Depth Estimation

Size for children ≥ **1year of age:** $\frac{\text{Age in years}}{4} + 4$

Size for children < 1year of age:

Gestational age	Weight	ETT Size
< 28 weeks	< 1kg	2.5
28-34 weeks	1-2 kg	3.0
34-38 weeks	2-3 kg	3.5
Term infant	> 3 kg	3.5
1-6 months	3-5 kg	3.5-4.0
6-11 months	5-10 kg	4.0
1 year	10-12 kg	4.0-4.5

Depth (to the teeth) for children > 2 years of age: $\frac{\text{Age in years}}{2} + 12$

Endotracheal Intubation

In general, ETI should be considered only when BLS airway maneuvers have not proven successful in maintaining oxygenation/ventilation. Several studies have indicated worse outcomes when patients are intubated under pre-hospital conditions. Paramedics should always consider the detrimental aspects of performing ETI and reference the Medical Directives to determine the appropriate patient population that may benefit.

- Attempt basic maneuvers as needed: positioning, suctioning, pharyngeal airway insertion, and BVM IPPV in addition to application of 100% O_2.
- Initiate cardiac monitoring, and pulse oximetry (if available).
- Consider administration of Xylometazoline or Lidocaine (refer to ETI Medical Directive).
- Pre-oxygenate the patient for 30-60 seconds with 100% O2 (and IPPV, if required).
- Choose the appropriate size ETT and check the cuff.
- Intubate the trachea, confirm tube placement, and secure the tube (see *Intubation Confirmation Procedure*).
- If intubation is unsuccessful, stop and re-oxygenate to avoid hypoxia. The paramedic may repeat attempt (maximum of 2 attempts) and/or initiate immediate transport.

CONSIDERATIONS

- Should the patient require sedation post ETI, refer to the Patient Sedation Medical Directive.
- Alternative airway adjuncts should be readily available for use in the event of failed intubation.
- Endotracheal tube must be consistently evaluated for displacement, with special attention paid after every patient movement. The ETCO2 waveform capnography is critically important for real time monitoring of ventilation status, as well as endotracheal tube placement.

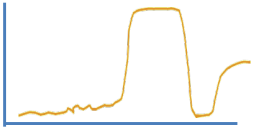
ENDOTRACHEAL TUBE CONFIRMATION

- Immediately after intubation, correct tube placement must be confirmed (refer to ETI medical Directive).

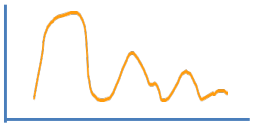
Primary Method	*Secondary Method*
Visualization	ETCO2
Auscultation	EDD
Chest rise	Other

- At least two primary and one secondary ETT placement confirmation must be used as per the ETI Medical Directive.
- An ETCO2 device (quantitative or qualitative) must be used for ETT placement confirmation. It should also be used every time the patient is moved to confirm the ETT has not been dislodged.

ET Tube Confirmation with ETCO2



ET Tube Displacement with ETCO2



- The appearance of a 4 phase capnography waveform post ETI is indication of proper tube placement.
- Loss of the 4 phase capnography is an indication that the ET tube may have become displaced.
- Numeric value >10 mmHg or numeric value gradually rising is evident of correct placement.
- Numeric value of ETCO2 may be low or zero if arrest has been prolonged. Generally ETCO2 should be ≥ 4 mmHg and should continue to rise during CPR.
- When an ET tube is inserted into the esophagus of a patient who recently ingested carbonated beverages the initial ETCO2 may be normal but will rapidly decrease to < 4mmHg after a few ventilations.

Supraglottic Airway Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Need for ventilatory assistance or airway control

AND

Other airway management is ineffective

CONDITIONS

Supraglottic Airway	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	Absent gag reflex

CONTRAINDICATIONS

Supraglottic Airway
Airway obstructed by a foreign obect
Known esophageal disease (varies)
Trauma to the orophaynx
Caustic ingestion

TREATMENT

Consider **supraglottic airway insertion**

The maximum number of supraglottic airway insertion attempts is 2

Confirm **supraglottic airway placement**

Method *Primary*	**Method** *Secondary*
$ETCO_2$ (Waveform capnography)	$ETCO_2$ (Non-waveform device)
	Auscultation
	Chest rise

CLINICAL CONSIDERATIONS

- An attempt at supraglottic airway insertion is defined as the insertion of the supraglottic airway into the mouth.
- Confirmation of supraglottic airway must use $ETCO_2$ (Waveform capnography). If waveform capnography is not available or is not working, then at least 2 secondary methods must be used.

Bronchoconstriction Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Respiratory distress

AND

Suspected bronchoconstriction

CONDITIONS

Salbutamol		EPINEPHrine		Dexamethasone	
AGE:	N/A	AGE:	N/A	AGE:	N/A
LOA:	N/A	WEIGHT:	N/A	WEIGHT:	N/A
HR:	N/A	LOA:	N/A	LOA:	N/A
RR:	N/A	HR:	N/A	HR:	N/A
SBP:	N/A	RR:	BVM ventilation required	RR:	N/A
Other:	N/A	SBP:	N/A	SBP:	N/A
		Other:	Hx of asthma	Other:	Hx of asthma **OR** COPD **OR** 20 pack-year history of smoking

CONTRAINDICATIONS

Salbutamol

Allergy or sensitivity to salbutamol

EPINEPHrine

Allergy or sensitivity to EPINEPHrine

Dexamethasone

Allergy or sensitivity to steroids

Currently on PO or parenteral steroids

TREATMENT

5Rs **Patient • Drug • Dose • Route • Time.**

Consider **salbutamol:**

	Weight <25 kg		Weight ≥25 kg	
	Route MDI*	Route NEB	Route MDI*	Route NEB
Dose	Up to 600 mcg (6 puffs)	2.5 mg	Up to 800 mcg (8 puffs)	5 mg
Max. single dose	600 mcg	2.5 mg	800 mcg	5 mg
Dosing interval	5-15 min. PRN	5-15 min. PRN	5-15 min. PRN	5-15 min. PRN
Max. # of doses	3	3	3	3

* 1 puff=100mcg

Consider **EPINEPHrine:**

	Concentration 1 mg/mL = 1:1,000
	Route IM
Dose	0.01 mg/kg*
Max. single dose	0.5 mg
Dosing interval	N/A
Max. # of doses	1

***The EPINEPHrine dose may be rounded to the nearest 0.05 mg.**

Consider **dexamethasone**

	Route PO/IM/IV
Dose	0.5 mg/kg
Max. single dose	8 mg
Dosing interval	N/A
Max. # of doses	1

CLINICAL CONSIDERATIONS

- EPINEPHrine should be the 1st medication administered if the patient is apneic. Salbutamol MDI may be administered subsequently using a BVM MDI adapter.
- Nebulization is contraindicated in patients with a known or suspected fever or in the setting of a declared febrile respiratory illness outbreak by the local medical officer of health.
- When administering salbutamol MDI, the rate of administration should be 100 mcg approximately every 4 breaths.
- A spacer should be used when administering salbutamol MDI.

EPINEPHrine 1 mg/mL = 1:1000 IM Dosing Chart

Dose (0.01 mg/kg) is rounded to the nearest 0.05mg
Use a 1 mL syringe

AGE	WEIGHT	DOSE (mg)	VOLUME (mL)
3 months	5 kg	**0.05 mg**	**0.05 mL**
6 months	8 kg	**0.08 mg**	**0.10 mL**
9 months	10 kg	**0.10 mg**	**0.10 mL**
1 year	12 kg	**0.12 mg**	**0.10 mL**
2 years	14 kg	**0.14 mg**	**0.15 mL**
3 years	16 kg	**0.16 mg**	**0.15 mL**
4 years	18 kg	**0.18 mg**	**0.20 mL**
5 years	20 kg	**0.20 mg**	**0.20 mL**
6 years	22 kg	**0.22 mg**	**0.20 mL**
7 years	24 kg	**0.24 mg**	**0.25 mL**
8 years	26 kg	**0.26 mg**	**0.25 mL**
9 years	28 kg	**0.28 mg**	**0.30 mL**
10 years	30 kg	**0.30 mg**	**0.30 mL**
11 years	32 kg	**0.32 mg**	**0.30 mL**
12 years	34 kg	**0.34 mg**	**0.35 mL**
13 years	36 kg	**0.36 mg**	**0.35 mL**
14 years	38 kg	**0.38 mg**	**0.40 mL**
Adult	50 kg	**0.50 mg**	**0.50 mL**

Note: Dosage administered can be calculated by the weight based calculation in the Medical Directive and/or by using the above chart. Administered dosage in the chart may be rounded to the nearest volume increment that can be accurately measured.

Moderate to Severe Allergic Reaction Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Exposure to a probable allergen

AND

Signs and/or symptoms of a moderate to severe allergic reaction (including anaphylaxis)

CONDITIONS

EPINEPHrine	
AGE:	N/A
WEIGHT:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	For anaphylaxis only

DiphenhydraMINE	
AGE:	N/A
WEIGHT:	≥25 kg
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

CONTRAINDICATIONS

EPINEPHrine	DiphenhydraMINE
Allergy or sensitivity to EPINEPHrine	Allergy or sensitivity to diphenhydraMINE

TREATMENT

5Rs **Patient · Drug · Dose · Route · Time.**

Consider **EPINPHrine**:

	Route IM **Concentration** 1 mg/mL = 1:1,000
Dose	0.01 mg/kg*
Max. single dose	0.5 mg
Dosing interval	Minimum 5 min
Max. # of doses	2

*** The EPINEPHrine dose may be rounded to the nearest 0.05 mg.**

Consider **diphenhydraMINE** (if available):

	Weight *≥25 kg to <50 kg* **Route** *IV/IM*	**Weight** *≥50 kg* **Route** *IV/IM*
Dose	25 mg	50 mg
Max. single dose	25 mg	50 mg
Dosing interval	N/A	N/A
Max. # of doses	1	1

CLINICAL CONSIDERATIONS

EPINEPHrine administration takes priority over IV access.

*NOTE: Refer to page 35 for **EPINEPHrine 1mg/mL = 1:1000 IM Dosing Chart**.*

Croup Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Current history of URTI

AND

Barking cough or recent history of a barking cough

CONDITIONS

EPINEPHrine	
AGE:	≥ 6 months to < 8 years
LOA:	N/A
HR:	<200 bpm
RR:	N/A
SBP:	N/A
Other:	Stridor at rest

Dexamethasone	
AGE:	≥ 6 months to < 8 years
LOA:	Unaltered
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	For mild, moderate and severe croup

CONTRAINDICATIONS

EPINEPHrine
Allergy or sensitivity to EPINEPHrine

Dexamethasone
Allergy or sensitivity to steroids
Steroids received within the last 48 hours
Unable to tolerate oral medications

TREATMENT

Patient • Drug • Dose • Route • Time.

Consider **EPINEPHphrine**

	Weight <10 kg **Route** NEB **Concentration** 1 mg/mL = 1:1,000	**Weight** ≥10 kg **Route** NEB **Concentration** 1 mg/mL = 1:1,000
Dose	2.5 mg	5 mg
Max. single dose	2.5 mg	5 mg
Dosing interval	N/A	N/A
Max. # of doses	1	1

Consider **dexamethasone**

	Age ≥ 6 months to < 8 years **Route** PO
Dose	0.5mg/kg
Max. single dose	8 mg
Dosing interval	N/A
Max. # of doses	1

CLINICAL CONSIDERATIONS

N/A

Croup Assessment

- Croup is an upper respiratory infection that is generally the result of a viral infection.
- It tends to occur in children aged 6 months to 3 years, and is most prevalent at the age of 2 years.
- It is characterized by swelling and irritation of the respiratory tract, and is often associated with a “barking style” cough.
- The severity of the symptoms can be characterized using the guideline below.
- Generally speaking, patients with moderate to severe croup should be considered for therapy as per the Medical Directive.

WESTLEY CROUP SCORE:

This allows the severity of symptoms to be classified. Maximum score possible is 17.

	Score					
	0	**1**	**2**	**3**	**4**	**5**
Inspiratory Stridor	-	Audible with stethoscope	Audible without stethoscope	-	-	-
Retraction	-	Mild	Moderate	Severe	-	-
Air entry	Normal	Decreased	Severely decreased	-	-	-
Cyanosis	None	-	-	-	With agitation	At rest
Conscious level	Normal	-	-	-	-	Altered

- Score of 2-3: Indicates mild croup.
- Score of 4-7: Indicates moderate croup.
- Score of >7: Indicates severe croup.

Tension Pneumothorax Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Pre-arrest or VSA

AND

Absent or severely diminished breath sounds on the affected side(s)

CONDITIONS

Needle Thoracostomy	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	Hypotension or VSA
Other:	N/A

CONTRAINDICATIONS

Needle Thoracostomy
N/A

TREATMENT

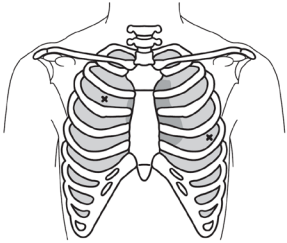
Consider **Needle Thoracostomy**

CLINICAL CONSIDERATIONS

Needle thoracostomy may only be performed at the 4th intercostal space anterior axillary line **OR** the 2nd intercostal space in the midclavicular line.

Chest Needle Thoracostomy

- Chest needle thoracostomy is performed in the setting of suspected tension pneumothorax. Refer to the Tension Pneumothorax Medical Directive for indications, conditions and contraindications.
- Prepare equipment including appropriate sized needle and syringe.
- Identify the appropriate landmark
  - 4th intercostal space, anterior axillary line (preferred)
  - 2nd intercostal space, mid clavicular line



- Cleanse the needle insertion site using aseptic technique.
- Insert the needle with arrached syringe into the appropriate intercostal space on the affected side along the superior aspect of the rib with the bevel facing toward the rib.
- Aspirate for air as you advance the needle into the thoracic cavity.
- Once free air has been aspirated, advance the needle 2 mm further to ensure bevel and catheter ar through the chest wall and into the pleural space.
- Advance the catheter over the needle to the hub, hold onto the cathether and remove the needle/syringe. A rush of air *may* be heard when you remove the needle/syringe.
- Place the needle into the biohazard container.
- Secure the catheter in place with tape.
- Place the flutter valve mechanism over the needle, being careful not to bend the catheter.
- Frequently reassess the patency of the needle throacostomy site and clinical status of the patient

CONSIDERATIONS

- The primary indicator of a successful needle decompression will be the improvement in patient condition in both hemodynamic status and partial or complete relief of respiratory symptoms.
- In the setting of a tension pneumothorax, it is preferred to not provide positive pressure ventilation (eg: with BVM) unless absolutely required and move quickly to chest needle decompression.

Continuous Positive Airway Pressure (CPAP) Medical Directive – *AUXILIARY*

An Advanced Care Paramedic may provide the treatment prescribed in this auxiliary Medical Directive if authorized.

INDICATIONS

Severe respiratory distress

AND

Signs and/or symptoms of acute pulmonary edema **OR** COPD

CONDITIONS

CPAP	
AGE:	≥18 years
LOA:	N/A
HR:	N/A
RR:	Tachypnea
SBP:	Normotension
Other:	SpO_2 <90% or accessory muscle use

CONTRAINDICATIONS

CPAP
Asthma exacerbation
Suspected pneumothorax
Unprotected or unstable airway
Major trauma or burns to the head or torso
Tracheostomy
Inability to sit upright
Unable to cooperate

TREATMENT

Consider **CPAP:**

Initial setting	5 cm H_2O	Or equivalent flow rate of device as per BH direction
Titration increment	2.5 cm H_2O	Or equivalent flow rate of device as per BH direction
Titration interval	5 min.	
Max. setting	15 cm H_2O	Or equivalent flow rate of device as per BH direction

Consider increasing **FiO_2** (if available):

Initial FiO_2	50-100%
FiO_2 increment (if available on device)	SpO_2 <92% despite treatment and/or 10cm H_2O pressure or equivalent flow rate of device as per BH direction
Max FiO_2	100%

Confirm **CPAP pressure by manometer** (if available)

CLINICAL CONSIDERATIONS

N/A

Endotracheal and Tracheostomy Suctioning & Reinsertion Medical Directive

An Advanced Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Patient with endotracheal or tracheostomy tube

AND

Airway obstruction or increased secretions

CONDITIONS

Suctioning	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

Emergency tracheostomy reinsertion	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	Patient with an existing tracheostomy where the innter and/or outer cannula(s) have been removed from the airway **AND** Respiratory distress **AND** Inability to adequately ventilate **AND** Paramedics are presented with a tracheostomy cannula for the identified patient

CONTRAINDICATIONS

Suctioning	Emergency tracheostomy reinsertion
N/A	Inability to landmark or visualize

TREATMENT

Consider **suctioning**

	Infant	Child	Adult
Dose	Suction at 60-100 mmHg	Suction at 100-120 mmHg	Suction at 100-150 mmHg
Max. single dose	N/A	N/A	N/A
Dosing interval	1 minute	1 minute	1 minute
Max. # of doses	5	5	5

Consider **emergency tracheostomy reinsertion**

The maximum number of attempts is 2

CLINICAL CONSIDERATIONS

Suctioning:
Pre-oxygenate with 100% oxygen.

In an alert patient, whenever possible, have patient cough to clear airway prior to suctioning.

Emergency Tracheostomy Reinsertion:
A reinsertion attempt is defined as the insertion of the cannula into the tracheostomy.

A new replacement inner or outer cannula is preferred over cleaning and reusing an existing one. Utilize a family member or caregiver who is available and knowledgeable to replace the tracheostomy cannula.

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Cardiac/Circulation

ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

Medical Cardiac Arrest Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Non-traumatic cardiac arrest.

PRIMARY CLINICAL CONSIDERATIONS

In the following settings, consider very early transport after a minimum of one analysis (and defibrillation if indicated) once an egress plan is organized:

1) pregnancy presumed to be ≥ 20 weeks gestation (fundus above umbilicus, ensure manual displacement of uterus to left);
2) hypothermia;
3) airway obstruction;
4) non-opioid drug overdose/toxicology, and;
5) other known reversible cause of the arrest unable to be addressed.

In cases of refractory VF or pulseless VT, transport following 3 rounds of epinephrine (or after 3rd consecutive defibrillation if no IV/IO/CVAD/ETT access). Refractory VF or pulseless VT is defined for the purpose of this directive, as persistent VF or pulseless VT after 3 consecutive shocks.

CONDITIONS

CPR

AGE: N/A
LOA: Altered
HR: N/A
RR: N/A
SBP: N/A
Other: Performed in 2 minute intervals

Manual Defibrillation (preferred method)

AGE: ≥ 24 hours
LOA: Altered
HR: N/A
RR: N/A
SBP: N/A
Other: VF **OR** pulseless VT

AED or SAED Defibrillation

AGE: ≥ 24 hours
LOA: Altered
HR: N/A
RR: N/A
SBP: N/A
Other: Defibrillation indicated
Not using manual defibrillation

EPINEPHrine

AGE: ≥ 24 hours
LOA: Altered
HR: N/A
RR: N/A
SBP: N/A
Other: Anaphylaxis suspected as causative event, IM route may be used

Amiodarone

AGE: ≥ 24 hours
LOA: Altered
HR: N/A
RR: N/A
SBP: N/A
Other: VF **OR** pulseless VT as an equivalent to lidocaine

Lidocaine

AGE: ≥ 24 hours
LOA: Altered
HR: N/A
RR: N/A
SBP: N/A
Other: VF **OR** pulseless VT as an equivalent to amiodarone

0.9% NaCl Fluid Bolus

AGE: ≥ 24 hours
LOA: Altered
HR: N/A
RR: N/A
SBP: N/A
Other: PEA **OR**
Any other rhythm where hypovolemia is suspected

Medical TOR

AGE: ≥ 16 years
LOA: Altered
HR: N/A
RR: N/A
SBP: N/A
Other: Arrest not witnessed by paramedic **AND** No ROSC after 20 minutes of resuscitation **AND** No defibrillation delivered

CONTRAINDICATIONS

CPR	Manual Defibrillation	AED or SAED Defibrillation
Obviously dead as per BLS PCS Meet conditions of the BLS PCS *Do Not Resuscitate (DNR) Standard*	Rhythms other than VF or pulseless VT	Non-shockable rhythm

EPINEPHrine	Amiodarone	Lidocaine
Allergy or sensitivity to EPINEPHrine	Allergy or sensitivity to amiodarone	Allergy or sensitivity to lidocaine

0.9% NaCl Fluid Bolus	Medical TOR
Fluid overload	Known reversible cause of the arrest unable to be addressed Pregnancy presumed to be ≥ 20 weeks gestation Suspected hypothermia Airway obstruction Non-opioid drug over/dose/toxicity

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **CPR as per the current Heart and Stroke Foundation of Canada Guidelines**

Consider **Manual defibrillation**

	Age ≥24 hours to <8 years	Age ≥8 years
Dose	1 defibrillation	1 defibrillation
Initial dose	2 J/kg	As per RBHP / manufacturer
Subsequent dose(s)	4 J/kg	As per RBHP / manufacturer
Dosing interval	2 min	2 min
Max. # of doses	N/A	N/A

Consider **AED or SAED defibrillation** (if not using manual defibrillation)

	Age ≥24 hours to <8 years	Age ≥8 years
Dose	1 defibrillation with or without pediatric attenuator cable	1 defibrillation
Max. single dose	As per RBHP / manufacturer	As per RBHP / manufacturer
Dosing interval	2 min	2 min
Max. # of doses	N/A	N/A

Consider **EPINEPHrine** *(if anaphylaxis is suspected as the causative event of the cardiac arrest)*

	Route IM
	Concentration 1 mg/mL = 1:1,000
Dose	0.01 mg/kg*
Max. single dose	0.5 mg
Dosing interval	N/A
Max. # of doses	1

* The EPINEPHrine dose may be rounded to the nearest 0.05 mg

Consider **EPINEPHrine**

	Age ≥24 hours to <12 years		Age ≥12 years	
	Route		Route	
	IV/IO/CVAD	ETT	IV / IO /CVAD	ETT
Solution	0.1 mg/mL = 1:10,000	1 mg/mL = 1:1,000	0.1 mg/mL = 1:10,000	as per RBHP
Dose	0.01 mg/kg* (0.1 mL/kg)	0.1 mg/kg to a max of 2 mg (0.1 mL/kg to a max of 2mL)	1 mg	2 mg
Min. single dose	0.05 mg	0.5 mg	1 mg	2 mg
Dosing interval	4 min	4 min	4 min	4 min
Max. # of doses	N/A	N/A	N/A	N/A

*** The EPINEPHrine dose may be rounded to the nearest 0.05 mg**

Consider **amiodarone**

	Age ≥24 hours to <12 years	Age ≥12 years
	Route	Route
	IV / IO / CVAD	IV / IO / CVAD
Initial Dose	5 mg/kg	300 mg
Max. initial dose	300 mg	300 mg
Subsequent dose(s)	5 mg/kg	150 mg
Max. repeat dose	150 mg	150 mg
Dosing interval	4 min	4 min
Max. # of doses	2	2

Consider **lidocaine** (if not using amiodarone)

	Age ≥24 hours to <12 years		Age ≥12 years	
	Route		Route	
	IV / IO /CVAD	ETT	IV / IO / CVAD	ETT
Initial Dose	1 mg/kg	2 mg/kg	1.5 mg/kg	3 mg/kg
Second Dose	1 mg/kg	2 mg/kg	0.75 mg/kg	1.5 mg/kg
Min. single dose	N/A	N/A	N/A	N/A
Dosing interval	4 min	4 min	4 min	4 min
Max. # of doses	2	2	2	2

Consider **0.9% NaCl fluid bolus**

	Age ≥24 hours to <12 years	Age ≥12 years
	Route	Route
	IV / IO / CVAD	IV / IO / CVAD
Infusion	20 mL/kg	20 mL/kg
Infusion interval	Immediate	Immediate
Reassess every	100 mL	250 mL
Max. volume	2,000 mL	2,000 mL

⚠ Mandatory Provincial Patch Point ⚠

Patch to consider Medical TOR (if applicable).

If the patch fails or if Medical TOR does not apply, transport to the closest appropriate hospital following ROSC or 20 minutes of resuscitation without ROSC.

Patch early (e.g. following the 4th analysis) to consider TOR if there are extenuating egress, prolonged transport or significant clinical limitations where the paramedic considers ongoing resuscitation to be futile.

CLINICAL CONSIDERATIONS

Consider regional base hospital program advanced airway strategy where more than OPA/NPA and BVM is required.

There is no clear role for routine administration of naloxone in confirmed cardiac arrest.

The IV/IO/CVAD routes of medication administration are preferred over the ETT route. However, ETT administration may be used if the IV/IO/CVAD routes are delayed (e.g. ≥ 5 min).

The BHP might **not** authorize TOR even though the patient meets TOR rule. Factors may include: location of the patients, EtCO2, age, bystander witnessed, bystander CPR, transportation time, and unusual cause of cardiac arrest such as electrocution, hanging, and toxicology.

The BHP may authorize TOR even though the patient does not meet the TOR rule. Factors that may be taken into account include extenuating egress limitations, prolonged transport, caregiver wishes, existence of DNR confirmation form, and underlying end stage progressive illness.

LOCAL BHP CONSULTATION ADVISORY

In extenuating circumstances during unusual or prolonged codes, Paramedics may choose to patch for consultation.
Extenuating circumstances may include, but are not limited to, the following:

1. Unusual cardiac arrest causes (ie. FBAO, hypothermia, electrocution, toxicity)
2. Excessive epinephrine administration (>5-6mg) in prolonged resuscitations.
3. Excessive number of shocks (>3 with vector change) delivered without change in refractory dysrhythmia.

Patient presentation/underlying cause of cardiac arrest should be considered when carrying out a treatment plan.

