ONTARIO BASE HOSPITAL GROUP

REFERENCE AND EDUCATIONAL NOTES

Companion Document for the Advanced Life Support Patient Care Standards

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ONTARIO
BASE HOSPITALS

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Medicine is a discipline in which no two situations are the same. Every patient must be thoroughly assessed and decisions are to be made based on the caregiver's interpretation. The goal of the provincial Advanced Life Support Patient Care Standards (ALS PCS) is to provide guidance for certain clinical scenarios that fall within the scope of practice of Ontario Paramedics. That being said, no directive is all encompassing and cannot provide guidance for each and every situation encountered.

The Ontario Base Hospital Group (OBHG) has purposefully reformatted the ALS PCS in order to provide Paramedics with a succinct yet practical reference book that provides the ability to obtain information quickly. As such, many of the previously found detailed clinical notes and references have been omitted from the ALS PCS and have been placed into this companion document to provide intent and clarification regarding the application of the directives. Much of the information contained herein was generated as a result of the many "Frequently Asked Questions" received following the implementation of the ALS PCS in 2011.

This companion document should be used as a reference tool to further appreciate the applicability of the Medical Directives within the ALS PCS. In an attempt to standardize Paramedic education and certification provincially, this document further provides guidance for scenarios that historically have had differing treatments across Ontario Regional Base Hospital Programs. The provincial Medical Advisory Committee's (MAC) consensus and best practice approach to these unique scenarios are highlighted within this document.

PREAMBLE

The Medical Directives apply to paramedics who provide patient care under the license and/or authority of the Regional Base Hospital (RBH) Program Medical Director. Delegation of controlled acts or Medical Directives in the ALS PCS to paramedics falls under the exclusive oversight of the MOHLTC's RBH Programs.

The Medical Directives are designed to guide a paramedic in the provision of timely and appropriate care to ill and/or injured patients in the prehospital setting, in accordance with the paramedic's training and authorized skill set. While great care has been taken in developing these Medical Directives, they cannot account for every clinical situation. Thus, they are not a substitute for sound clinical judgment.

In the section titled "Home Medical Technology and Novel Medications" the sentence that reads, "Alternatively consider contacting the responsible member of a regulated health profession" is not for the purposes of obtaining medical delegation.

This document will be updated regularly and the most current version will always be the electronic version available on the Ontario Base Hospital Group's website: (http://www.ontariobasehospitalgroup.ca)

A patch may be made to a BHP for critically ill or injured patients that may benefit from additional/further treatment beyond what is specified in the medical directives, but is within the paramedic's scope of practice.

Patch points or dosing end points within directives have been created to act as 'safe margins' or 'check points', where BHPs need to be involved in patient care.

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MEDICAL CARDIAC ARREST MEDICAL DIRECTIVE

- The initial rhythm interpretation/analysis and defibrillation should be performed as soon as possible. Following the initial rhythm interpretation/analysis, additional rhythm interpretations/analyses should occur at two (2) minute intervals with a focus on the delivery of high quality chest compressions.

- The energy settings used for defibrillation typically follow specific manufacturer guidelines and are supported by each respective Regional Base Hospital program.

- As a general rule, Paramedics do **NOT** count pre-arrival interventions into their patient care. Care delivered prior to arrival can be "considered" and documented. However, in the setting of cardiac arrest where a medical termination of resuscitation (TOR) might apply, the Paramedics will complete three (3) rhythm interpretations themselves rather than "count" the number completed prior to their arrival.

- In all cardiac arrest directives, manual defibrillation has been moved ahead of AED defibrillation in keeping with the preferred treatment being listed first.

- Compressions during the charge cycle should be considered to minimize the peri-shock pause.

- When en-route and using manual or semi-automated defibrillator rhythm interpretation, the ambulance must be stopped to minimize artifact and the risk of an inaccurate rhythm interpretation.

Supraglottic Airways:

- The preferred sequence listed for the placement of advanced airways is deliberate and based on:
    1. The reduced importance placed on the airway as outlined in the 2015 AHA guidelines,
    2. The ease of supraglottic airway insertion vs. the complexity and risks of intubation,
    3. The emphasis placed on minimally interrupted compressions,

  and does not preclude the PCP from placing a supraglottic airway when more than a basic airway adjunct is required for a VSA patient, or in a prolonged resuscitation.
- Once the supraglottic airway is placed, compressions should be continuous and ventilations provided asynchronously at a rate of ten (10) breaths/minute (one [1] every six [6] seconds).

Mandatory Patch Point:

- For PCPs, the patch will follow the third (3rd) rhythm interpretation/analysis if considering the medical TOR. The intention of this patch point is to receive advice as to whether rapid transport or termination of resuscitation is most appropriate.

