Advanced **C**are **P**aramedic

Pocket Reference Guide

2024 v. 5.3+

Durham
Haliburton
Kawartha Lakes
Northumberland
Peterborough
York

CEPCP

This pocket reference guide has been formatted to align with the ALS PCS version 5.3+ with an in force date of February 9th, 2024. As always, this guide is intended to support the ALS PCS and is for reference only. Refer to the current Medical Directives for all treatment decisions. If there are inconsistencies between this reference guide and the current directives always refer to the Medical Directives.

For questions, comments, or suggestions for improvements, please contact us at:
Website (follow 'contact us' link):
www.cepcp.ca

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CEPCP Patch Physicians

On Feb 1st, 2023 CEPCP moved the BHP patch system to a primary group of on call physicians. These on call physicians will typically not be working in a hospital setting during their shift, enhancing their responsiveness to the incoming calls as well as being able to spend more time on the call (as necessary) and being more aware of the scope of the paramedic on the phone.

While this system still runs through the CACC and are recorded there, the calls are now re-routed directly to the physician's cell phone with a redundant recording occurring there.

The dedicated group of physicians represent staff from our patch hospitals: Markham, Oshawa and Peterborough. This group will take call from 08:00 to 22:00 and from 22:00 to 08:00, the calls will go to The Markham Emergency Phone. Calls that are not immediately answered by the on call physician will also be redirected to the Markham Emergency Phone.

Patch line numbers:

Lindsay CACC – 705-324-3246

Oshawa CACC – 905-430-3179

Georgian CACC – 1-866-667-6669

On call Physician names between 0800-2200:
Phil Moran (CEPCP Medical Director)
Andrew Arcand (CEPCP Associate Medical Director)
Vince Arcieri (CEPCP Associate Medical Director)
Hasan Abdullah
Matthew Adamson
Carolyn Arbanas
Alex Atfield
Abdul Basith
Brendan Caraher
Erika Defoort
Kate Gong
Roberta Hood
Shirley Hu

Scott Kapoor
Nour Khatib
Lily Malkin
Jared Paty
Adam Pyle
Aleksandar Trajkovski

Patching

Advanced Care Paramedics are required to **PATCH** to the Base Hospital Physician for the following:

Core Directives

- Medical Cardiac Arrest Directive **PATCH** for authorization to apply the TOR if applicable
- Trauma Cardiac Arrest Directive **PATCH** for authorization to apply the TOR if applicable
- Tachydysrhythmia Directive **PATCH** for authorization to proceed with Lidocaine or monomorphic wide complex regular rhythm for Adenosine
- Tachydysrhythmia Directive **PATCH** for authorization to proceed with synchronized cardioversion
- Intravenous and Fluid Therapy Directive: **PATCH** for authorization to administer IV NaCl bolus to a hypotensive patient less than 12 years of age with suspected Diabetic Ketoacidosis (DKA)
- **PATCH** to BHP for authorization and dosage verification before administering Morphine or FentaNYL for children < 12 years old.

Auxiliary Directives

- N/A – there are no auxiliary directives currently authorized that require a patch to the BHP.

NOTE: A patch to the Base Hospital Physician may be made at any time to discuss patient care that does not fall within an existing medical directive but is within your scope of practice.

Patch failure: is defined as the inability to make contact with a BHP after reasonable attempts. This is to be documented on the ACR in the procedures section using the relevant codes. *If the failure resulted in a patient care issue, the Paramedic must contact CEPCP as soon as possible as well as document (with explanation) the failure on their ACR.*

Medical Cardiac Arrest

Indications

Non-traumatic cardiac arrest.

Primary Clinical Consideration(s):

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 greater than or equal to 20 weeks gestation (fundus above umbilicus, ensure manual displacement of uterus to the left),
2. hypothermia,
3. airway obstruction,
4. non-opioid drug overdose/toxicology, OR
5. other known reversible cause of arrest not addressed (i.e., hypovolemia, hyperkalemia, etc).

In refractory or recurrent VF/VT, consider transporting after 3 rounds of Epinephrine (or 3 consecutive defibrillations if no vascular access obtained).
Note: Patients are considered to be in refractory ventricular fibrillation or refractory pulseless ventricular tachycardia after three consecutive defibrillations. “Recurrent” indicates the shockable was terminated with treatment and it re-occurred at any time during the cardiac arrest.

Clinical Parameters

CPR

- Altered LOA
- Performed in two-minute intervals
- Not obviously dead
- Does not meet the conditions of the DNR Standard

Manual Defibrillation

- ≥ 24 hours old **AND** Altered LOA
- VF OR pulseless VT

Anaphylaxis suspected as the causative event:

EPINEPHrine [1mg/ml] IM

- ≥ 24 hours old **AND** Altered LOA
- No allergy or sensitivity to Epinephrine

Lidocaine

- ≥ 24 hours **AND** Altered LOA
- Refractory or recurrent VF **OR** pulseless VT
- No allergy or sensitivity to Lidocaine
- Paramedics may public access defibrillations and/or the fire departments defibrillations before they arrived if confirmed to be in a shockable rhythm
- The patient has to be in a shockable rhythm at least twice to receive lidocaine and it is based on the last interpretation.

0.9% NaCl Fluid Bolus

- ≥ 24 hours **AND** Altered LOA
- PEA **OR** any other rhythm where hypovolemia is suspected
- Once starting the fluid bolus, it is recommended to complete the fluid bolus based on the 20ml/kg dose, regardless if there is a rhythm change, unless the patient meets signs of fluid overload.

Medical TOR

- Mandatory Patch to the BHP for authorization to apply the Medical TOR if applicable
- ≥ 16 years old **AND** Altered LOA
- Arrest not witnessed by paramedic **AND** no ROSC after 20 minutes of resuscitation **AND** no defibrillation delivered

TOR is contraindicated if:

- Known reversible cause of the arrest is unable to be addressed
- Pregnancy presumed to be ≥ 20 weeks gestation
- Suspected hypothermia
- Airway obstruction

- Non-opioid drug overdose/toxicology

Pediatric Doses (greater than 24 hours and less than 8 years)

- Interpret, print and code mark/snapshot the rhythm every 2 minute
- For Zoll and LP15 use 2 J/kg for first defibrillation and 4 J/kg all subsequent dose(s)
- CPR as per current Heart and Stroke Foundation of Canada Guidelines

Pediatric Doses (greater than and equal to 24 hours to less than 12 years of age)

Medication	Initial Dose	Q	Min	Max dose
EPINEPHrine 1:10,000 [0.1mg/mL] IV (preferred) / IO / CVAD	0.01 mg/kg (0.1 mL/kg) **The EPINEPHrine dose may be rounded to the nearest 0.05mg**	4 min	0.05 mg (0.5ml)	N/A
EPINEPHrine 1:1,000 [1mg/mL] - ETT	0.1 mg/kg (0.1 mL/kg)	4 min	0.5 mg (0.5ml)	2 mg (2 ml)
EPINEPHrine 1:1,000 IM (for suspected anaphylaxis)	0.01 mg/kg max 0.5 mg	N/A	N/A	0.5 mg (0.5ml) **1 dose**
Lidocaine IV / IO / CVAD for refractory/recurrent VF/pVT	1.0 mg/kg	4 min	N/A	2 doses
Lidocaine ETT for refractory/recurrent VF/pVT	2 mg/kg	4 min	N/A	2 doses
Bolus IV / IO / CVAD	20 ml/kg	Re-assess every	N/A	2,000 ml

		100 ml		

Patients greater than or equal to 8 years

- Interpret, print and code mark/snapshot the rhythm every 2 minute
- CPR as per current Heart and Stroke Foundation of Canada Guidelines

Adult Dosing (≥8 years of age)

- Interpret, print and code mark/snapshot the rhythm every 2 minute.
- For Zoll and LP15 provide energy as per RBHP/manufacturer.

CPR	As per current HSF of Canada Guidelines			
Treatment	**Dose**	**Repeats**	**Q**	**Max doses**
Manual defib	LP15 360J Zoll X 200J	LP15 360J Zoll X 200J	2 min	N/A

Adult doses (greater than or equal to 12 years old)

Medication	Initial Dose	Q	Min	Max Dose
EPINEPHrine 1:10,000 (0.1 mg/ml) IV / IO/ CVAD	1mg (10ml)	4 min	1 mg	N/A
EPINEPHrine ETT	2.0 mg All 1:10,000 or mixed 1:10,000 and 1:1,000	4 min	2 mg	N/A
EPINEPHrine 1:1,000 (0.1mg/ml) – IM (for suspected anaphylaxis)	0.01 mg/kg max 0.5 mg (0.5ml)	N/A	N/A	1 dose

Lidocaine IV / IO / CVAD for refractory/recurrent VF/pVT	1.5 mg/kg (1st dose) **0.75 mg/kg (2nd dose)**	4 min	N/A	2 doses
Lidocaine ETT for refractory/recurrent VF/pVT	3 mg/kg (1st dose) 1.5 mg/kg (2nd dose)	4 min	N/A	2 doses
Bolus IV / IO / CVAD PEA or any other rhythm where hypovolemia is suspected Once initiated a fluid bolus, it is recommended to complete the fluid bolus, regardless of the rhythm change, unless there is a contraindication.	20 ml/kg	Re-assess every 250 ml	N/A	2,000 ml

Medical TOR: (≥ 16 years of age)

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 circumstances surrounding egress, prolonged transport or significant clinical limitations where the paramedic considers ongoing resuscitation to be futile.

Notes:

Large spike in $ETCO_2$ to above normal values – probable ROSC, consider pulse check at **next** interpretation.

Vector change defibrillation can be considered **after the third consecutive defibrillation.** Paramedics may count the fire departments defibrillations and/or public access defibrillations if they are confirmed to be in a shockable rhythm still.

Pad placement should include a new set of pads and the anterior pad should move to the back and the lateral pad should be moved more over the left chest.

Consider SGA or ETT 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, $ETCO_2$, 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.

AHA Guidelines for CPR: <30 days is 3:1. ≥30 days is 15:2 for two rescuer or 30:2 for one rescuer.

Notes: The formula for **cuffed** pediatric tubes is: **(Age / 4) + 3.5**

Pediatric Joule settings

DOSING: ≥ 24 HOURS → LESS THAN 12 YEARS OF AGE							
Weight	Age	Joules 2J/kg / 4J/kg	Epi 1:10 000 **IV/IO/CVAD** 0.01 mg/kg 0.1 mls/kg	Epi 1:1000 **ETT** 0.1mg/kg	Lidocaine **IV/IO/CVAD** 1mg/kg	Approx ETT Size	EZ IO
4 kg/9 lb	< 1 year	8 J / 16 J	0.05 mg = 0.5 ml	0.5mg = 0.5ml	4 mg = 0.2 ml	3.0 mm	Pink
6 kg/13lb	< 1 year	12J /24 J	0.06 mg = 0.6 ml	0.6mg = 0.6ml	6 mg = 0.3 ml	3.0 mm	Pink
8 kg/18lb	< 1 year	16 J / 32 J	0.08 mg = 0.8 ml	0.8mg = 0.8ml	8 mg = 0.4 ml	3.0–3.5 mm	Pink
10kg/22lb	< 1 year	20 J / 40 J	0.10 mg = 1.0 ml	1.0mg = 1.0ml	10 mg = 0.5 ml	3.5 mm	Pink
12kg/26lb	1	24 J / 48 J	0.12 mg = 1.2 ml	1.2mg = 1.2ml	12 mg = 0.6 ml	4.0 mm	Pink
14kg/31lb	2	28 J / 56 J	0.14 mg = 1.4 ml	1.4mg = 1.4ml	14 mg = 0.7 ml	4.0 mm	Pink
16kg/35lb	3	32 J / 64 J	0.16 mg = 1.6 ml	1.6mg = 1.6ml	16 mg = 0.8 ml	4.5 mm	Pink
18kg/40lb	4	36 J / 72J	0.18 mg = 1.8 ml	1.8mg = 1.8ml	18 mg = 0.9 ml	4.5 mm	Pink
20kg/44lb	5	40 J / 80 J	0.20 mg = 2.0 ml	2.0mg = 2.0ml	20 mg = 1.0 ml	5.0 mm	Pink
22kg/48lb	6	44 J / 88J	0.22 mg = 2.2 ml	2.0mg = 2.0ml	22 mg = 1.1 ml	5.0 mm	Pink
24kg/53lb	7	48 J /96J	0.24 mg = 2.4 ml	2.0mg = 2.0ml	24 mg = 1.2 ml	5.5 mm	Pink
26kg/57lb	8	200J Zoll 360 LP15	0.26 mg = 2.6 ml	2.0mg = 2.0ml	26 mg = 1.3 ml	5.5 mm	Pink
28kg/62lb	9	200J Zoll 360 LP15	0.28 mg = 2.8 ml	2.0mg = 2.0ml	28 mg = 1.4 ml	5.5 mm	Pink
30kg/66lb	10	200J Zoll 360 LP15	0.30 mg = 3.0 ml	2.0mg = 2.0ml	30 mg = 1.5 ml	6.0 mm	Pink
35kg/77lb	11		0.35 mg = 3.5 ml	2.0mg = 2.0ml	35 mg = 1.75 ml	6.0 mm	Pink

(Courtesy of Mitch Lohnert)

Trauma Cardiac Arrest

Indications

Cardiac arrest secondary to severe blunt or penetrating trauma

Clinical Parameters

CPR

- Altered LOA
- Performed in two-minute intervals
- Not obviously dead
- Does not meet the conditions of the DNR Standard

Manual Defibrillation

- ≥ 24 hours old **AND** Altered LOA
- VF **OR** pulseless VT

Trauma TOR

- **Mandatory PATCH Point to the 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.
- ≥ 16 years old
- No palpable pulses **AND** no defibrillations delivered **AND** rhythm is 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