*NOTE: Refer to page 35 for **Epinephrine 1mg/mL = 1:1000 IM Dosing Chart***

*NOTE: Refer to page 58 for **Defibrillation Joule Setting Reference Chart.***

*NOTE: Refer to page 174 for **CPR Guidelines.***

Pediatric Defibrillation Joule Setting Chart

Age	Approx Weight	First Defib Setting (2J/kg)	Subsequent Defib Setting (4J/kg)
0 to 30 days		N/A	N/A
≥1 month to <3 months	<5kg	10 J	20 J
≥3 months to <1 year	≥5 to <12kg	15 J	30 J
≥1 to <5 years	≥12 to <20kg	30 J	70 J
≥5 to <8 years	≥20 to <30kg	50 J	100 J
≥8 years		Adult Manual Defibrillation settings	

Adult Defibrillation Joule Settings Reference

Manufacturer:	Series:	Joule Settings:
Medtronic	Lifepack	200, 300, 360 Joules
Phillips	MRX / FR2	150 Joules non escalating
ZOLL	E, M, or X Series	120, 150, 200 Joules

Trauma Cardiac Arrest Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Cardiac arrest secondary to severe blunt or penetrating trauma.

CONDITIONS

CPR	
AGE:	N/A
LOA:	Altered
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	Performed in 2 minute intervals

Manual Defibrillation	
AGE:	≥24 hours
LOA:	Altered
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	VF **OR** pulseless VT

AED or SAED Defibrillation	
AGE:	≥24 hours
LOA:	Altered
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	Defibrillation indicated If not using manual defibrillation

Needle thoracostomy	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	Suspected tension pneumothorax **AND** absent or severely diminished breath sound on the affected side(s)

Trauma TOR	
AGE:	≥16 years
LOA:	Altered
HR:	0
RR:	0
SBP:	N/A
Other:	No palpable pulses **AND** No defibrillation delivered **AND** Rhythm Asystole **AND** No signs of life at any time since fully extricated **OR** Signs of life when fully extricated with the closest ED ≥30 min transport time away **OR** Rhythm PEA with the closest ED ≥30 min transport time away

CONTRAINDICATIONS

CPR	Manual Defibrillation	AED or SAED Defibrillation
Obviously dead as per BLS PCS Meet conditions of the BLS PCS *Do Not Resuscitate (DNR) Standard*	Rhythms other than VF or pulseless VT	Non-shockable rhythm

Needle thoracostomy	Trauma TOR
N/A	Age <16 years Defibrillation delivered Signs of life at any time since fully extricated. Rhythm PEA and closest ED <30 min transport time away Patients with penetrating trauma to the torso or head/neck and Lead Trauma Hospital < 30 min transport time away

TREATMENT

Consider **CPR as per current Heart and Stroke Foundation of Canada Guidelines**

Consider **Manual defibrillation** (if available and authorized)

	Age *≥24 hours to <8 years*	**Age** *≥8 years*
Dose	1 defibrillation	1 defibrillation
Initial dose	2 J/kg	As per RBHP / manufacturer
Dosing interval	N/A	N/A
Max. # of doses	1	1

Consider **AED or SAED defibrillation** (if not using manual defibrillation):

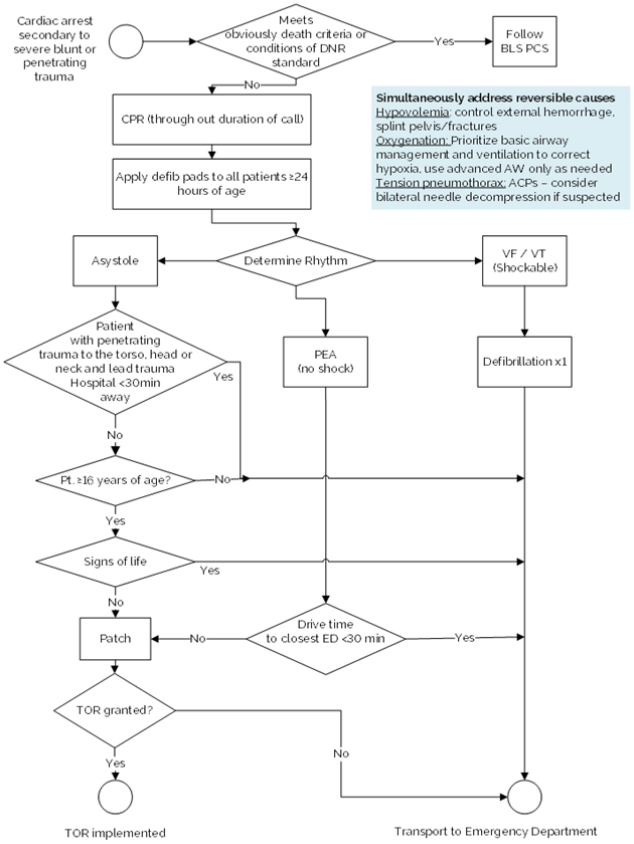
	Age ≥24 hours to <8 years	**Age** ≥8 years
Dose	1 defibrillation with or without pediatric attenuator cable	1 defibrillation
Max. single dose	As per RBHP / manufacturer	As per RBHP / manufacturer
Dosing interval	N/A	N/A
Max. # of doses	1	1

Consider **needle thoracostomy**

⚠ Mandatory Provincial Patch Point ⚠

Patch to BHP for authorization to apply the Trauma TOR if applicable. If the BHP patch fails, or the Trauma TOR does not apply, transport to the closest appropriate receiving facility following the 1st analysis/defibrillation.

Treatment – Algorithm for Trauma Arrest



CLINICAL CONSIDERATIONS

If no obvious external signs of significant blunt trauma, consider medical cardiac arrest and treat according to the appropriate medical cardiac arrest directive.

Signs of life: specifically any spontaneous movement, respiratory efforts, organized electrical activity on ECG, and reactive pupils.

An intravenous fluid bolus may be considered, where it does not delay transport and should not be prioritized over management of other reversible pathology.

*NOTE: Refer to page 58 for **Defibrillation Joule Setting Reference Chart.***

*NOTE: Refer to page 174 for **CPR Guidelines.***

Newborn Resuscitation Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Newborn patient.

CONDITIONS

PPV		CPR		EPINEPHrine	
AGE:	<24 hours	AGE:	<24 hours	AGE:	<24 hours
LOA:	N/A	LOA:	N/A	LOA:	N/A
HR:	<100 bpm	HR:	<60 bpm	HR:	<60 bpm
RR:	N/A	RR:	N/A	RR:	N/A
SBP:	N/A	SBP:	N/A	SBP:	N/A
Other:	N/A	Other:	After 30 seconds of PPV using room air	Other:	After 30 seconds of PPV **AND** 30 seconds of CPR

CONTRAINDICATIONS

PPV	CPR
Obviously dead as per BLS PCS Presumed gestional age less that 20 weeks	Obviously dead as per BLS PCS Presumed gestional age less that 20 weeks

EPINEPHrine
Allergy or sensitivity to EPINEPHrine Presumed gestional age less that 20 weeks

TREATMENT

Consider **PPV as per the treatment flowchart**

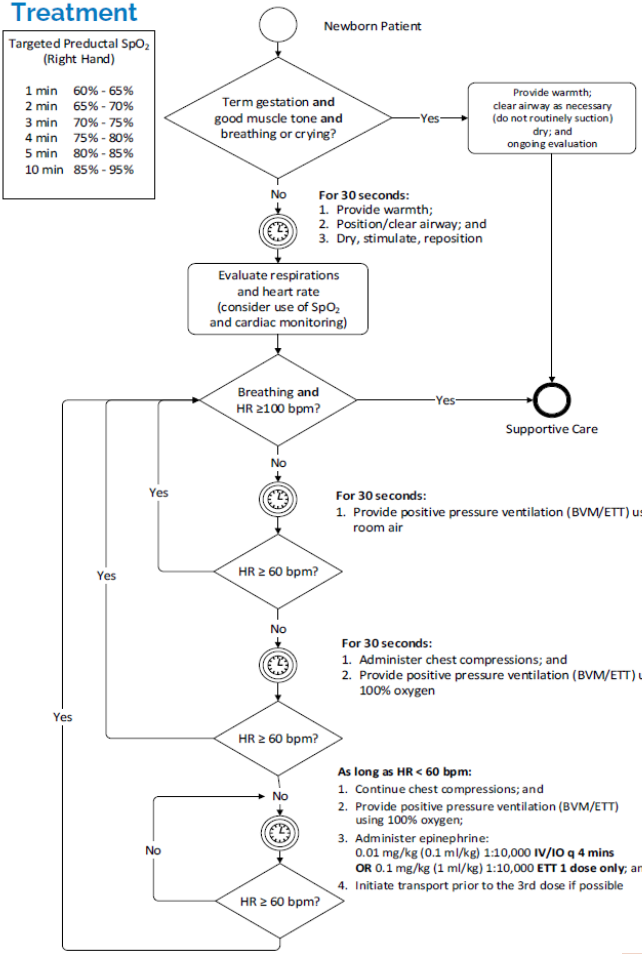
Consider **CPR as per current Heart and Stroke Foundation of Canada Guidelines**

Consider **EPINEPHrine**

	Age ≥24 hours	
	Route	
	IV/IO	ETT*
Solution	0.1 mg/mL = 1:10,000	0.1 mg/mL = 1:10,000
Dose	0.01 mg/kg (0.1 mL/kg)	0.01 mg/kg (1.0 mL/kg)
Min. single dose	0.05 mg (0.5 mL)	N/A
Max. single dose	N/A	0.3 mg (3.0 mL)
Dosing interval	4 min	N/A
Max. # of doses	N/A	1

*** EPINEPHrine is to be administered IV/IO after the single ETT dose if the conditions are still met**

Treatment


Targeted Preductal SpO_2 (Right Hand)
1 min 60% - 65%
2 min 65% - 70%
3 min 70% - 75%
4 min 75% - 80%
5 min 80% - 85%
10 min 85% - 95%
Newborn Patient
Term gestation and good muscle tone and breathing or crying?
Yes
Provide warmth; clear airway as necessary (do not routinely suction) dry; and ongoing evaluation
No
For 30 seconds:
1. Provide warmth;
2. Position/clear airway; and
3. Dry, stimulate, reposition
Evaluate respirations and heart rate (consider use of SpO_2 and cardiac monitoring)
Breathing and HR ≥100 bpm?
Yes
Supportive Care
No
Yes
For 30 seconds:
1. Provide positive pressure ventilation (BVM/ETT) using room air
HR ≥ 60 bpm?
Yes
No
For 30 seconds:
1. Administer chest compressions; and
2. Provide positive pressure ventilation (BVM/ETT) using 100% oxygen
HR ≥ 60 bpm?
Yes
As long as HR < 60 bpm:
1. Continue chest compressions; and
2. Provide positive pressure ventilation (BVM/ETT) using 100% oxygen;
3. Administer epinephrine: 0.01 mg/kg (0.1 ml/kg) 1:10,000 IV/IO q 4 mins OR 0.1 mg/kg (1 ml/kg) 1:10,000 ETT 1 dose only; and
4. Initiate transport prior to the 3rd dose if possible
No
No
HR ≥ 60 bpm?

CLINICAL CONSIDERATIONS

If newborn resuscitation is required, initiate cardiac monitoring and right-hand pulse oximetry monitoring.

Infants born between 20-25 weeks gestation may be stillborn or die quickly. Initiate resuscitation and transport as soon as feasible.

If gestational age cannot be confirmed, initiate resuscitation and rapid transport.

If newborn is less than 20 weeks gestation, resuscitation is futile. Provide the newborn with warmth and consider patching to BHP for further direction.

APGAR Score Reference

Parameter	0	1	2
Heart rate (bpm)	0 (absent)	Slow (< 100)	≥ 100
Respiratory effort	Absent	Slow, irregular	Good, crying
Muscle tone	None, limp	Some flexion	Active motion
Reflex irritability (suction of nares, tactile stimulation)	None	Some grimace	Good grimace, cough, cry
Colour	Blue or pale	Pink body with blue extremities	Completely pink

- APGAR performed at 1 minute & 5 minutes after delivery
- Maximum possible total score is 10 (5 parameters x maximum score 2 for each parameter)
- Don't wait for APGAR to make decision on resuscitation

Neonatal Pre-ductal Oxygen Saturation Reference

TARGETED PRE-DUCTAL SpO2

After Birth	
1 min	60-65%
2 min	65-70%
3 min	70-75%
4 min	75-80%
5 min	80-85%
10 min	85-95%

In all neonates, only apply the pulse oximeter to the **RIGHT HAND**. Target the above values when:

- Resuscitation is anticipated
- PPV is required for more than a few breaths
- Persistent central cyanosis, or if you need to confirm your perception of central cyanosis
- Any administration of supplemental oxygen

Return of Spontaneous Circulation (ROSC) Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Patient with return of spontaneous circulation (ROSC) after the resuscitation was initiated.

CONDITIONS

0.9% NaCl Fluid Bolus	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	Hypotension
Other:	Chest auscultation is clear

Dopamine	
AGE:	≥ 8 years
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	Hypotension
Other:	N/A

CONTRAINDICATIONS

0.9% NaCl Fluid Bolus
Fluid overload

Dopamine
Allergy or sensitivity to dopamine
Tachydysrhythmias excluding sinus tachycardia
Mechanical shock states
Hypovolemia
Pheochromocytoma

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **optimizing ventilation and oxygenation**

Titrate oxygenation 94%-98%

Avoid hyperventilation and target $ETCO_2$ to 30-40 mmHg with continuous waveform capnography (if available)

Consider **0.9% NaCl fluid bolus**

	Age <12 years **Route** IV/IO/CVAD	**Age** 12 years **Route** IV/IO/CVAD
Infusion	10 mL/kg	10 mL/kg
Infusion interval	Immediate	Immediate
Reassess every	100 mL	250 mL
Max. volume	1,000 mL	1,000 mL

Consider **DOPamine**

	Age *≥8 years* **Route** *IV*
Initial Infusion Rate	5 mcg/kg/min
Titration increment	5 mcg/kg/min
Titration interval	5 min
Max infusion rate	20 mcg/kg/min

NOTE: Titrate DOPamine to achieve a SBP of ≥90 to <110mmHg. If discontinuing dopamine electively, do so gradually over 5-10 minutes.

Consider **12 lead ECG acquisition and interpretation**

CLINICAL CONSIDERATIONS

Consider initiating transport in parallel with the above treatment.

Adult IO administration of a NaCl bolus requires the ACP to be authorized.

Notify receiving hospital staff if DOPamine drip goes interstitial.

*NOTE: Refer to page 172 for **12 Lead ECG Placement Reference.***

"Single Strength" DOPamine Dosing Guide

DOPAMINE INFUSION RATE (mL or drops/min with a microdrip set)
[Using an 800mcg/mL ('single strength') solution]

Weight (kg)	Drip Rate (drops/min)				
	2 (mcg/kg/minute)	5 (mcg/kg/minute)	10 (mcg/kg/minute)	15 (mcg/kg/minute)	20 (mcg/kg/minute)
5	1	2	4	6	8
10	2	4	8	11	15
15	2	6	11	17	23
20	3	8	15	23	30
25	4	9	19	28	38
30	5	11	23	34	45
35	5	13	26	39	53
40	6	15	30	45	60
45	7	17	34	51	68
50	8	19	38	56	75
55	8	21	41	62	83
60	9	23	45	68	90
65	10	24	49	73	98
70	11	26	53	79	105
75	11	28	56	84	113
80	12	30	60	90	120
85	13	32	64	96	128
90	14	34	68	101	135
95	14	36	71	107	143
100	15	38	75	113	150
105	16	39	79	118	158
110	17	41	83	124	165
115	17	43	86	129	173
120	18	45	90	135	180

Cardiac Ischemia Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Suspected cardiac ischemia.

CONDITIONS

ASA		Nitroglycerin		Morphine	
AGE:	≥18 years	AGE:	≥18 years	AGE:	≥18 years
LOA:	Unaltered	LOA:	Unaltered	LOA:	Unaltered
HR:	N/A	HR:	60-159 bpm	HR:	N/A
RR:	N/A	RR:	N/A	RR:	N/A
SBP:	N/A	SBP:	Normotension	SBP:	Normotension
Other:	Able to chew and swallow	Other:	Prior history of nitroglycerin use **OR** IV access obtained	Other:	Severe pain

CONTRAINDICATIONS

ASA	Nitroglycerin	Morphine
Allergy or sensitivity to NSAIDS	Allergy or sensitivity to nitrates	Allergy or sensitivity to morphine
If asthmatic, no prior use of ASA	Phosphodiesterase inhibitor use within the previous 48 hours	SBP drops by one-third or more of its initial value after morphine is administered
Current active bleeding	SBP drops by one-third or more of its initial value after nitroglycerin is administered	
CVA or TBI in the previous 24 hours	12-lead ECG compatible with Right Ventricular MI	

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **ASA**

	Route
	PO
Dose	160-162 mg
Max. single dose	162 mg
Dosing interval	N/A
Max. # of doses	1

Consider **12-lead ECG acquisition and interpretation for STEMI**

Consider **nitroglycerin**

	STEMI	
	NO	YES
	SBP *≥100 mmHg*	**SBP** *≥100 mmHg*
	Route SL	**Route** SL
Dose	0.3 mg **OR** 0.4 mg	0.3 mg **OR** 0.4 mg
Max. single dose	0.4 mg	0.4 mg
Dosing interval	5 min	5 min
Max. # of doses	6	3

Consider **morphine** (after the 3rd dose of nitroglycerin or if nitroglycerin is contraindicated)

	Route
	IV
Dose	2 mg
Max. single dose	2 mg
Dosing interval	5 min
Max. # of doses	5

CLINICAL CONSIDERATIONS

Suspect a Right Ventricular MI in all inferior STEMIs and perform at minimum V4R to confirm (ST-elevation ≥ 1mm in V4R).

Do not administer nitroglycerin to a patient with a Right Ventricular STEMI.

Apply defibrillation pads when a STEMI is identified.

The goal for time to 12-lead ECG from first medical contact is < 10 minutes where possible.

*NOTE: Refer to page 172 for **12 Lead ECG Placement Reference.***

Acute Cardiogenic Pulmonary Edema Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Moderate to severe respiratory distress;

AND

Suspected acute cardiogenic pulmonary edema

CONDITIONS

Nitroglycerin	
AGE:	≥18 years
LOA:	N/A
HR:	60-159 bpm
RR:	N/A
SBP:	Normotension
Other:	N/A

CONTRAINDICATIONS

Nitroglycerin
Allergy or sensitivity to nitrates
Phosphodiesterase inhibitor use within the previous 48 hours
SBP drops by one-third or more of its initial value after nitroglycerin is administered

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **nitroglycerin**

	SBP ≥100 mmHg to <140 mmHg	SBP ≥140 mmHg	
	IV or Hx*	IV or Hx*	IV or Hx*
	Yes	No	Yes
	Route	Route	Route
	SL	SL	SL
Dose	0.3 mg **or** 0.4 mg	0.3 mg **or** 0.4 mg	0.6 mg **or** 0.8 mg
Max. single dose	0.4 mg	0.4 mg	0.8 mg
Dosing interval	5 min	5 min	5 min
Max. # of doses	6	6	6

***Hx refers to a patient with a prior history of nitroglycerin use**

Consider **12-lead ECG acquisition and interpretation**

CLINICAL CONSIDERATIONS

N/A

*NOTE: Refer to page 172 for **12 Lead ECG Placement Reference.***

Cardiogenic Shock Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

STEMI-positive 12-lead ECG;

AND

Cardiogenic shock.

CONDITIONS

0.9% NaCl Fluid Bolus	
AGE:	≥18 years
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	Hypotension
Other:	Chest auscultation is clear

DOPamine	
AGE:	≥18 years
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	Hypotension
Other:	N/A

CONTRAINDICATIONS

0.9% NaCl Fluid Bolus
Fluid overload
SBP ≥90 mmHg

DOPamine
Allergy or sensitivity to dopamine
Tachydysrhythmia excluding sinus tachycardia
Mechanical shock states
Hypovolemia
Pheochromocytoma

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **0.9% NaCl Fluid Bolus**

	Age
	≥18 years
	Route
	IV/IO/CVAD
Infusion	10 mL/kg
Infusion interval	N/A
Reassess every	250 mL
Max. volume	1,000 mL

NOTE: If NaCl bolus contraindicated due to pulmonary crackles, consider DOPamine.

Consider **DOPamine**

	Route
	IV
Initial infusion rate	5 mcg/kg/min
Titration increment	5 mcg/kg/min
Titration interval	5 min
Max. infusion rate	20 mcg/kg/min

NOTE: Titrate DOPamine to achieve a SBP of ≥90 to <110 mmHg. If discontinuing dopamine electively, do so gradually over 5-10 minutes.

CLINICAL CONSIDERATIONS

Contact BHP if patient is bradycardic.

Symptomatic Bradycardia Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Bradycardia;

AND

Hemodynamic instability.

CONDITIONS

Atropine	
AGE:	≥18 years
LOA:	N/A
HR:	<50 bpm
RR:	N/A
SBP:	Hypotension
Other:	N/A

Transcutaneous Pacing	
AGE:	≥18 years
LOA:	N/A
HR:	<50 bpm
RR:	N/A
SBP:	Hypotension
Other:	N/A

DOPamine	
AGE:	≥18 years
LOA:	N/A
HR:	<50 bpm
RR:	N/A
SBP:	Hypotension
Other:	N/A

CONTRAINDICATIONS

Atropine
Allergy or sensitivity to atropine
Hypothermia
History of heart transplant

Transcutaneous Pacing
Hypothermia

DOPamine
Allergy or sensitivity to dopamine
Mechanical shock
Pheochromocytoma

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **Rhythm determination**

Consider **12 lead ECG acquisition and interpretation** (if this won't delay therapy)

Consider **atropine**

	Route
	IV
Dose	1 mg
Max. single dose	1 mg
Dosing interval	5 min
Max. # of doses	2

Consider **transcutaneous pacing**

Consider **DOPamine**

	Route
	IV
Initial infusion rate	5 mcg/kg/min
Titration increment	5 mcg/kg/min
Titration interval	5 min
Max. infusion rate	20 mcg/kg/min

NOTE: Titrate DOPamine to achieve a SBP of ≥90 to <110 mmHg. If discontinuing dopamine electively, do so gradually over 5-10 minutes.

CLINICAL CONSIDERATIONS

TCP should not be delayed for placement of an IV.

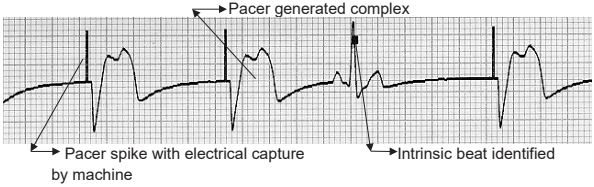
A fluid bolus should be considered with all symptomatic bradycardia patients if indicated.

*NOTE: Refer to page 73 for **Dopamine Dosing Chart.***

*NOTE: Refer to page 132 for **Procedural Sedation Medical Directive***

Transcutaneous Pacing

- Refer to the Symptomatic Bradycardia Medical Directive for indications, conditions and contraindications for transcutaneous pacing.
- Ensure the limb leads are applied for cardiac monitoring
- Place the defibrillation pads on patient as per manufacturer's recommendation. Generally "anterior/posterior" or sternum/apex placements are acceptable.
- Set the pacing rate to 80 beats per minute.
- Increase the output or milliamps slowly until electrical capture is confirmed by the presence of pacer spikes followed by a wide QRS complex (see below).



- Once electrical capture is confirmed, the presence of mechanical capture must be confirmed and consistently monitored.
- Mechanical capture should be confirmed through palpation of a mechanical pulse that matches the pre-set rate on the pacer.
- Upon confirmation of mechanical capture, the Paramedic should increase the output or milliamps by 5-10% to ensure mechanical capture is maintained.
- If pacing does not achieve mechanical capture despite maximal output and good connection between the pads and skin, then this should be discontinued.

CONSIDERATIONS

- Generally electrical capture will be achieved between 70 and 120 mA, but higher energy settings will occasionally be required.
- Many conscious patients who are receiving TCP therapy will require sedation. Consider applying the Procedural Sedation Medical Directive.
- Ensure continuous monitoring of mechanical capture as it can be lost over time.

Tachydysrhythmia Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Symptomatic Tachydysrhythmia.

CONDITIONS

Valsalva Maneuver

AGE: ≥18 years
LOA: Unaltered
HR: ≥150 bpm
RR: N/A
SBP: Normotension
Other: Narrow complex and regular rhythm

Adenosine

AGE: ≥18 years
LOA: Unaltered
HR: ≥150 bpm
RR: N/A
SBP: Normotension
Other: Narrow complex and regular rhythm

Amiodarone

AGE: ≥18 years
LOA: Unaltered
HR: ≥120 bpm
RR: N/A
SBP: Normotension
Other: Wide complex and regular rhythm

Lidocaine

AGE: ≥18 years
LOA: Unaltered
HR: ≥120 bpm
RR: N/A
SBP: Normotension
Other: Wide complex and regular rhythm

Synchronized Cardioversion

AGE: ≥18 years
LOA: N/A
HR: ≥120 bpm (wide) **OR** ≥150 bpm (narrow)
RR: N/A
SBP: Hypotension
Other: Altered mental status, ongoing chest pain, other signs of shock

CONTRAINDICATIONS

Valsalva Maneuver	Adenosine	Amiodarone
Sinus tachycardia or atrial fibrillation or atrial flutter	Allergy or sensitivity to adenosine Sinus tachycardia or atrial fibrillation or atrial flutter Patient taking dipyridamole or carbamazepine Bronchoconstriction on exam	Allergy or sensitivity to amiodarone

Lidocaine	Synchronized Cardioversion
Allergy or sensitivity to lidocaine	N/A

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **Rhythm determination** (*c*onfirm regularity)

Consider **12-lead ECG acquisition and interpretation to confirm QRS width** (if this won't delay therapy)

Consider **valsalva maneuver**

Perform a maximum of 2 attempts lasting 10 to 20 seconds duration each.

Consider **adenosine**

	Route *IV*
Initial dose	6 mg
Subsequent dose	12 mg
Dosing interval	2 min
Max. # of doses	2

Mandatory Provincial Patch Point

Patch to BHP for authorization to proceed with amiodarone or lidocaine or if monomorphic wide complex regular rhythm for adenosine.

Consider **amiodarone** (if available and authorized) **OR lidocaine** (if not using amiodarone)

	Medication Amiodarone **Route** IV*	**Medication** Lidocaine **Route** IV
Initial dose	150 mg	1.5 mg/kg
Subsequent dose	150 mg	0.75 mg/kg
Max. single dose	150 mg	150 mg
Dosing interval	10 min	10 min
Max. # of doses	2	3

***Amiodarone should be administered by IV infusion over 10 min.**

Mandatory Provincial Patch Point

Patch to BHP for authorization to proceed with synchronized cardioversion.