Re-Arrest:

- In the event a return of spontaneous circulation (ROSC) is achieved and the patient re-arrests en-route, Paramedics utilizing semi-automated defibrillators will adhere to the following sequence:
    1. Pull over,
    2. Initiate one (1) immediate rhythm interpretation,
    3. Treat rhythm appropriately AND,
    4. Continue with transportation to the receiving facility with no further stops.

- If in the opinion of the Paramedic(s), the patient would benefit from further interpretation/analysis/defibrillation, a patch to the BHP would be indicated for direction.

- For sudden cardiac arrests that occur on scene or en-route, the patient should, in absence of unusual circumstances, be treated utilizing the full medical cardiac arrest medical directive

(complete four (4) rhythm interpretations).

Unusual Circumstance:

- The clinical consideration (in cases of unusual circumstances) regarding early transport has been revised to indicate transport after the first (1st) rhythm interpretation. As well, the circumstances for early transport have been broadened.

Blood Glucometry:

- Glucometry in the vital signs absent (VSA) patient is of no clinical value and is not indicated.

Anaphylactic Cardiac Arrest:

- A single dose of IM epinephrine 1:1,000 is indicated if the Paramedic believes the cardiac arrest is directly related to the anaphylactic reaction. This patient is to be treated under the medical arrest medical directive and may be transported early as specified in the "unusual circumstances" clinical consideration. An IM dose of epinephrine for anaphylaxis should not delay defibrillation.

Asthmatic Cardiac Arrest:

- While there is provision for treatment with epinephrine 1:1,000 in the anaphylactic arrest, there is no similar recommendation in the asthmatic cardiac arrest. It is very difficult to deliver salbutamol effectively in cardiac arrests, so the focus is placed on effective ventilation and oxygenation.

Electrocution:

- The Paramedic must use judgment in this setting. A simple electrocution is a medical cardiac arrest that should respond well to defibrillation. In the event the electrocution is associated with significant trauma, it should be treated as a trauma cardiac arrest.

Pulse Checks:

- Following the initial pulse check, subsequent pulse checks are indicated when a rhythm interpretation/analysis reveals a non- shockable rhythm (PEA or Asystole).

Clinical Consideration:

- Considering early transportation is not limited to the 2 examples provided (pediatrics and toxicological overdoses).

Commotio Cordis and Hangings:

- Are typically treated as medical cardiac arrests (unless life threatening trauma is noted).

Opioid Overdose:

- There is no clear role for the administration of naloxone in cardiac arrest (Lavonas, Drennan, Gabrielli, Geffner, Hoyte, Orkin, Sawyer & Donnino, 2015).

TRAUMA CARDIAC ARREST MEDICAL DIRECTIVE

- Fluid bolus is not listed in the directive and is not indicated.
- The age difference between Medical and Trauma TOR reflects the accepted definition of a pediatric trauma patient.
- The 30 minute time reference is a reflection of transportation time and is relevant only in PEA rhythms.
- The flow chart has been updated to reflect the 2015 AHA guidelines.

HYPOTHERMIA CARDIAC ARREST MEDICAL DIRECTIVE

Pulse check:

- The specific reference to a prolonged pulse check was removed because the AHA guidelines advocate for a 10 second pulse check.
- When treating the hypothermic cardiac arrest, focus on passive re-warming and gentle handling.
- The expectation is that these patients will be transported. The old adage says that "**the patient is not dead until they are warm and dead.**"

FOREIGN BODY AIRWAY OBSTRUCTION CARDIAC ARREST MEDICAL DIRECTIVE

- This directive is intended to apply to a simple airway obstruction that is unrelieved and where the patient presents in cardiac arrest. Initiating a medical cardiac arrest treatment plan is most appropriate if and when the obstruction is relieved and the patient remains pulseless.
- If the obstruction is not relieved, early/rapid transport is indicated following the first (1^{st}) analysis.
- This is an infrequently encountered patient presentation but quick and accurate interventions can make a significant impact on the patient's outcome.

NEONATAL RESUSCITATION MEDICAL DIRECTIVE

- Approximately 10% of newborns require some assistance to begin breathing following delivery; less than 1% require extensive resuscitation (Wyckoff, Aziz, Escobedo, Kapadia, Kattwinkel, Perlman, Simon, Weiner & Zaichin, 2015).
- If any of the following are **absent** or **abnormal**, begin with resuscitative assessment and interventions:
    - Term gestation,
    - Good muscle tone,
    - Breathing or crying.
- While drying, positioning and stimulating are intended for the newborn, this medical directive is applicable to all patients under 30 days of age. In the patient that is not newly born, begin by assessing respirations and heart rate; then proceed.
- The flow chart has been updated to reflect the 2015 AHA guidelines.
- When a newborn or patient less than 30 days old is in cardiac arrest, chest compressions are indicated immediately and would not be delayed to warm, dry, stimulate or provide only ventilations.
- At the 60 second treatment bubble, it is correctly stated that BVM ventilations are to be performed with **room air ONLY** and not with an attached oxygen source. The neonate is more susceptible to harm from increased oxygen concentrations (hyperoxemia).
- An oxygen saturation chart has been added as a guideline. These values are ideal targets and require application of the SpO2 probe to the right hand.
- Ensure cardiac monitoring is initiated (Wyckoff et al., 2015).