- **NO TOR** if patients with penetrating trauma to the torso or head/neck and Lead Trauma Hospital < 30 min transport time away

Needle Thoracostomy

- Suspected tension pneumothorax **AND**
- Absent or severely diminished breath sound on the affected side(s)
- Fourth intercostal space anterior axillary line is the preferred site for adults and pediatrics. ACPs can still use the second-intercostal space mid-clavicular line **for adults only.**
- **If a patient is ≥13 years old or a typical sized adult, a 12g and/or 14g needle with a minimal length (2.5inches) can be used.**

- **If a patient is <13 years old, a 14g or 16g (1.5inch needle) can be used.**

Adult Doses (≥ 8 years of age)

Treatment	Dose	Q	Repeat	Max dose
• Interpret, print and code mark/snapshot the rhythm • For Zoll and LP15 provide energy as per RBHP/manufacturer • CPR as per current HSF of Canada Guidelines				
Manual defibrillation	Max energy	N/A	N/A	1 dose
Bolus IV / IO / CVAD	20 ml/kg	Reassess every 250 ml	N/A	2,000 ml
Needle Thoracostomy				

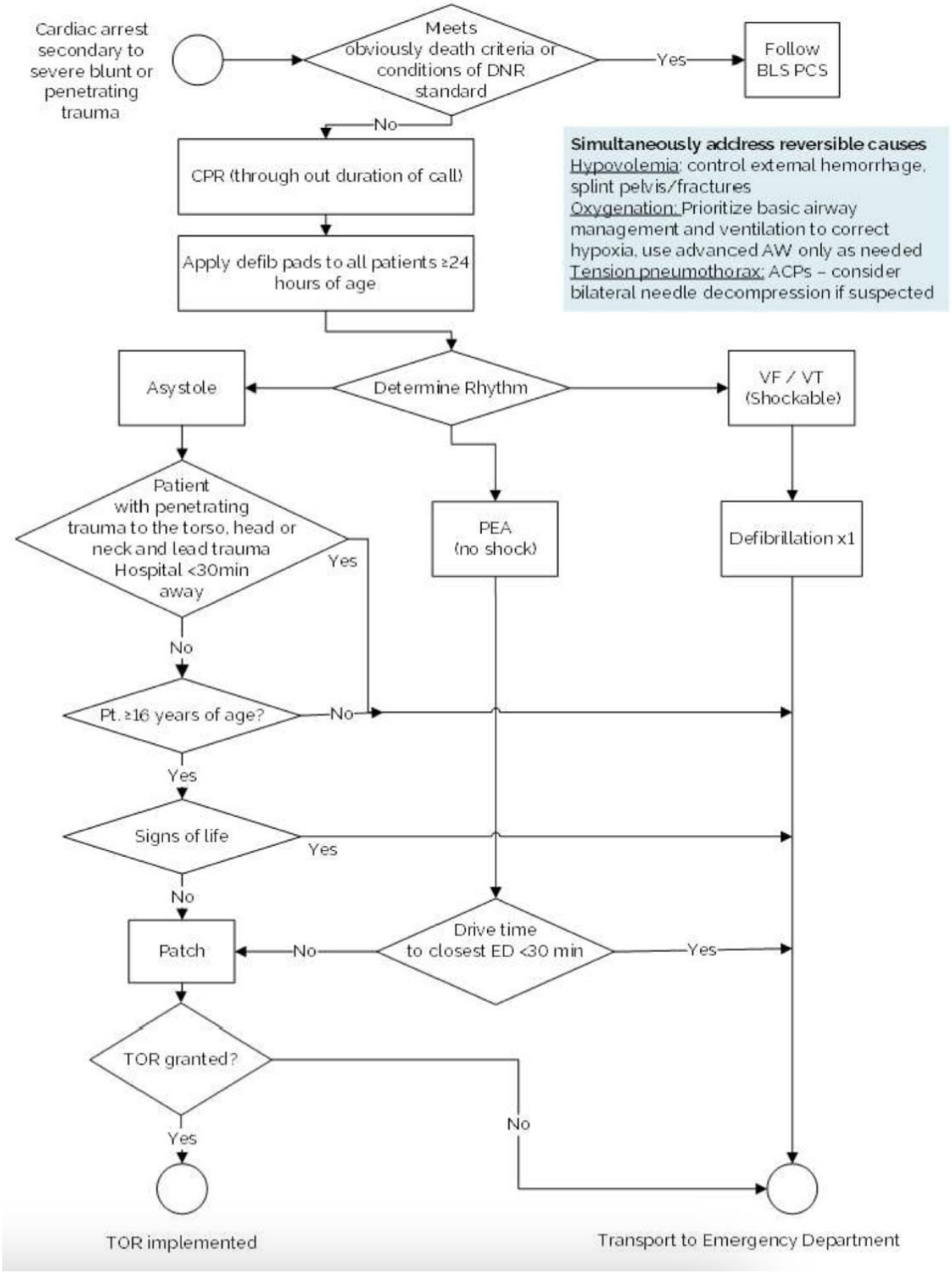
Pediatric Doses (≥ 24 hours to < 8 years of age)

Treatment	Dose	Q	Repeat	Max dose
Manual defibrillation	2 J/kg	N/A	N/A	1 dose
Bolus IV / IO / CVAD	20 ml/kg	Reassess every 100 ml	N/A	2,000 ml
Needle Thoracostomy				

Notes:

- AHA Guidelines for CPR: <30 days is 3:1. ≥30 days is 15:2 for two rescuer or 30:2 for one rescuer.
- 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.

- Consider transporting penetrating trauma cardiac arrest to LTH if less than 30 min away.


Cardiac arrest secondary to severe blunt or penetrating trauma
Meets obviously death criteria or conditions of DNR standard
Yes
Follow BLS PCS
No
CPR (through out duration of call)
Apply defib pads to all patients ≥24 hours of age
Simultaneously address reversible causes
Hypovolemia: control external hemorrhage, splint pelvis/fractures
Oxygenation: Prioritize basic airway management and ventilation to correct hypoxia, use advanced AW only as needed
Tension pneumothorax: ACPs – consider bilateral needle decompression if suspected
Asystole
Determine Rhythm
VF / VT (Shockable)
Patient with penetrating trauma to the torso, head or neck and lead trauma Hospital <30min away
Yes
PEA (no shock)
Defibrillation x1
No
Pt. ≥16 years of age?
No
Yes
Signs of life
Yes
No
Patch
No
Drive time to closest ED <30 min
Yes
TOR granted?
No
Yes
TOR implemented
Transport to Emergency Department

NOTES: Pediatric Joule Settings

Weight	Age	Joules 2J/kg
4 kg/9 lb	≥24 hr	8 J
6 kg/13lb	≥24 hr	15 J
8 kg/18lb	≥24 hr	20 J
10kg/22lb	< 1 year	20 J
12kg/26lb	1 year	30 J
14kg/31lb	2 years	30 J
16kg/35lb	3 years	50 J
18kg/40lb	4 years	50 J
20kg/44lb	5 years	50 J
22kg/48lb	6 years	50 J
24kg/53lb	7 years	50 J
26kg/57lb	8 years	Max joules settings Zoll 200J LP15 360 J
28kg/62lb	9 years	Max joules settings Zoll 200J LP15 360 J
30kg/66lb	10 years	Max joules settings Zoll 200J LP15 360 J
35kg/77lb	11 years	Max joules settings Zoll 200J LP15 360 J

Newborn Resuscitation (< 24 hours)

Indications

Newborn patient (< 24 hours)

Clinical Parameters

Do not attempt resuscitate if patient is obviously dead as per BLS PCS
Do not attempt resuscitate if presumed age is less than 20 weeks (consider calling the BHP for guidance)
< 24 hours of age

Positive Pressure Ventilation

- HR < 100

CPR

- HR < 60
- After 30 seconds of PPV with room air

EPINEPHrine

- After 30 seconds of CPR and PPV with oxygen
- No allergy or sensitivity

Notes:

- AHA Guidelines for CPR: <30 days is 3:1
- 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. Keep warm, initiate resuscitation and transport ASAP.
- 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 the BHP.

iGel Reference

Size	Colour	Patient
1	Pink	< 5 kg

King LT Reference

Size	Colour	Patient

0	Clear	< 5 kg
Inflate cuff with a maximum of 10 ml air.		

EPINEPHrine

	Age	
	< 24 hours	
	Route	
	IV/ IO	**ETT***
Solution	0.1 mg/mL = 1:10,000 (0.1mg/1ml)	0.1 mg/mL = 1:10,000 (0.1mg/1ml)
Dose	0.01 mg/kg (0.1 ml/kg)	0.1 mg/kg (1.0 ml/kg)
Minimum Single Dose	0.05 mg (0.5 ml)	N/A
Maximum Single Dose	N/A	0.3 mg (3.0 ml)
Dosing Interval	4 min	N/A
Max # of Doses	N/A	**1**

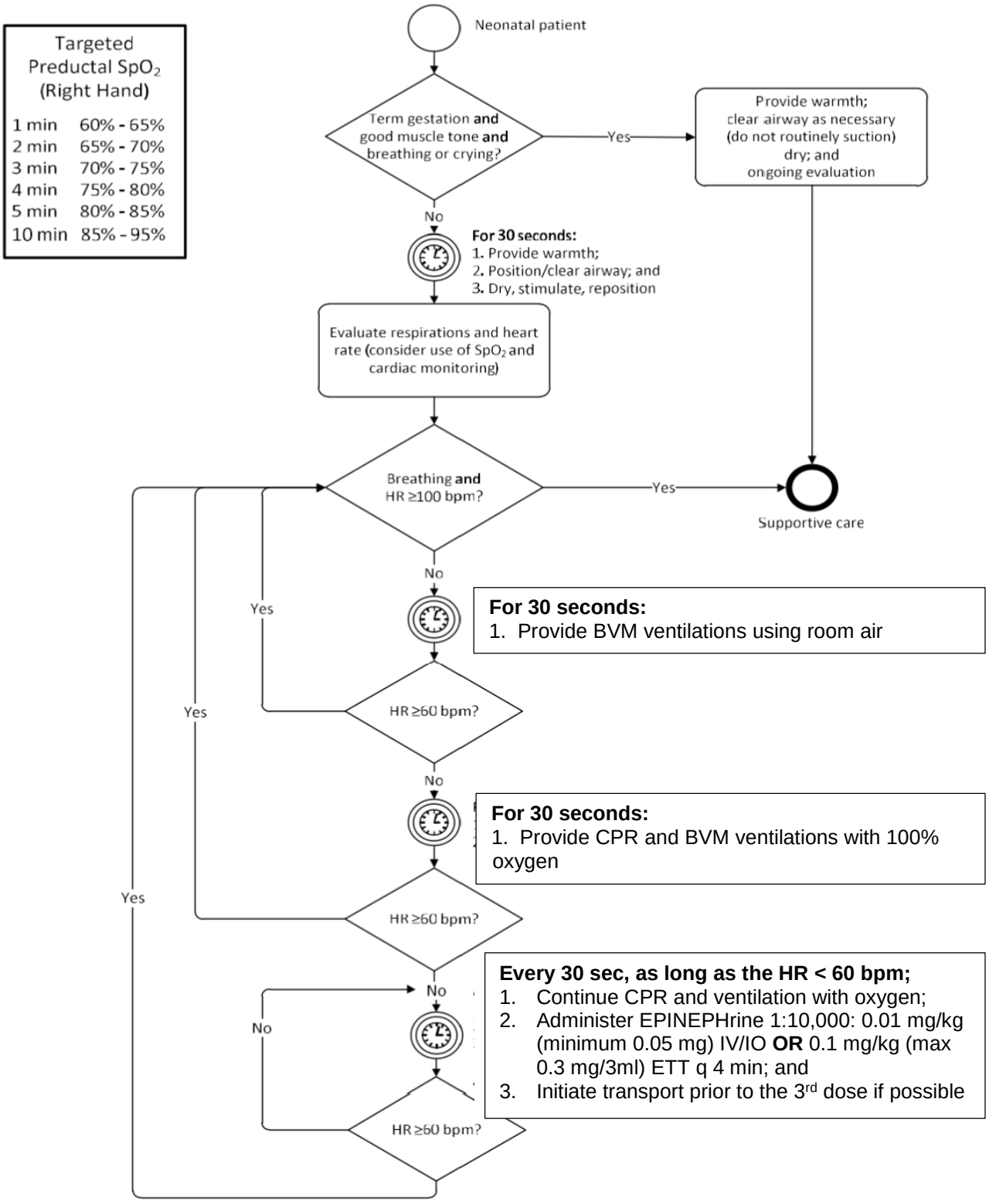
*Administer EPINEPHrine IV/IO after a **single ETT dose.**

Newborn Reference

Gestational Age (wks)	Weight (kg)	Tube Size (cuffed)	IV/IO EPINEPHrine [0.1 mg/ml] (Using a 1ml syringe is recommended)	ETT EPINEPHrine [0.1 mg/ml] (Using a 1ml syringe is recommended until volume exceeds 1ml)
23-24	≈ 0.5	2.5 mm	0.05 mg (0.5 ml)	0.05 mg (0.5 ml)
25-26	≈ 0.8	2.5 mm	0.05 mg (0.5 ml)	0.08 mg (0.8 ml)
27-29	≈ 1.0	2.5 mm	0.05 mg (0.5 ml)	0.10 mg (1.0 ml)
30-32	≈ 1.2	3.0 mm	0.05 mg (0.5 ml)	0.12 mg (1.2 ml)

33-34	≈ 1.6	3.0 mm	0.05 mg (0.5 ml)	0.16 mg (1.6 ml)
35-37	≈ 2.2	3.5 mm	0.05 mg (0.5 ml)	0.22 mg (2.2 ml)
38-40	≈ 2.8	3.5 mm	0.05 mg (0.5 ml)	0.28 mg (2.8 ml)
41-43	≈ 3.7	4.0 mm	0.05 mg (0.5 ml)	0.3 mg (3.0 ml)

The formula for **cuffed** pediatric tubes is: **(Age / 4) + 3.5**


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%
Neonatal 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
For 30 seconds:
1. Provide BVM ventilations using room air
Yes
HR ≥60 bpm?
Yes
No
For 30 seconds:
1. Provide CPR and BVM ventilations with 100% oxygen
Yes
HR ≥60 bpm?
Every 30 sec, as long as the HR < 60 bpm;
1. Continue CPR and ventilation with oxygen;
2. Administer EPINEPHrine 1:10,000: 0.01 mg/kg (minimum 0.05 mg) IV/IO OR 0.1 mg/kg (max 0.3 mg/3ml) ETT q 4 min; and
3. Initiate transport prior to the 3rd dose if possible
No
No
HR ≥60 bpm?