Consider **synchronized cardioversion**

Administer up to 3 synchronized shocks in accordance with BHP direction and energy settings. (In the setting of a patch failure, the energy settings to be used are 100 J, 200 J and the maximum manufacturer setting.)

CLINICAL CONSIDERATIONS

N/A

CONSIDERATIONS FOR TREAT AND DISCHARGE (IF AUTHORIZED)

The patient must meet all of the following criteria:

- the patient is ≥18 AND <65 years old;
- patient must have a prior history of SVT;
- the patient presented with narrow complex and regular rhythm Supraventricular Tachycardia (SVT);
- the patient must have only had a single SVT episode in the past 24 hours
- the patient has returned to normal sinus rhythm (NSR) either spontaneously, with a valsalva maneuver or with adenosine treatment by paramedics and is now asymptomatic;
- the patient has returned to their normal level of consciousness;
- a complete set of vital signs are within expected normal ranges with a HR <100bpm and the patient remains in NSR for at least 15 minutes post conversion;

AND

- the patient was not treated with electrical cardioversion by paramedics;
- the patient is not pregnant;
- the SVT must not be related to alcohol or substance abuse or withdrawal, and;
- the patient has no fever or preceding illness.

In addition to the above criteria, if all of the following requirements have been met, the patient can be discharged by paramedics:

- a responsible adult agrees to remain with the patient for the next 4 hours;
- all of the patient or substitute decision makers questions were answered and a care plan was developed;
- the patient or substitute decision maker has been advised to follow up with their primary health care team or provider;
- clear instructions to call 911 were provided should symptoms redevelop;
- patient or substitute decision maker has the ability to access 911 should symptoms redevelop, and;
- patient or substitute decision maker consents to the discharge.

CLINICAL CONSIDERATIONS (TREAT AND DISCHARGE)

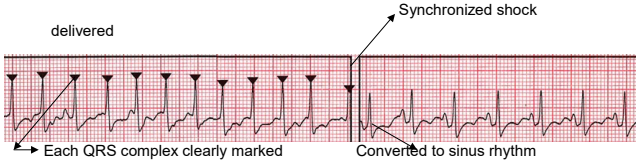
Patch to BHP for consultation if you are unclear if the patient meets all of the discharge criteria.

*NOTE: Refer to page 132 for **Procedural Sedation Medical Directive***

*NOTE: Refer to page 172 for **12 Lead ECG Placement Reference***

Synchronized Cardioversion

- Refer to the Tachydysrhythmia Medical Directive for the specific indications, conditions and contraindications.
- Patch to the BHP is required in accordance with the Medical Directive. In the setting of a patch failure, and the patient otherwise meets the medical directive, the energy settings to be used are 100J, 200J and the maximum manufacturer setting.
- Ensure the limb leads are applied for cardiac monitoring
- Place the defibrillation pads on patient as per manufacturer's recommendation. Generally "anterior/posterior" or sternum/apex placements are acceptable.
- Activate **synchronize** mode on the monitor if necessary.
- Press the synchronize button and be sure the machine has "marked" each QRS complex. See image below.



- Once it has been identified that each QRS is appropriately marked, set the energy in accordance with the BHP order, or in the event of a patch failure, in accordance with the Medical Directive.
- Press the charge button.
- Once the defibrillator is charged, clear the patient and press and **hold** the shock button until the energy has been delivered.
- Reassess patient.
- Generally, the initial joule setting will be 100J. If a successful cardioversion is not achieved at the initial setting, subsequent synchronized cardioversions may be delivered at increased joule settings in accordance with the BHP orders or the Medical Directive. Ensure that the defibrillator is **synched** before any subsequent cardioversions are delivered.

CONSIDERATIONS

- Anomalies in the ECG morphology may cause the machine to mistakenly mark non-QRS portions of the ECG. For example peaked T waves may be marked in the setting of hyperkalemia, or the P and T waves could be marked in low amplitude states. The paramedic must be sure the machine is properly identifying QRS complexes. This is achieved by cycling through all leads looking for the tallest R waves.
- The defibrillator must be **resynchronized** before every cardioversion attempt.
- If synchronization is not possible, consult with the BHP during the patch.

Hyperkalemia Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Suspected hyperkalemia in patients at high risk, including:

Currently on dialysis; **OR**

History of end-stage renal disease; **OR**

Relevant incident history (i.e. prolonged crush injury)

AND

One of the following clinical situations:

Cardiac Arrest; **OR**

Prearrest with 12-lead ECG changes associated with Hyperkalemia.

CONDITIONS

Calcium Gluconate 10%	
AGE:	≥18 years
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

Salbutamol	
AGE:	≥18 years
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

CONTRAINDICATIONS

Calcium gluconate	Salbutamol
N/A	Allergy or sensitivity to salbutamol

TREATMENT

Consider ***12-lead ECG acquisition and interpretation***

Consider **calcium gluconate 10%**

	Route
	IV/IO/CVAD
Dose	1 g (10 mL) over 2-3 minutes
Max. single dose	1g (10 mL)
Dosing interval	5 minutes
Max. # of doses	2 *

***Note: an additional 3rd dose may be administered after 30 minutes if the patient improved initially and symptoms meeting the indications recur.**

Consider **salbutamol**

	Route	
	MDI*	NEB
Dose	1,600 mcg (16 puffs)	10 mg
Max. single dose	1,600 mcg	10 mg
Dosing interval	Immediate	Immediate
Max. # of doses	2	2

***1 puff=100mcg**

CLINICAL CONSIDERATIONS

In the Indications, the pre-arrest patient would present with one or more of the following:

- hypotension;
- altered levels of awareness; or
- symptomatic bradycardia.

12-lead changes suggestive of hyperkalemia are:

- wide and bizarre QRS complexes [≥120 ms];
- peaked T waves;
- loss of P waves; and/or
- a QRS complex with a “sine wave” appearance.

(12-lead acquisition is intended for the patient not in cardiac arrest to establish the QRS duration before and after treatment.)

Whenever possible, both calcium gluconate and salbutamol should be administered as the 2 medications have different modes of action.

The action of calcium gluconate is often visible through the normalization of observed ECG changes of hyperkalemia. If ECG changes do not improve, or if they worsen, additional doses may be required. The duration of action is 20-60 minutes: consider repeat dosing if ECG changes recur during extended transport times.

Caution that calcium gluconate should only be administered in an IV/IO/CVAD that is running well.

Calcium gluconate and sodium bicarbonate should not be mixed or administered in the same IV without flushing well.

Intravenous and Fluid Therapy Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Actual or potential need for intravenous medication **OR** fluid therapy.

CONDITIONS

IV Cannulation	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

0.9% NaCl Fluid Bolus	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	Hypotension
Other:	N/A

CONTRAINDICATIONS

IV Cannulation	0.9% NaCl Fluid Bolus
Suspected fracture proximal to the access site	Fluid overload

TREATMENT

Consider **IV cannulation**

Consider **0.9% NaCl** maintenance infusion

	Age <12 years **Route** IV / IO / CVAD	**Age** ≥12 years **Route** IV / IO / CVAD
Infusion	15 mL/hr	30-60 mL/hr
Infusion interval	N/A	N/A
Reassess every	N/A	N/A
Max. volume	N/A	N/A

⚠ Mandatory Provincial Patch Point ⚠

Patch to BHP for authorization to administer 0.9% NaCl bolus to hypotensive patients <12 years with suspected Diabetic Ketoacidosis (DKA).

Consider **0.9% NaCl fluid bolus**

	Age <12 years **Route** IV / IO / CVAD	**Age** ≥12 years **Route** IV / IO / CVAD
Infusion	20 mL/kg	20 mL/kg
Infusion interval	Immediate	Immediate
Reassess every	100 mL	250 mL
*Max. volume**	2,000 mL	2,000 mL

***The maximum volume of 0.9% NaCl is lower for patients in cardiogenic shock and return of spontaneous circulation.**

CLINICAL CONSIDERATIONS

Adult IO and CVAD procedures are auxiliary Medical Directives described elsewhere. Fluid administration via the IO or CVAD routes only apply to paramedics authorized to perform these procedures.

Microdrips and/or volume control administration sets should be considered when IV access is indicated for patients <12 years of age.

An intravenous fluid bolus may be considered for a patient who does not meet trauma TOR criteria, where it does not delay transport and should not be prioritized over management of other reversible causes.

Adult Intraosseous Medical Directive –*AUXILIARY*

An Advanced Care Paramedic may provide the treatment prescribed in this auxiliary Medical Directive if authorized.

INDICATIONS

Actual or potential need for intravenous medication **OR** fluid therapy;
AND
IV access is unobtainable;
AND
Cardiac arrest or pre-arrest state.

CONDITIONS

IO	
AGE:	≥12 years
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

CONTRAINDICATION

IO
Fracture or crush injuries proximal to the access site.
Suspected or known replacement / prostheses immediately proximal to the access site

TREATMENT

Consider **IO access**

CLINICAL CONSIDERATIONS

N/A

*NOTE: Refer to page 100 to 102 for **Intraosseous Site Guidelines***

Pediatric Intraosseous Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Actual or potential need for intravenous medication **OR** fluid therapy;
AND
Intravenous access is unobtainable;
AND
Cardiac arrest or pre-arrest state.

CONDITIONS

IO	
AGE:	<12 years
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

CONTRAINDICATION

IO
Fracture or crush injuries proximal to the access site
Suspected or known replacement / prosthesis proximal to the access site.

TREATMENT

Consider **IO access**

CLINICAL CONSIDERATIONS

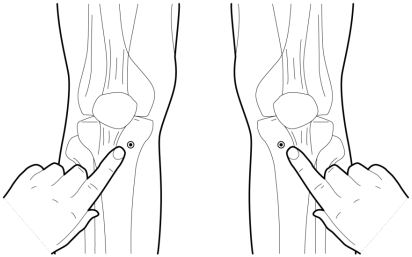
N/A

*NOTE: Refer to page 100 to 102 for **Intraosseous Site Guidelines***

INTRAOSSEOUS SITE GUIDELINES

PROXIMAL TIBIAL SITE (ADULT AND PEDIATRIC)

- Refer to the Adult and Pediatric Intraosseous Medical Directives for indications, conditions and contraindications.
- To landmark this site, rotate the leg externally, then find the medial and lateral condyles of the proximal tibia. Between the condyles, on the top of the anterior tibial crest is the tibial tuberosity. The insertion site is one to two fingerbreadths below and medial to the tibial tuberosity. The needle should be aimed slightly distally away from the growth plate.



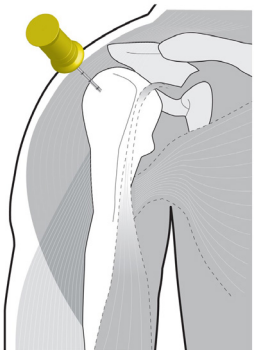
- Cleanse the needle insertion site with aseptic technique.
- Select the appropriate size IO needle as per the age of the patient and/or the manufacturers recommendation.
- Insert the IO needle as per the manufacturer's recommendations. For a manual device, place the needle at 90 degrees to the landmark and applying a firm pressure with a screwing-type motion. A distinct tactile "popping" should be felt as needle passes through the bone into the medullary cavity.
- Once the IO needle has been placed into the medullary cavity of the bone, place the introducer needle into the biohazard container.
- Confirm proper placement by confirming patency of the IO site, and ensure there are no signs of infiltration. Generally, the posterior aspect of the limb will best show the most prominent signs of infiltration.

- Attach a primed infusion set to the IO device and set the appropriate infusion rate.
- Appropriately pad and secure the IO site to maintain stability during patient movement

CONSIDERATIONS

- The solution set attached to an IO may require additional pressure to initiate and maintain flow. The paramedic may choose to use a pressure bag, or infuse a predetermined amount of fluid via syringe. When a pressure bag is selected, the flow rate must be constantly monitored as the rate can tend to increase as the compartment becomes more accepting to fluid, and slow as the pressure in the bag desreases.
- If the first IO attempt is unsuccessful, consider an attempt at the proximal tibial site on the other leg.

PROXIMAL HUMERUS SITE IDENTIFICATION – ADULT



- Select and insert the appropriate size IO needle as per the patient and/or the manufacturers recommendation.

PROXIMAL HUMERUS NEEDLE SELECTION

- Palpate and identify which site you want to use. Use the proximal tibia site for pediatrics, and either the proximal tibia or humeral site for adults.
- Although weight of the patient is one of the criteria for needle selection, the correct needle set is based primarily on the site selected and tissue depth overlying the bone
- The 45mm needle is recommended for humeral site insertion
- Due to the anterolateral location of the proximal humerus – use a 45° angle for the insertion
- Needle Insertion
- Stabilize the bone and surrounding tissue (two person technique is best)
- Penetrate the skin through to the bone **WITHOUT** running the driver
- Assure the 5mm mark is visible when the needle tip has come in contact with the bone
- If the 5mm mark is not visible **DO NOT** proceed, the needle is **NOT** long enough!
- Run the driver constantly with mild pressure for adult patients, no pressure with pediatric patients
- Stop the driver when you feel the “pop” into the intraosseous space

POST-NEEDLE INSERTION

- Unscrew the needle (counter clockwise) from the hub and remove it using two hands
- Connect using the EZ connect adapter ensuring the tubing as been primed with normal saline. DO NOT attach directly to a syringe.
- Aspirate a small amount of blood (not always possible, does not rule out proper placement) and assess stability of needle in bone to confirm placement
- Flush with 3-10mL normal saline. In neonates will only need 3mL. In adults use 5-10mL.
- A second flush may be needed on larger patients
- Check for any leakage or extravasation or fluid gathering in extremity compartments
- Put the arm band on the patient's wrist

NOTE ON FLUSH:

- ***NO FLUSH = NO FLOW.***
  Failure to properly flush the IO catheter may result in limited or no flow

NOTE ON PRESSURE INFUSER:

- *Pressure in the IV bag must be higher than the pressure inside the bone to achieve flow*
- *Therefore, fluids or medications must be delivered under pressure to obtain maximum flow rates*

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Level of Consciousness

ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

Hypoglycemia Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Suspected hypoglycemia

CONDITIONS

Dextrose	
AGE:	N/A
LOA:	Altered
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	Hypoglycemia

Glucagon	
AGE:	N/A
LOA:	Altered
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	Hypoglycemia

CONTRAINDICATIONS

Dextrose
Allergy or sensitivity to dextrose

Glucagon
Allergy or sensitivity to glucagon
Pheochromocytoma

TREATMENT

Patient · Drug · Dose · Route · Time.

Consider **glucometry**

Consider **dextrose** (D50W diluted as required if not using D10W)

	Age < 2 years	Age ≥ 2 years	
	Concentration *10% dextrose*	**Concentration** *10% dextrose*	**Concentration** 50% dextrose
	Route IV	**Route** IV	**Route** IV
Dose	0.2 g/kg (2 ml/kg)	0.2 g/kg (2ml/kg)	0.5 g/kg (1 ml/kg)
Max. single dose	5 g (50 ml)	25 g (250 ml)	25 g (50 ml)
Dosing interval	10 min	10 min	10 min
Max. # of doses	2	2	2

Titrate dextrose to a level of awareness where the patient can safely consume complex carbohydrate.

Consider **glucagon** (if not using dextrose)

	Weight < 25 kg	Weight ≥ 25 kg
	Route IM	**Route** IM
Dose	0.5 mg	1 mg
Max. single dose	0.5 mg	1 mg
Dosing interval	20 min	20 min
Max. # of doses	2	2

CLINICAL CONSIDERATIONS

If the patient responds to dextrose or glucagon, he/she may receive oral glucose or other simple carbohydrates.

If only mild signs or symptoms are exhibited, the patient may receive oral glucose or other simple carbohydrates instead of dextrose or glucagon.

If a patient initiates an informed refusal of transport, a final set of vital signs including blood glucometry must be attempted and documented.

CONSIDERATIONS FOR TREAT AND DISCHARGE (IF AUTHORIZED)

All of the following criteria must be met:

- the patient is ≥18 AND <65 years old;
- the patient has a diagnosis of diabetes;
- the hypoglycemia can be explained by insulin administration with inadequate oral intake;
- the hypoglycemia promptly responded to a single administration of dextrose (no intraosseous was used) as per the Medical Directive and/or 1mg of Glucagon and/or consumed oral glucose or other complex carbohydrates;
- this was a single isolated episode of symptomatic hypoglycemia within the past 24 hours;
- the blood glucose is ≥4.0mmol/L after treatment;
- the patient has returned to their normal level of consciousness and is asymptomatic;
- a complete set of vital signs are within expected normal ranges;

AND

- not an intentional overdose;
- the hypoglycemia must not be related to alcohol or substance abuse or withdrawal;
- no seizure or reported history of seizure prior to paramedic treatment;
- not on an oral hypoglycemic medication;
- hypoglycemia is not considered to be related to an acute medical illness, and;
- the patient is not pregnant.

In addition to the above criteria, if all of the following requirements have been met, the patient can be discharged by paramedics:

- the patient has access to appropriate carbohydrates;
- a responsible adult agrees to remain with the patient for the next 4 hours;
- all of the patient or substitute decision makers questions were answered and a care plan was developed;
- the patient or substitute decision maker has been advised to follow up with their primary health care team or provider;
- clear instructions to call 911 were provided should symptoms redevelop;
- patient or substitute decision maker has the ability to access 911 should symptoms redevelop, and
- patient or substitute decision maker consents to the discharge.

CLINICAL CONSIDERATIONS (TREAT AND DISCHARGE)

Patch to BHP for consultation if you are unclear if the patient meets all of the discharge criteria.

Dextrose Dosing Guide

Age	Weight kg	Blood Sugar mmol/L	Dextrose prep	Initial dose / Repeat dose		
				Dose g/kg	*Volume* mL/kg	***Amt*** **mL**
< 30 days	2	< 3.0	**D10W** Waste 40 mLs replace w/ sterile water	0.2	2	**4**
	3				2	**6**
	4				2	**8**
	5				2	**10**
≥30 days to **< 2 years**	3	< 3.0	**D25W** Waste 25 mLs replace w/ sterile water	0.5	2	**6**
	4				2	**8**
	5				2	**10**
	6				2	**12**
	8				2	**16**
	10				2	**20**
	12				2	**24**
	14				2	**28**
≥ 2 years	10	< 4.0	**D50W**	0.5	1	**10**
	15				1	**15**
	20				1	**20**
	25				1	**25**
	30				1	**30**
	35				1	**35**
	40				1	**40**
	45				1	**45**
	> 50				1	**50**

Patient • Drug • Dose • Route • Time.

Seizure Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Active generalized motor seizure.

CONDITIONS

Midazolam	
AGE:	N/A
LOA:	Unresponsive
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

CONTRAINDICATIONS

Midazolam
Allergy or sensitivity to midazolam

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **midazolam**

	Route	
	IV / IO	IM / IN / Buccal
Dose	0.1 mg/kg	0.2 mg/kg
Max. single dose	5 mg	10 mg
Dosing interval	5 min	5 min
Max. # of doses	2	2

CLINICAL CONSIDERATIONS

Conditions such as cardiac arrest and hypoglycemia often present as seizure and should be considered by a paramedic.

Do not delay midazolam administration for blood glucometry in cases where hypoglycemia is not thought to be the causative agent.

Blood glucose should be routinely checked in patients who do not respond to midazolam or have not returned to their baseline LOA after a seizure.

CONSIDERATIONS FOR TREAT AND DISCHARGE (IF AUTHORIZED)

All of the following criteria must be met:

- the patient is ≥18 AND <65 years old;
- patient must have a history of epilepsy;
- the patient is taking their anticonvulsant medication as prescribed;
- the patient must have only had a single seizure episode in the past 24 hours;
- the seizure pattern and duration must be similar to past seizures;
- the patient has returned to their normal level of consciousness and is asymptomatic;
- a complete set of vital signs including temperature are within expected normal ranges;

AND

- the seizure must not be related to hypoglycemia, alcohol or substance abuse or withdrawal;
- the patient must not have received midazolam by paramedics;
- the patient did not injure themselves during seizure activity;
- the patient must not have a fever, preceding illness or recently started a new medication, and;
- the patient is not pregnant.

In addition to the above criteria, if all of the following requirements have been met, the patient can be discharged by paramedics:

- a responsible adult agrees to remain with the patient for the next 4 hours;
- all of the patient or substitute decision makers questions were answered and a care plan was developed;
- the patient or substitute decision maker has been advised to follow up with their primary health care team or provider;
- clear instructions to call 911 were provided should symptoms redevelop;
- patient or substitute decision maker has the ability to access 911 should symptoms redevelop, and;
- patient or substitute decision maker consents to the discharge.

CLINICAL CONSIDERATIONS (TREAT AND DISCHARGE)

Patch to BHP for consultation if you are unclear if the patient meets all of the discharge criteria.

Seizure Medical Directive Dosing Guide

Midazolam Dosing Guide

Age	Weight	Route: IM/IN/Buccal Dose: 0.2 mg/kg Supplied: 10 mg/2 mL Use 1 mL syringe Undiluted			Route: IV/IO Dose: 0.1 mg/kg Supplied: 10 mg/2 mL Use 10 mL syringe diluted to 1 mg/mL		
		Dose	Calculated Volume	Volume to Administer (rounded)	Dose	Actual Volume	Volume to Administer (rounded)
Neonate	3 kg	0.6 mg	0.12 mL	0.10 mL	0.3 mg	0.3 mL	0.4 mL
< 1	6 kg	1.2 mg	0.24 mL	0.25 mL	0.6 mg	0.6 mL	0.6 mL
1	12 kg	2.4 mg	0.48 mL	0.50 mL	1.2 mg	1.2 mL	1.2 mL
2	14 kg	2.8 mg	0.56 mL	0.55 mL	1.4 mg	1.4 mL	1.4 mL
3	16 kg	3.2 mg	0.64 mL	0.65 mL	1.6 mg	1.6 mL	1.6 mL
4	18 kg	3.6 mg	0.72 mL	0.70 mL	1.8 mg	1.8 mL	1.8 mL
5	20 kg	4.0 mg	0.80 mL	0.80 mL	2.0 mg	2.0 mL	2.0 mL
6	22 kg	4.4 mg	0.88 mL	0.90 mL	2.2 mg	2.2 mL	2.2 mL
		Supplied: 10 mg/2 mL Use 3 mL or 10 mL syringe Undiluted			Supplied: 10 mg/2 mL Use 10 mL syringe Diluted to 1 mg/mL		
7	24 kg	4.8 mg	0.96 mL	1.0 mL	2.4 mg	2.4 mL	2.4 mL
8	26 kg	5.2 mg	1.04 mL	1.0 mL	2.6 mg	2.6 mL	2.6 mL
9	28 kg	5.6 mg	1.12 mL	1.2 mL	2.8 mg	2.8 mL	2.8 mL
10	30 kg	6 mg	1.20 mL	1.2 mL	3.0 mg	3.0 mL	3.0 mL
11	32 kg	6.4 mg	1.28 mL	1.2 mL	3.2 mg	3.2 mL	3.2 mL
12	34 kg	6.8 mg	1.36 mL	1.4 mL	3.4 mg	3.4 mL	3.4 mL
	40 kg	8 mg	1.60 mL	1.6 mL	4.0 mg	4.0 mL	4.0 mL
	45 kg	9 mg	1.80 mL	1.8 mL	4.5 mg	4.5 mL	4.5 mL
Max	>50 kg	10 mg	2.00 mL	2.0 mL	5.0 mg	5.0 mL	5.0 mL

Note: Dosage administered can be calculated by the weight based calculation in the Medical Directive and/or by using the above chart. Administered dosage in the chart may be rounded to the nearest volume increment that can be accurately measured.

Note:

Dosing for Adult Procedural Sedation: up tp 0.1mg/kg (IV/IM/IN); max single dose 5mg; max 2 doses

Dosing for Adult Combative Patient up to 0.1mg/kg (IV/IO/CVAD/IN); max single dose 5mg; max total dose 10mg

Opioid Toxicity Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Altered LOC;

AND

Respiratory depression;

AND

Inability to adequately ventilate; OR persistent need to assist ventilations;

AND

Suspected opioid overdose.

CONDITIONS

Naloxone	
AGE:	≥ 24 hours
LOA:	Altered
HR:	N/A
RR:	<10 breaths/min
SBP:	N/A
Other:	N/A

CONTRAINDICATIONS

Naloxone
Allergy or sensitivity to naloxone

TREATMENT

Consider **naloxone**

	Route IV / IO	Route IM	Route IN	Route SC
Dose	Up to 0.4 mg*	0.4 mg	2-4 mg	0.8 mg
Max. single dose	0.4 mg	0.4 mg	2-4 mg	0.8 mg
Dosing interval	5 mins	5 min	5 min	5 min
Max. # of doses	3	3	3	3

***For the IV route, titrate naloxone only to restore the patient's respiratory status.**

CLINICAL CONSIDERATIONS

Upfront aggressive management of the airway is paramount and the initial priority.

If no response to initial treatment; consider patching for further doses.

If the patient does not respond to airway management and the administration of naloxone, glucometry should be considered.

Combative behaviour should be anticipated following naloxone administration and paramedics should protect themselves accordingly, thus the importance of gradual titrating (if given IV) to desired clinical effect: respiratory rate ≥10, adequate airway and ventilation, not full alertness

Suspected Adrenal Crisis Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

A patient with primary adrenal failure who is experiencing clinical signs of adrenal crisis.