- Meconium with poor muscle tone and breathing/crying needs to be addressed by suctioning the mouth and pharynx before the nose while ensuring oxygenation is maintained. Routine meconium suctioning is not required (Wyckoff et al., 2015).

- The administration of Epinephrine IM for anaphylaxis does not apply to this directive. It would be a very rare circumstance, and the differential diagnosis even more complicated.

- If central cyanosis is present, but respirations appear adequate and the heart rate is greater than 100 bpm, oxygen administration is not required.

- If respiratory distress is present (ie: sternal retractions, grunting, nasal flaring), administer oxygen by mask at 5-6 L/min or by cupping a hand around the oxygen tubing and holding the tubing 1-2 cm from the patient's face; slowly withdraw as the patient's colour improves.

RETURN OF SPONTANEOUS CIRCULATION (ROSC) MEDICAL DIRECTIVE

Oxygenation:

- Optimizing oxygenation and targeting an SpO_2 of 94 to 98% (avoiding 100%) will provide adequate oxygenation and will minimize vasoconstriction and the development of oxygen free radicals. Despite ideal SpO_2 values, oxygen administration should be continued if the patient remains unstable (Callaway, Donnino, Fink, Geocadin, Golan, Kern, Leary, Meurer, Peberdy, Thompson & Zimmerman, 2015).

Therapautic Hypothermia:

- Is beneficial, however not in the prehospital setting and has therefore been removed (Callaway et al., 2015).

$ETCO_2$:

- Post ROSC, the goal is to maintain ventilation at a rate of approximately ten (10) breaths per minute (or one (1) breath every 6 seconds) and titrate to achieve an $ETCO_2$ (with waveform capnography) of 30 - 40 mmHg (Callaway et al., 2015).
- Hyperventilation MUST be avoided, but be mindful not to hypoventilate in an attempt to artificially raise a low $ETCO_2$; a low $ETCO_2$ may reflect metabolic acidosis.

Fluid Therapy:

- Regardless of the amount of fluid administered prior to ROSC, if chest auscultation is "clear", a 10 ml/kg 0.9% NaCl fluid bolus may be administered to a maximum of 1000 ml targeting a SBP of ≥ 90 mmHg.

CARDIAC ISCHEMIA MEDICAL DIRECTIVE

12 Lead Acquisition:

- Considering 12 lead acquisition and interpretation for STEMI is now a defined step in the treatment of cardiac ischemia and precedes Nitroglycerin consideration.

- While not specified, manual interpretation of the 12 lead is preferred over a computer generated interpretation.

- In the event the 12 Lead ECG identifies an Inferior STEMI, a 15 Lead ECG (specifically V4R) is to be performed to rule in or out a right ventricular infarct. These patients are often preload dependent and the administration of Nitroglycerin to these patients may cause significant hypotension.

ASA Administration:

- ASA is a safe medication with a wide therapeutic index (the effective dose without side effects can be from 80 – 1500 mg). The additional dose provided by paramedics will not exceed the therapeutic dose while ensuring the correct administration of correct dose of the medication. Therefore, apply the cardiac ischemia medical

directive as if no care had been rendered prior to your arrival.

Nitroglycerine Administration:

- Conditions for nitroglycerin use are: "a prior history OR an established IV". An IV must be initiated prior to the administration of nitroglycerin in first time suspected cardiac ischemia patients. If the patient already had an IV in place (i.e. outpatient), the IV would need to be assessed for patency and once confirmed, would allow for first time administration. This will only apply to the PCP(s) with Autonomous IV Certification.
- Prior history is defined as previously authorized or prescribed to the patient for use by a certified Medical Doctor.

STEMI Positive:

- Treatment with nitroglycerin has been revised. In the event of a STEMI positive patient, a maximum of 3 doses of nitroglycerin are to be administered. Research has indicated that nitroglycerin may cause adverse effects in the setting of STEMI.