Return of Spontaneous Circulation (ROSC)

Indications

ROSC after resuscitation was initiated

Clinical Parameters

- Adult hypotensive
- Pediatric SBP < 70 mmHg + (2 x age in years)

Bolus:

- No fluid overload-cardiogenic pulmonary edema
- Fluid administration during the cardiac arrest does not count towards fluid administered in the ROSC setting.

DOPamine:

- No allergy/sensitivity to Dopamine
- No pheochromocytoma
- No tachydysrhythmias (excluding sinus tachycardia)
- No mechanical shock states (i.e.: tension pneumothorax, pulmonary embolism, pericardial tamponade)

Adult Doses

Medication	Initial Dose	Q	Titration	Max dose
Bolus IV / IO / CVAD Macodrip set)	10 ml/kg	Reassess every 250 ml	N/A	1,000 ml
DOPamine IV only **≥ 8 years old**	5 mcg/kg/min	5 min	5 mcg/kg/min	20 mcg/kg/min

Pediatric Doses (less than 12 years old)

Medication	Initial Dose	Q	Titration	Max dose
Bolus IV / IO / CVAD (Microdrip set)	10 ml/kg	Reassess every 100 ml	N/A	1,000 ml

DOPamine IV only and age ≥ 8 yrs	5 mcg/kg/min	5 min	5 mcg/kg/min	20 mcg/kg/min

Notes:

Titrate DOPamine to achieve a SBP of greater than or equal to 90 less than 110 mmHg. If discontinuing DOPamine electively, do so gradually over 5-10 minutes.

Titrate oxygenation to 94 - 98%.

Avoid hyperventilation and target an $ETCO_2$ of 30 - 40 mmHg with continuous waveform capnography.

Consider 12 lead ECG **(approx. 10 min post ROSC).**

DOPamine Single Strength 800 mcg/ml				
Weight	**5mcg/kg/min**	**10mcg/kg/min**	**15mcg/kg/min**	**20mcg/kg/min**
5 kg	2	4	6	8
10	4	8	11	15
15	6	11	17	23
20	8	15	23	30
25	9	19	28	38
30	11	23	34	45
35	13	26	39	53
40	15	30	45	60
45	17	34	51	68
50	19	38	56	75
55	21	41	62	83
60	23	45	68	90
65	24	49	73	98
70	26	53	79	105
75	28	56	84	113
80	30	60	90	120
85	32	64	96	128
90	34	68	101	135
95	36	71	107	143
100	38	75	113	150
105	39	79	118	158
110	41	83	124	165

115	43	86	129	173
120	45	90	135	180

Cardiac Ischemia

Indications

Suspected cardiac ischemia

Clinical Parameters

Nitroglycerin:

- Prior Nitroglycerin use and/or IV established
- HR 60 – 159 beats per minute
- SBP ≥ 100 mmHg; Discontinue if SBP drops more than 1/3 of the initial reading
- No *phosphodiesterase inhibitor use in past 48 hours
- No right ventricular MI (no ST elevation in V4R in the setting of ST elevation in II, III and aVF).

ASA Indications:

- Unaltered LOA
- Age ≥ 18 years old
- Able to chew and Swallow

ASA Contraindications:

- No prior use of ASA if asthmatic
- No allergy to ASA or NSAIDs
- No current, active bleeding
- No CVA or TBI in past 24 hrs

Morphine: (after 3rd Nitroglycerin or if Nitroglycerin is contraindicated)

- Severe pain
- SBP ≥ 100 mmHg
- Discontinue if SBP drops more than 1/3 the initial reading

Adult Doses (≥ 18 years of age)

Medication	Initial Dose	Q	Repeat	Max dose
Nitroglycerin SL **(Non-STEMI)**	0.4 mg	5 min	0.4 mg	6 doses
Nitroglycerin SL **(STEMI)**	0.4 mg	5 min	0.4 mg	3 doses
ASA PO	160 - 162 mg	N/A	N/A	160 - 162 mg
Morphine IV	2 mg	5 min	2 mg	5 doses

Notes:

Perform a 12 lead prior to Nitroglycerin administration. Perform a 15 lead (V4R) if ST elevation is present in the inferior leads (two or more of II, III and aVF).

Do not administer Nitroglycerin to a patient with Right Ventricular STEMI

Try to obtain the 12 lead within 10 min of patient contact.

Apply defibrillation pads when a STEMI is identified

If STEMI is identified, consider local STEMI by-pass policy

An intravenous in the left arm is preferred rather than the right arm in a STEMI patient.

*Phosphodiesterase inhibitors (including but not limited to):

- **Sildenafil: Viagra, Revatio** (for pulmonary hypertension)
- **Tadalafil: Cialis, Adcirca** (for pulmonary hypertension)
- **Vardenafil: Levitra, Stazyn**

Notes:

A 15 lead ECG should be obtained

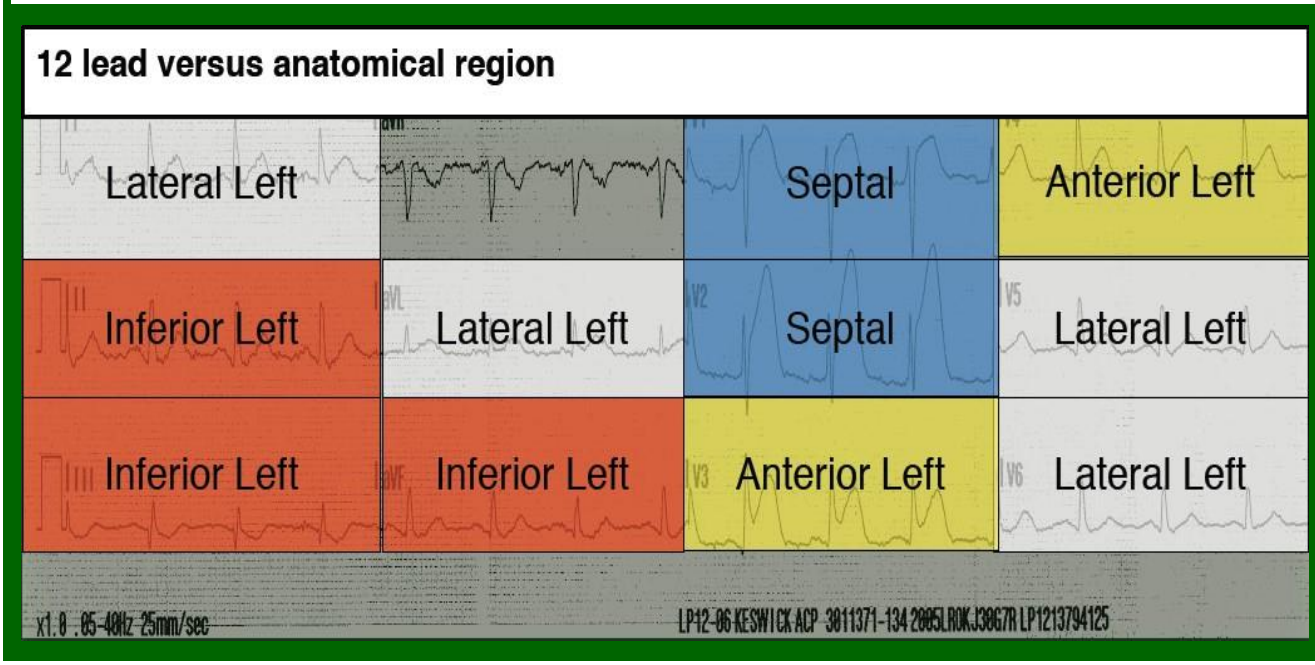
- When a 12 lead shows an inferior wall MI (assess V4R)
- When there is ST depression in V1-V4 (assess V8 and V9)
- When the 12 lead is normal but the patient is exhibiting signs or symptoms of cardiac ischemia (assess V8 and V9)

V4R

- The V4R lead is obtained by moving V4 to the same location but on the right chest wall (5th intercostal space, mid clavicular line)
- V4R is considered anatomically contiguous with II, III and aVF
- ST elevation in V4R indicates an infarct of the right ventricle and NTG is to be withheld

V8 and V9

- The V8 lead is obtained by moving V5 around to the posterior, left chest wall and placing it on the mid-scapular line just below the scapula
- The V9 lead is obtained by moving V6 around to the back and placing it between V5 and the vertebral column
- ST elevation in V8 and V9 indicates an infarct in the posterior wall of the left ventricle
- Infarcts in the posterior wall often show up as ST depression in leads V1-V4 or as a “normal” 12 lead

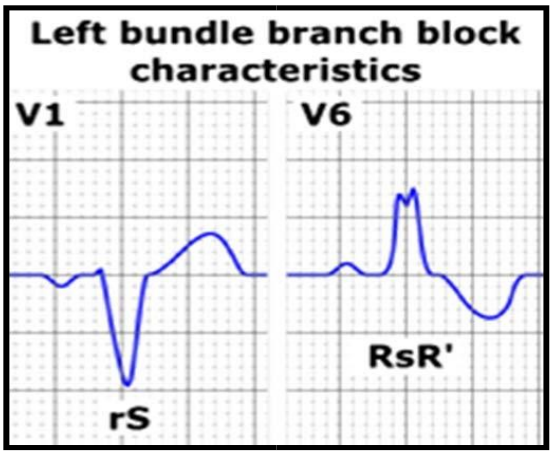


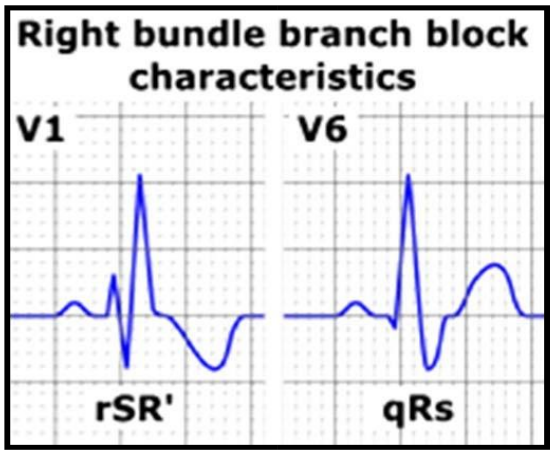
Common Imitators of AMI

Interpreting ST segment elevation is not possible in the following rhythms (not a complete list – other imitators exist)

LBBB

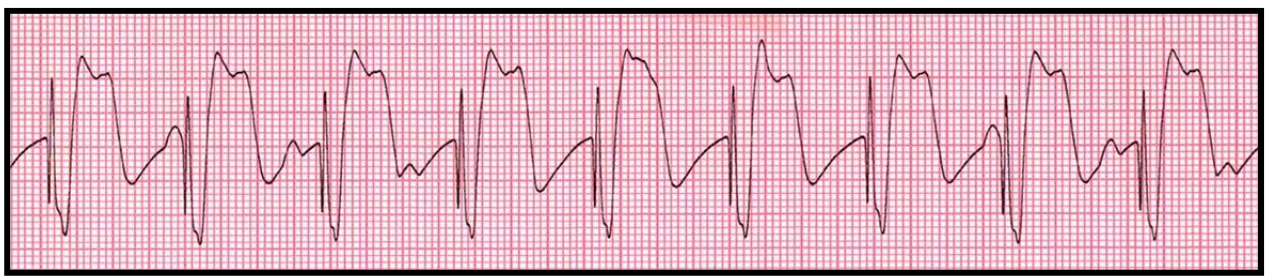
- Characterized by a supraventricular rhythm (identified by the presence of P waves and a 1:1 occurrence with QRS waves) & a wide (> 120 ms) QRS complex.
- A LBBB will have a -ve terminal deflection in V1 and typically a secondary R wave in V6 (seen as a notched complex seen as RsR' below). A STEMI cannot be determined in the field in the presence of a LBBB.
- A RBBB will have a +ve terminal deflection in V1 typically with a notched complex & a slurred or prolonged S wave in V6. A RBBB does not preclude the ability to interpret a STEMI in the field.





Ventricular Paced Rhythm

- A pacer spike is typically seen immediately preceding the QRS complex which will be wide.
- Pacer detect may need to be activated on the cardiac monitor
- Electrical capture is the presence of a QRS following the pacer spike.
- Mechanical capture is the presence of a pulse matching the electrical rate of the paced rhythm.