CONDITIONS

Hydrocortisone	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	Paramedics are presented with a vial of hydrocortisone for the identified patient **AND** Age-related hypoglycemia **OR** GI symptoms (vomiting, diarrhea, abdominal pain) **OR** Syncope **OR** Temperature ≥38C or suspected/history of fever **OR** Altered level of awareness **OR** Age-related tachycardia **OR** Age related hypotension

CONTRAINDICATIONS

Hydrocortisone
Allergy or sensitivity to hydrocortisone

TREATMENT

5Rs ***Patient • Drug • Dose • Route • Time.***

Consider ***hydrocortisone***

	Route
	IM/IV/IO/CVAD
Dose	2 mg/kg*
Max. single dose	100 mg
Dosing interval	N/A
Max. # doses	1

***Dose should be rounded to the nearest 10 mg**

CLINICAL CONSIDERATIONS

N/A

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Pain/Sedation/Nausea

ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

Analgesia Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Pain

CONDITIONS

Acetaminophen

AGE: ≥12 years
LOA: Unaltered
HR: N/A
RR: N/A
SBP: N/A
Other: N/A

Ibuprofen

AGE: ≥12 years
LOA: Unaltered
HR: N/A
RR: N/A
SBP: N/A
Other: N/A

Ketorolac

AGE: ≥12 years
LOA: Unaltered
HR: N/A
RR: N/A
SBP: Normotension
Other: N/A

Morphine

AGE: ≥1 year
LOA: Unaltered
HR: N/A
RR: N/A
SBP: Normotension
Other: N/A

FentaNYL	
AGE:	≥1 year
LOA:	Unaltered
HR:	N/A
RR:	N/A
SBP:	Normotension
Other:	N/A

CONTRAINDICATIONS

Acetaminophen
Acetaminophen use within previous 4 hours
Allergy or sensitivity to acetaminophen
Hx of liver disease
Active vomiting
Unable to tolerate oral medication
Suspected ischemic chest pain

Ibuprofen
NSAID use within previous 6 hours
Allergy or sensitivity to NSAIDs
Patient on anticoagulation therapy
Current active bleeding
Hx of peptic ulcer disease or GI bleed
Pregnant
If asthmatic, no prior use of ASA or other NSAIDs
CVA or TBI in the previous 24 hours
Known renal impairment
Active vomiting
Unable to tolerate oral medication
Suspected ischemic chest pain

Ketorolac

- NSAID use within previous 6 hours
- Allergy or sensitivity to NSAIDs
- Patient on anticoagulation therapy
- Current active bleeding
- Hx of peptic ulcer disease or GI bleed
- Pregnant
- If asthmatic, no prior use of ASA or other NSAIDs
- CVA or TBI in the previous 24 hours
- Known renal impairment
- Suspected ischemic chest pain

Morphine

- Allergy or sensitivity to morphine
- Treatment of headache
- Treatment of chronic pain
- SBP drops by one-third or more of its initial value after morphine is administered
- Suspected ischemic chest pain (refer to Cardiac Ischemia Medical Directive for suspected cardiac ischemia)
- Active Labour

FentaNYL

- Allergy or sensitivity to fentanyl
- Treatment of headache
- Treatment of chronic pain
- SBP drops by one-third or more of its initial value after fentanyl is administered
- Suspected ischemic chest pain
- Active labour

TREATMENT

Consider **acetaminophen**

	Age ≥12 years to <18 years	**Age** ≥18 years
Route	*PO*	*PO*
Dose	500-650 mg	960-1,000 mg
Max. single dose	650 mg	1,000 mg
Dosing interval	N/A	N/A
Max. # doses	1	1

Consider **ibuprofen**

Route	Age ≥12 years *PO*
Dose	400 mg
Max. single dose	400 mg
Dosing interval	N/A
Max. # doses	1

Consider **ketorolac**

Route	Age ≥12 years *IM/IV*
Dose	10-15 mg
Max. single dose	15 mg
Dosing interval	N/A
Max. # doses	1

⚠ Mandatory Provincial Patch Point ⚠

Patch to BHP for authorization and dosage verification before administering morphine or fentanyl for children < 12 years old

Consider **morphine**

Route	Age ≥1 year to <18 years *IV/SC*	Age ≥18 years *IV/SC*
Dose	0.05-0.1 mg/kg	2 - 10 mg
Max. single dose	5 mg	10 mg
Dosing interval	15 min	15 min
Max. # of doses	N/A	N/A
Max. cumulative dose	10 mg	20 mg

Consider **fentaNYL (if available and authorized)**

Route	Age ≥1 year to <18 years *IV/IN*	Age ≥18 years *IV/IN*
Dose	Up to 1 mcg/kg	25 – 75 mcg
Max. single dose	75 mcg	75 mcg
Dosing interval	5 min	5 mins
Max. # of doses	4	4
Max. cumulative dose	225 mcg	225 mcg

CLINICAL CONSIDERATIONS

Whenever possible, consider co-administration of acetaminophen and ibuprofen.

Suspected renal colic patients should routinely be considered for ketorolac **and** morphine or fentaNYL.

Exercise caution when using narcotics in opioid naïve patients and patients ≥65 years older as they may be more sensitive to dosages.

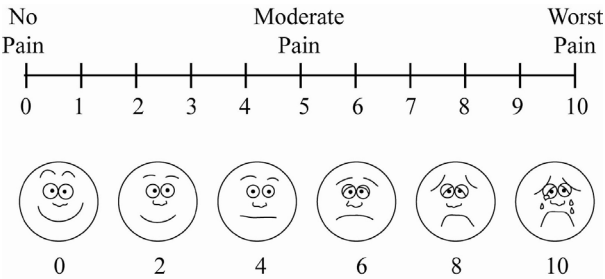
When higher doses of morphine (5-10 mg) or fentaNYL (50-75 mcg) are given intravenously, consider administering medication in small aliquots q 3 minutes until desired effect or max. single dose is reached to avoid nausea and vomiting.

FentaNYL should not be used in combination with morphine unless authorized by BHP.

The maximum volume of fentaNYL that may be administered IN is 1mL per nare.

Pain Scale Reference

Can be utilized for patients 3 years of age and older.



Analgesia Medical Directive - Adult & Pediatric

Morphine Dosing Guide

Age	Weight	Route: Subcutaneous Pediatric dosage 0.05 mg/kg Supplied: 10 mg/mL Use 1 mL Syringe Undiluted			Route: Intravenous Pediatric dosage 0.05 mg/kg Supplied: 10 mg/mL Use 1 mL Syringe Diluted to 1 mg/mL		
		Dose	Calculated Volume	Volume To Administer (rounded)	Dose	Calculated Volume	Volume To Administer (rounded)
		⚠ Mandatory Provincial Patch Point			For patients < 12 years		
Neonate	3 kg	0.15 mg	0.015 mL	---- mL	0.15 mg	0.15 mL	0.15 mL
<1	6 kg	0.3 mg	0.03 mL	0.05 mL	0.3 mg	0.3 mL	0.3 mL
1	12 kg	0.6 mg	0.06 mL	0.05 mL	0.6 mg	0.6 mL	0.6 mL
2	14 kg	0.7 mg	0.07 mL	0.05 mL	0.7 mg	0.7 mL	0.7 mL
3	16 kg	0.8 mg	0.08 mL	0.10 mL	0.8 mg	0.8 mL	0.8 mL
4	18 kg	0.9 mg	0.09 mL	0.10 mL	0.9 mg	0.9 mL	0.9 mL
5	20 kg	1.0 mg	0.10 mL	0.10 mL	1.0 mg	1.0 mL	1.0 mL
6	22 kg	1.1 mg	0.11 mL	0.10 mL	1.1 mg	1.1 mL	1.0 mL
7	24 kg	1.2 mg	0.12 mL	0.1 mL	1.2 mg	1.2 mL	1.2 mL
8	26 kg	1.3 mg	0.13 mL	0.1 mL	1.3 mg	1.3 mL	1.4 mL
9	28 kg	1.4 mg	0.14 mL	0.1 mL	1.4 mg	1.4 mL	1.4 mL
10	30 kg	1.5 mg	0.15 mL	0.2 mL	1.5 mg	1.5 mL	1.6 mL
11	32 kg	1.6 mg	0.16 mL	0.2 mL	1.6 mg	1.6 mL	1.6 mL
		Supplied: 10 mg/mL Use 1 mL Syringe Undiluted			Supplied: 10 mg/mL Use 10 mL Syringe Diluted to 1 mg/mL		
Youth (12-17)	34 kg	1.7 mg	0.17 mL	0.2 mL	1.7 mg	1.7 mL	1.8 mL
	40 kg	2.0 mg	0.20 mL	0.2 mL	2.0 mg	2.0 mL	2.0 mL
	45 kg	2.25 mg	0.225 mL	0.2 mL	2.25 mg	2.25 mL	2.2 mL
	50 kg	2.5 mg	0.25 mL	0.3 mL	2.5 mg	2.5 mL	2.6 mL
	55 kg	2.75 mg	0.275 mL	0.3 mL	2.75 mg	2.75 mL	2.8 mL
	60 kg	3.0 mg	0.30 mL	0.3 mL	3.0 mg	3.0 mL	3.0 mL
	65 kg	3.25 mg	0.325 mL	0.3 mL	3.25 mg	3.25 mL	3.2 mL
	70 kg	3.5 mg	0.35 mL	0.4 mL	3.5 mg	3.5 mL	3.6 mL
	75 kg	3.75 mg	0.375 mL	0.4 mL	3.75 mg	3.75 mL	3.8 mL
	80 kg	4.0 mg	0.40 mL	0.4 mL	4.0 mg	4.0 mL	4.0 mL
	85 Kg	4.25 mg	0.425 mL	0.4 mL	4.25 mg	4.25 mL	4.2 mL
	90 kg	4.5 mg	0.45 mL	0.5 mL	4.5 mg	4.5 mL	4.6 mL
	95 kg	4.75 mg	0.475 mL	0.5 mL	4.75 mg	4.75 mL	4.8 mL
	100 kg	5 mg	0.5 mL	0.5 mL	5.0 mg	5.0 mL	5.0 mL
Pediatric **Maximum** Single Dose		5 mg	0.50 mL	0.5 mL	5.0 mg	5 mL	5 mL

Dosing Interval: **15 minutes** Pediatric **Max** # of **Doses**: 4

Analgesia Medical Directive - Adult & Pediatric

Dosing Interval: **15 minutes** Pediatric **Max #** of **Doses**: 4

	Supplied: 10 mg/mL Use 1 mL Syringe Undiluted		Supplied: 10 mg/mL Use 10 mL Syringe Diluted to 1 mg/mL	
Adult N/A	2 - 10mg	0.2 - 1.0 mL	2 – 10 mg	2 - 10 mL
Adult **Maximum** Single **Dose**	10 mg	1.0 mL	10 mg	10 mL

Dosing Interval: **15 minutes** Adult **Max #** of **Doses**: **4**

Analgesia Medical Directive - Adult & Pediatric

FentaNYL Dosing Guide

Route: Intravenous or Intranasal
Supplied: 100 mcg in 2 mL
*Intranasal Max Fluid : 1 mL per nare
Use 1 mL Syringe, undiluted
Maximum Pediatric Dosage: up to 1 mcg/kg (administer in divided doses)

⚠ **Mandatory Provincial Patch Point for Children < 12 years old**

Age	Weight	Maximum Dose	Calculated Volume	Volume to administer (rounded)
Neonate	3 kg	3 mcg	0.03 mL	----
<1	6 kg	6 mcg	0.06 mL	0.05 mL
1	12 kg	12 mcg	0.24 mL	0.2 mL
2	14 kg	14 mcg	0.28 mL	0.3 mL
3	16 kg	16 mcg	0.32 mL	0.3 mL
4	18 kg	18 mcg	0.36 mL	0.4 mL
5	20 kg	20 mcg	0.40 mL	0.4 mL
6	22 kg	22 mcg	0.44 mL	0.4 mL
7	24 kg	24 mcg	0.48 mL	0.5 mL
8	26 kg	26 mcg	0.52 mL	0.5 mL
9	28 kg	28 mcg	0.56 mL	0.6 mL
10	30 kg	30 mcg	0.60 mL	0.6 mL
11	32 kg	32 mcg	0.64 mL	0.6 mL
Youth* (12-17)	34 kg	34 mcg	0.68 mL	0.7 mL
	40 kg	40 mcg	0.80 mL	0.8 mL
	45 kg	45 mcg	0.90 mL	0.9 mL
	50 kg	50 mcg	1.0 mL	1.0 mL
	55 kg	55 mcg	1.1 mL*	1.1 mL*
	60 kg	60 mcg	1.2 mL*	1.2 mL*
	65 kg	65 mcg	1.3 mL*	1.3 mL*
	70 kg	70 mcg	1.4 mL*	1.4 mL*
	75 kg	75 mcg	1.5 mL*	1.5 mL*
Pediatric Maximum Single Dose*		75 mcg	1.5 mL*	1.5 mL*
Adults ≥ 18 years		25 – 75 mcg	0.50 -1.5 mL*	0.50 -1.5 mL*
Adult Maximum Single Dose		75 mcg	1.5 mL*	1.5 mL*

Procedural Sedation Medical Directive – *AUXILIARY*

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Post-intubation; **OR**
Transcutaneous pacing.

CONDITIONS

FentaNYL	
AGE:	≥18 years
LOA:	N/A
HR:	N/A
RR:	≥10/min*
SBP:	Normotension
Other:	N/A

Midazolam	
AGE:	≥18 years
LOA:	N/A
HR:	N/A
RR:	≥10/min*
SBP:	Normotension
Other:	N/A

***Non-intubated patients only**

CONTRAINDICATIONS

FentaNYL	Midazolam
Allergy or sensitivity to FentaNYL	Allergy or sensitivity to midazolam

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **fentaNYL**

	Route IV/IO/CVAD/IN
Dose	25-75 mcg
Max. single dose	75 mcg
Dosing interval	5 min
Max. total dose	150 mcg

Consider **midazolam**

	Route IV/IO/CVAD/IN
Dose	Up to 0.1 mg/kg
Max. single dose	5 mg
Dosing interval	5 min
Max. total dose	10 mg

CLINICAL CONSIDERATIONS

Consider lower dose of medication in elderly and lighter weight individuals.

Consider quantitative EtCO2 monitoring once the patient has been sedated.

Combative Patient Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Combative **OR** violent or agitated behavior that requires sedation for patient safety.

CONDITIONS

Midazolam	
AGE:	≥18 years
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

Ketamine	
AGE:	≥18 years
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	Normotension
Other:	Suspected excited delirium / severe violent psychosis

CONTRAINDICATIONS

Midazolam
Allergy or sensitivity to midazolam

Ketamine
Allergy or sensitivity to ketamine

TREATMENT

5Rs **Patient • Drug • Dose • Route • Time.**

Consider **midazolam**

Route	Age ≥18 years IV/ IM / IN
Dose	Up to 0.1 mg/kg
Max. single dose	5 mg
Dosing interval	5 min
Max. total dose	10 mg
Max. # doses	N/A

Consider **ketamine**

Route	Age ≥18 years to <65 years IM	Age ≥65 years IM
Dose	5 mg/kg	3 mg/kg
Max. single dose	500 mg	300 mg
Dosing interval	N/A	N/A
Max. # doses	1	1

CLINICAL CONSIDERATIONS

Reversible causes of combative, violent or agitated behaviours (e.g. hypoglycemia, hypoxia, hypovolemia) should be considered and treated (if possible) prior to treating with midazolam or ketamine.

Paramedics can administer a lower weight base dose (e.g. 0.05 mg/kg) of midazolam based on clinical judgment taking into consideration such as but not limited to, patient age, and degree of combativeness, and the level of suspicion of hypotension or hypoxia when unable to obtain vital signs.

Do not co-administer midazolam and ketamine unless direction received from BHP.

Consider quantitative EtCO2 monitoring once the patient has been sedated.

If ketamine emergence reaction develops, a BHP patch is required if further sedation orders are required

Nausea / Vomiting Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Nausea or vomiting.

CONDITIONS

Ondansetron	
AGE:	N/A
Weight:	≥25 kg
LOA:	Unaltered
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

DimenHYDRINATE	
AGE:	< 65 years
Weight:	≥25 kg
LOA:	Unaltered
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

CONTRAINDICATIONS

Ondansetron
Allergy to ondansetron
Prolonged QT syndrome (known to patient)
Apomorphine use

DimenHYDRINATE
Allergy or sensitivity to dimenHYDRINATE or other antihistamines
Overdose on antihistamines or anticholinergics or tricyclic antidepressants
Co-administration of diphenhydraMINE

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **ondansetron**

	Weight ≥ 25 kg
	Route PO
Dose	4 mg
Max. single dose	4 mg
Dosing interval	N/A
Max. # of doses	1

Consider **dimenHYDRINATE**

	Weight ≥25 kg to <50 kg	Weight ≥50 kg
	Route IV/IM	**Route** IV/IM
Dose	25 mg	50 mg
Max. single dose	25 mg	50 mg
Dosing interval	N/A	N/A
Max. # of doses	1	1

CLINICAL CONSIDERATIONS

Prior to IV administration, dilute dimenHYDRINATE (concentration of 50 mg/1 ml) 1:9 with Normal Saline or D5W. If administered IM do not dilute

If a patient has received Ondansetron and has no relief of their nausea & vomiting symptoms after 30 minutes, dimenHYDRINATE may be considered.

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Procedural

ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

Home Dialysis Emergency Disconnect Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Patient receiving home dialysis (hemo or peritoneal) and connected to dialysis machine and requires transport to the closest appropriate receiving facility;

AND

Patient is unable to disconnect ;

AND

There is no family member of caregiver who is available and knowledgeable in dialysis disconnect .

CONDITIONS

Home Dialysis Emergency Disconnect	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

CONTRAINDICATIONS

Home Dialysis Emergency Disconnect
N/A

TREATMENT

Consider **Home Dialysis Emergency Disconnect**

CLINICAL CONSIDERATIONS

Generally, an emergency disconnect kit with materials and instructions can be found hanging from the dialysis machine or nearby on the wall.

Ensure both the patient side and machine side of the connection are clamped before disconnecting and attaching end caps.

Emergency Dialysis Disconnect Prompt Card

Hemodialysis

- Clamp patient side tubing clamps
- Clamp machine side clamps
- Attach sterile Luer Lock caps to the ends of the patient tubing
- Disregard any alarms that may sound from the machine
- Secure patient tubing and cover with abdo pad

Continuous Ambulatory Peritoneal Dialysis (CAPD)

- Close the twist clamp
- Clamp both the fill and drain bag tubing with clamps supplied in disconnect kits
- Screw a sterile Luer Lock on the patient side tubing
  - Snap a sterile Luer Lock on the machine side tubing
- Secure patient tubing and cover with abdo pad

Automatic Peritoneal Dialysis (APD)

- Push “Stop” button on ADP machine
- Close the twist clamp
- Disconnect the patient tubing from the machine tubing
- Screw a sterile mini cap on the patient tubing
- Snap a mini cap on the machine tubing
- Secure patient tubing and cover with abdo pad

Emergency Childbirth Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Pregnant patient experiencing labour; **OR**

Post-partum patient immediately following delivery and/or placenta.

CONDITIONS

Delivery

AGE: Childbearing years
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A
Other: Second stage labour **AND/OR** Imminent birth **AND/OR** Shoulder Dystocia **AND/OR** Breech Delivery **AND/OR** Prolapsed Cord

Umbilical Cord Management

AGE: Childbearing years
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A
Other: Cord complications **OR** if neonatal or maternal resuscitation is required **OR** Due to transport considerations

External Uterine Massage

AGE: Childbearing years
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A
Other: Post-placental delivery

Oxytocin

AGE: Childbearing years
LOA: N/A
HR: N/A
RR: N/A
SBP: < 160 mmHg
Other: Post-placental delivery **AND/OR** Placental delivery

CONTRAINDICATIONS

Delivery

N/A

Umbilical Cord Management

N/A

External Uterine Massage

Placenta not delivered

Oxytocin

Allergy or sensitivity to oxytocin
Undelivered fetus
Suspected or known pre-eclampsia with current pregnancy
Eclampsia (seizures) with current pregnancy
>4 hours post placenta delivery

TREATMENT

Consider **delivery**

Position the patient and deliver neonate

Consider **shoulder dystocia delivery**

Perform ALARM twice on scene. If successful; deliver neonate. If unsuccessful; transport to closest appropriate facility

Consider **breach delivery**

HANDS OFF the breech. Allow neonate to deliver to umbilicus; consider carefully releasing the legs & arms as they are delivered; otherwise hands off.

Once hairline is visible AND/OR 3 mins has passed since umbilicus was visualized attempt the Mauriceau Smellie-Veit maneuver.

If successful; deliver neonate. If unsuccessful; transport to closest appropriate facility.

Consider **prolapsed breach delivery**

If a cord prolapse is present, the fetal part should be elevated to relieve pressure on the cord. Assist the patient into a knee-chest position or exaggerated Sims position, and insert gloved fingers/hand into the vagina to apply manual digital pressure to the presenting part which is maintained until transfer of care in hospital.

Consider **umbilical cord management**

If a nuchal cord is present and loose, slip cord over the neonate's head. Only if a nuchal cord is tight and cannot be slipped over the neonate's head, clamp and cut the cord, encourage rapid delivery.

Following delivery of the neonate, the cord should be clamped and cut immediately if neonatal or maternal resuscitation is required. Otherwise, after pulsations have ceased (approximately 2-3 minutes), clamp the cord in two places and cut the cord.

Consider **external uterine massage**

Post placental delivery

Consider **oxytocin**

	Route
	IM
Dose	10 units
Max. single dose	10 units
Dosing interval	N/A
Max. # doses	1

CLINICAL CONSIDERATIONS

If the patient presents with limb-presentation, do not attempt to push the limb back into the vagina; discourage the patient from pushing, cover the limb using a dry sheet to maintain warmth, and initiate transport as per the *Load and Go Patient Standard* of the BLS PCS.

If labour is failing to progress, discourage the patient from pushing or bearing down during contractions.

If delivery has not occurred at scene within approximately ten minutes of initial assessment, consider transport in conjunction with the following:

a. Patient assessment findings:

   i. Lack of progression of labour;
   ii. Multiple births expected;
   iii. Neonate presents face up;
   iv. Pre-eclampsia;
   v. Presence of vaginal hemorrhage;
   vi. Premature labour;
   vii. Primip;

b. Distance to the closest appropriate receiving facility.

When the placenta is delivered, inspect it for wholeness, place in a plastic bag from the OBS kit, label it with the maternal patient's name and time of delivery, and transport it with the maternal or neonatal patient. Delivery of the placenta should not delay transport considerations/initiation.

Central Venous Access Device Access Medical Directive

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized.

INDICATIONS

Actual or potential need for intravenous medication **OR** fluid therapy.

AND

IV access is unobtainable;

AND

Cardiac arrest or pre-arrest state.

CONDITIONS

CVAD Access	
AGE:	N/A
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	Patient has a CVAD with an accessible external lumen

CONTRAINDICATIONS

CVAD Acess
Inability to confirm patency of CVAD line
Inability to flush or aspirate
Injury or suspected fracture proximal to the access site
Swelling of the involved limb
Bleeding at the intersection site

TREATMENT

Consider **CVAD access**

CLINICAL CONSIDERATIONS

N/A

Research / Special Projects

ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

Special Project Palliative Care

Medical Directive

An Advanced Care Paramedic may provide the treatment and/or patient disposition prescribed in this Medical Directive if authorized.

Patch

If a paramedic determines that the patient would benefit from any other management that is not included in this special project medical directive, a patch to a BHP is necessary.

Registered Patient

A registered patient is under the care of a palliative care team through Home and Community Care, or a physician or nurse practitioner providing palliative care services in the community. The paramedic is required to confirm the patient registration according to their local process.

Management of Patients with Palliative Care Needs

Patients with palliative care needs may require a different approach to assessment and treatment that reflects their unique goals of care. Therefore paramedics, for this defined patient population, should consider prioritizing patient comfort and are not required to follow the described regimen of strict vital signs, cardiac monitoring and transport as directed in the Basic Life Support Patient Care Standard (BLS PCS). If patient transport is initiated, however, paramedics should consider usual care (vitals and monitoring) per the ALS and BLS PCS in conjunction with the patient's goals of care; they may also consider symptom treatments below if indicated.

Medical Directive

This Medical Directive is written in five sections or equivalent to five directives combined including four symptom-based sections (Dyspnea, Hallucinations/Agitation, Nausea/Vomiting and Terminal Congested Breathing) as well as a Treat and Refer directive. Any of these directives can apply, individually or in combination, to a patient with palliative care needs. The Treat and Refer part of this directive can be applied even if no symptoms listed in the directive are present or treatments have not been provided. All patients who

remain at home must be referred to their palliative care team to ensure follow up of their presenting complaint.

When in doubt, please consult/patch to a Base Hospital Physician (BHP) in consultation with palliative physician or nurse if available.

PAIN AND DYSPNEA

INDICATIONS

Registered Palliative Care Patient

And

Uncontrolled pain or dyspnea

or

Uncontrolled dyspnea with suspected bronchoconstriction

CLINICAL CONSIDERATIONS

- If orders are available for the patient, either morphine or hydromorphone may be administered within the range specified above per the emergency orders. Any doses outside the range specified must be confirmed with by a Base Hospital Physician prior to administration.
- If there are no orders available or patients are opioid naïve the lower range of doses should be used.
- If the patient is already on a regular opiate, the same opiate should be used. If the patient is on a regular opiate regimen that does not include either morphine or hydromorphone and does not have emergency orders available, paramedics should confirm with a Base Hospital Physician prior to administering morphine or hydromorphone.
- Salbutamol should only be used in patients whose dyspnea is accompanied by wheezing or a history of response to bronchodilators.

CONDITIONS

Morphine	Hydromorphone	Salbutamol
AGE: ≥18	AGE: ≥18	AGE: ≥18
LOA: N/A	LOA: N/A	LOA: N/A
HR: N/A	HR: N/A	HR: N/A
RR: N/A	RR: N/A	RR: N/A
SBP: N/A	SBP: N/A	SBP: N/A
Other: N/A	Other: N/A	Other: For Dyspnea with suspected bronchoconstriction only

CONTRAINDICATIONS

Morphine	Hydromorphone	Salbutamol
Allergy to morphine	Allergy to hydromorphone	Allergy to salbutamol

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **Morphine**

	Route
	SC/ IV/CVAD
Dose	2-10 mg
Max. single dose	10 mg
Dosing interval	15 min
Max. # of doses	4

OR

Consider **Hydromorphone**

	Route
	SC/ IV/CVAD
Dose	0.5-2 mg
Max. single dose	2 mg
Dosing interval	15 min
Max. # of doses	4

Consider **Salbutamol**

	Route	Route
	*MDI**	*NEB*
Dose	Up to 800 mcg (8 puffs)	5 mg
Max. dose	800 mcg	5mg
Dosing interval	5-15 min prn	5-15 min prn
Max. # of doses	3	3

*1 puff – 100 mcg

HALLUCINATIONS OR AGITATION

INDICATIONS

Registered Palliative Care Patient

And

Increasing agitation or suspected new or increased hallucinations

CLINICAL CONSIDERATIONS

- Haloperidol should be used as the first line agent for the treatment of agitation and hallucinations. Midazolam can be used in patients with contraindications to Haloperidol.

CONDITIONS

Haloperidol	Midazolam
AGE: ≥18	AGE: ≥18
LOA: N/A	LOA: N/A
HR: N/A	HR: N/A
RR: N/A	RR: N/A
SBP: N/A	SBP: N/A
Other: N/A	Other: N/A

CONTRAINDICATIONS

Haloperidol	Midazolam
Allergy to haloperidol Known Parkinson's or Lewy Body Dementia Neuroleptic Malignant Syndrome	Allergy to Midazolam

TREATMENT

Patient • Drug • Dose • Route • Time.

Consider **Haloperidol**

	Route
	SC/IV/CVAD
Dose	0.5-1 mg
Max. single dose	1 mg
Dosing interval	30 min
Max. # of doses	2

Consider **Midazolam**

	Route
	SC/ IV/CVAD
Dose	0.5-2 mg
Max. single dose	2 mg
Dosing interval	30 min
Max. # of doses	2

NAUSEA OR VOMITING

INDICATIONS

Registered Palliative Care Patient

And

Nausea and/or vomiting

CLINICAL CONSIDERATIONS

- Dimenhydrinate is rarely used in the palliative care population as it can cause delirium, increase drowsiness, and does not target the appropriate receptors to control the nausea in most patients. It should only be used in patients with contraindications to haloperidol where ondansetron cannot be used.

CONDITIONS

Haloperidol	Ondansetron	Dimenhydrinate
AGE: ≥18	AGE: ≥18	AGE: ≥18
LOA: N/A	LOA: N/A	LOA: N/A
HR: N/A	HR: N/A	HR: N/A
RR: N/A	RR: N/A	RR: N/A
SBP: N/A	SBP: N/A	SBP: N/A
Other: N/A	Other: Contraindication to Haloperidol	Other: Contraindication to Haloperidol

CONTRAINDICATIONS

Haloperidol	Ondansetron	Dimenhydrinate
Allergy to haloperidol Known Parkinson's or Lewy Body Dementia Neuroleptic Malignant Syndrome	Allergy to ondansetron	Allergy to dimenhydrinate or other antihistamines Overdose on antihistamines or anticholinergics or tricyclic antidepressants

TREATMENT

5Rs *Patient • Drug • Dose • Route • Time.*

Consider **Haloperidol**

	Route
	SC/ IV/CVAD
Dose	0.5-1 mg
Max. single dose	1 mg
Dosing interval	30 min
Max. # of doses	2

Consider **Ondansetron**

	Route
	PO/SC/IV/CVAD
Dose	4 mg
Max. single dose	4 mg
Dosing interval	N/A
Max. # of doses	1

Consider **Dimenhydrinate**

	Route
	SC/ IV/CVAD
Dose	25-50 mg
Max. single dose	50 mg
Dosing interval	N/A
Max. # of doses	1

TERMINAL CONGESTED BREATHING

INDICATIONS

Registered Palliative Care Patient

And

Congested/loud/rattling breathing in patients near the end of life

CLINICAL CONSIDERATIONS

- Patient repositioning and gentle turning of the head to the side can be done instead of medication however suction of the oropharynx is not appropriate as it will likely cause discomfort and a gag reflex.

CONDITIONS

Glycopyrrolate or Atropine	
AGE:	≥18
LOA:	N/A
HR:	N/A
RR:	N/A
SBP:	N/A
Other:	N/A

CONTRAINDICATIONS

Glycopyrrolate	Atropine
Allergy to glycopyrrolate	Allergy to atropine

TREATMENT

Patient • Drug • Dose • Route • Time.

Consider **Glycopyrrolate or Atropine**

	Route
	SC/ IV/CVAD
Dose	0.4 mg
Max. single dose	0.4 mg
Dosing interval	N/A
Max. # of doses	1

TREAT AND REFER

INDICATIONS

Registered Palliative Care Patient

And

Symptoms improved to patient's/Substitute Decision Maker's (SDM) satisfaction

And

After informed discussion patient/SDM preference to remain at home

CLINICAL CONSIDERATIONS

- A period of observation is recommended after the administration of any medication if the patient is not transported to ensure adequate response and no unexpected immediate adverse effects
- Transport should be considered if there is strong suspicion of reversible causes including but not limited to:
    - Complete bowel obstruction with no prior history of same
    - New Spinal Cord Compression
    - New Superior Vena Cava (SVC) Obstruction
    - Airway obstruction
    - Suspected new pathologic fracture
- If patients do not meet the treat and refer conditions, paramedics should consider consulting BHP, follow the patient refusal standard and document appropriately.

CONDITIONS

Age ≥ 18

DNR and/or previous goals of care discussion

Registered Palliative Care Patient

CONTRAINDICATIONS

Concerns of patient abuse or neglect

Patient and SDM cannot demonstrate decision-making capacity based on the Aid to Capacity Evaluation Tool

Uncontrolled or new seizures

TREATMENT

Paramedics may assess and/or treat patients according to this medical directive and, in collaboration with the patient/SDM, honour wishes to remain at home (treat and refer). Paramedics will notify the patient's palliative care team for all patients who remain at home to ensure follow up for their presenting complaint.

Research Medical Directive for Palliative Care (EC3P)

An Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if specifically authorized.

INDICATIONS

A patient, or their surrogate, who self identifies as receiving palliative care and who is experiencing the following uncontrolled symptoms:

Pain

Nausea

Dyspnea

Delirium or agitation

Noisy breathing or excessive secretions

CONDITIONS

Haloperidol	
AGE:	≥ 18 years
LOA:	n/a
HR:	n/a
SBP:	n/a
Other:	Delirium, agitation or nausea

Glycopyrrolate	
AGE:	≥ 18 years
LOA:	n/a
HR:	n/a
SBP:	n/a
Other:	Excessive secretions or noisy breathing

Hydromorphone	
AGE:	≥ 18 years
LOA:	n/a
HR:	n/a
RR:	n/a
SBP:	n/a
Other:	Emergency pain relief or treatment of dyspnea

CONTRAINDICATIONS

Haloperidol

Allergy or sensitivity to haloperidol

History of Parkinsons Disease, Lewy Body Dementia, or extrapyramidal symptoms from medications

Glycopyrrolate

Allergy or sensitivity to glycopyrrolate

Hydromorphone

Allergy or sensitivity to hydromorphone

TREATMENT

Patient • Drug • Dose • Route • Time.

Consider **haloperidol**

	Indication Nausea, delirium, or agitation **Route** *SC/IV*
Dose	0.5 mg – 1 mg
Max. single dose	1 mg
Dosing interval	30 mins
Max. # of doses	2

Consider **glycopyrrolate**

	Indication Secretions or noisy breathing **Route** *SC*
Dose	0.4 mg
Max. single dose	0.4 mg
Dosing interval	n/a
Max. # of doses	1

Consider **hydromorphone**

	Indication Dyspnea **Route** *SC/IV*
Dose	0.5 mg
Max. single dose	0.5 mg
Dosing interval	30 mins
Max. # of doses	2

⚠ Mandatory Local Patch Point ⚠

Patch to the BHP for discussion of management of breakthrough pain for appropriate doses of opioid medications. BHP will need to know current symptoms, home medication regimen (including 24-hour morphine equivalents), treatments administered by paramedics and caregivers, and patient response.

Consider **hydromorphone**

	Indication Pain **Route** SC/IV
Dose	Per BHP Order
Max. single dose	n/a
Dosing interval	n/a
Max. # of doses	n/a

⚠ Mandatory Local Patch Point ⚠

1. Patch to the BHP if patient symptoms not controlled with medical directives.
2. Patch to the BHP if patient goals of care are unclear.
3. Patch to the BHP for all non-transport situations.

Study Medical Directive for Palliative Care Symptom Relief– Subcutaneous Line Placement

Medical Directive

A Primary Care or Advanced Care Paramedic may provide the treatment prescribed in this Medical Directive if authorized. This directive is to be used only in conjunction with Study Medical Directive for Palliative Care Symptom Relief (EC3P).

INSERTION OF SUBCUTANEOUS LINE

INDICATIONS

A patient, or their surrogate, who self identifies as palliative and is being treated under the Study Medical Directive for Palliative Care Symptom Relief by Paramedics

And

Parenteral administration of palliative care symptom relief medications is clinically indicated (such as Morphine, Hydromorphone, Haloperidol, Midazolam)

And

It is expected more than one medication administration will be required and thus the patient will benefit from placement of a subcutaneous line

And

A follow up plan is in place to ensure ongoing management of the subcutaneous line (such as follow up by MRP or community paramedic)

CONTRAINDICATIONS

N/A

TREATMENT

5Rs ***Patient • Drug • Dose • Route • Time.***

Consider **Subcutaneous Line Placement**

CLINICAL CONSIDERATIONS

- A period of observation is recommended after the administration of any medication if the patient is not transported to ensure adequate response and no unexpected immediate adverse effects.
- Adverse events after insertion include pain at the site (from the irritation of the drug or the injection was fast, this is prevented by injecting the drug slowly). If pain remain then the needle may be pulled back into the intradermal space (put a folded 2x2 gauze under the butterfly wings to elevate the needle to 45 degrees. If pain persist, then you need to change needle).

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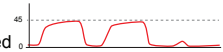
Medical References

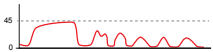
ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

$ETCO_2$ Waveforms

Sudden loss waveform
- ET tube disconnected, dislodged, kinked or obstructed
- Loss of circulatory function

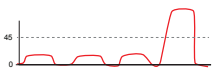


Decreasing EtC2
- ET tube cuff leak
- ET tube in hypopharynx
- Partial obstruction

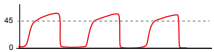


CPR Assessment
- Attempt to maintain minimum of 10 mmHg

Sudden increase in EtCO2
- Return of spontaneous circulation (ROSC)

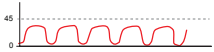


Bronchospasm ("Shark-fin" appearance)
- Asthma
- COPD

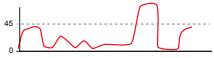


Hypoventilation

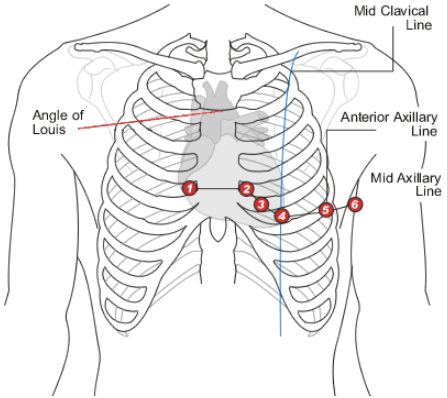
Hyperventilation



Decreased EtCO2
- Apnea
- Sedation



12 Lead ECG Placement



PRECORDIAL LEADS:

V1 - 4th intercostal space to the right of the sternum
V2 - 4th intercostal space to the left of the sternum
V3 - directly between leads V2 and V4
V4 - 5th intercostal space at left midclavicular line
V5 - level with lead V4 at left anterior axillary line
V6 - level with lead V5 at left midaxillary line

LIMB LEADS

RA - right forearm or wrist
LA - left forearm or wrist
LL - left lower leg
RL - right lower leg

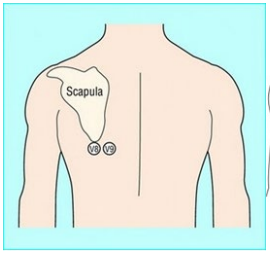
NOTE:

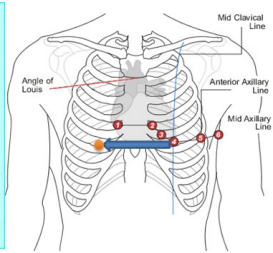
Refer to the Medical Directives for the clinical situations where a 12-Lead ECG should be considered. This may include patients experiencing cardiac ischemia, acute cardiogenic pulmonary edema, tachycardias, bradycardias, shortness of breath or upon ROSC.

STEMI Anatomical Location

I Lateral	aVR	V1 Septal	V4 Anterior
II Inferior	aVL Lateral	V2 Septal	V5 Lateral
III Inferior	aVF Inferior	V3 Anterior	V6 Lateral

15-Lead ECG Placement





V4 becomes	**V4R**	- fifth intercostal space at **right** midclavicular line (similar position as V4 but on right side of chest)
V5 becomes	**V8**	- level with V6 at left midscapular line
V6 becomes	**V9**	- level with V6 at left paravertebral line

NOTE:

- Limb leads should be placed on the limbs and not on the chest
- Consider assessing V4R when the 12 Lead identifies an inferior STEMI or ST depression in any of the septal leads (V1/V2).
- Consider assessing V8 and V9 when the 12 lead shows ST depression in the precordial leads or the 12 lead appears 'normal'.
- ST elevation of ≥ 1 mm in V4R and inferior ST-elevation, suggests a Right Ventricular involvement.
- ST elevation of ≥ 1 mm or greater in V8 and V9 suggests Posterior MI.

CPR Guidelines

Component	Recommendations		
	★ Adults	★ Children	★ Infants
Recognition	★★★ Check for responsiveness (for all ages) ★★★ No breathing or only gasping (ie: abnormal) ★★★ No pulse palapted within 10 seconds for all ages ★★ HR < 60 and signs of hypoperfusion		
CPR sequence	★★★ C-A-B		
Compression rate	★★★ 100-120/min		
Compression depth	★ 5.0 – 6.0 cm (2.0 - 2.4 inches)	★ At least 1/3 AP diameter ★ About 5 cm (2 inches)	★ At least 1/3 AP diameter ★ About 4 cm (1 1/2 inches)
Chest wall recoil	★★★ Allow complete recoil between compressions Rotate compressors every 2 minutes		
Compression interruptions	★★★ Minimize interruptions in chest compressions Attempt to limit interruptions to < 10 seconds		
Airway	★★★ Head tilt-chin lift or where trauma is suspected, jaw thrust		
Compression-to-ventilation ratio (until advanced airway placed)	★ 30:2 1 or 2 rescuers	★★ 30:2 Single rescuer ★★ 15:2 2 HCP rescuers Neonates: 3:1	
Ventilations with advnaced airway (HCP)	★★★ 1 breath every 6-8 seconds (8-10 breaths/min) Asynchronous with chest compressions About 1 second per breath without too much force Visible chest rise		
Defibrillation	★★★ Attach and use AED as soon as available. Minimize interuptions in CPR pre & post rhythm interpretation/defibrillation to < 10 seconds		

CPR NOTES:

- Rate: 100-120 compressions/minute and allow full chest recoil.
- Switch person doing compressions every 2 minutes and focus on high quality CPR.
- Minimize interruptions to chest compressions at all times.
- Give ventilations over 1 second just to point of seeing chest rise.

ADULTS:

Non-intubated: ratio 30:2 as above.
Intubated: 10 ventilations per minute without interrupting chest compressions.
SGA inserted: 10 ventilations per minute without interrupting chest compressions

PEDIATRICS (30 DAYS TO AGE 12):

Non-intubated: ratio 15:2 as above.
Intubated: 8-10 ventilations per minute without interrupting chest compressions.
Ventilations for resp. arrest only, non-intubated: 12-20/min.

NEONATE:

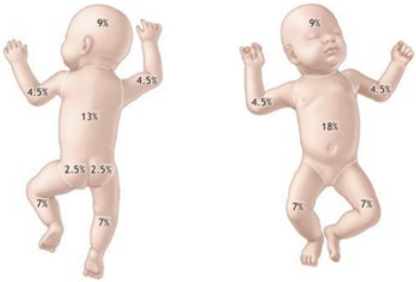
Both non-intubated **AND** intubated 3:1 ratio as above.

ETCO2 IN CARDIAC ARREST

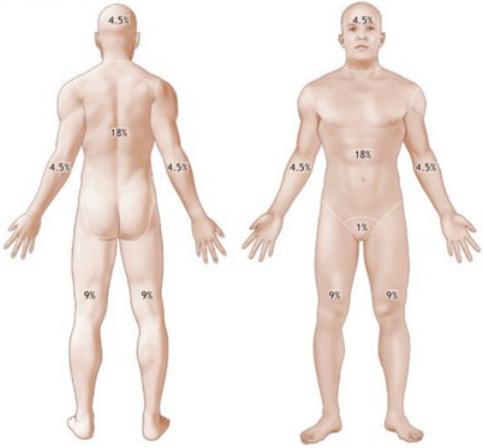
- When a SGA or ETT is in place, the following concepts apply:
- Continuous waveform capnography is recommended in addition to clinical assessment as the most reliable method of confirming and monitoring correct placement of an endotracheal tube
- Waveform capnography should be used to confirm and monitor endotracheal tube and SGA placement at all times
- Studies on waveform capnography have shown nearly 100% sensitivity and 100% specificity in identifying correct endotracheal tube and SGA placement
- Using quantitative waveform capnography is recommended in patients to monitor CPR quality, optimize chest compressions, and detect ROSC during chest compressions or when rhythm check reveals an organized rhythm (in addition to pulse checks)
- If waveform capnography abruptly increases to a normal value (35 to 40 mm Hg or higher) and is sustained, this may represent ROSC; wait for the next rhythm check to check for a pulse (or stop sooner if the patient exhibits signs of life)
- An $ETCO_2$ < 10 mmHg in VSA patients after 20 minutes of ACLS have a very poor prognosis; and can be used with clinical factors for the BHP to determine if TOR is appropriate.

Rule of Nines, Burn Percentage Chart

PEDIATRIC



ADULT



Advanced Trauma Life Support, 9th Edition 2012 ; The American College of Surgeons.

Intramuscular Injection

- An intramuscular (IM) injection is a parenteral medication administration route commonly used by paramedics. It involves injecting a pharmacological agent directly into muscle tissue. Muscle tissue is very vascular, and as a result IM injections tend to have a faster onset of action than subcutaneous administrations.
- Identify patient that meets criteria for an intramuscular medication administration (refer to the Medical Directives or BHP order).
- Ensure all the “rights” of medication administration have been met
- Confirm medication and dose with paramedic partner if available.
- Follow safe process for responsible medication administration.
- Landmark the intended injection site. Generally the deltoid and the vastus lateralis are easily accessible and appropriate sites for IM injections; however other sites may be appropriate and can be landmarked as per the diagram on the following page.
- Select the appropriate size and gauge needle.
- Cleanse the needle insertion site using aseptic technique.
- Prepare the appropriate medication and dose into the syringe and needle ensuring all air bubbles are removed prior to injection.
- Stretch the skin taut and use the “Z-track” technique to displace the skin and soft tissue. Insert the needle with syringe/medication at a 90 degress angle using a “dart style” motion. The Z-track method reduces the chance the medication will leak from the muscle into the subcutaneous tissue.
- Inject the correct dose of medication.
- Remove the needle and immediately dispose of it in the biohazard container.
- Apply gentle pressure to the site with a dry gauze. Do not rub or massage. Apply a band-aid if needed.

Intramuscular Injection Sites

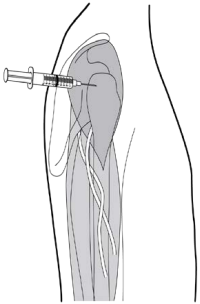


Figure 1 - Deltoid

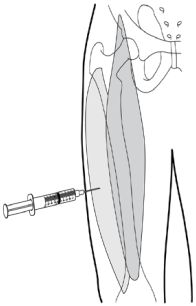


Figure 2 – Vastus Lateralis

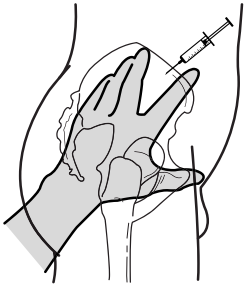


Figure 3 – Ventrogluteal

Formulas

NOTE: The formulas below are for reference purposes only. Paramedics must refer to the Medical Directives and/or Base Hospital Physician patch orders for appropriate treatment options.

IV FLOW RATE CALCULATION:

gtt/min = $\frac{\text{Amount (mL) to be infused} \times \text{Drops per mL (gtt/mL) of administration set}}{\text{Total time of infusion (min)}}$

MEDICATION INFUSION RATE:

mL/hr = $\frac{\text{Desired dose (mg/min)} \times 60 \text{ min/ hr}}{\text{Drug concentration (mg/mL)}}$

Note: Units must be consistent throughout the calculation. For example, the desired dose can be in mcg/ min, as long as the concentration is also converted into mcg/mL.

PEDIATRIC BODY WEIGHT:

For use with children aged 1 to 10 years.

(Age in years x 2) + 10 = Approximate child body weight in kg.

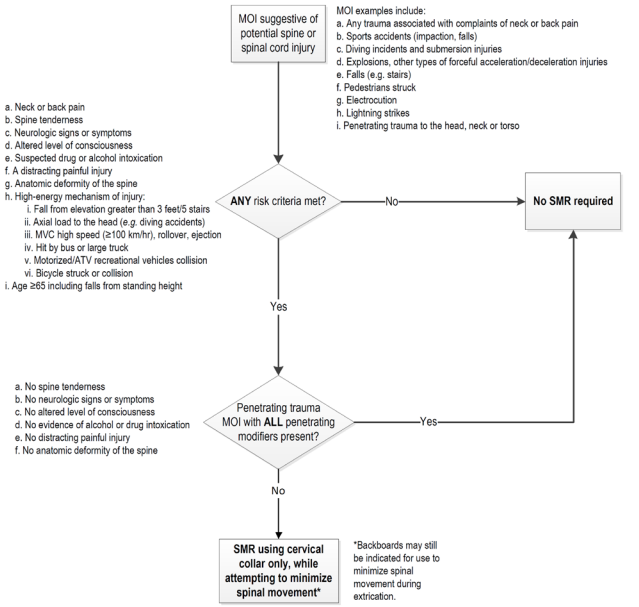
OXYGEN TANK DURATION:

Duration of flow (minutes) = $\frac{\text{Gauge pressure} - \text{Safe residual pressure}}{\text{Flow rate (L/min)}} \times \text{Cylinder factor}$

Cylinder Factor: D-tank = 0.16; M-tank = 1.56

Spinal Motion Restriction Standard Prompt Card

This prompt card provides a quick reference of the *Spinal Motion Restriction (SMR) Standard* contained in the *Basic Life Support Patien Care Standards* (BLS PCS). Please refer to the BLS PCS for the full standard.



Ontario

"Single Strength" DOPamine Dosing Guide

DOPAMINE INFUSION RATE (mL/hr or drops/min with a microdrip set)
[Using an 800 mcg/mL ('single strength') solution]

Weight (kg)	Drip Rate (drops/min)				
	2 (mcg/kg/minute)	5 (mcg/kg/minute)	10 (mcg/kg/minute)	15 (mcg/kg/minute)	20 (mcg/kg/minute)
5	1	2	4	6	8
10	2	4	8	11	15
15	2	6	11	17	23
20	3	8	15	23	30
25	4	9	19	28	38
30	5	11	23	34	45
35	5	13	26	39	53
40	6	15	30	45	60
45	7	17	34	51	68
50	8	19	38	56	75
55	8	21	41	62	83
60	9	23	45	68	90
65	10	24	49	73	98
70	11	26	53	79	105
75	11	28	56	84	113
80	12	30	60	90	120
85	13	32	64	96	128
90	14	34	68	101	135
95	14	36	71	107	143
100	15	38	75	113	150
105	16	39	79	118	158
110	17	41	83	124	165
115	17	43	86	129	173
120	18	45	90	135	180

EPINEPHrine 1 mg/mL = 1:1000 IM Dosing Guide

Dose (0.01 mg/kg) is rounded to the nearest 0.05mg Use a 1 mL syringe			
AGE	**WEIGHT**	**DOSE (mg)**	**VOLUME (mL) (rounded)**
3 months	5 kg	**0.05 mg**	**0.05 mL**
6 months	8 kg	**0.08 mg**	**0.10 mL**
9 months	10 kg	**0.10 mg**	**0.10 mL**
1 year	12 kg	**0.12 mg**	**0.10 mL**
2 years	14 kg	**0.14 mg**	**0.15 mL**
3 years	16 kg	**0.16 mg**	**0.15 mL**
4 years	18 kg	**0.18 mg**	**0.20 mL**
5 years	20 kg	**0.20 mg**	**0.20 mL**
6 years	22 kg	**0.22 mg**	**0.20 mL**
7 years	24 kg	**0.24 mg**	**0.25 mL**
8 years	26 kg	**0.26 mg**	**0.25 mL**
9 years	28 kg	**0.28 mg**	**0.30 mL**
10 years	30 kg	**0.30 mg**	**0.30 mL**
11 years	32 kg	**0.32 mg**	**0.30 mL**
12 years	34 kg	**0.34 mg**	**0.35 mL**
13 years	36 kg	**0.36 mg**	**0.35 mL**
14 years	38 kg	**0.38 mg**	**0.40 mL**
Adult	50 kg	**0.50 mg**	**0.50 mL**