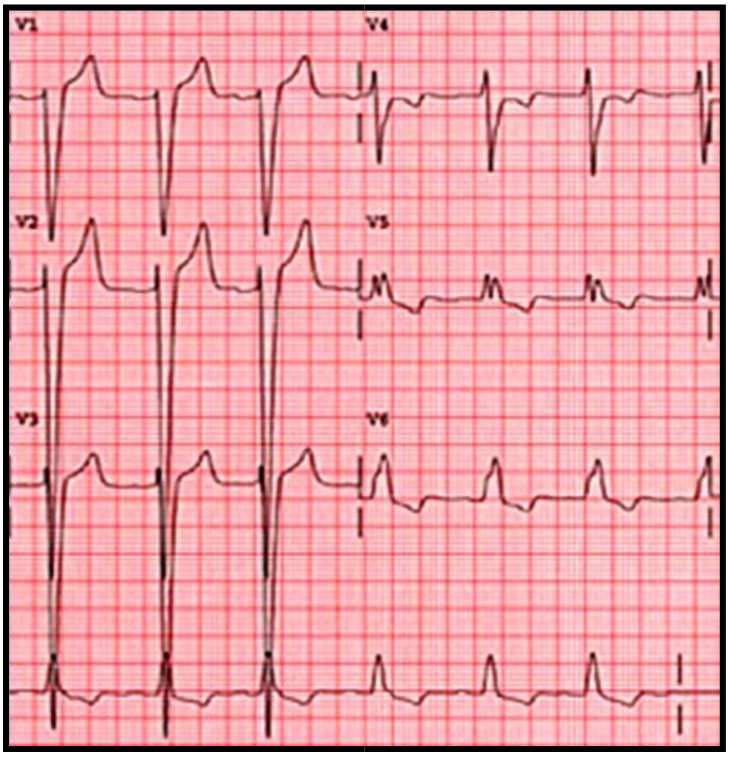


LVH (Left Ventricular Hypertrophy)

Look at the RS complex in either V1 or V2 and count the small boxes of the -ve deflection
Then do the same with either V5 or V6, counting the small boxes of the +ve deflection

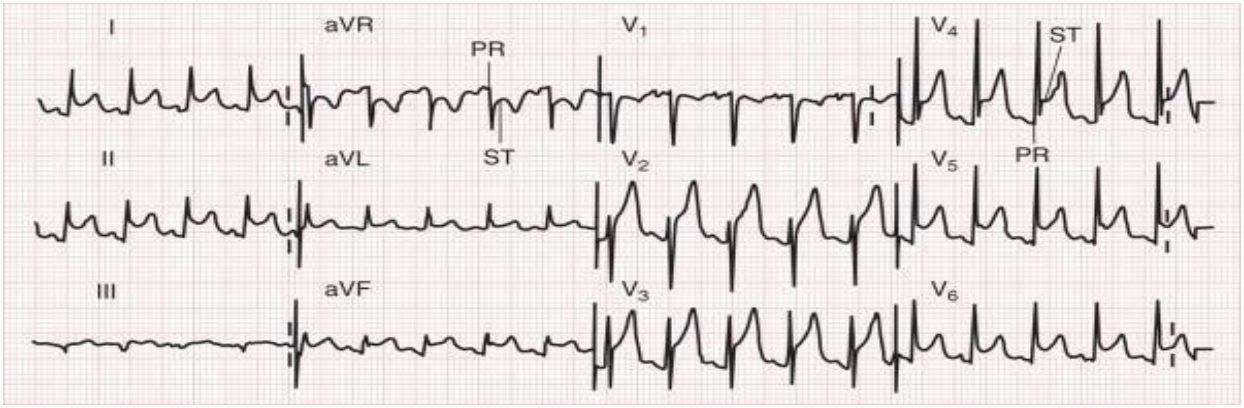
Add the two numbers together, if they equal 35 mm's or greater, it is likely LVH.

A STEMI cannot be determined in the field in the presence of LVH



Pericarditis

- A condition in which inflammation of the pericardial sac produces electrical abnormalities in the 12 lead ECG
- Men aged 20 – 50 years of age are most susceptible
- Often produces "global" ST elevation, or elevation in leads that are not anatomically contiguous and that is not consistent with the patient's clinical presentation
- A STEMI cannot be determined in the field in the presence of pericarditis



Acute Cardiogenic Pulmonary Edema

Indications

Moderate to severe respiratory distress **AND**

Suspected acute cardiogenic pulmonary edema

Clinical Parameters	Vital Sign Parameters
• No allergy or sensitivity • No *phosphodiesterase inhibitors in the past 48 hours • If SBP < 140 mmHg patient must have prior Nitroglycerin use or an IV established	• HR 60 – 159 bpm • SBP ≥ 100 mmHg • SBP drops no more than 1/3 of the initial reading

Adult Doses (≥ 18 years of age)

Medication	Initial Dose	Q	Repeat	Max
Nitroglycerin SL SBP 100 – 139 mmHg WITH an IV or History of use	0.4 mg	5 min	0.4 mg	6 doses
Nitroglycerin SL SBP ≥ 140 mmHg and **NO** History or IV	0.4 mg	5 min	0.4 mg	6 doses
Nitroglycerin SL SBP ≥ 140 mmHg **WITH** History or IV	0.8 mg	5 min	0.8 mg	6 doses

Notes:

Consider 12 /15 lead

*Phosphodiesterase inhibitors (including but not limited to):

- **Sildenafil: Viagra, Revatio** (for pulmonary hypertension)
- **Tadalafil: Cialis, Adcirca** (for pulmonary hypertension)
- **Vardenafil: Levitra, Stazyn**

Clinical consideration: If a patient presents with a STEMI and acute cardiogenic pulmonary edema, it is recommended to treat according to the

STEMI nitroglycerin doses (X3 of 0.4mg) because the most likely cause of the acute cardiogenic pulmonary edema is the STEMI.
If a patient becomes hypotensive post nitroglycerin administration, it is recommended to administer a fluid bolus despite the pulmonary crackles, to achieve normotension. Then, it is advised to withhold nitroglycerin.

Cardiogenic Shock

Indications

STEMI positive 12-lead **AND**
Cardiogenic Shock

Clinical Parameters

SBP < 90 mmHg

Bolus:

- No fluid overload-acute cardiogenic pulmonary edema

DOPamine:

- No allergy or sensitivity
- No tachydysrhythmias (excluding sinus tachycardia)
- No mechanical shock (i.e. Tension Pneumothorax, Pulmonary Embolism, Pericardial Tamponade)
- No pheochromocytoma
- No hypovolemia

Adult Doses (≥ 18 years of age)

Medication	Initial Dose	Q	Repeat	Max
Bolus IV / IO / CVAD	10 ml/kg	Reassess every 250 ml	N/A	1,000 ml
DOPamine IV	5 mcg/kg/min	5 min	5 mcg/kg/min	20 mcg/kg/min

Notes:

Titrate DOPamine to achieve a SBP of ≥ 90 to < 110 mmHg.
If discontinuing DOPamine electively, do so gradually over 5-10 minutes.
Contact BHP if patient is bradycardic.
If the bolus is contraindicated due to crackles, consider DOPamine.

Symptomatic Bradycardia

Indications

Bradycardia **AND**

Hemodynamic Instability

Clinical Parameters

SBP < 90 mmHg **AND** HR < 50 bpm with hemodynamic instability

Atropine:

- No hypothermia
- No heart transplant
- No allergy or sensitivity to any medication considered

TCP:

- No hypothermia

DOPamine:

- No pheochromocytoma
- No mechanical shock
- Allergy of sensitivity to DOPamine

Adult Doses (≥ 18 years of age)

Medication	Initial Dose	Q	Repeat	Max
Atropine IV	1 mg	5 min	1 mg	2 doses
DOPamine IV	5 mcg/kg/min	5 min	Increase by 5 mcg/kg/min	20 mcg/kg/min

Transcutaneous pacing: Set rate at 80 and then increase mAmps to get electrical and mechanical capture

Notes:

TCP should not be delayed for placement of an IV.

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

The right radial pulse is the preferred site to assess for mechanical output because the left wrist can have false positives from muscle contractions.

To maintain pacing during patient handover to the hospital, it is recommended to have the hospital staff apply their pads. They will turn their pacing to a higher rate than paramedics', then it will take over as the demand pacer.

Buretrol Set-up:

- Close both roller clamps
- Spike bag
- Open top roller clamp (between bag and Buretrol)
- Fill chamber with 30 ml
- Close top roller clamp
- Run through tubing
- Fill chamber with desired amount

Rate Control Sets

- Look closely at the units of measure, typically ml / hr (not drops / min)
- Typically require rotating the device to the fully open position then setting to the correct rate
- Ensure the IV bag is elevated approximately 80 cm (2.6 feet) above the level of the IV to deliver the rate desired
- Check frequently to confirm the rate of infusion

Transcutaneous Pacing

- **Attach** limb leads
- **Attach** defibrillation pads
- Activate pacing function
- Increase CURRENT (mA) until electrical capture is evident (pacer spike followed by a QRS complex)
- Check for mechanical capture (assess for a pulse equivalent to the pacing rate) Assess BP
- Consider reducing the RATE to 60 bpm **if BP is adequate**
- Continuously reassess BP

Consider FentNYL and/or Midazolam (as per the Procedural Sedation Medical Directive) administration for this patient to relieve discomfort post TCP.
Clinical considerations: Ensure the patient's chest is shaved (if applicable) and pad placement is correct to optimize a successful transcutaneous pacing.

Tachydysrhythmia

Indications

Symptomatic tachydysrhythmia

Clinical Parameters

No allergy or sensitivity to any medication considered

Valsalva

- SBP ≥ 100 mmHg
- Unaltered LOA
- Use for regular narrow complex tachycardia ≥ 150 bpm
- Not for sinus tachycardia, A-fib, or A-flutter

Adenosine:

- SBP ≥ 100 mmHg
- Unaltered LOA
- Use for regular narrow complex tachycardia ≥ 150 bpm
- Not on Dipyridamole (Persantine, Aggrenox) or Carbamazepine (Tegretol)
- No bronchoconstriction on exam
- Not for sinus tachycardia, A-fib, or A-flutter
- **PATCH** only if suspected SVT with aberrancy (regular wide complex)

Lidocaine - PATCH:

- SBP ≥ 100 mmHg
- Unaltered LOA
- Use for regular wide complex tachycardia ≥ 120 bpm

Cardioversion - PATCH:

- **For unstable patients: SBP < 90 mmHg, altered LOA, ongoing chest pain, other signs of shock**
- Tachycardia ≥ 120 bpm (wide complex) OR ≥ 150 bpm (narrow complex)

Adult Doses (≥ 18 years of age)

Procedure	Initial Dose	Duration		Max dose
Valsalva (REVERT)	1 attempt	10 – 20 Seconds		2 attempts
Medication	**Initial Dose**	**Q**	**Repeat**	**Max dose**
Adenosine IV **PATCH** only if suspected SVT with aberrancy (wide complex)	6 mg	2 min	12 mg	2 doses
Lidocaine IV **PATCH**	1.5 mg/kg to maximum 150 mg	10 min	0.75 mg/kg to maximum 75 mg	3 doses
Cardioversion* **PATCH**	100 J	PRN	*200 J and then max energy	3 attempts

Notes:

*Administer synchronized cardioversion in accordance with **PATCH** orders.

The energy settings noted above are a guideline and would apply in the event of a **PATCH** failure.

Cardioversion

- **Attach** limb leads **AND Attach** defibrillation pads
- Cycle through leads and select the lead that shows the largest 'R' wave
- **Activate 'SYNC'** and ensure sync markers appear on the "R" waves (if visible)
- **Will say "synchronized cardioversion" on the monitor if in the correct setting.**
- Select the energy setting ordered
- Begin running printer (run lots of strips before and after cardioversion)
- Double check resuscitation equipment is prepared
- Charge the defibrillator

- Clear patient, **press-and-hold** 'SHOCK' until energy is delivered. After cardioversion, the monitor will automatically default out of ‘SYNC’ mode
- **Reassess patient and reactivate SYNC IF THE PATIENT STILL NEEDS TO BE CARDIOVERTED**

Tachydysrhythmia Treat and Discharge – IF AUTHORIZED

Indications

An ACP may **treat and discharge** a patient experiencing a tachydysrhythmia under these criteria

AND

if authorized to use this Medical Directive

Considerations for Treat and Discharge

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 < 100 bpm and the patient remains in NSR for at least 15 minutes post conversion,

AND……

Considerations for Treat and Discharge

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,
- 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,
- Patient or substitute decision maker consents to the discharge.

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

IV and Fluid Therapy

Indications

Actual or potential need for IV medication **OR** fluid therapy

Clinical Parameters

Cannulation:

- No fracture proximal to IV insertion site

Bolus:

- No signs of fluid overload-acute cardiogenic pulmonary edema
- Adult SBP < 90 mmHg
- Pediatric SBP < 70 mmHg + (2 x age in years).

Note: Formula should not produce a result that exceeds the normal adult normal value of 90 mmHg.

Note: Administer a fluid bolus until the patient is normotensive.

Adult Doses (≥ 12 years of age)

Medication	Initial Dose	Q	Repeat	Max dose
TKVO IV / IO / CVAD	30 - 60 ml/hr	N/A	N/A	N/A
Bolus IV / IO / CVAD	20 ml/kg	Reassess every 250 ml	N/A	2,000 ml

Pediatric Doses

Medication	Initial Dose	Q	Repeat	Max dose
TKVO IV/ IO / CVAD	15 ml/hr	N/A	N/A	N/A
Bolus IV / IO / CVAD	20 ml/kg	Reassess every 100 ml	N/A	2,000 ml

Notes:

PATCH to the BHP in the setting of a hypotensive DKA patient, less than 12 years of age, to determine the appropriate fluid bolus.