Analgesia Medical Directive - Adult & Pediatric

Morphine Dosing Guide

Age	Weight	Route: Subcutaneous Pediatric dosage 0.05 mg/kg Supplied: 10 mg/mL Use 1 mL Syringe Undiluted			Route: Intravenous Pediatric dosage 0.05 mg/kg Supplied: 10 mg/mL Use 1 mL Syringe Diluted to 1 mg/mL		
		Dose	Calculated Volume	Volume To Administer (rounded)	Dose	Calculated Volume	Volume To Administer (rounded)
		⚠ Mandatory Provincial Patch Point			For patients < 12 years		
Neonate	**3 kg**	0.15 mg	0.015 mL	---- mL	0.15 mg	0.15 mL	0.15 mL
<1	**6 kg**	0.3 mg	0.03 mL	0.05 mL	0.3 mg	0.3 mL	0.3 mL
1	**12 kg**	0.6 mg	0.06 mL	0.05 mL	0.6 mg	0.6 mL	0.6 mL
2	**14 kg**	0.7 mg	0.07 mL	0.05 mL	0.7 mg	0.7 mL	0.7 mL
3	**16 kg**	0.8 mg	0.08 mL	0.10 mL	0.8 mg	0.8 mL	0.8 mL
4	**18 kg**	0.9 mg	0.09 mL	0.10 mL	0.9 mg	0.9 mL	0.9 mL
5	**20 kg**	1.0 mg	0.10 mL	0.10 mL	1.0 mg	1.0 mL	1.0 mL
6	**22 kg**	1.1 mg	0.11 mL	0.10 mL	1.1 mg	1.1 mL	1.0 mL
7	**24 kg**	1.2 mg	0.12 mL	0.1 mL	1.2 mg	1.2 mL	1.2 mL
8	**26 kg**	1.3 mg	0.13 mL	0.1 mL	1.3 mg	1.3 mL	1.4 mL
9	**28 kg**	1.4 mg	0.14 mL	0.1 mL	1.4 mg	1.4 mL	1.4 mL
10	**30 kg**	1.5 mg	0.15 mL	0.2 mL	1.5 mg	1.5 mL	1.6 mL
11	**32 kg**	1.6 mg	0.16 mL	0.2 mL	1.6 mg	1.6 mL	1.6 mL
		Supplied: 10 mg/mL Use 1 mL Syringe Undiluted			Supplied: 10 mg/mL Use 10 mL Syringe Diluted to 1 mg/mL		
Youth (12-17)	**34 kg**	1.7 mg	0.17 mL	0.2 mL	1.7 mg	1.7 mL	1.8 mL
	40 kg	2.0 mg	0.20 mL	0.2 mL	2.0 mg	2.0 mL	2.0 mL
	45 kg	2.25 mg	0.225 mL	0.2 mL	2.25 mg	2.25 mL	2.2 mL
	50 kg	2.5 mg	0.25 mL	0.3 mL	2.5 mg	2.5 mL	2.6 mL
	55 kg	2.75 mg	0.275 mL	0.3 mL	2.75 mg	2.75 mL	2.8 mL
	60 kg	3.0 mg	0.30 mL	0.3 mL	3.0 mg	3.0 mL	3.0 mL
	65 kg	3.25 mg	0.325 mL	0.3 mL	3.25 mg	3.25 mL	3.2 mL
	70 kg	3.5 mg	0.35 mL	0.4 mL	3.5 mg	3.5 mL	3.6 mL
	75 kg	3.75 mg	0.375 mL	0.4 mL	3.75 mg	3.75 mL	3.8 mL
	80 kg	4.0 mg	0.40 mL	0.4 mL	4.0 mg	4.0 mL	4.0 mL
	85 Kg	4.25 mg	0.425 mL	0.4 mL	4.25 mg	4.25 mL	4.2 mL
	90 kg	4.5 mg	0.45 mL	0.5 mL	4.5 mg	4.5 mL	4.6 mL
	95 kg	4.75 mg	0.475 mL	0.5 mL	4.75 mg	4.75 mL	4.8 mL
	100 kg	5 mg	0.5 mL	0.5 mL	5.0 mg	5.0 mL	5.0 mL
Pediatric **Maximum** Single **Dose**		5 mg	0.50 mL	0.5 mL	5.0 mg	5 mL	5 mL

Dosing Interval: **15 minutes** Pediatric **Max** # of **Doses**: 4

Analgesia Medical Directive - Adult & Pediatric

Morphine Dosing Guide

		Supplied: 10 mg/mL Use 1 mL Syringe Undiluted		Supplied: 10 mg/mL Use 10 mL Syringe Diluted to 1 mg/mL	
Adult	**N/A**	2 - 10mg	0.2 - 1.0 mL	2 – 10 mg	2 - 10 mL
Adult **Maximum** Single **Dose**		10 mg	1.0 mL	10 mg	10 mL

Dosing Interval: 1**5 minutes** Adult **Max** # of **Doses**: **4**

Analgesia Medical Directive - Adult & Pediatric

FentaNYL Dosing Guide

Route: Intravenous or Intranasal
Supplied: 100 mcg in 2 mL
*Intranasal Max Fluid : 1 mL per nare
Use 1 mL Syringe, undiluted
Maximum Pediatric Dosage: up to 1 mcg/kg (administer in divided doses)

⚠ **Mandatory Provincial Patch Point for Children < 12 years old**

Age	Weight	Maximum Dose	Calculated Volume	Volume to administer (rounded)
Neonate	3 kg	3 mcg	0.03 mL	----
<1	6 kg	6 mcg	0.06 mL	0.05 mL
1	12 kg	12 mcg	0.24 mL	0.2 mL
2	14 kg	14 mcg	0.28 mL	0.3 mL
3	16 kg	16 mcg	0.32 mL	0.3 mL
4	18 kg	18 mcg	0.36 mL	0.4 mL
5	20 kg	20 mcg	0.40 mL	0.4 mL
6	22 kg	22 mcg	0.44 mL	0.4 mL
7	24 kg	24 mcg	0.48 mL	0.5 mL
8	26 kg	26 mcg	0.52 mL	0.5 mL
9	28 kg	28 mcg	0.56 mL	0.6 mL
10	30 kg	30 mcg	0.60 mL	0.6 mL
11	32 kg	32 mcg	0.64 mL	0.6 mL
Youth* (12-17)	34 kg	34 mcg	0.68 mL	0.7 mL
	40 kg	40 mcg	0.80 mL	0.8 mL
	45 kg	45 mcg	0.90 mL	0.9 mL
	50 kg	50 mcg	1.0 mL	1.0 mL
	55 kg	55 mcg	1.1 mL*	1.1 mL*
	60 kg	60 mcg	1.2 mL*	1.2 mL*
	65 kg	65 mcg	1.3 mL*	1.3 mL*
	70 kg	70 mcg	1.4 mL*	1.4 mL*
	75 kg	75 mcg	1.5 mL*	1.5 mL*
Pediatric Maximum Single Dose*		75 mcg	1.5 mL*	1.5 mL*
Adults ≥ 18 years		25 – 75 mcg	0.50 -1.5 mL*	0.50 -1.5 mL*
Adult Maximum Single Dose		75 mcg	1.5 mL*	1.5 mL*

*for pediatric dosing, consider administering in divided doses of one-third to one-half and titrate to effect similar to adult dosing.

Seizure Medical Directive Dosing Guide

Midazolam Dosing Guide

Age	Weight	Route: IM/IN/Buccal Dose: 0.2 mg/kg Supplied: 10 mg/2 mL Use 1 mL syringe Undiluted			Route: IV/IO Dose: 0.1 mg/kg Supplied: 10 mg/2 mL Use 10 mL syringe diluted to 1 mg/mL		
		Dose	Calculated Volume	Volume to Administer (rounded)	Dose	Actual Volume	Volume to Administer (rounded)
Neonate	3 kg	0.6 mg	0.12 mL	0.10 mL	0.3 mg	0.3 mL	0.4 mL
< 1	6 kg	1.2 mg	0.24 mL	0.25 mL	0.6 mg	0.6 mL	0.6 mL
1	12 kg	2.4 mg	0.48 mL	0.50 mL	1.2 mg	1.2 mL	1.2 mL
2	14 kg	2.8 mg	0.56 mL	0.55 mL	1.4 mg	1.4 mL	1.4 mL
3	16 kg	3.2 mg	0.64 mL	0.65 mL	1.6 mg	1.6 mL	1.6 mL
4	18 kg	3.6 mg	0.72 mL	0.70 mL	1.8 mg	1.8 mL	1.8 mL
5	20 kg	4.0 mg	0.80 mL	0.80 mL	2.0 mg	2.0 mL	2.0 mL
6	22 kg	4.4 mg	0.88 mL	0.90 mL	2.2 mg	2.2 mL	2.2 mL
		Supplied: 10 mg/2 mL Use 3 mL or 10 mL syringe Undiluted			Supplied: 10 mg/2 mL Use 10 mL syringe Diluted to 1 mg/mL		
7	24 kg	4.8 mg	0.96 mL	1.0 mL	2.4 mg	2.4 mL	2.4 mL
8	26 kg	5.2 mg	1.04 mL	1.0 mL	2.6 mg	2.6 mL	2.6 mL
9	28 kg	5.6 mg	1.12 mL	1.2 mL	2.8 mg	2.8 mL	2.8 mL
10	30 kg	6 mg	1.20 mL	1.2 mL	3.0 mg	3.0 mL	3.0 mL
11	32 kg	6.4 mg	1.28 mL	1.2 mL	3.2 mg	3.2 mL	3.2 mL
12	34 kg	6.8 mg	1.36 mL	1.4 mL	3.4 mg	3.4 mL	3.4 mL
	40 kg	8 mg	1.60 mL	1.6 mL	4.0 mg	4.0 mL	4.0 mL
	45 kg	9 mg	1.80 mL	1.8 mL	4.5 mg	4.5 mL	4.5 mL
Max	>50 kg	10 mg	2.00 mL	2.0 mL	5.0 mg	5.0 mL	5.0 mL

Note: Dosage administered can be calculated by the weight based calculation in the Medical Directive and/or by using the above chart. Administered dosage in the chart may be rounded to the nearest volume increment that can be accurately measured.

Note:

Dosing for Adult Procedural Sedation: up tp 0.1mg/kg (IV/IM/IN); max single dose 5mg; max 2 doses

Dosing for Adult Combative Patient up to 0.1mg/kg (IV/IO/CVAD/IN); max single dose 5mg; max total dose 10mg

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Medication Information

ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

Medication Information

ACETAMINOPHEN	
CLASS	Antipyretic and analgesic. Mild anti-inflammatory effects.
ACTION	Exact mechanism is not known. Rapidly absorbed through GI tract. Believed to raise the pain threshold.
ONSET	15 minutes and lasts up to 3 hours.
METABOLISM	At normal therapeutic dosages, primary hepatic metabolism. A toxic dose (as little as 4g daily) can cause hepatic cell necrosis. Oral administration is subject to first pass metabolism.

ADENOSINE	
CLASS	Antiarrhythmic
ACTION	Slows conduction time through the AV node, interrupting the re-entry pathways through the AV node, restoring normal sinus rhythm. Adenosine also causes coronary vasodilation and increases blood flow in normal coronary arteries with little to no increase in stenotic coronary arteries; thallium-201 uptake into the stenotic coronary arteries will be less than that of normal coronary arteries revealing areas of insufficient blood flow.
ONSET	Rapid
HALF-LIFE	< 10 seconds
METABOLISM	Blood and tissue.

AMIODARONE	
CLASS:	Antiarrhythmic (Class I, II, III, and IV)
ACTION:	Blocks sodium channels; lengthens cardiac potential. Slows cardiac conduction through the AV node. Antisympathetic action and negative inotropic effects in cardiac nodal tissue. Used for ventricular arrhythmias (ventricular tachycardia/ventricular fibrillation) and some atrial arrhythmias (atrial fibrillation, but takes hours)
ONSET	15 minutes
TIME TO PEAK	1 to 4 hours
DURATION	3 to 6 hours
HALF-LIFE	9-36 hours
METABOLISM	Hepatic

ASPIRIN (ASA)	
CLASS:	Platelet aggregation inhibitor, analgesic, antipyretic and anti-inflammatory
ACTION:	Decreases clotting by inactivating cyclooxygenase, interfering with Thromboxane A2 production within the platelets. Thromboxane A2 also causes arteries to constrict. Reduced morbidity/mortality in adults with C/P from an AMI.
ABSORPTION	Rapid
TIME TO PEAK	1-2 hours
METABOLISM	Hydrolyzed to salicylate (active) in GI mucosa, RBC, synovial fluid and blood. Metabolism of salicylate primarily by the liver.

ATROPINE	
CLASS	Parasympatholytic, anticholinergic
ACTION	Blocks the action of acetylcholine at parasympathetic sites in smooth muscle, secretory glands and the CNS. Results in increased cardiac output and dries secretions.
ONSET	Rapid
HALF-LIFE	2-3 hours
DISTRIBUTION	Widely throughout the body; crosses placenta; trace amounts enter breast milk; crosses blood-brain barrier.
METABOLISM	Hepatic

CALCIUM GLUCONATE 10%	
CLASS	Minerals and electrolytes
ACTION	Calcium protects the myocardium from the deleterious effects of hyperkalemia. It stabilizes the cardiac cell membrane.
ADVERSE REACTION	When given too rapidly can cause hypotension, bradycardia and syncope. If administered IM or extravagates it can cause necrosis/abscess. When given to someone on digoxin this may cause sudden death from ventricular fibrillation.
ADMIN	Slow IV push over 2-3 minutes Incompatible with Sodium Bicarbonate in same IV line.
ONSET	Rapid
DURATION	30 minutes - 2hours
SIDE EFFECTS	Chalky taste, N&V, Dry mouth

DEXAMETHASONE	
CLASS	Adrenocoritcal steroid
ACTION	Binds to the glucocorticoid receptors inhibiting the release of pro-inflammatory signals through cytokine inhibition, resulting in decreased edema, fibrin deposition, capillary leakage and migration of inflammatory cells.
ONSET	5-15 min(IV); 30 min (PO)60 minutes
DURATION	3 days
HALF-LIFE	4 hours

DEXTROSE (D50) IN WATER	
CLASS	Carbohydrate
ACTION	Replenishes blood glucose levels, reversing hypoglycemia.
METABOLISM	Metabolized to carbon dioxide and water.

DIMENHYDRINATE (GRAVOL)	
CLASS	Antiemetic, Antihistamine
ACTION	Competes with histamine for H1-receptor sites on effector cells in the GI tract, blood vessels and respiratory tract; blocks chemoreceptor trigger zone, diminishes vestibular stimulation and depresses function through its central anticholinergic activity.
ONSET	1-5 minutes (IV). 15-30 minutes (oral)
PEAK EFFECTS	1-2 hours
DURATION	3-6 hours

DIPENHYDRAMINE (BENADRYL)	
CLASS	Antihistamine
ACTION	Competes with histamine and H1-receptor sites on effector cells in the GI tract, blood vessels and respiratory tract; anticholinergic and sedative effects are also seen.
ONSET	1-5 minutes (IV). 1-3 hours (oral)
PEAK EFFECTS	1-2 hours (IV). 2-4 hours (oral)
HALF-LIFE	2-10 hours
DURATION	4-8 hours

DOPAMINE	
CLASS	Sympathomimetic agent
ACTION	Stimulates both adrenergic and dopaminergic receptors, lower doses are mainly dopaminergic stimulating and produce renal and mesenteric vasodilation. Higher doses have both dopaminergic and β1-adrenergic stimulating and produce cardiac stimulation and renal vasodilation. Large doses stimulate α-adrenergic receptors.
ONSET	5 minutes
HALF-LIFE	2 minutes
METABOLISM	Renal, hepatic and plasma (25% gets converted to norepinephrine).

EPINEPHERINE	
CLASS	Sympathomimetic agent
ACTION	Stimulate β1, α1 and β2-adrenergic receptors resulting in relaxation of smooth muscle of the bronchial tree, cardiac stimulation (increasing myocardial O2 consumption) and dilation of skeletal muscle vasculature. Small doses can cause vasodilation via β2-vascular receptors; large doses may produce constriction of skeletal and vascular smooth muscle.
ONSET	5-10 minutes (bronchodilation).
METABOLISM	Hepatic

FENTANYL	
CLASS	Analgesic, opioid
ACTION	Binds to opioid mu-receptors in the CNS causing inhibition of ascending pain pathways, altering the perception of and response to pain; produces generalized CNS depression, respiratory depression, and can cause apnea. Can cause muscle rigidity if rapid IV injection.
ONSET	IV: almost immediately IN: 5-15 minutes
PEAK EFFECT	IV: 6 minutes IN: 12 minutes
METABOLISM	Hepatic

GLUCAGON	
CLASS	Glucose elevating agent
ACTION	Stimulates adenylate cyclase to produce increased cyclic AMP, which promotes hepatic glycolysis and gluconeogenesis, resulting in a rise in blood glucose levels.
ONSET	30 minutes (IM)
HALF-LIFE	8-18 minutes
DURATION	60-90 minutes
METABOLISM	Primarily hepatic, some occurs renally and in the plasma.

GLYCOPYRROLATE	
CLASS	anticholinergic
ACTION	Inhibits the acetylcholine activity on smooth muscles and structures innervated by postganglionic nerves. Causes bronchodilation, decreased volume and acidity of gastric secretions, as well as control of excessive pharyngeal, tracheal and bronchial secretions. Also has antimuscarinic properties, antagonizes muscarinic effects induced by cholinergic medications
ONSET	Rapid
DURATION	2-4 hours
HALF-LIFE	1.25 hours

HALOPERIDOL	
CLASS	Antipsychotic
ACTION	Butyrophenone antipsychotic unclear mechanism of action. Possible effect through central dopamine, adrenergic, cholinergic and histaminergic receptors.
ONSET	Rapid
DURATION	4-6 hours

HYDROCORTISONE	
CLASS	Adrenal glucocorticoid, corticosteroid
ACTION	Short-acting corticosteroid; when used in adrenal crisis or adrenocortical deficiency it replaces/mimics the person's own cortisol which regulates glucose, regulates the immune system, and is released during stressors to help support the cardiovascular system
ONSET	1-2 hours
PEAK EFFECT	1.5 – 2 hours
DURATION	6-12 hours
METABOLISM	Hepatic

HYDROMORPHONE	
CLASS	Opioid analgesic
ACTION	Binds to the mu-opioid receptors in the CNS causing inhibition of the ascending pain pathways, altering the perception of and response to pain. Produces generalized CNS depression
ONSET	5 minutes
DURATION	3-4 hours
HALF-LIFE	2-3 hours

IBUPROFEN	
CLASS	Antipyretic, analgesia and non-steroid anti-inflammatory
ACTION	Its pharmacological effects are believed to be due to inhibition COX-2 which decreases the synthesis of prostaglandins involved in mediating inflammation, pain, fever and swelling. Antipyretic effects may be due to action on the hypothalamus, resulting in an increased peripheral blood flow, vasodilation, and subsequent heat dissipation.
PEAK EFFECT	120 minutes
ONSET	15 minutes
DURATION	4-6 hours
ADVERSE EFFECTS	HTN, MI, GI bleeding, increased the risk of gastric ulcers and damage and renal failure.
METABOLISM	Ibuprofen and its metabolites pass easily across the placenta. More than 90% of an ingested dose is excreted in the urine as metabolites or their conjugates.

KETOROLAC (TORADOL)	
CLASS	Analgesic, antipyretic and non-steroid anti-inflammatory
ACTION	Blocks prostaglandin formation thereby decreasing nociceptor stimulation.
ONSET	10 minutes (IM/IV)
PEAK EFFECT	2-3 hours
DURATION	6-8 hours
METABOLISM	Mostly the hepatic

LIDOCAINE (XYLOCAINE)	
CLASS	Class 1b antiarrhythmic
ACTION	Suppresses automaticity of conductive tissue by increasing the electrical stimulus threshold of the ventricles, His-Purkinje system and spontaneously depolarization of the ventricles during diastole (by direct action on the tissues). Blocks both the initiation and conduction of nerve impulses by decreasing the neural membranes permeability to Na ions, which results in inhibition of depolarization with resultant blockade of conduction.
ONSET	45-90 seconds
DURATION	10-20 minutes
METABOLISM	90% hepatic

MIDAZOLAM (VERSED)	
CLASS	Benzodiazepine, CNS depressant, Sedative and Amnesic
ACTION	Binds to stereospecific benzodiazepine receptors on the post-synaptic GABA neuron at several sites within the CNS (including limbic system and reticular formation). Enhancement of the inhibitory effect of GABA on neural excitability results by increased neural membrane permeability to chloride ions. This shift in chloride.
ONSET	45-90 seconds
DURATION	10-20 minutes
METABOLISM	90% hepatic

MORPHINE	
CLASS	Opioid analgesia
ACTION	Binds to opiate receptors in the CNS causing inhibition of ascending pain pathways, altering the perception of and response to pain; produces generalized CNS depression.
ONSET	2-5 minutes (IV)
PEAK EFFECT	20 minutes (IV)
METABOLISM	Hepatic

NALOXONE (NARCAN)	
CLASS	Narcotic Antagonist
ACTION	Competitive narcotic antagonist. Displaces and narcotics bound to opiate receptor sites reversing their effects.
ONSET	2-5 minutes (IM). 8-18 minutes (IN). 2 minutes (IV)
HALF-LIFE	3-4 hours (neonates). 0.5-1.5 hours (adults)
DURATION	30-120 minutes
DISTRIBUTION	Crosses placenta
METABOLISM	Hepatic

NITROGLYCERIN	
CLASS	Coronary vasodilator, smooth muscle relaxant and anti-anginal
ACTION	Vasodilation of peripheral veins and arteries with more prominent effects on the veins. Reduces myocardial oxygen demand by decreasing preload; may modestly reduce afterload; dilates coronary arteries and improves collateral flow to ischemic tissues. In smooth muscle, nitric oxide activates smooth muscle relaxation.
ONSET	1-3 minutes (SL). 15-30 minutes (topical). 30 minutes (transdermal)
HALF-LIFE	1-4 minutes
DURATION	25 minutes (SL), 7 hours (topical), 10-12 hours (transdermal)
METABOLISM	Extensive first-pass effect; hepatic, RBC and vascular walls

ONDANSETRON	
CLASS	5-HT3 antagonist
ACTION	Selective 5-HT3 receptor antagonist. Mechanism of action through blocking the action of 5-HT3 selectively peripherally and through the vagus nerve , a natural substance that may cause nausea and vomiting. Centrally the chemoreceptor trigger zone is effected.
ONSET	20-30 min
HALF-LIFE	3-6 hrs (PO); 5-8 HRS (IV, IM)
DURATION	4-8 hrs (PO); 5-8 hrs (IV, IM)

OXYTOCIN	
CLASS	Hormone
ACTION	Promotes uterine contractions by increasing intracellular calcium levels. Greatest effect during labor at term due to increased oxytocin receptor concentrations in uterine myometrial tissue
ONSET	3-5 min
HALF-LIFE	2-3 hrs
DURATION	1-6 min

SALBUTAMOL (VENTOLIN)	
CLASS	Sympathomimetic, β2 agonist
ACTION	Relaxes bronchial smooth muscle by action on β2-receptors with little effect on heart rate
ONSET	10 minutes (Neb/Inhalation)
HALF-LIFE	3-8 hours (inhaled)
DURATION	3-4 hours (Neb/Inhalation)
METABOLISM	Hepatic to an inactive sulfate

XYLOMETAZOLINE (OTRIVIN)	
CLASS	Sympathomimetic Adrenergic Alpha-agonist, decongestant
ACTION	When sprayed into the nares, causes vasoconstriction of the nasal mucosa, resulting in a decrease in blood flow in the nasal passages, decreased nasal congestion, and may help stop epistaxis.
ONSET	5-10 minutes

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Contact

ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

Physician On-Scene Reference

For the Paramedic:

If a paramedic encounters a physician on-scene that would like to assist or direct care, the paramedic will follow the Ontario BLS-PCS for any BLS care and the Medical Directives in this document for any ALS care. Inform the physician that paramedics are not able to accept delegation for controlled medical acts from any physician other than an affiliated Base Hospital Physician. The paramedic may show the following information to the on-scene physician to assist in next steps and provide further information.

To the On-Scene Physician:

Thank you for your assistance.

The paramedics would usually take responsibility for the patient(s) upon their arrival. If, as a physician, you wish to assist with the emergency after the providers have arrived you have three options:

1. Offer your assistance or suggestions that follow the Ontario Basic Life Support Patient Care Standards and/or the Paramedic Medical Directives. If your instructions are not in accordance with these documents, the paramedics cannot follow this direction but can contact the Regional Base Hospital Physician for direction.

2. Take complete responsibility for patient - in which case you will need to accompany the patient to hospital. The paramedics will assist you, but cannot perform skills that do not follow their directives. You may be asked to show identification that you are a physician licensed to practice medicine in Ontario.

3. Request to speak with the Regional Base Hospital Physician (via patch) to offer advice and consult on the best management of the patient(s).