Central Venous Access Device (CVAD)

Indications
Actual or potential need for intravenous medication **OR** fluid therapy **AND** Intravenous access is unobtainable **AND** Patient is in cardiac arrest or pre-arrest state

Clinical Parameters	Contraindications
CVAD: Patient has a pre-existing, externally accessible central venous catheter in place	• Inability to confirm patency of CVAD • Inability to flush or aspirate • Injury or suspected fracture proximal to the access site • Swelling of the involved limb • Bleeding at the insertion site

Notes:

- Prepare equipment: two 10 ml syringes, one empty and one with 10 ml saline, alcohol swabs, a prepared IV infusion set, sterile gloves
- Close clamps
- Wipe med-port and luer lock with alcohol swab
- Remove med-port from luer lock
- Attach the empty syringe
- Open the clamp (if present)
- Withdraw whatever fluid is within the catheter and approx 2 ml of blood
- Close clamp and remove syringe
- Attach the syringe with saline
- Open the clamp, and slowly inject the saline using a push/pause technique. If resistance is met discontinue attempt
- Close clamp and remove syringe
- Attach the IV line
- Open clamp

- Run the IV as per normal, administering IV medications through the medication ports on the IV set

Pediatric / Adult Intraosseous

Indications
Actual or potential need for intravenous medication **OR** fluid therapy **AND** Intravenous access is unobtainable **AND** Patient is in cardiac arrest or near-arrest state

Clinical Parameters	Vital Sign Parameters
IO Initiation: No fracture or crush injuries or known replacement / prosthesis proximal to the access site	N/A

Notes:

Jamshidi / Cook:

< 1 year of age use an 18 gauge needle

> 1 year of age use a 15/16 gauge needle

EZ IO:

Pink 15 mm: 3-39 kg

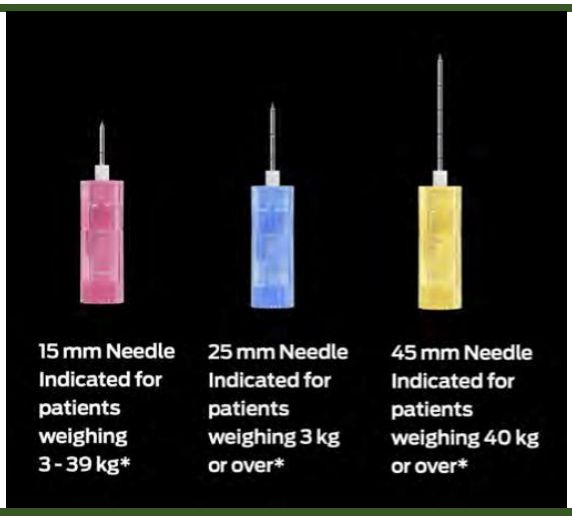
Blue 25 mm: ≥ 40 kg

Yellow 45 mm ≥ 40 kg

Or where excessive tissue exists over the insertion site

SAM IO

Sizing is the same as EZ-IO



Hypoglycemia

Indications
Suspected hypoglycemia

Clinical Parameters	Vital Sign Parameters
Altered LOA Hypoglycemia **IN Glucagon:** >=4 years old **Dextrose:** • Allergy or sensitivity to Dextrose	**Hypoglycemia:** • ≥ 2 yrs < 4.0 mmol/L • < 2 yrs < 3.0 mmol/L

Glucagon:
- No Pheochromocytoma
- No allergy or sensitivity to glucagon

In all cases Dextrose should be titrated to a level of awareness where the patient can safely consume complex carbohydrates.

All doses (Age ≥ 2 years old)

Medication		Max Single Dose	Q	Repeat	Max doses
D10W IV	0.2 g/kg (2 ml/kg)	25 g (250 ml)	10 min	0.2 g/kg (2 ml/kg)	2 doses
D50W IV	0.5 g/kg (1 ml/kg)	25 g (50 ml)	10 min	0.5 g/kg (1 ml/kg)	2 doses

Pediatric doses (Age < 2 years old)

Medication		Max Single Dose	Q	Repeat	Max doses
D10W IV	0.2 g/kg (2 ml/kg)	5 g (50 ml)	10 min	0.2 g/kg (2 ml/kg)	2 doses

All doses

Medication	Initial Dose	Q	Repeat	Max doses
Glucagon IM	< 25 kg (55lbs) 0.5 mg	20 min	0.5 mg	2 doses

Glucagon IM	≥ 25 kg 1 mg	20 min	1 mg	2 doses

IN Glucagon

Medication	Initial Dose	Q	Repeat	Max doses
Glucagon IN	3mg IN	20 min	3mg IN	2 doses

Notes:

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.

Intranasal glucagon is a powder that is supplied in a commercially available single-dose intranasal device.

Dextrose 10% in Water Reference

Age	Weight kg	Blood Sugar mmol/L	Dextrose prep	Initial and repeat doses		
				Dose g/kg	Vol. ml/kg	Amt ml
< 2 years old	2	**< 3.0**	D10W Mix 2 ml of D50W and 8 ml of sterile water in a 10 cc syringe equals **1 g/10 ml – suitable for up to 5 kg.** OR Waste 40 ml of D50W and replace w/ sterile water equals **5 g/50 ml**	**0.2**	2	4
	3				2	6
	4				2	8
	5				2	10
	6				2	12
	8				2	16
	10				2	20
	12				2	24

	14				2	28
	16				2	32

Hypoglycemia Treat and Discharge – <u>IF AUTHORIZED</u>

Indications

Patient has been treated appropriately under the Hypoglycemia Medical Directive

AND

An ACP, when authorized, **may discharge** a post hypoglycemic patient, according to the following:

Considerations for Treat and Discharge:

<u>All</u> of the following criteria must be met:

- ☐ The patient is ≥ 18 AND < 65 years old,
- ☐ The patient has a diagnosis of diabetes,
- ☐ The hypoglycemia is explained by insulin administration with inadequate oral intake,
- ☐ The hypoglycemia promptly responded to a single administration of Dextrose as per the Medical Directive and/or 1mg of Glucagon and/or consumed oral glucose or other complex carbohydrates,
- ☐ This is a single isolated episode of symptomatic hypoglycemia in the past 24 hrs,
- ☐ The blood glucose is ≥ 4.0 mmol/L after treatment,
- ☐ The patient has a return to their normal level of consciousness and is asymptomatic,
- ☐ A complete set of vital signs are within expected normal ranges,

AND….

Considerations for Treat and Discharge:

AND….

- Not an intentional overdose,
- The hypoglycemia must not be related to alcohol / 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,
- 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,
- Patient or substitute decision maker consents to the discharge.

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

Note: Patients can receive multiple forms of treatment for hypoglycemia (i.e., dextrose and glucagon before consuming carbohydrates). If the patient receives two doses of glucagon or two doses of dextrose, they should be transported to the hospital.

Seizure

Indications

Active generalized motor seizure

Clinical Parameters

- Unresponsive
- No allergy or sensitivity

Adult Doses

Medication	Initial Dose	Q	Repeat	Max doses
Midazolam IV / IO	0.1 mg/kg Max 5 mg	5 min	0.1 mg/kg Max 5 mg	2 doses
Midazolam IM / IN / Buccal	0.2 mg/kg Max 10 mg	5 min	0.2 mg/kg Max 10 mg	2 doses

Pediatric Doses

Medication	Initial Dose	Q	Repeat	Max
Midazolam IV / IO	0.1 mg/kg Max 5 mg	5 min	0.1 mg/kg Max 5 mg	2 doses
Midazolam IM / IN / Buccal	0.2 mg/kg Max 10 mg	5 min	0.2 mg/kg Max 10 mg	2 doses

Notes:

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.

Midazolam Reference

NOTE – prior to using the following chart for IN administration, ensure you know the amount of deadspace in your mucosal atomizer and add that to the volume calculated

Midazolam Dosing Chart					
Age	**Weight**	IV Dosage	IV **Volume**	IM/IN/Buccal Dosage	IM/IN/Buccal **Volume**
6 mo	7 kg	0.70 mg	0.14 ml	1.40 mg	0.28 ml
1 yr	10 kg	1.00 mg	0.20 ml	2.00 mg	0.40 ml
2	14 kg	1.40 mg	0.28 ml	2.80 mg	0.56 ml
3	16 kg	1.60 mg	0.32 ml	3.20 mg	0.64 ml
4	18 kg	1.80 mg	0.36 ml	3.60 mg	0.72 ml
5	20 kg	2.00 mg	0.40 ml	4.00 mg	0.80 ml
6	22 kg	2.20 mg	0.44 ml	4.40 mg	0.88 ml
7	24 kg	2.40 mg	0.48 ml	4.80 mg	0.96 ml
8	26 kg	2.60 mg	0.52 ml	5.20 mg	1.04 ml
9	28 kg	2.80 mg	0.56 ml	5.60 mg	1.12 ml
10	30 kg	3.00 mg	0.60 ml	6.00 mg	1.20 ml
11	35 kg	3.50 mg	0.70 ml	7.00 mg	1.40 ml
12	40 kg	4.00 mg	0.80 ml	8.00 mg	1.60 ml
13	45 kg	4.50 mg	0.90 ml	9.00 mg	1.80 ml
14	50 kg	5.00 mg	1.00 ml	10.00 mg	2.00 ml

Calculations are based on a 5 mg/ml concentration

Seizure Treat and Discharge - IF AUTHORIZED

Indications

An ACP, when authorized, **may discharge** a post seizure patient, according to the following:

Considerations for Treat and Discharge

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 has no changes to their prescribed medications in the previous 30 days.
- 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,
- A complete set of vital signs including temperature are within expected normal ranges,

AND….

Considerations for Treat and Discharge

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,
- 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,
- Patient or substitute decision maker consents to the discharge.

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

Opioid Toxicity

Indications

Altered LOC **AND**
Respiratory depression **AND**
Inability to adequately ventilate **OR** persistent need to ventilate **AND**
Suspected opioid overdose

Clinical Parameters

- Respiratory rate < 10 breaths/min
- No allergy or sensitivity
- Age greater than or equal to 24 hours
- Patient must have an altered LOA

≥ 24 hours old

Medication	Initial Dose	Q	Repeat	Max Doses
Naloxone IV	Up to 0.4 mg	5 min	Up to 0.4 mg	3 doses
Naloxone IM	0.4 mg	5 min	0.4 mg	3 doses
Naloxone SC	0.8 mg	5 min	0.8 mg	3 doses
Naloxone IN	2-4 mg	5 min	2-4 mg	3 doses

Notes:

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.

During IV titration, the desired clinical effects are respiratory rate ≥ 10, adequate airway and ventilation, not full alertness.

Some Common Opioids:
Morphine, Percodan, MS Contin, Oxycocet, Statex, Oxycontin, Hydromorphone, Tylenol #1, #2, #3, FentaNYL, Heroin, Percocet, Codeine

Endotracheal Intubation (Oral and Nasal)

Indications

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

Clinical Parameters

- No allergy or sensitivity to the medication considered
- If < 50 years old **AND** experiencing asthma exacerbation, **must be in or near cardiac arrest.**

Nasal ETT:

- ≥ 8 years old
- Not apneic
- No suspected basal skull or mid-face fracture
- No uncontrolled epistaxis
- Not on anticoagulant therapy (ASA excluded)
- No bleeding disorders

Lidocaine TOP	**Xylometazoline** TOP
• For nasal/oral ETT • Not used if patient is unresponsive	• Use for nasal ETT only

Adult Doses

Medication	Initial Dose	Q	Repeat	Max
Lidocaine TOP	10 mg/spray	N/A	N/A	5 mg/kg up to 20 sprays
Xylometazoline TOP	2 sprays / nare	N/A	N/A	1 dose

Confirmation Methods	Primary	Secondary
Confirm advanced airway placement	$ETCO_2$ (waveform capnography) **must** be used if available.	• $ETCO_2$ (non-waveform capnography) • Visualization (Oral) • Auscultation • Chest rise • Esophageal Detection Device

Notes:

Maximum number of ETT attempts is two.

An intubation attempt is defined as insertion of the laryngoscope blade into the mouth for the purposes of intubating the patient.

Must use $ETCO_2$ (waveform capnography) or at least 3 secondary methods. If paramedics are unable to achieve an end-tidal CO2 reading despite attempts to trouble-shoot equipment/confirm its placement, it is recommended to extubate the patient.

Consider FentaNYL and Midazolam (as per the Procedural Sedation Medical Directive) administration for this patient to maintain the tube.

Endotracheal tube placement must be reconfirmed immediately after every patient movement.

Supraglottic Airway

Indications
Need for ventilatory assistance **OR** airway control **AND**
Other airway management is ineffective

Clinical Parameters
Absent gag reflex
No airway obstruction by foreign object
No known esophageal disease (i.e., varices)
No trauma to the oropharynx
No caustic ingestion

Confirmation Methods	Primary	Secondary
Confirm advanced airway placement	$ETCO_2$ (waveform capnography) **must** be used if available.	• $ETCO_2$ (non-waveform capnography) • Auscultation • Chest rise

Notes:
Maximum number of supraglottic attempts is two.
An attempt is defined as the insertion of the supraglottic airway into the mouth.
Must use $ETCO_2$ (waveform capnography) or at least 2 secondary methods.
If paramedics can clear vomit in the airway, the supraglottic airway does not have to be removed.
ACPs can attempt two intubation attempts if it's indicated after two unsuccessful supraglottic airway attempts.

King LT Reference			
Size	**Colour**	**Patient**	**Amount of air in Cuff**
0	Clear	< 5 kg	10 ml
1	White	5 – 12 kg	20 ml
2	Green	12 – 25 kg	25 – 35 ml
2.5	Orange	25 – 35 kg	30 – 40 ml
3	Yellow	4 – 5 ft tall	45 – 60 ml
4	Red	5 – 6 ft tall	60 – 80 ml
5	Purple	≥ 6 ft tall	70 – 90 ml

iGel Reference		
Size	**Colour**	**Patient**
1	Pink	< 5 kg
1.5	Blue	5 – 12 kg
2	Grey	12 – 25 kg
2.5	White	25 – 35 kg
3	Yellow	30 – 60 kg
4	Green	60 – 90 kg
5	Orange	90 + kg

Bronchoconstriction

Indications

Respiratory distress **AND**
Suspected bronchoconstriction

Clinical Parameters

No allergy or sensitivity to any medication considered

Dexamethasone

- Not currently on PO or parenteral steroids
- Patient has history of asthma **OR** COPD **OR** 20 pack-year history of smoking

EPINEPHrine

- BVM ventilation is required
- Must have a history of asthma

Salbutamol

- N/A

Notes: PO or parenteral steroids are systemic steroids.
Systemic steroids (not an exhaustive list):
Prednisone
Hydrocortisone
Methlyprednisolone
Flovent is not-considered a systemic steroid. Topical or inhaled steroids are not contraindicated.