Hamilton Health Sciences
CENTRE FOR PARAMEDIC EDUCATION AND RESEARCH

i identification	Identify BHP & Introduce yourself (OASIS, Service, ACP / PCP)
S SITUATION	ORDERS SOUGHT age, sex, weight problem / concern ETA to hospital
B BACKGROUND	Pertinent +/- HPI (OPQRST) PMHx (SAMPLE)
A ASSESSMENT	Pertinent +/- Physical Exam Vitals Signs, ECG
R RESPONSE	Response to treatment Reiterate orders sought Receive orders REPEAT BACK ORDERS

BASE HOSPITAL PHYSICIAN LIST

Centre for Paramedic Education & Research

Physicians Name	BHP Number
Dr. K. Barker	209
Dr. A. Dixon	212
Dr. E. Hanel	140
Dr. P. Miller	116

Physicians Name	BHP Number
Dr. R. Sahsi	211
Dr. C. Sellens	206
Dr. E. Shih	218
Dr. M. Welsford	201

Hamilton General Hospital

Physicians Name	BHP Number
Dr. K. Al Lawati	186
Dr. S. Bazak	188
Dr. M. Beyea	180
Dr. S. Caron	111
Dr. T. Chan	144
Dr. A. Chorley	167
Dr. H. Cowan	158
Dr. J. Crossley	076
Dr. B. Dew	126
Dr. K. Dong	172
Dr. K. Dorosh	161
Dr. K. English	102
Dr. F. Fung	181
Dr. A. Greenwald	142
Dr. R. Grewal	121
Dr. G. Gupta	143
Dr. K. Hawley	096
Dr. A. Hersi	104
Dr. C. Heyd	175
Dr. M. Jalayer	141
Dr. J. Jowett	093
Dr. H. Lee	178
Dr. M. Liebregts	148
Dr. P. MacDougall	048

Physicians Name	BHP Number
Dr. J. Mahn	173
Dr. R. Mallin	122
Dr. K. Mattina	187
Dr. A. McCulloch	152
Dr. L. Nasser	185
Dr. J. Owen	146
Dr. A. Pardhan	177
Dr. F. Pervaiz	179
Dr. I. Price	133
Dr. D. Quinlan	159
Dr. K. Rigg	171
Dr. S. Sandhanwalia	169
Dr. D. Sehdev	136
Dr. S. Sennik	147
Dr. S. Sharif	176
Dr. K. Sidhu	174
Dr. J. Singh	139
Dr. S. Skitch	168
Dr. J. Tang	149
Dr. J. Thompson	163
Dr. K. van Diepen	160
Dr. J. Wojtowicz	128
Dr. D. Wong	182
Dr. A. Worster	070
Dr. C. Yeh	189

Contact Information

430 McNeilly Road, Unit 201
Stoney Creek, Ontario L8E 5E3
Telephone Number: 905-521-2100 x71223
Fax Number: 905-643-1104

Name:	Position:	EXT:	Mobile:	Email Address:
Tim Dodd	Regional Program Manager/ Director		905-515-4818	tdodd@cper.ca
Dr. Paul MIller	Regional Medical Director			millerpa@hhsc.ca
Dr. Rupinder Sahsi	Assistant Medical Director			rupinder@sahsi.net
Dr. Erich Hanel	Assistant Medical Director			erich.hanel@medportal.ca
Dr. Gina Agarwal	Senior Medical Advisor			agarg@mcmaster.ca
Colette Easton	Administration Assistant (To the Directors)	71226		ceaston@cper.ca
Audrey Collie	Administration Assistant (To the Programs)	71229		acollie@cper.ca
Jackie Swing	Administration Assistant	71223		jswing@cper.ca
Angela Burgess	Lead Quality Specialist		289-286-0975	aburgess@cper.ca
Kailash Selvaratinam	Quality Specialist		905-870-4457	kselvar@cper.ca
Kathy Winter	Quality Specialist		416-436-5428	winterkat@hhsc.ca
Stephanie Coletta	Lead Paramedic Educator		905-515-0659	scoletta@cper.ca
David Plyley	Paramedic Educator		289-219-1952	dplyley@cper.ca
Jenn Radoslav	Paramedic Educator		289-260-3268	jradoslav@cper.ca
Carrie Schneider	Auditor/Instructor		519-503-6632	cschneider@cper.ca
Peggy D'Eath	Outreach Specalist		365-324-8389	pdeath@cper.ca

HHS Centre for Paramedic Education and Research Additional Contact Information Reference

Central Ambulance Communication Centres (CACC):

CACC – Cambridge	800-265-2215
CACC – Hamilton	905-574-1414
CACC – Hamilton (Alternate)	800-263-5767
CACC – Niagara Ambulance Communication Centre	905-704-4005 866-895-6227

Emergency Medical Services:

Brant / Brantford Paramedic Service	519-756-4570
Dufferin County Paramedic Service	519-941-9608
Guelph-Wellington Paramedic Service	519-824-1677
Haldimand County Paramedic Services	905-318-5932
Hamilton Paramedic Service	905-546-2424
Niagara EMS	905-641-0827
Norfolk County Paramedic Services	519-426-4115
Region of Waterloo Paramedic Service	519-650-8295
Six Nations Paramedic Services	519-445-4000

Community Support Referral Contact Information

The following contact information is provided for cases where:

- Patients are **refusing** transport to the hospital, and
- An assessment shows that the patient has the **capacity to refuse**, and
- The patient does not appear to be of **immediate danger to themselves or others,** and
- Paramedics have **ongoing concerns** regarding the living conditions in their home (CCAC), their need for victim's support services (victim's services) or the patient's mental health (COAST, Hamilton only)
- OR the family of a patient needs support services (Victims Services).

These community service organizations are available to assist people with these concerns. Paramedics can give the information directly to the patient or assist them by making the referral on their behalf. Please note that if the Paramedic assists the patient by calling the organization he/she must get the patient's consent to do so. If the Paramedic contacts the organization directly, the agency will require the patient's name, address, phone number and nature of the concern. The Paramedic must then leave the information about the organization called with the patient.

CCAC (Community Care Access Centre): provides services for persons with living condition concerns (message can be left).

Brantford CCAC:	800-810-0000
Dufferin County CCAC:	519-925-5452
Guelph-Wellington CCAC:	519-823-2550
Haldimand / Hamilton CCAC:	800-810-0000
Niagara Region CCAC:	800-810-0000
Norfolk / Simcoe CCAC:	800-810-0000
Six Nations (Ohsweken)	519-445-2418
Waterloo - Kitchener CCAC:	519-748-2222

Victims Services: provides short-term emotional support and community referral and assistance to victims of crime, tragic circumstance or disaster (24/7).

Brantford	519-752-3140
Cambridge	519-585-2369 / 519-570-5143
Dufferin County	519-942-1452
Guelph-Wellington	519-824-1212 ext. 7304
Haldimand County	800-264-6671
Hamilton Victim Services	905-546-4904
Kitchener	519-585-2369 / 519-570-5143
Niagara Region	905-682-2626
Norfolk County	800-264-6671
Six Nations (Ohsweken)	519-752-3140
Waterloo Region	519-585-2369 / 519-570-5143

COAST (**C**risis **O**utreach **A**nd **S**upport **T**eam): provides services for persons with mental health concerns in the Hamilton area only (24/7).

Hamilton – Only (24/7)	905 972-8338

Child in Need of Protection

Paramedics have a duty to report under the Child and Family Services Act (CFSA) and this extends to any child they encounter in their professional duties and is not limited to the person (s) requesting 9-1-1 services[1]. This duty overrides any other provincial statue, including any provisions that would otherwise prohibit someone from making a disclosure (i.e. PHIPA). This failure to report a suspicion in the circumstances set out in the CFSA is an offence under the Act.[2]

Children's Aid Societies in Ontario

Dufferin Child and Family Protection Services	Bus: (519) 941-1530
Family & Children's Services of Guelph and Wellington County	Bus: (519) 824-2410
Children's Aid Society of Hamilton	Bus: (905) 522-1121
Catholic Children's Aid Society of Hamilton	Bus: (905) 525-2012
Family & Children's Services Niagara	Bus: (888) 937-7731
Children's Aid Society of Haldimand and Norfolk	Bus: (519) 587-5437 Toll Free: (888) 227-5437
Brant Family and Children's Services	Bus: (519) 753-8681 Toll Free: (888) 753-8681
Family & Children's Services of the Waterloo Region	Bus: (519) 576-0540

[1] Training Bulletin 116 -Child in Need of Protection Standard March 2015 Version 1.0

[2] Basic Life Support Patient Care Standards –Version 2.2

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Destination Guidelines

ADVANCED CARE PARAMEDIC MEDICAL DIRECTIVES

Field Trauma Triage Standards

Definitions

For the purposes of the *Field Trauma Triage Standard*:

Regionally Designated Equivalent Hospital

means an appropriately resourced hospital facility as defined by the Regional Trauma Network of Critical Care Services Ontario and included in a local PPS.

Transport Time

means the time from scene departure to time of arrival at destination.

General Directive

The paramedic shall follow the procedure below when conducting field triage of patients injured by a traumatic mechanism or who show evidence of trauma.

The paramedic shall also use this standard to assess the clinical criteria (*i.e.* to determine if the patient meets the clinical criteria) as required by the *Air Ambulance Utilization Standard*.

The paramedic shall consider using the Trauma Termination of Resuscitation (TOR) contained in the *Trauma Cardiac Arrest Medical Directive* as per the ALS PCS.

CACC/ACS may authorize the transport once notified of the patient's need for re-direct or transport under the *Field Trauma Triage Standard*.

Procedure

The paramedic shall:

1. assess the patient to determine if he/she has one or more of the following **physiological criteria** (Step 1):
   a. Patient does not follow commands,
   b. Systolic blood pressure <90mmHg, or
   c. Respiratory rate <10 or ≥30 breaths per minute or need for ventilatory support (<20 in infant aged <1 year);
2. if the patient meets the physiological criteria listed in paragraph 1 above, **AND** the land transport time is estimated to be <30 minutes* to a Lead Trauma Hospital (LTH) or regionally designated equivalent hospital, transport the patient directly to the LTH or regionally designated equivalent hospital;
3. if the patient does not meet the criteria listed in paragraphs 1 and 2, assess the patient to determine if he/she has one or more of the following **anatomical criteria** (Step 2):

a. Any penetrating injuries to head, neck, torso and extremities proximal to elbow or knee,
b. Chest wall instability or deformity (*e.g.* flail chest),
c. Two or more proximal long-bone fractures,
d. Crushed, de-gloved, mangled or pulseless extremity,
e. Amputation proximal to wrist or ankle,
f. Pelvic fractures,
g. Open or depressed skull fracture, or
h. Paralysis;

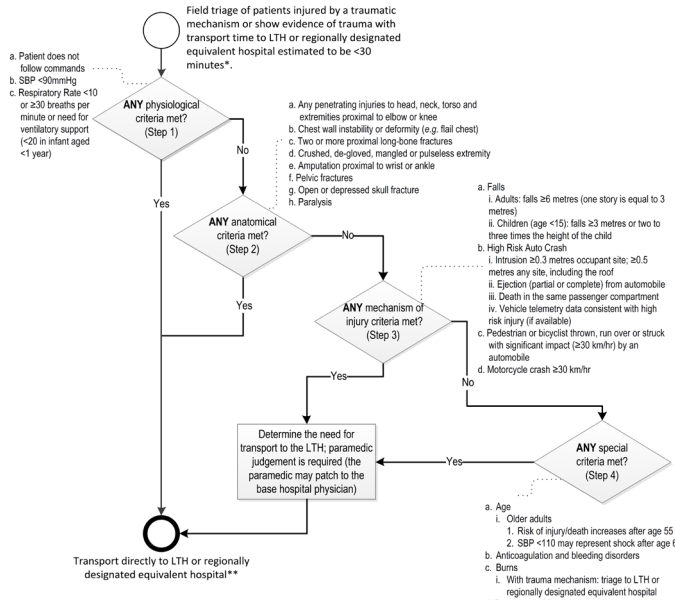
4. if the patient meets the anatomical criteria listed in paragraph 3 above and the land transport time is estimated to be <30 minutes* to the LTH or regionally designated equivalent hospital, transport the patient directly to the LTH or regionally designated equivalent hospital;
5. if unable to secure the patient's airway or survival to the LTH or regionally designated equivalent hospital is unlikely, transport the patient to the closest emergency department despite paragraphs 2 and 4 above;
6. despite paragraph 5 above, transport the patient directly to an LTH or regionally designated equivalent hospital if the patient has a penetrating trauma to the torso or head/neck, and meets **ALL** of the following:
   a. Vital signs absent yet not subject to TOR described in the *General Directive* above, and
   b. Land transport to the LTH or regionally designated equivalent hospital is estimated to be <30 minutes*;
7. if the patient does not meet the physiological or anatomical criteria listed above, use the following **criteria** to determine if the patient may require other support services at the LTH or regionally designated equivalent hospital as a result of his/her traumatic **mechanism of injury** (Step 3):
   a. Falls
      i. Adults: falls ≥6 metres (one story is equal to 3 metres)
      ii. Children (age <15): falls ≥3 metres or two to three times the height of the child
   b. High Risk Auto Crash
      i. Intrusion ≥0.3 metres occupant site; ≥0.5 metres any site, including the roof
      ii. Ejection (partial or complete) from automobile
      iii. Death in the same passenger compartment
      iv. Vehicle telemetry data consistent with high risk injury (if available)
   c. Pedestrian or bicyclist thrown, run over or struck with significant impact (≥30 km/hr) by an automobile
   d. Motorcycle crash ≥30 km/hr;
8. if the patient meets the mechanism of injury criteria listed in paragraph 7 above, **AND** the land transport time is estimated to be <30 minutes* to an LTH or regionally designated equivalent hospital, determine the need for patient transport to the LTH or regionally designated equivalent hospital;

9. in conjunction with the physiological, anatomical, and mechanism of injury criteria listed above, consider the following **special criteria** (Step 4):
   a. Age
      i. Risk of injury/death increases after age 55
      ii. SBP <110 may represent shock after age 65
   b. Anticoagulation and bleeding disorders
   c. Burns
      i. With trauma mechanism: triage to LTH
   d. Pregnancy ≥20 weeks; and
10. if the patient meets any of the special criteria listed above, **AND** the land transport time is estimated to be <30 minutes* to an LTH or regionally designated equivalent hospital, determine the need for patient transport to the LTH or regionally designated equivalent hospital.

***Note: The 30 minute transport time may be amended to up to 60 minutes as per an ambulance service PPS, but may not exceed 60 minutes.**

Field Trauma Triage Prompt Card

This prompt card provides a quick reference of the *Field Trauma Triage Standard* contained in the *Basic Life Support Patient Care Standards* (BLS PCS). Please refer to the BLS PCS for the full standard.



*The 30 minute transport time may be amended to up to 60 minutes as per an ambulance service PPS, but may not exceed 60 minutes.

If unable to secure the patient's airway or survival to the LTH or regionally designated equivalent hospital is unlikely, transport the patient to the closest ED (unless** patient has penetrating trauma to the torso or head/neck). Consider the Trauma TOR as per the ALS PCS.

Ontario

Air Ambulance Utilization Standard

General Directive

Requests for an on-scene air ambulance response should meet at least one of the bulleted operational criteria **PLUS** one of the clinical criteria (*e.g.* known clinical criteria as listed in the *Field Trauma Triage Standard* or from the bulleted list of medical or obstetrical criteria listed below).

Procedure

The paramedic shall:

1. assess the scene response to meet one or more of the following **operational criteria**:
   a. The land ambulance is estimated to require more than 30 minutes to reach the scene and the air ambulance can reach the scene quicker.
   b. The land ambulance is estimated to require more than 30 minutes to travel from the scene to the closest appropriate hospital* and the air ambulance helicopter can reach the scene and transport the patient to the closest appropriate hospital* quicker than the land ambulance.
   c. The estimated response for both land and air is estimated to be greater than 30 minutes, but approximately equal, and the patient needs care which cannot be provided by the responding land ambulance.
   d. There are multiple patients who meet the clinical criteria and the local land ambulance resources are already being fully utilized.
2. if the scene response meets the requirements of paragraph 1 above, assess the patient to determine if he/she meets one or more of the following **clinical criteria**:
   a. Patients meeting the criteria listed in the *Field Trauma Triage Standard*.
   b. Patients meeting one or more of the following:
      i. **Medical**:
         1. Shock, especially hypotension with altered mentation (*e.g.* suspected aortic aneurysm rupture, massive gastrointestinal bleed, severe sepsis, anaphylaxis, cardiogenic shock, *etc.*)
         2. Acute stroke with a clearly determined time of onset or last known to be normal <6.0 hours
         3. Altered level of consciousness (GCS <10)
         4. Acute respiratory failure or distress
         5. Suspected STEMI or potentially lethal dysrhythmia
         6. Resuscitation from respiratory or cardiac arrest
         7. Status epilepticus
         8. Unstable airway or partial airway obstruction

ii. **Obstetrical**:
    1. Active labour with abnormal presentation (*i.e.* shoulder, breech or limb)
    2. Multiple gestation and active labour
    3. Umbilical cord prolapse
    4. Significant vaginal bleeding (suspected placental abruption or placenta previa or ectopic pregnancy);

3. in conjunction with the ACO, assess if an on-scene air ambulance helicopter is appropriate, based on:
    a. the perceived severity of the reported injuries and without confirmation that the clinical criteria have been met, or
    b. the patient cannot reasonably be reached by land ambulance (*e.g.* sites without road access such as islands; geographically isolated places, *etc.*);
4. if the requirements listed in paragraph 2 or 3 above are met, request an on-scene air ambulance helicopter response:
    a. Provide the ACO with the information set out in operational and clinical criteria above. In order for the ACO to determine if an air ambulance response and transport will be quicker than land ambulance, the paramedic will provide the ACO with the estimated time to prepare the patient for transport, identify separately any time required for patient extrication, provide the estimated land ambulance driving time to the closest appropriate hospital and any additional information as required.
    b. The paramedics shall not delay patient transport by waiting for the air ambulance helicopter, unless the air ambulance helicopter can be seen on its final approach to the scene. If the air ambulance helicopter is en route but not on final approach to the scene, and the land paramedics have the patient in his/her ambulance, then the land ambulance will proceed to the closest local hospital with an emergency department. The air ambulance helicopter will proceed to that local hospital and, if appropriate, assist hospital personnel prepare the patient for rapid evacuation.
    c. While en route to the local hospital, paramedics may rendezvous with the air ambulance helicopter if:
        i. the air ambulance helicopter is able to land along the direct route of the land ambulance; and
        ii. it would result in a significant reduction in transport time to the most appropriate hospital.
5. if the call's circumstances and patient(s) fail to meet the criteria set out in this standard and an air ambulance helicopter is known to be responding based on the merits of the initial request for ambulance service, contact the CACC/ACS and advise that an on-scene air ambulance helicopter response is not required and why it is not required.

Guideline

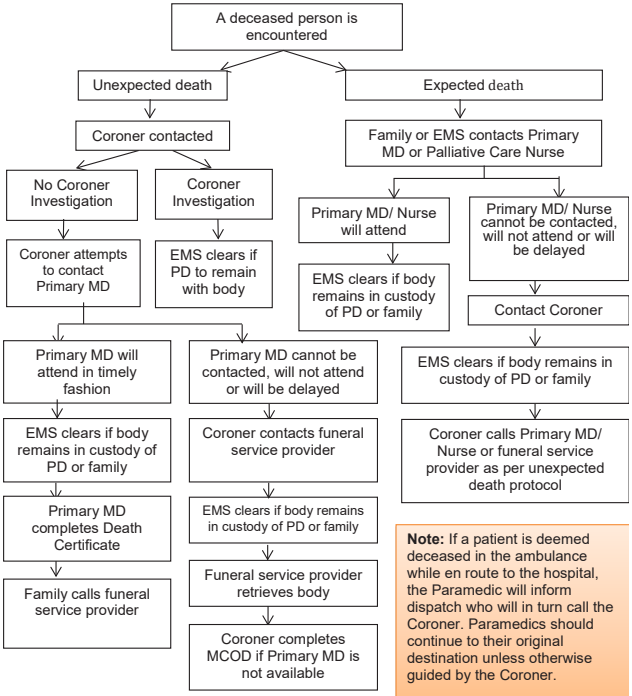
Air Ambulance Helicopter Landing Site Safety and Coordination

Upon confirmation that the air ambulance helicopter is responding, the paramedic shall follow the guidelines set out by the Ornge Aviation Safety Department, which can be found on Ornge's "Aircraft Safety" website at: https://www.ornge.ca/aircraft-safety.

Other Use of Air Ambulance Helicopter

- Air ambulance helicopters are not permitted to respond to night calls which require a landing at a site other than night licensed airports, helipads or night approved remote landing sites.
- Air ambulance helicopters are not permitted to conduct search and rescue calls.
- In cases where a land ambulance can reach the patient(s) and an on-scene response by air ambulance helicopter is appropriate, the ACO will assign a land ambulance and continue the land response until the flight crew requests that the land ambulance be cancelled.
- In cases where a land ambulance arrives on-scene prior to the air ambulance helicopter, paramedics shall inform the CACC/ACS as clinical events occur.

Deceased Patient Standards



Note: If a patient is deemed deceased in the ambulance while en route to the hospital, the Paramedic will inform dispatch who will in turn call the Coroner. Paramedics should continue to their original destination unless otherwise guided by the Coroner.

Deceased patient means a patient who is:

i) Obviously dead – code 5
ii) Subject to a MCOD presented to the paramedic
iii) VSA and subject to a valid DNR
iv) VSA and is subject to a Termination of Resuscitation Order
v) VSA and is subject to a Withhold Resuscitation Order

Note: When a Termination of resuscitation Order is received, and the deceased person has not been removed from the place of death, paramedics should not remove the body, but rather they should follow the appropriate procedure as outlined.

Paramedic Prompt Card for Acute Stroke Protocol

This prompt card provides a quick reference of the *Acute Stroke Protocol* contained in the *Basic Life Support Patient Care Standards* (BLS PCS). Please refer to the BLS PCS for the full protocol.

Indications under the Acute Stroke Protocol

Redirect or transport to the closest or most appropriate Designated Stroke Centre* will be considered for patients who meet **ALL** of the following:

1. Present with a new onset of at least one of the following symptoms suggestive of the onset of an acute stroke:
    a. Unilateral arm/leg weakness or drift.
    b. Slurred speech or inappropriate words or mute.
    c. Unilateral facial droop.
2. Can be transported to arrive at a Designated Stroke Centre within 6 hours of a clearly determined time of symptom onset or the time the patient was last seen in a usual state of health.
3. Perform a secondary screen for a Large Vessel Occlusion (LVO) stroke using the Los Angeles Motor Scale (LAMS) and inform the CACC/ACS to aid in the determination of the most appropriate destination.

*A Designated Stroke Center is a Regional Stroke Centre, District Stroke Centre or a Telestroke Centre regardless of EVT capability.

Contraindications under the Acute Stroke Protocol

ANY of the following exclude a patient from being transported under the Acute Stroke Protocol:

1. CTAS Level 1 and/or uncorrected airway, breathing or circulatory problem.
2. Symptoms of the stroke resolved prior to paramedic arrival or assessment**.
3. Blood sugar <3 mmol/L***.
4. Seizure at onset of symptoms or observed by paramedics.
5. Glasgow Coma Scale <10.
6. Terminally ill or palliative care patient.
7. Duration of out of hospital transport will exceed two hours.

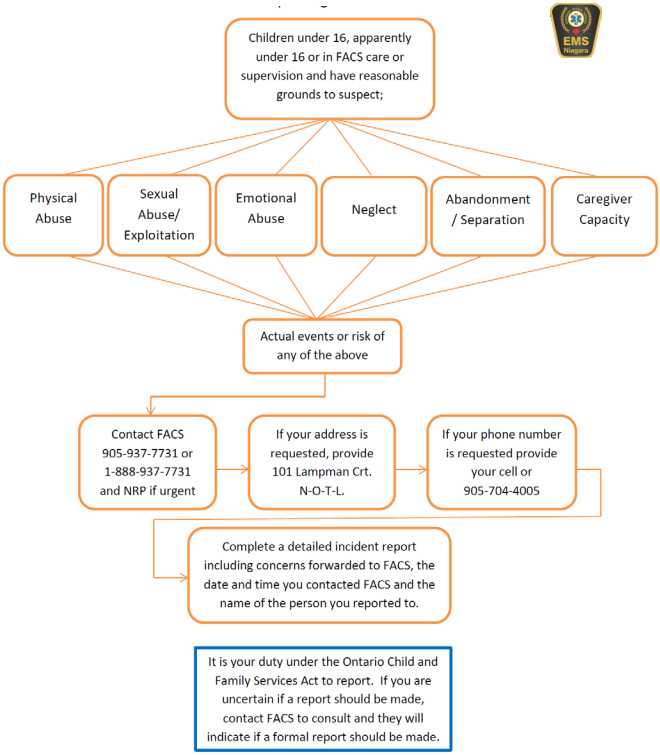
**Patients whose symptoms improve significantly or resolve during transport will continue to be transported to a Designated Stroke Centre.

*** If symptoms persist after correction of blood glucose level, the patient is not contraindicated.

CACC/ACS will authorize the transport once notified of the patient's need for redirect or transport under the Acute Stroke Protocol.

Ontario

Reporting to FACS Niagara



Paramedic Prompt Card for Sepsis

Paramedic Prompt Card for Sepsis Reference	YES	NO
Suspected or Confirmed Signs and Symptoms of Infection? **Skin:** Cellulitis, Wound, Burns **Immunocompromised Neuro:** LOC changes, Weakness, Indwelling Medical Device **Chest:** Cough, SOB, Recent Surgery/Invasive Procedure **Abdomen:** Pain, Vomiting, Diarrhea, History of Fever or Rigors (shakes) **Urine:** Dysuria, Frequency, Odour		
Age : ≥ 18		
At Least **2 OR MORE**: **Temperature:** < 36° C OR ≥ 38° C **Pulse:** ≥ 90 bpm **Respiratory Rate:** ≥ 20bpm		
And at least ONE of the following Signs of Hypoperfusion (O2 Sat <92%) Systolic BP <90mmHg New Altered mental status		
Suggested Treatment IV access obtained Intravenous & Fluid Therapy Directive (bolus)		
Notify ED of ***Sepsis Alert***		

Paramedic Prompt Card for Sepsis (NEMS)

Paramedic Prompt Card for Sepsis Reference	YES	NO
Suspected or Confirmed Signs and Symptoms of Infection? ▸ ***Skin***: Cellulitis, Wound, Burns ▸ ***Immunocompromised /Neuro***: LOA changes, Weakness, Indwelling Medical Device , Chemotherapy ▸ ***Chest***: Cough, SOB, Recent Surgery/Invasive Procedure ▸ **Abdomen**: Pain, Vomiting, Diarrhea with a history of fever or rigors ▸ ***Urine***: Dysuria, Frequency (increased or decreased), Odour		
Age : ≥ 18		
At Least **2 OR MORE of the following**: ▸ ***Temperature***: < 36° C OR ≥ 38° C ▸ ***Pulse***:≥ 90 bpm ▸ ***Respiratory Rate***:≥ 20bpm		
And at least ONE of the following ▸ Signs of Hypoperfusion (mottled extremities, poor cap refill, etc) ▸ Systolic BP <90mmHg ▸ New altered LOA		
If you answer yes to all of the above then Notify ED of ***Sepsis Alert***		

Suggested Treatment

- IV access
- Intravenous & Fluid Therapy Directive
- If the patient clearly meets the Sepsis Alert **AND** they do not meet the Medical Directive for fluid therapy, consider contacting the BHP for IV fluid orders.

Niagara EMS Hospital Destination Policy

Policy # IV 3.12a Hospital Destination Policy
May 1, 2022

HOSPITAL DESTINATION POLICY - Niagara Region

The URGENT CARE CENTRE will only accept PATIENTS that meet the established guidelines

The Paramedic will:

Make a decision regarding receiving facility and transport the patient to that facility or an alternate facility as confirmed or directed by:

- an ambulance dispatcher, or
- an attending physician, with dispatch confirmation, or
- a base hospital physician, with dispatch confirmation, or
- approved local transfer guidelines, or
- the patient, with dispatch approval.

In the absence of direction, transport to the closest or most appropriate hospital emergency department capable of providing the medical care apparently required by the patient. The goal is to expedite time to definitive care. When there are two or more hospitals equal in time from the level 1 or 2 patient, the Paramedic may choose among available sites in consultation with NEMS Communications.

If in the paramedic's judgment, the patient can be managed en route the patient will be transported to the most appropriate hospital (as indicated below).

If the patient deteriorates during transport, and survival to the directed receiving facility is questionable, **the paramedic will** transport the patient to the **closest** or most appropriate hospital emergency department capable of providing the medical care immediately required by the patient. **The paramedic will** immediately notify dispatch of any destination change, and notify or ask dispatch to **notify** the **initial** and **receiving** facility.

Patient preference for a specific hospital, other than the closest, will be considered where resources permit based on clinical factors or continuity of care.

CONDITION	DESCRIPTION	DESTINATION
TRAUMA	Paramedics/ Dispatchers will consider the Air Ambulance Utilization Standard for FTT All trauma patients meeting Field Trauma Triage (FTT) Standard Criteria where the incident location is within 60 minutes transport time to a Lead Trauma Centre will be transported to the Lead Trauma Centre in accordance with the guidelines (Policy IV-3.12h). *If transport time to Lead Trauma Centre will exceed 60 minutes, or survival to Lead Trauma Hospital is unlikely (see exception in Policy IV-	**Trauma Center/ Closest Emergency Department ***

	3.12h), patients meeting FTT criteria will be transported to the closest Emergency Department.	
HEAD TRAUMA ***Hospitals with CT:*** *GNG, SCS, WH Sites and WLMH in Niagara* ***HGH Site in Hamilton***	All patients with head trauma & **an altered LOC not meeting FTT Standard** will be taken to the closest hospital with a **functioning** CT. If they are in active resuscitation then the patient is to be transported to the closest ED.	**Closest Emergency Department with a functioning CT (GNG, SCS, WH, WLMH and HGH)**
STROKE EMERGENCIES ***Stroke Centers:*** *GNG Site and Hamilton General Hospital* ***Hospitals with CT:*** *GNG, SCG, WH Sites and WLMH in Niagara* ***HGH in Hamilton***	**Patients meeting the criteria of the Paramedic Prompt Card will be taken to the closest Stroke Centre for evaluation (attached)** Those stroke patients who do **not** meet the Paramedic Prompt Card criteria will be taken to the closest hospital with a **functioning** CT. If CT is down at the GNG Site, patients who meet the Provincial Paramedic Prompt Card criteria will be taken to the closest site with a functioning CT with "next on table" priority. They will then be transported to the GNG Site for assessment by the Stroke Team (see attached Appendix A_2 - CT Downtime Contingency Plan for Stroke Thrombolysis (tPA).	**Closest Stroke Center**
SEXUAL ASSAULT	All victims of sexual assaults will go to the **closest** hospital for medical clearance. Following patient triage, registration, and physician assessment appropriate transfer arrangements to SCS/**HGH** will be made by the receiving site if the patient requires sexual assault services.	**Closest hospital for medical clearance – then may require transfer to SCS or HGH as appropriate**
DIALYSIS EMERGENCIES	All hemo/ peritoneal dialysis with **related complaints** will be transported to SCS unless the patient is actively being resuscitated, patients will be transported to the closest hospital. **Consideration will be given to St. Joseph's Health Care Hamilton for patients picked up West of RR24**	**St. Catharines Site or St. Joseph's Health Care**

Policy # IV 3.12a Hospital Destination Policy
May 1, 2022

OBSTETRICAL & GYNECOLOGICAL EMERGENCIES	Patients whose chief complaint is Obstetrical in nature will be taken to the SCS (**or WLMH if closer**) unless active resuscitation is in progress or in the case of a laboring patient a presenting fetal part is visible (e.g. crowning). These patients will be taken to the closest Emergency Department. If childbirth has occurred, and no active resuscitation is required, infant and mother should be transported to SCS **or WLMH, whichever is closest.** **Note: WLMH should typically only be considered for patients greater than 36 weeks gestation.** Patients whose presentation is highly suggestive of an ectopic pregnancy, for eg. sudden onset severe abdominal pain in a female of child bearing age, should also be considered for transport to SCS or **WLMH if closer.** *Pregnant patients whose chief complaint is clearly **NOT** OB/GYN in nature will be transported under the appropriate destination for that complaint as outlined within this policy.*	**St. Catharines Site or WLMH, whichever is closest, unless active resuscitation in progress <u>OR</u> presenting fetal part is visible.**
ONCOLOGY and PALLIATIVE EMERGENCIES	Patients will go to the hospital where they have been receiving treatment within Niagara Region if they can be managed en route. **Niagara's Regional Cancer Program is the SCS. (*Consideration* will be given to Juravinski in Hamilton for patients picked up West of RR24)**	**St. Catharines Site (*consideration* for Juravinski West of RR24)**

PAEDIATRIC EMERGENCIES (less than 16 yrs. of age)	Paediatric patients triaged as **Level 1, or who require active resuscitation,** will go to the closest hospital for immediate assessment and stabilization. Non-complex Paediatric patients will be taken to the **closest** hospital or may be transported to a UCC in accordance with the Urgent Care Destination Criteria. **Complex patients, such as those with indwelling medical devices, with medically complex histories or injuries, or who are currently receiving treatment at St. Catharines Site, should be transported to the closest hospital with a pediatrician available (SCS in Niagara, MUMC in Hamilton) if the patient can be managed during transport.** All other patients will be transported to the closest appropriate hospital as outlined in this policy (for example, orthopedics or trauma).	**If active resuscitation go to closest hospital.** Complex patients go to St. Catharines Site or MUMC depending on location
MENTAL HEALTH EMERGENCIES	Patients of all ages where **mental illness is the primary problem** will be taken to a **schedule 1 facility:** SCS in Niagara, or **St. Joseph's Healthcare in Hamilton if closer**. Patients should be taken to the closest of the two sites. Consideration for previous treatment history with a facility may be considered in choosing an appropriate destination. Patients with a history of mental illness, but in whom the **primary problem** is medical (i.e. overdose etc.) or surgical emergency will go to the **closest** appropriate hospital as outlined elsewhere in this policy.	**If primary problem is medical go to closest hospital.** **If Mental Illness is the primary problem then go to St. Catharines Site, or SJHH if closer.**
ORTHOPEDIC EMERGENCIES	Patients with major orthopedic emergencies (i.e. long bone fracture, spinal or pelvic fracture, open fracture or gross deformity) will be taken to the closest appropriate hospital i.e. where there is an Orthopedic Surgeon on-call if they can be managed en route. **This includes HGH to the West**. Patients under 16 should be transported to SCS **(MUMC if closer)**	**Major: Closest hospital with Ortho (peds to SCS or MUMC)** **Minor: Closest hospital or UCC**

Policy # IV 3.12a Hospital Destination Policy
May 1, 2022

	Patients with minor orthopedic emergencies (i.e. isolated orthopedic injury, fractured wrist, ankle etc.) will be taken to the closest hospital ED or UCC if they meet the Urgent Care Centre Destination Criteria.	

Revised: May 1, 2022

Policy # IV 3.12a Hospital Destination Policy
May 1, 2022

PARAMEDIC PROMPT CARD
Niagara Regional Acute Stroke Protocol

Refer to **current Paramedic Prompt Card for Acute Stroke Protocol** contained within **the** current **Basic Life Support Patient Care Standards**.

The closest Stroke Centre is defined in the CAD.

Notify the Receiving Hospital that they will be receiving a "Stroke Alert" patient that meets the Acute Stroke Protocol.

Transport CTAS Level 2 to the Emergency Department of the closest Stroke Centre.

Appendix A_2 – CT Downtime Contingency Plan for Stroke Thrombolysis (tPA)

"The Canadian CSPINE Rule"

The Canadian C-spine Rule is to be utilized only as part of NEMS' "Research Medical Directive to Study the Safety of C-spine Clearance by Paramedics".

To be used on **ALERT**, **STABLE** patients >= 8 years of age with NO exclusion criteria present.

1. Any ONE High-Risk factor which mandates immobilization?
- Age ≥65 years
- Dangerous Mechanism*
- Numbness or tingling in extremities

Yes → **USE C-SPINE IMMOBILIZATION**

No ↓

2. Any ONE Low-Risk factor which allows safe assessment of range of motion?
- Rear-ended in Simple Rear-end MVC**
- Ambulatory at any time at scene
- No neck pain at scene when asked *(answer "yes" if no pain)*
- No pain during midline c-spine palpation *(answer "yes" if no pain)*

No → **USE C-SPINE IMMOBILIZATION**

Yes ↓

3. Patient voluntarily able to Actively Rotate neck 45° left and right when requested, regardless of pain?

No → **USE C-SPINE IMMOBILIZATION**

Yes ↓

NO C-SPINE IMMOBILIZATION

***Dangerous Mechanism:**
- fall from elevation ≥3 feet/5 stairs
- axial load to head, e.g. diving
- MVC: rollover, ejection, high speed (≥100km/h)
- motorized recreational vehicles, e.g. ATV, snowmobile
- bicycle collision with object, e.g. post, car

****Simple Rearend MVC Excludes:**
- pushed into oncoming traffic
- hit by bus/large truck
- rollover
- hit by high speed vehicle (≥100km/h)

STEMI Hospital Bypass Prompt Card

This prompt card provides a quick reference of the *STEMI Hospital Bypass Protocol* contained in the *Basic Life Support Patient Care Standards* (BLS PCS). Please refer to the BLS PCS for the full protocol.

Indications under the STEMI Hospital Bypass Protocol

Transport to a PCI centre will be considered for patients who meet **ALL** of the following:

1. ≥18 years of age.
2. Chest pain or equivalent consistent with cardiac ischemia/myocardial infarction.
3. Time from onset of current episode of pain <12 hours.
4. 12-lead ECG indicates an acute AMI/STEMI*:
    a. At least 2 mm ST-elevation in leads V1-V3 in at least two contiguous leads; **AND/OR**
    b. At least 1 mm ST-elevation in at least two other anatomically contiguous leads; **OR**
    c. 12-lead ECG computer interpretation of STEMI and paramedic agrees.

*Once activated, continue to follow the STEMI Hospital Bypass Protocol even if the ECG normalizes.

Contraindications under the STEMI Hospital Bypass Protocol

ANY of the following exclude a patient from being transported under the STEMI Hospital Bypass Protocol:

1. CTAS 1 and the paramedic is unable to secure patient's airway or ventilate.
2. 12-lead ECG is consistent with a LBBB, ventricular paced rhythm, or any other STEMI imitator
3. Transport to a PCI centre ≥60 minutes from patient contact.**
4. Patient is experiencing a complication requiring PCP diversion:**
    a. Moderate to severe respiratory distress or use of CPAP.
    b. Hemodynamic instability or symptomatic SBP <90 mmHg at any point.
    c. VSA without ROSC.
5. Patient is experiencing a complication requiring ACP diversion:**
    a. Ventilation inadequate despite assistance.
    b. Hemodynamic instability unresponsive/not amenable to ACP treatment/management.
    c. VSA without ROSC.

**The interventional cardiology program may still permit the transport to the PCI centre.

CACC/ACS will authorize the transport once notified of the patient's need for bypass under the STEMI Hospital Bypass Protocol.

Ontario

Pediatric Patient Priority System (PPS)

Pediatric patients (less than 18 years) will be transported according to the Basic Life Support Patient Care Standards, Patient Transport Standard. The following presentations should be taken to the facility listed as the most appropriate hospital capable of providing the medical care apparently required by the patient. VSA, pre-arrest or unresolved airway compromise patients should be transported to the closest facility unless otherwise directed by provincial guidelines/ standards.

Decision Priorities		
1	• Patient meets Provincial Field Trauma Triage Guidelines 16 years old and over.	HHS General Site*
2a	• Pregnant patients ≥ 32 weeks gestation in labour or expected complications for fetus or mother	Obstetrics Assessment Area SJH or MUMC (planned site of care or closest if no planned site)
2b	• Pregnant patients 20-31 weeks gestation in labour or expected complications for fetus or mother	Obstetrics Assessment Area MUMC
2c	• Pregnant patients < 20 weeks gestation in labour or expected complications for fetus or mother	MUMC ED
3	• All other Pediatric Patients	McMaster Children's Hospital

Adult Patient Priority System (PPS) (HPS)

Adult patients 18 years and older will be transported according to the Basic Life Support Patient Care Standards, Patient Transport Standard. The following presentations should be taken to the facility listed as the most appropriate hospital capable of providing the medical care apparently required by the patient. VSA, pre-arrest or unresolved airway compromise patients should be transported to the closest facility unless otherwise directed by provincial guidelines/standards.

Decision Priorities		
1	• Patient meets Field Trauma Triage Guidelines, including pregnant patient meeting Field Trauma Triage Guidelines • Possible ST Elevation MI (Provincial Paramedic Prompt Card) • Acute Stroke (Provincial Paramedic Prompt Card) • Major Burn >25% Total Body Surface or airway problems • Smoke Inhalation Injury with altered LOC • Diving/Decompression Incidents	**HHS General Site***
2	• Dialysis patient • Psychiatric emergency (as per Recognition Tool)	**St. Joseph's Healthcare***
3a	• Pregnant patients ≥ 32 weeks gestation in labour or expected complications for fetus or mother	**Obstetrics Assessment Area SJH or MUMC (planned site of care or closest if no planned site)**
3b	• Pregnant patients 20-31 weeks gestation in labour or expected complications for fetus or mother	**Obstetrics Assessment Area MUMC**
3c	• Pregnant patients < 20 weeks gestation in labour or expected complications for fetus or mother • All other Pregnant patients regardless of gestational age with non-FTTG injury or other medical concern	**St. Joseph's Healthcare ED**
4	• Known or suspected Sexual Assault	**HHS General Site or HHS Juravinski Site**
5	• Possible GI Bleed (as per Recognition Tool) • Possible Hip Fracture (as per Recognition Tool)	**St. Joseph's Healthcare* or HHS Juravinski Site***
6	• Patients with musculoskeletal injury possibly requiring surgery (as per Recognition Tool)	**St. Joseph's Healthcare* or HHS General Site***
7	• UCC Patients (St. Joseph's King Street East Campus UCC, and HHS Main Street West UCC) transported to the "arranged" Emergency Department for continuation of the patient care.	**Any "arranged" ED or direct to any "arranged" unit (with immediate transfer of care).**
8	Patients with a recent history at a particular hospital for a related problem (defined as inpatient within 14 days)	**Facility with most recent history (as defined).**
9	Attending physician has made arrangements, as confirmed by Hamilton CACC with the receiving hospital and the "accepting" physician identified.	**Any "arranged" ED or direct to any "arranged" hospital unit.**
10	**All other patients.**	**As directed by CACC considering all factors**

NOTE: For Decision Priorities #7 through #9, CACC will endeavor to distribute patients in a manner that facilitates equity and prompt transfer of care.
Suspected Ebola Virus Disease (EVD) disease patients must be considered according to the tool attached

***In any case that a regional hospital is closed to any incoming patients (i.e. fire in the hospital), CACC will decide the hospital destination.**

GI Bleed Recognition Tool (HPS)

For the purposes of the Patient Priority System:

Patients with possible "GI bleeds" (gastrointestinal bleeding) recognized by the guidelines below should be transported to the appropriate Emergency Department (St. Joseph's Healthcare or HHS Juravinski Site) as directed by CACC.

INCLUSION	EXCLUSION
The patient must be; ≥ 18 years of age and meet the following: • 1. Vomiting blood (hematemesis) bright red blood, dark red blood, dark brown/black blood ("coffee grounds") or blood clots. • 2. Passing red blood rectally (hematochezia) bright red blood, dark red blood or blood clots (with or without stools) • 3. Passing black stools (melena) sticky, black, "tarry", stools with a typical foul smell – may be mixed with red or maroon blood.	Patients < 18 years should be transported as per the Pediatric Destination Determination Guidelines and not according to this Tool.

Education notes:

Relevant history:
If a patient with a possible "GI bleed" has an extensive history with one site (eg: such as post operative, oncology, dialysis, multiple admissions, or discharged patient), it would be preferable for the patient to be transported to that site (excluding McMaster Children's Hospital or HHS Hamilton General Site).

Isolated Hip Fracture Recognition Tool (HPS)

For the purposes of the Patient Priority System:

Patients with possible "isolated" hip fracture recognized by the guidelines below should be transported to the Emergency Department as directed by CACC (St. Joseph's Healthcare or HHS Juravinski Site).

INCLUSION	EXCLUSION
Mechanism: Fall from sitting (chair), bed, or standing (not height or MVC); may have other minor injuries (i.e. contusions); AND History of: Pain in hip or groin at rest or with patient initiated movement (paramedic should not intentionally move joint); AND Examination: May have externally rotated and/or shortened leg.	1. Patient meets the Trauma Triage Guidelines 2. Patient with hip joint replacement on same side (Pt should be transported to site of original joint replacement surgery. If original site is unknown normal distribution guidelines will apply).

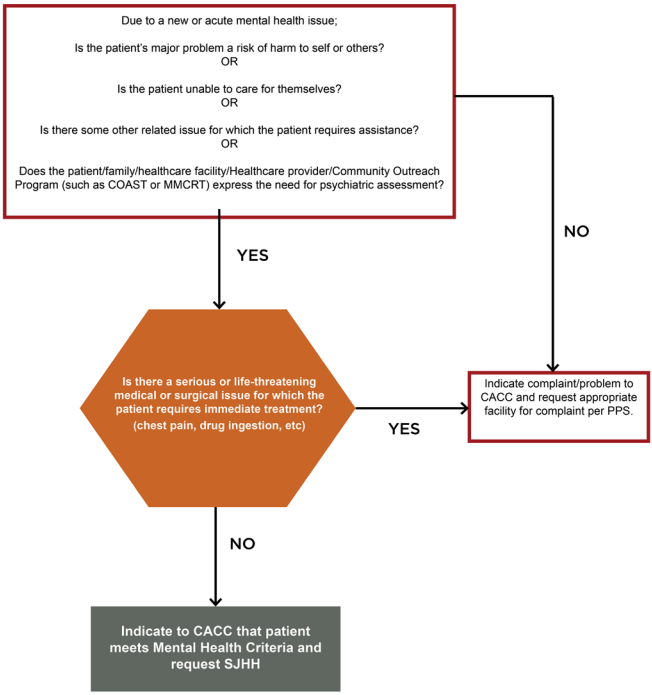
Education notes:

1. "Isolated" hip fracture: Refers to no other recognized significant injuries.

2. Mechanism:
The intention of the above listed mechanism is to select those patients that are unlikely to have additional injuries (significant trauma mechanism). Although the tool states fall from sitting, lying, standing, this may also include a single step or curb but is meant to exclude more significant falls.

3. Relevant history:
If a patient with a possible hip fracture has an extensive history with one site (i.e. such as post-operative, oncology, dialysis, multiple admissions, or discharged patient), it would be preferable for the patient to be transported to that site (excluding McMaster Children's Hospital or HHS Hamilton General Site).

Psychiatric Emergency Recognition Tool (HPS)



Musculoskeletal Injury Recognition Tool (HPS)

For the purposes of Patient Priority System:

Patients with suspected significant orthopedic fractures which might require immediate surgery (excluding hip) by the guidelines below should be transported to the Emergency Departments of St. Joseph's Hospital or Hamilton General Hospital as directed by CACC.

INCLUSION

Adult patients (≥18) with:

1. Suspected "open" fracture of any limb, OR

2. Severe bony deformity of an injured lower limb

EXCLUSION

1. Patient's injury is at site of known joint replacement (prosthetic joint), then transport to the Emergency Department to the site where the joint replacement surgery was performed or the Juravinski or St. Joseph's Hospital as directed by CACC.

2. Receiving active oncology treatment at the Juravinski Cancer Clinic, transport to the Juravinski Emergency Department.

Education notes:

1. If Patient meets the Provincial Trauma Triage Guidelines, then transport to Hamilton General Hospital as directed by CACC.

2. If Patient meets the Possible Hip Fracture Identification Tool, preferentially follow that tool, then transport to the Emergency Department of the Juravinski or St. Joseph's Hospital as directed by CACC.

3. "Open" fracture or compound fracture: Refers to a fracture with an associated wound. This can include circumstances where the bone fragments can be seen protruding through a wound, where there is a large skin defect or even just a small puncture sized wound where the bone may have penetrated the skin but is no longer visible. Any open injury (other than an abrasion) associated with a suspected fracture can be considered a suspected "open" fracture for the purposes of this guideline.

4. The Juravinski Hospital will continue to treat pathological fractures associated with a malignancy

5. All Sites, including the Juravinski Hospital, will continue to manage patients with fractures not requiring immediate surgery, dislocations and soft tissue injuries.

Ebola Virus Disease (EVD) Screening Recognition Tool

For the purposes of the Patient Priority System:

Patients who are screened as positive (suspected EVD) using the most current Ministry of Health and Long Term Care (MOHLTC) EVD Screening Tool, and who meet specific destination protocol criteria, will be preferentially transported as indicated below:

Adult patient ≥18 years of age and screened positive for EVD:

- For Decision Priority 1 through 4, follow the current Adult PPS by transporting the patient to the identified destination as per normal practice.
- For Decision Priority 5 through 10, transport the adult patient to the Juravinski Hospital

Pediatric patient <18 years of age and screened positive for EVD:

- For all Decision Priority criteria follow the current Pediatric PPS by transporting the patient to the identified destination as per normal practice.

Education Notes:

1. When a patient has screened positive for EVD, a patch to notify the receiving facility must be completed by the Paramedics regardless of transport priority.

2. The following hospitals are designated EVD testing sites although the ambulance destination decision will follow the direction above:
   - Juravinski Hospital – Adult patients (≥18 years of age)
   - McMaster Children's Hospital – Pediatric patients (<18 years of age)

Radio Channel Change Locations

Hamilton

QEW and Fifty Road=====NIA REG2 COM, contact Hamilton CACC

London

QEW and Fifty Road=====NIA REG2 COM, contact Hamilton CACC

Hwy 403 and County Road 25 (Middle Townline Road)=====NIA MOH ZN 1, contact London CACC

This is about 15-20 km west of Brantford

Mississauga

QEW and Fifty Road====NIA REG2 COM, contact Hamilton CACC

QEW and Hwy 403 (base of Burlington Skyway)=====NIA MOH ZN 1, contact Mississauga CACC

Toronto

QEW and Fifty Road====NIA REG2 COM, contact Hamilton CACC

QEW and Hwy 403 (base of Burlington Skyway)=====NIA MOH ZN 1, contact Mississauga CACC

QEW and Hwy 427====NIA PROV COM, contact Toronto CACC

When returning, the locations for changing back are the same.

If transporting a patient on return to Niagara, switch to NIA TAC 1 at Fifty Road. If you are returning empty, switch to NIA North at Fifty Road.

All channels are within the NIA folder and can be found by simply turning the Channel Selector.

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FAST Sepsis Pre-Alert for GWPS, HPS, and ROWPS

Do you suspect or know there is an infection? If yes, apply ParaHEWS (below)
If ParaHEWS **≥5**: notify receiving hospital of "Sepsis Pre-Alert" and Apply Capnography

Physiological Parameters	3	2	1	0	1	2	3
Heart Rate / Pulse		<41	41-50	51-100	101-110	111-130	≥131
Systolic BP	<71	71-90		91-170		171-200	≥201
Respiratory Rate	<8	8-13		14-20		21-30	≥31
Temperature (C)	<35		35.0-36.0	36.1-37.9 (or not available)	38.0-39.0	≥39.1	
O_2 Saturation	<85		85-92	≥93			O_2 via face mask
O_2 Therapy				Room Air	O_2 via nasal prongs		Not responsive
Change in CNS from Baseline		New Confusion		Alert or Usual Self	Voice	Pain	

www.sepsis-prealert.ca

STEMI Protocol Pearls

Symptoms

PAIN

Pain can be typical or atypical (but not only non-specific symptoms of dyspnea, nausea, fatigue, etc)

ACUTE

An acute history of symptoms of < 12 hours

ECG

QUALITY

Ensure good quality ECG

- Shave chest
- No moving/talking

REPEAT

If negative, do serial ECGs

(1) before treatment
(2) in ambulance prior to leaving scene
(3) in ambulance prior to moving into ED

CAUTION

ECGs can be tricky, rule out mimics
If not certain, go to closest appropriate ED

Geography

60 MINUTES

Maximum 60 minutes from first medical contact to PCI centre

If you are quicker on scene (eg: 15 minutes), this will allow longer transport time (eg: 45 minutes)

BOUNDARIES

Know the PCI centres in your area
CACC may be able to assist

HGH **1-844-832-6830**

Brampton **1-416-747-3500,1**

St. Mary's **1-519-653-4074**

Southlake **1-905-952-2466**

Trillium **1-888-493-3568**

Prepare

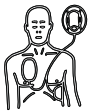
CAUTION

Caution with nitro and morphine

Neither of these medications are life-saving in STEMI patients & can cause adverse events

"PADS ON"

Defibrillation pads are placed on all patients with suspected STEMI



BE READY

Be familiar with the common complications that can occur:

- dysrhythmias
- pump failure
- cardiac arrest

Be ready to manage them

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LIST OF MANDATORY PROVINCIAL PATCH POINTS

Medical Cardiac Arrest

- TOR

Trauma Cardiac Arrest

- Trauma TOR

Tachydysrhythmia

- amiodarone/lidocaine administration
- adenosine administration if wide complex;
- cardioversion

IV & Fluid Therapy

- Fluid bolus for hypotensive patients <12 years of age with suspected DKA

Analgesia

- morphine/fentanyl administration for patients <12 years of age

LIST OF MANDATORY LOCAL PATCH POINTS

- Special Project Palliative Care Medical Directives
- Research Project Palliative Care Medical Directives

Patch Process

Based on your area, call:

Brant / Brantford Paramedic Service
Dufferin County Paramedic Service
Guelph-Wellington Paramedic Service
Haldimand County Paramedic Service
Hamilton Paramedic Service
Norfolk County Paramedic Service
Region of Waterloo Paramedic Service
Six Nations Paramedic Services

1-888-256-6629

Niagara EMS

905-704-4019

Busy Signal	Another patch is ongoing. Wait 30 seconds for diverter to reset. Call again.	If unsuccessful, Call CACC for direct patch to HGH BHP
Voicemail	Both BHP's are busy with a patch. Wait 30 seconds. Call again.	If unsuccessful, Call CACC for direct patch to HGH BHP
Dropped call	Check connectivity. Call again.	If unsuccessful, Call CACC for direct patch to HGH BHP

Please email report to CQI@CPER.CA if unsuccessful with radio patch

Medication Safety Starts with You

When you see the "5Rs" symbol throughout this guidebook, it is a reminder to always confirm:

- ☐ RIGHT PATIENT
- ☐ RIGHT DRUG
- ☐ RIGHT DOSE
- ☐ RIGHT ROUTE
- ☐ RIGHT TIME

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CENTRE FOR PARAMEDIC EDUCATION AND RESEARCH