All doses

Medication	Weight	Initial Dose	Q	Repeat	Max doses
Salbutamol MDI	< 25 kg	600 mcg	5-15 mins	600 mcg	3 doses
Salbutamol NEB	< 25 kg	2.5 mg	5-15 mins	2.5 mg	3 doses

Salbutamol MDI	≥ 25 kg	800 mcg	5-15 mins	800 mcg	3 doses
Salbutamol NEB	≥ 25 kg	5 mg	5-15 mins	5 mg	3 doses

All doses

Medication	Initial Dose	Maximum Single Dose	Q	Repeat	Max doses
EPINEPHrine 1:1000 IM	0.01 mg/kg	0.5 mg	N/A	N/A	1 dose

*EPINEPHrine may be rounded to the nearest 0.05 mg

All doses

Medication	Initial Dose	Maximum Single Dose	Q	Repeat	Max doses
Dexamethasone PO / IM / IV **PO is the preferred route IM/IV routes should be reserved for patients that cannot tolerate PO.**	0.5 mg/kg	8 mg	N/A	N/A	1 dose

Notes:

EPINEPHrine should be the first medication administered if the patient is apneic

Salbutamol MDI may be administered subsequently using a BVM MDI adapter (if available).

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 (if available).

NOTES: Proper assembly of the BVM and the MDI aerochamber. The MDI must be in an upright position to be administered correctly.

Moderate to Severe Allergic Reaction

Indications

Exposure to a probable allergen **AND**

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

Clinical Parameters

No allergy or sensitivity to any medication

Consider EPINEPHrine use for anaphylaxis

DiphenhydrAMINE

- Weight must be ≥ 25 kg

Adult Doses

Medication	Initial Dose	Q	Repeat	Max doses
EPINEPHrine [1 mg/ml] IM	0.01 mg/kg Max 0.5 mg (0.5ml)	Min 5 min	same as initial	2 doses
DiphenhydrAMINE IV / IM	50 mg if ≥ 50 kg 25 mg if 25-49 kg	N/A	N/A	1 dose

Pediatric Doses

Medication	Initial Dose	Q	Repeat	Max doses
EPINEPHrine [1 mg/ml] IM	0.01 mg/kg Max 0.5 mg	Min 5 min	same as initial	2 doses
DiphenhydrAMINE IV / IM	25 mg if 25-49 kg	N/A	N/A	1 dose

Notes:

EPINEPHrine should be the first drug administered in anaphylaxis.

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

DiphenhydrAMINE is commonly referred to as Benadryl.

Dexamethasone **should not** be administered in the setting of a patient experiencing anaphylaxis and bronchoconstriction. It can lead to worse outcomes.

EPINEPHrine [1 mg/ml] 0.01 mg/kg – Rounded to the nearest 0.05 ml	
4 kg = 0.04 mg administer 0.05 ml	28 kg = 0.28 mg administer 0.3 ml
6 kg = 0.06 mg administer 0.05 ml	30 kg = 0.3 mg administer 0.3 ml
8 kg = 0.08 mg administer 0.1 ml	32 kg = 0.32 mg administer 0.3 ml
10 kg = 0.1 mg administer 0.1 ml	34 kg = 0.34 mg administer 0.35 ml
12 kg = 0.12 mg administer 0.10 ml	36 kg = 0.36 mg administer 0.35 ml
14 kg = 0.14 mg administer 0.15 ml	38 kg = 0.38 mg administer 0.4 ml
16 kg = 0.16 mg administer 0.15 ml	40 kg = 0.4 mg administer 0.4 ml
18 kg = 0.18 mg administer 0.2 ml	42 kg = 0.42 mg administer 0.4 ml
20 kg = 0.2 mg administer 0.2 ml	44 kg = 0.44 mg administer 0.45 ml
22 kg = 0.22 mg administer 0.2 ml	46 kg = 0.46 mg administer 0.45 ml
24 kg = 0.24 mg administer 0.25 ml	48 kg = 0.48 mg administer 0.5 ml
26 kg = 0.26 mg administer 0.25 ml	50 kg = 0.5 mg administer 0.5 ml

Croup

Indications

Current history of upper respiratory tract infection **AND**

Barking cough or recent history of barking cough

Clinical Parameters

≥ 6 months to < 8 years old
No allergy or sensitivity to medications being considered

EPINEPHrine
- Patient must have stridor at rest
- No allergy or sensitivity to EPINEPHrine
- Heart rate less than 200 beats per minute

Dexamethasone
- Unaltered LOA
- Can be administered for mild, moderate, and severe croup
- No steroids received within the last 48 hours
- Able to tolerate oral medications

Pediatric doses

Medication	Weight	Initial Dose	Max Single Dose	Repeat	Max
EPINEPHrine [1 mg/ml] NEB	< 10 kg	2.5 mg (2.5 ml)	2.5 mg	N/A	1 dose
EPINEPHrine [1 mg/ml] NEB	≥ 10 kg	5 mg (5 ml)	5 mg	N/A	1 dose
Dexamethasone PO	N/A	0.5 mg/kg	8 mg	N/A	1 dose

Notes:
Titrate nebulized epinephrine until you see misting of 6-8l/min of oxygen. Dexamethasone is only permitted PO for croup unless a Base Hospital patch is initiated. If patients are unable to tolerate oral medications/nebulized, a patch for different routes may be considered. Do not mix Dexamethasone in solutions (i.e., orange juice) for administration.

Tension Pneumothorax

Indications
Pre-arrest or VSA **AND** Absent or severely diminished breath sounds on the affected side(s)

Clinical Parameters	Vital Sign Parameters
N/A	Hypotensive **OR** VSA

Notes:

Needle thoracostomy may be performed at the 4th intercostal space anterior axillary line **(preferred)** OR the 2nd intercostal space in the midclavicular line **for adults**

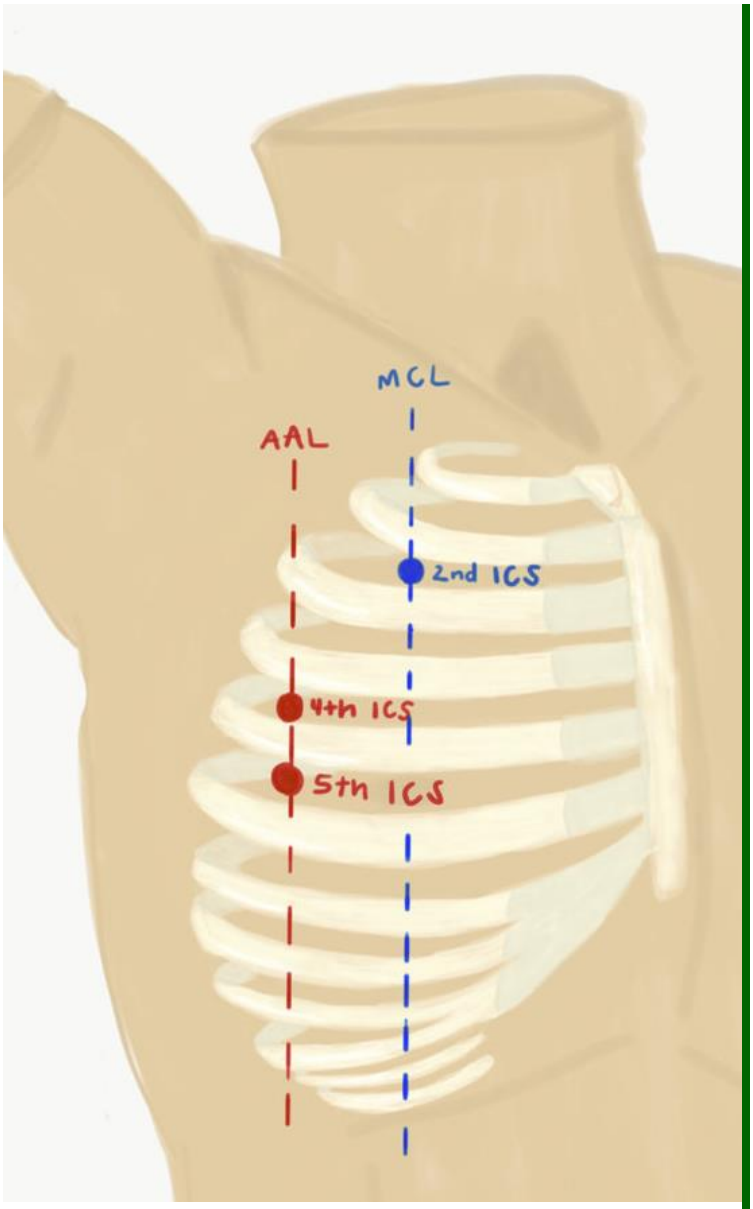
2nd IC space landmarking

Using three finger widths (average adult fingers) from the centre of the sternum provides an accurate, easy to remember, vertical landmark. The rib adjacent to the Angle of Louis is the second rib. The space below the second rib is the second intercostal space. This is the horizontal landmark.

4th IC space landmarking

The crease of the 'armpit' is the anterior axillary line, this is the vertical landmark. The rib adjacent to the Angle of Louis is the second rib, count down two subsequent ribs to the fourth rib. The space below the fourth rib is the fourth intercostal space. This is the horizontal landmark.

Pediatric site: 4th intercostal space anterior axillary line
If a patient is ≥ years old or a typical sized adult, a 12g and/or 14g needle with a minimal length (2.5inches) can be used.
If a patient is <13 years old, a 14g or 16g (1.5inch needle) should be used.



Analgesia

Indications
Pain

Medication	Clinical Parameters	Contraindications
Acetaminophen	• ≥ 12 years old • Unaltered	• Acetaminophen use within previous 4 hours • Allergy or sensitivity to acetaminophen • Active vomiting • Hx of liver disease • Suspected ischemic chest pain • Unable to tolerate oral medication
Ibuprofen	• ≥ 12 years old • Unaltered	• NSAID use within previous 6 hours • Allergy or sensitivity to ASA or NSAIDs • Current active bleeding • Patient on anticoagulation therapy (not antiplatelet therapy) • Hx of peptic ulcer disease or GI bleed • If asthmatic, no prior use of ASA or other NSAIDs • Active vomiting • Known renal impairment • CVA or TBI in the previous 24 hours • Unable to tolerate oral medication • Suspected Ischemic chest pain • Pregnant

Medication	Clinical Parameters	Contraindications
Ketorolac	• ≥ 12 years old • Unaltered • Normotension	• NSAID use within previous 6 hours • Current active bleeding • Allergy or sensitivity to ASA or NSAIDs • Patient on anticoagulation therapy (not anti-platelet therapy) • If asthmatic, no prior use of ASA or • other NSAIDs • Hx of peptic ulcer disease or GI bleed • Known renal impairment • Suspected ischemic chest pain • Pregnant • CVA or TBI in the previous 24 hours
Morphine	• ≥ 1 years old • Unaltered • Normotension	• 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	• ≥ 1 years old • Unaltered • Normotension	• Treatment of headache • SBP drops by one-third or more of its initial value after fentaNYL is administered • Allergy or sensitivity to fentaNYL • Active labour • Treatment of chronic pain • Cannot be used for suspected ischemic chest pain

Adult Doses

Medication	Age	Initial Dose	Max Single Dose	Q	Max Cumulative Dose	Max Doses
Acetaminophen PO	≥ 18	960-1000 mg	1000 mg	N/A	N/A	1
Ibuprofen PO	≥ 12	400 mg	400 mg	N/A	N/A	1
Ketorolac IM / IV	≥ 12	10-15 mg	15 mg	N/A	N/A	1
Morphine IV / SC	≥ 18	2-10 mg	10 mg	15 min	20 mg	N/A
FentaNYL IV / IN	≥ 18	25-75 mcg	75 mcg	5 min	200 mcg	N/A

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

Pediatric Doses

Medication	Age	Initial Dose	Max Single Dose	Q	Max Cumulative Dose	Max Doses
Acetaminophen PO	≥ 12 to < 18	500-650 mg	650 mg	N/A	N/A	1
Morphine IV / SC	≥ 1 to < 18	0.05-0.1 mg/kg	5 mg	15 min	10 mg	N/A
FentaNYL IV / IN	≥ 1 to < 18	up to 1 mcg/kg	75 mcg	5 min	200 mcg	N/A

Notes:

Consider co-administration of acetaminophen and Ibuprofen.
Consider renal colic patients for an NSAID and Morphine or FentaNYL.
Exercise caution when using narcotics in opioid naïve patients and patients ≥ 65 years old as they may be more sensitive to dosages.
Consider administering IV medication in smaller aliquots q 3 min, when larger doses of Morphine or FenaNYL are administered IV.
FentaNYL **should not be used** in combination with Morphine unless authorized by BHP.
The maximum volume of FentaNYL that may be administered IN is 1 mL per nare.

Nausea / Vomiting

Indications

Nausea and/or Vomiting

Clinical Parameters

Ondansetron

- No allergy or sensitivity to ondansetron
- No prolonged QT syndrome known to the patient
- No Apomorphine (Apokyn) use
- Unaltered

DimenhyDRINATE

- No allergy of sensitivity to DimenhyDRINATE or other antihistamines
- No overdose on antihistamines, anticholinergics, or tricyclic antidepressants
- Cannot be co-administered with DiphenhydrAMINE
- Unaltered
- **≥ 65 years and Ondansetron unavailable. "Unavailable" means the service is unable to procure or receive their stock and the medication is physically unavailable for your use.**

All doses

Medication	Weight	Dose	Q	Max doses
DimenhyDRINATE IV/IM	≥ 50 kg	50 mg	N/A	1 dose
DimenhyDRINATE IV/IM	25 to 49 kg **OR** age ≥ 65 years	25 mg	N/A	1 dose
Ondansetron PO	≥ 25 kg	4 mg	N/A	1 dose

Notes:
If a patient has received Ondansetron and has no relief of their nausea & vomiting symptoms after 30 minutes, DimenhyDRINATE may be considered. The reverse situation is also applicable. **However, this rule does not apply for the ≥65 year old age group because it does not meet the clinical parameters. A patch would be warranted at this time for more ondansetron and/or DimenhyDrinate administration.** If administering IV, **dilute** DimenhyDRINATE with 9 ml normal saline to a 50 mg in 10 ml solution.
Overdose medications that contraindicate DimenhyDRINATE administration. **This is not an exhaustive list**
Antihistamines
Actifed, **Astemazole** (Hismanal), **Azatdine** (Zadine), **Cetirizine** (Zyrtec, Reactine), **Chlorpheniramine** (Chlor-Trimeton, chlortripalon), **Clemastine** (Periactin), **Dexchlorpheniramine**, **Desloratadine** (Clarinex), **DimenhyDRINATE** (Dramamine), **DiphenhydrAMINE** (Benadryl), **Fexofenadine** (Allegra), **Hydroxyzine** (Atarax, Vistaril), **Loratadine** (Claritin, Alavert), **Phenothiazines**, **Promethazine** (Phenergan), **Piperzanes**, **Terfenadine** (Seldane)
Tricyclic Antidepressants (TCA)
Amitriptyline (Elavil, Ednep, Vanatrip), **Clomipramine** (Anafranil), **Desipramine** (Norpramin), **Doxepin** (Sinequan, Adapin, Silenor), **Nortriptyline** (Aventyl, Pamelor), **Protriptyline** (Vivactil), **Trimipramine** (Surmontil)
Anticholinergics

Atropine, **Hyoscine**, **Glycopyrrolate** (Robinul), **Ipratropium** (Atrovent), **Oxybutinin** (Ditropan, Lyrinel XL), **Oxitropium** (Oxivent), **Tiotropium** (Spiriva)

Hyperkalemia

Indications

Suspected hyperkalemia in high risk patient (dialysis; end-stage renal disease; other reason e.g. Crush injury)
AND
Cardiac arrest **OR** pre-arrest with 12 lead ECG changes suggestive of hyperkalemia

Clinical Parameters	Contraindications
N/A	Allergy or sensitivity to considered medication.

Consider 12 lead acquisition and interpretation

Adult Doses (≥ 18 years of age)

Medication	Initial Dose	Q	Repeat	Max doses
Calcium Gluconate IV / IO / CVAD	1 g (10 ml) over 2-3 minutes	5 min	Same as initial	2 doses*
Salbutamol MDI / NEB	1600 mcg 16 puffs OR 10 mg NEB	Immediate	Same as initial	2 doses

* **A 3rd dose of Calcium Gluconate** may be administered after 30 minutes if the patient improved initially and then the symptoms meeting the indications recur or if ECG changes do not improve, or if they worsen.

Notes:

The pre-arrest patient would present with one or more of the following symptoms: hypotension, altered LOA, or symptomatic bradycardia.

12-lead changes associated with 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.
Administer both Calcium Gluconate and Salbutamol whenever possible.
Do not administer Calcium and Sodium Bicarbonate without flushing well in between.

Combative Patient

Indications

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

Clinical Parameters

Midazolam Conditions

- ≥ 18 years of age
- Allergy or sensitivity to Midazolam

Ketamine Conditions

- For Ketamine, a patient suffering from suspected excited delirium or severe violent psychosis

Contraindications

- Allergy or sensitivity to Ketamine

Midazolam

Medication	Dose	Max Single Dose	Q	Max. cumulative dose	Max doses
Midazolam IV / IM / IN	Up to 0.1 mg/kg	5 mg	5 minutes	10 mg	N/A

Ketamine

Medication	Age	Dose	Max Single Dose	Q	Max doses

Ketamine IM	≥ 18 years to < 65 years	5 mg/kg	500 mg	N/A	1 dose
Ketamine IM	≥ 65 years	3 mg/kg	300 mg	N/A	1 dose

Notes:

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 may administer lower weight based dose (e.g. 0.05 mg/kg) of midazolam based on clinical judgement (e.g., due to patient age, degree of combativeness, level of suspicion of hypotension or hypoxia).

Do **not** co-administer Midazolam and Ketamine unless direction to do so, is received from the BHP.

Consider applying $ETCO_2$ monitoring once the patient has been sedated.

If Ketamine emergence reaction develops, a BHP patch is required if further sedation is needed.

Maximum single IM injection to be limited to 5 ml in the vastus lateralis.Two syringes will be warranted for patient's needing to receive more than 250mg of ketamine.

Home Dialysis Emergency Disconnect

Indications

Patient connected to home dialysis **AND**

Requires transport to a receiving facility

Clinical Parameters

Patient must be unable to disconnect themselves **AND** no caregiver who is knowledgeable in how to disconnect is present.

Interventions

Disconnect

Notes:

In general, the instructions will be found with the machine.

Sequence:

- Ensure the **patient side** is clamped first, and
- then the machine side, and
- then the tubing can be disconnected **between** the clamps.

Suspected Adrenal Crisis

Indications

Patient with primary adrenal failure who has signs of an adrenal crisis

Clinical Parameters

Paramedics are presented with a vial of Hydrocortisone for the identified patient **AND** no allergy or sensitivity to Hydrocortisone **AND** any of the following:

- Age-related hypoglycemia, or
- GI symptoms (vomiting, diarrhea, abdominal pain), or
- Syncope, or
- Temperature ≥ 38C or suspected / hx of fever, or
- Altered LOA, or
- Age related hypotension, or
- Age related tachycardia

All Doses

Medication	Initial Dose	Q	Repeat	Max doses
Hydrocortisone IM / IV / IO / CVAD	2 mg/kg Max 100 mg	N/A	N/A	1 dose

Notes:

Hydrocortisone has a common trade name of Solu-cortef.
Dose may be rounded to the nearest 10 mg.
All patients need to be transported.
Ensure the medication label is examined carefully for its concentration.
Hydrocortisone may be premixed or it may come in an ACT-O-VIAL® system.
To use the ACT-O-VIAL®:
1. Press down on plastic top to force diluent into the lower compartment
2. Gently agitate to effect solution
3. Remove plastic tab covering center of stopper
4. Sterilize top of stopper with alcohol

5. Insert needle through center of stopper and withdraw the appropriate dose / volume

Emergency Childbirth

Indications

Pregnant patient experiencing labour **OR** immediately following delivery

Clinical Parameters

For all considerations, patient must be of childbearing years.

Delivery

- Second stage labour and/or imminent birth AND/OR:
  - Shoulder dystocia
  - Breech delivery
  - Prolapsed cord

Umbilical Cord Management

- Cord complications OR if newborn or maternal resuscitation is required OR due to transport considerations

Oxytocin

- Postpartum delivery AND/OR placental delivery
- No allergy or sensitivity to oxytocin
- All fetuses have been delivered
- SBP < 160 mmHg
- No suspected or known preeclampsia with current pregnancy
- No eclamptic seizures with current pregnancy
- ≤ 4 hours post placenta delivery

  Note: The placenta does not have to be delivered to receive oxytocin

External Uterine Massage

- Post-placental delivery

Adult doses

Medication	Initial Dose	Q	Repeat	Max

Oxytocin IM	10 units	N/A	N/A	1 dose

Interventions

Shoulder Dystocia

- Perform ALARM twice on scene. If successful, delivery the neonate. If unsuccessful, transport to closest appropriate facility

Breech Delivery

- Hands off the breech. Allow neonate to deliver to the umbilicus
- Consider carefully releasing the legs & arms as they are delivered, if needed
- Once hairline is visible **AND/OR** 3 minutes has passed since umbilicus was visualized, attempt Mauriceau Smellie-Veit maneuver
- If successful, delivery the neonate. If unsuccessful, transport to closest appropriate facility

Prolapsed Cord

- Elevate fetal part to relieve pressure on the cord
- Assist patient to the knee-chest or exaggerated Sims position
- Insert gloved fingers/hand into the vagina and apply gentle manual digital pressure to the presenting part; this is maintained until transfer of care

Postpartum Hemorrhage - Pre-Placental Delivery

- If the placenta **has not** yet been delivered, consider:
  - Gentle cord traction while guarding the uterus
  - Bimanual compression if bleeding continues

Postpartum Hemorrhage - Post-Placental Delivery

- If the placenta **has been delivered**, consider:
  - External uterine massage while guarding the uterus
  - Encouraging patient to void bladder
  - Bimanual compression if bleeding continues

Notes:

Oxytocin would not be indicated for a miscarriage <20 weeks. Oxytocin receptors are very low before 20 weeks gestation and it is unlikely to be effective. A patch could be considered after 20 weeks gestation.

Consider an intravenous fluid bolus if indicated with a combination of the above treatments for post-partum hemorrhage.

Endotracheal and Tracheostomy Suctioning

Indications

Patient with an ETT or trach tube **AND**
The airway is obstructed, or increased secretions are present

Clinical Parameters

Emergency Tracheostomy Reinsertion

- Patient with an existing tracheostomy where the inner 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.
- Paramedics must have the ability to landmark or visualize

Suction

Patient	Initial Suction Pressure	Q	Repeat	Max doses
Infant	60 – 100 mmHg	1 min	Same as initial	N/A
Child	100 – 120 mmHg	1 min	Same as initial	N/A
Adult	100 – 150 mmHg	1 min	Same as initial	N/A

Notes:

Suctioning

- Before each suctioning procedure, pre-oxygenate with 100% oxygen.

- Do not exceed 10 seconds duration of suction application.
- Apply suction only during withdrawal.

Emergency Tracheostomy Reinsertion:

- The maximum number of attempts for emergency tracheostomy reinsertion is two.
- An 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.

Continuous Positive Airway Pressure (CPAP)

Indications

Severe respiratory distress **AND**

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

Clinical Parameters

- Able to sit upright and cooperate
- Respiratory rate ≥ 28 breaths/minutes
- SpO_2 < 90% OR accessory muscle use
- SBP ≥ 100
- Not asthma exacerbation
- Stable or protected airway
- Not suspected pneumothorax
- No major trauma or burns to the head or torso
- No tracheostomy

Adult Doses (≥ 18 years of age)

Initial setting	Titration increment	Titration interval	Max setting
5 cm H_2O	2.5 cm H_2O	5 min	15 cm H_2O

If the device has adjustable FiO_2, start at the lower setting and only increase if SpO_2 remains < 92% despite treatment and / or CPAP pressure of 10 cmH_2O

Bousignac:

Notes:

CPAP is no longer reserved for those patients with acute cardiogenic pulmonary edema. CPAP can be used for patients experiencing pulmonary edema (regardless of the origin). CPAP can be beneficial for a variety of different causes of pulmonary edema.

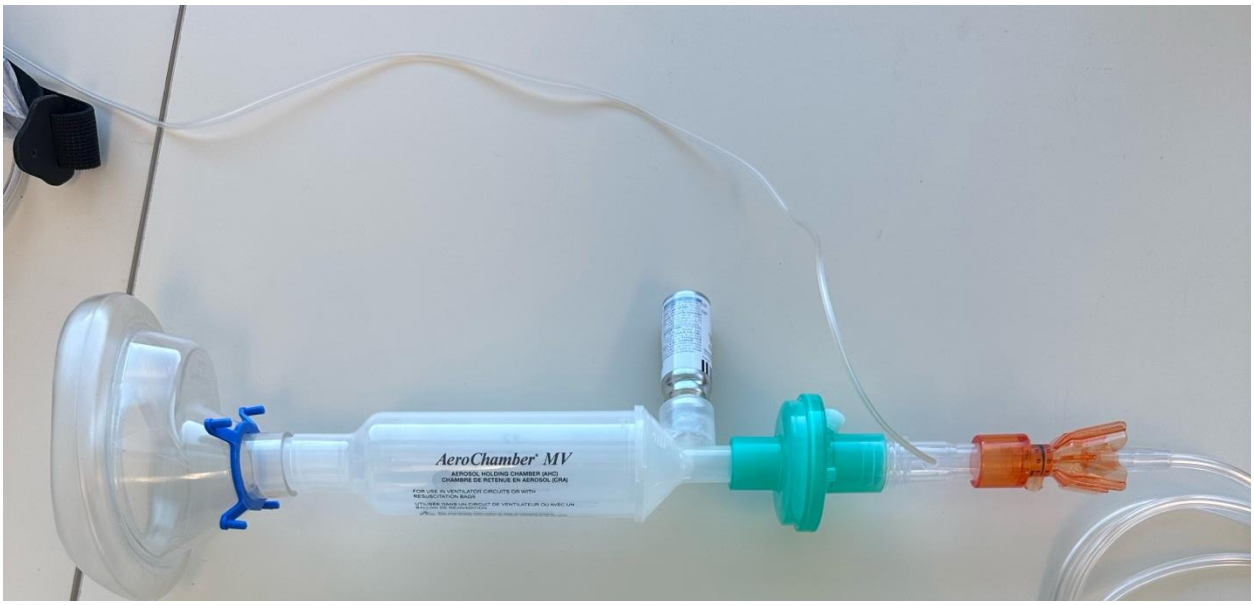
CPAP (Boussignac) settings:

8l/min=5 cmH_2O

10l/min=8 cmH_2O (accepted titration for the CPAP model)

12l/min=10 cmH_2O

15lmin= 15 cmH_2O



NOTES: Proper assembly of CPAP and the MDI aerochamber.

Procedural Sedation

Indications

Post-intubation **OR**

Transcutaneous pacing.

Clinical Parameters

- No allergies or sensitivity to any considered medication
- SBP ≥ 100 mmHg
- Respiratory rate ≥ 10 breaths/min (unless intubated)

Adult Doses (≥ 18 years of age)

Medication	Dose	Max Single Dose	Q	Max Cumulative Dose
FentaNYL IV / IO / CVAD / IN	25-75 mcg	75 mcg	5 min	150 mcg
Midazolam IV / IO / CVAD / IN	up to 0.1 mg/kg	5 mg	5 min	10 mg

Notes:

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

Consider quantitative $ETCO_2$ monitoring once the patient has been sedated.

Both medications should be considered based on their different mechanisms.

Hydrofluoric (HF) Acid Exposure

Indications

Exposure to vapour and/or liquid Hydrofluoric acid (HF) **AND**

Exhibits signs and symptoms of HF poisoning

Clinical Parameters

- No allergy or sensitivity to any medication considered

All doses

Medication	Initial Dose	Q	Repeat	Max doses
Calcium Gluconate (10% solution) Inhalation exposure NEB	100 mg	N/A	N/A	1 dose
Calcium Gluconate (2.5% gel) Skin exposure TOP	N/A	N/A	PRN	N/A
Anaesthetic Eye Drops TOP	2 gtts/eye	10 min	2 gtts/eye	N/A

Notes:

For skin contact, ensure thorough irrigation prior to treatment.

For eye exposure, remove patient's contact lenses, if applicable, prior to initiating treatment. Use Anaesthetic eye drops for comfort and then irrigate eyes with normal saline for at least 15 minutes.

Treatment initiated by onsite staff may be continued enroute to hospital.

Cyanide Exposure

Indications

Suspected exposure to cyanide with signs and symptoms of poisoning

AND

Cardiac arrest; or

Altered level of awareness; OR

Hypotension

Clinical Parameters

- Altered LOA
- No allergies or sensitivity to any medication considered

Adult Dose (≥ 18 years of age)

Medication	Initial Dose	Q	Repeat	Max doses
Hydroxocobalamin IV/IO/CVAD	5g over 15 – 30 min	N/A	N/A	1 dose

Pediatric Doses

Medication	Initial Dose	Q	Repeat	Max doses
Hydroxocobalamin IV/IO/CVAD	70 mg/kg over 30 min Max single dose of 5 g	N/A	N/A	1 dose

Notes:

Hydroxocobalamin must be reconstituted with 200 ml normal saline prior to administration.

Hydroxocobalamin Dosing Chart – Pediatric

Weight (kg)	Dose	Concentration	Volume
5	350mg/kg	25 mg/ml	14 ml
10	700mg	25 mg/ml	28 ml
15	1050mg	25 mg/ml	42 ml
20	1400mg	25 mg/ml	56 ml
25	1750mg	25 mg/ml	70 ml
30	2100mg	25 mg/ml	84 ml
35	2450mg	25 mg/ml	98 ml
40	2800	25 mg/ml	112 ml
≥41	5g	25 mg/ml	200ml

Assessments of Patients with Possible COVID-19 – IF AUTHORIZED

Indications

Confirmed COVID-19 / suspected COVID-19 with mild acute respiratory illness characterized by a combination of 2 or more of the following:
fever, new onset of cough, worsening chronic cough, shortness of breath or difficulty breathing, sore throat, runny nose/nasal congestion (without any known cause).
AND
The crisis is straining the resources of the host community

Clinical Parameters

Patient Disposition:

- ≥ 18 years to < 65 years
- Unaltered LOA
- HR is < 110 bpm
- RR is < 22 breaths/min
- Patient is normotensive
- CTAS 3, 4 or 5
- SpO2 ≥ 94%
- If temperature ≥ 38 ° C, does not appear septic/unwell
- Patient and/or substitute decision maker demonstrate decision-making capacity based on the Aid to Capacity Evaluation Tool
- Patient is not pregnant

Nasopharyngeal OR nasal OR pharyngeal swab

- ≥ 18 years
- Patient is being released from care **AND** meets COVID-19 testing criteria **OR** as requested by local Public Health
- Patient has no recent significant facial trauma (all)
- No current epistaxis **OR** significant abnormality of the nasal anatomy (nasopharyngeal or nasal swab)
- No significant abnormality of the oral anatomy (pharyngeal swab)

Treatment – Mandatory BHP patch

Consider patient disposition * (if authorized)	
Transport to closest most appropriate emergency department	**Consider release from care (following BHP patch)**
CTAS 1 & 2 CTAS 3 with comorbidity or immunocompromise	**CTAS 3 with mild or no respiratory distress (without comorbidity/immunocompromise)** **CTAS 4 & 5 without immunocompromise**

Notes:

*Assess for safety to remain at home including clinical criteria above, and the following: Patient is unaltered, the patient can self-isolate, the patient has access to food, phone, and other necessities, and appropriate caregivers are available (if needed).

Prior to a release from care, the patient and/or SDM must be provided with contact information for their Local Public Health Unit, education on self-isolation and symptom management, and information for accessing assessment centres.

Paramedics must document these instructions and patient and/or SDM consent to the plan of care in the remarks section of the Ambulance Call Report. Advise the patient that if the problem persists or worsens they should seek further medical attention.

Consider obtaining nasopharyngeal **OR** nasal **OR** pharyngeal swab (if available and authorized). If swab obtained, complete the lab requisition and transport the specimen as per local arrangement.

Clinical Considerations:

Base Hospital Physician Patch:

When a patch is made to the BHP, the Paramedic will provide the following: patient's COVID-19 screening result, history of illness and symptoms, all past medical history, vital signs, and assessment findings, in addition to patient and/or SDM's wishes, and follow-up plans (if known).

Immunocompromised definition:

Patient or caregiver states immunocompromised, cancer treatment within past 6 weeks, HIV/AIDS, organ transplant patient, substance-use disorder, and any immunosuppressive medications.

Comorbidity definition:

Hypertension, cardiovascular disease, cerebrovascular disease, diabetes, chronic lung disease, chronic kidney disease, immunocompromised.

Mild Respiratory Distress definition:

Patient may report dyspnea on exertion, but there is mild or no increased work of breathing, patient able to speak in sentences, and RR < 22 breaths/min AND SpO2 ≥ 94%.

Headache (Special Events Only)

Indications

Uncomplicated headache conforming to the patient's usual pattern

Clinical Parameters

- ≥ 18 years old
- Unaltered LOA
- No allergy or sensitivity to Acetaminophen
- No Acetaminophen in the last 4 hours
- No signs or symptoms of intoxication

Adult Doses (≥ 18 years of age)

Medication	Initial Dose	Q	Repeat	Max doses
Acetaminophen PO	325 – 650 mg	N/A	N/A	1 dose

Notes:

The Special Event Medical Directives are in force when they have been preauthorized for use by the Medical Director.

Special Event: a preplanned gathering with potentially large numbers of people.

Consider release from care.

Advise patient that if the problem persists or worsens that they should seek further medical attention.

Minor Abrasion (Special Events Only)

Indications

Minor abrasions

Clinical Parameters

- ≥ 18 years old
- Unaltered LOA
- No allergy or sensitivity to topical antibiotics

Adult Doses (≥ 18 years of age)

Medication	Initial Dose	Q	Repeat	Max doses
Topical Antibiotic	N/A	N/A	N/A	1 dose

Notes:

The Special Event Medical Directives are in force when they have been preauthorized for use by the Medical Director.

Special Event: a preplanned gathering with potentially large numbers of people.

Consider release from care

Advise patient that if the problem persists or worsens that they should seek further medical attention

Minor Allergic Reaction (Special Events Only)

Indications

Signs consistent with minor allergic reaction

Clinical Parameters

- ≥ 18 years old
- Unaltered LOA
- SBP ≥ 100 mmHg (and other vital signs within normal limits)
- No allergy or sensitivity to DiphenhydrAMINE
- No antihistamine or sedative use in the previous 4 hours
- No signs or symptoms of a moderate to severe allergic reaction
- No signs or symptoms of intoxication
- No wheezing

Adult Doses (≥ 18 years of age)

Medication	Initial Dose	Q	Repeat	Max doses
DiphenhydrAMINE PO	50 mg	N/A	N/A	1 dose

Notes:

The Special Event Medical Directives are in force when they have been preauthorized for use by the Medical Director.

Special Event: a preplanned gathering with potentially large numbers of people.

Consider release from care.

Advise patient that if the problem persists or worsens that they should seek further medical attention.

Musculoskeletal Pain (Special Events Only)

Indications

Minor musculoskeletal pain

Clinical Parameters

- ≥ 18 years old
- Unaltered LOA
- No allergy or sensitivity to Acetaminophen
- No Acetaminophen use in the previous 4 hours
- No signs or symptoms of intoxication

Adult Doses (≥ 18 years of age)

Medication	Initial Dose	Q	Repeat	Max doses
Acetaminophen PO	325 – 650 mg	N/A	N/A	1 dose

Notes:

The Special Event Medical Directives are in force when they have been preauthorized for use by the Medical Director.

Special Event: a preplanned gathering with potentially large numbers of people.

Consider release from care.

Advise patient that if the problem persists or worsens that they should seek further medical attention.

Palliative Care - PAIN OR DYSPNEA

Indications

Patient registered in palliative care program, **AND**

Uncontrolled pain or dyspnea, **OR** Uncontrolled dyspnea with suspected bronchoconstriction

Clinical Parameters

Morphine:

- No Allergy
- ≥ 18 years old

Hydromorphone:

- No Allergy
- ≥ 18 years old

Salbutamol:

- No Allergy
- ≥ 18 years old
- Only for dyspnea with suspected bronchoconstriction

Adult doses

Medication	Dose	Max single dose	Q	Repeat	Max doses
Morphine SC / IV / CVAD	2-10 mg	10 mg	15 min	Same as initial	4 doses
Hydromorphone SC / IV / CVAD	0.5-2 mg	2 mg	15 min	Same as initial	4 doses
Salbutamol MDI	800 mcg (8 puffs)	800 mcg (8 puffs)	5-15 min	Same as initial	3 doses
Salbutamol NEB	5 mg	5 mg	5-15 min	Same as initial	3 doses

Notes:

If orders are available for the patient, either Morphine or Hydromorphone may be administered within the range specified above per the emergency orders. Any dose outside the range specified must be confirmed by a Base Hospital Physician prior to administration.

If there are no orders available or patients are opioid naive, the lower range 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 opioid 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 to bronchoconstriction.

Palliative Care - HALLUCINATIONS OR AGITATION

Indications

Patient registered in palliative care program
AND
Increasing agitation or suspected new or increased hallucinations

Clinical Parameters

Haloperidol:
- ≥ 18
- No allergy to haloperidol
- Does not have Parkinson's or Lewy Body Dementia
- Does not have Neuroleptic Malignant Syndrome

Midazolam
- ≥ 18
- No allergy to Midazolam

Adult doses

Medication	Dose	Max single dose	Q	Repeat	Max doses
Haloperidol SC / IV / CVAD	0.5-1 mg	1 mg	30 min	Same as initial	2 doses

Adult doses

Medication	Dose	Max single dose	Q	Repeat	Max doses
Midazolam SC / IV / CVAD	0.5-2 mg	2 mg	30 min	Same as initial	2 doses

Notes:

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

Palliative Care - NAUSEA OR VOMITING

Indications

Patient registered in palliative care program
AND
Nausea and/or vomiting

Clinical Parameters

Haloperidol:
- ≥ 18 years old
- No allergy or sensitivity
- Does not have Parkinson's or Lewy Body Dementia
- Does not have Neuroleptic Malignant Syndrome

Ondansetron:
- ≥ 18 years old
- No allergy or sensitivity
- Haloperidol contraindicated

DimenhyDRINATE:
- ≥ 18 years old
- No allergy or sensitivity
- Haloperidol contraindicated
- No overdose on antihistamines, anticholinergics or tricyclic antidepressants

Adult doses

Medication	Dose	Max single dose	Q	Repeat	Max doses
Haloperidol SC / IV / CVAD	0.5-1 mg	1 mg	30 min	Same as initial	2 doses
Ondansetron PO / SC / IV / CVAD	4 mg	4 mg	N/A	N/A	1 dose
DimenhyDRINATE SC / IV / CVAD	25-50 mg	50 mg	N/A	N/A	1 dose

Notes:

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 and where Ondansetron cannot be used.

Palliative Care - TERMINAL CONGESTED BREATHING

Indications

Patient registered in palliative care program

AND

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

Clinical Parameters

Glycopyrrolate:

- ≥ 18 years old
- No allergy or sensitivity

Atropine

- ≥ 18 years old
- No allergy or sensitivity

Adult doses

Medication	Dose	Max single dose	Q	Repeat	Max
Glycopyrrolate SC / IV / CVAD	0.4 mg	0.4 mg	N/A	N/A	1 dose

Adult doses

Medication	Dose	Max single dose	Q	Repeat	Max
Atropine SC / IV / CVAD	0.4 mg	0.4 mg	N/A	N/A	1 dose

Notes:

Re-positioning the patient's head with gentle turning to the side, may be just as effective instead of administering medication.

Suction of the oropharynx is not appropriate as it will likely cause discomfort and a gag reflex

Palliative Care - TREAT AND REFER

Indications

Patient registered in palliative care program, **AND**
Symptoms improved to patients/SDM satisfaction, **AND**
After informed discussion patient/SDM preference to remain home

Clinical Parameters

- ≥ 18
- Valid DNR: registered in Paramedic Palliative Care Program
- No concerns of patient abuse or neglect
- Patient and SDM demonstrate decision making capacity based on the Aid to Capacity Evaluation Tool
- No uncontrolled or new seizures

Treat and Refer

Paramedics may 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 patients palliative care team. `

Notes:

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 obstruction
- Airway Obstruction
- Suspected new pathological fracture

If patients do not meet the treat and refer conditions, paramedics should patch to a BHP, follow the patient refusal standard and document appropriately.

ADDITIONAL NOTES:

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