Phosphodiesterase Inhibitors:

- The use of these medications has diversified to include treatment of pulmonary hypertension and congestive heart failure (CHF).
- The most appropriate categorization is as phosphodiesterase (PDE) 5 inhibitors.
- Phospodiesterase (PDE) 5 inhibitor list (also known as erectile dysfunction drugs [EDD]): Viagra, Levitra, Cialis, Revatio, Sildenafil, Tadalafil, Vardenafil, Udenafil and Avanafil, Lodenafil, Mirodenafil, Acetildenafil, Aildenafil, Benzamidenafil, Zaprinast and Icariin (a natural product). This may not be an exhaustive list and was current as of the date written.

- If myocardial ischemic symptoms/acute coronary syndromes resolve prior to the arrival of Paramedics, a decision to administer ASA will be made based on patient assessment and critical thinking.

- If a patient's vital signs fall outside the medical directive's parameters (i.e.: hypotension), the patient can no longer receive that medication (i.e.: nitroglycerin or morphine) even if the patient's vital signs return to acceptable ranges.

- The nitroglycerin canister should be considered a single patient use device.

ACUTE CARDIOGENIC PULMONARY EDEMA MEDICAL DIRECTIVE

- The notes listed above regarding the Cardiac Ischemia Medical Directive are applicable to the Acute Cardiogenic Pulmonary Edema Medical Directive as well.

- The condition requiring a prior history or an established IV has been removed. The dosing table is now correct as written.

- The maximum of 6 doses is of either 0.4 mg or 0.8 mg. The patient may **not** receive 6 doses for pulmonary edema and 6 more doses for cardiac ischemia symptoms should they co-exist.

- Note that 15 lead acquisition and interpretation is not a requirement in this medical directive because Right Ventricular infarcts do not generally present with acute pulmonary edema.

CARDIOGENIC SHOCK MEDICAL DIRECTIVE

- This directive is applicable only to those Paramedics who are authorized to apply PCP Autonomous IV therapy.

- Cardiogenic shock is normally defined as a state in which the heart has been damaged to such an extent that it is unable to supply enough blood to the organs, tissues and cells of the body.

- Fluid bolus is limited to 10 ml/kg (maximum 1000 ml). This reflects the fact that the patient is not actually volume depleted but is in need of preload.

HYPOGLYCEMIA MEDICAL DIRECTIVE

- The directive includes a fairly broad set of patient presentations to enable the Paramedic to use the glucometer to rule in or rule out a blood sugar related event.

- Performing glucometry is performed using the Paramedic's supplied device.

Capillary Blood Sample Sites:

- Finger tips and the heel of the foot (pediatric patients who have not begun to walk).
- Samples **cannot be obtained from the flash chamber of an IV catheter**. Not only is the practice inherently unsafe, but it involves manipulating a medical device for purposes that it is not intended for and the blood sample obtained is not a capillary sample.

- Dextrose is listed first and is the preferred medication, but is only applicable to the PCP Autonomous IV certified paramedic. There is now an option to administer Dextrose 10% to a maximum of 10 g or 50% to a maximum of 25 g.

- Premixed D10W should be run as a piggyback onto an existing IV line to ensure accurate dose administration.

- If Glucagon was initially administered with no patient improvement and an IV is subsequently established (if certified and authorized); perform a second glucometry and if the patient remains hypoglycemic administer dextrose regardless of the elapsed time since glucagon administration.

Refusal of Service:

- Should the patient initiate a refusal of transportation post treatment, a repeat glucometry must be performed along with a full set of vital signs. The patient (along with family or bystanders) requires a clear explanation of the risks involved, what signs to be vigilant of, and instructions to eat complex carbohydrates. This is to be recorded in the procedures section of the ACR/ePCR as well as an appropriately completed refusal of care section. Paramedics should always attempt to ensure a responsible adult remains with the patient prior to leaving the scene. Minors refusing transport will need to be signed off by a substitute decision maker and left with that responsible person. Hypoglycemia due to oral hypoglycemic agents or long-acting insulin is associated with the need for ongoing IV therapy, hospital admission and poor outcomes (repeat EMS responses and death). Thus, these patients need to be advised of these risks.

BRONCHOCONSTRICTION MEDICAL DIRECTIVE

- Suspected bronchoconstriction applies to asthma, COPD, and other causes of bronchoconstriction. Symptoms of bronchoconstriction may include wheezing, coughing, dyspnea, decreased air entry and silent chest.

- Epinephrine 1:1,000 IM is indicated when the patient is asthmatic and BVM ventilation is required. This is typically after salbutamol has had no effect, however salbutamol could be bypassed and epinephrine be administered immediately due to the severity of the patient's condition. The indications to administer epinephrine do not change based on the ability to administer salbutamol.

- When a dose of MDI salbutamol is administered, the intent is to deliver all six (6) (pediatric) or eight (8) (adult) sprays to complete a dose. It would be under unusual circumstances to deliver less than the full

dose.

- MDI administration is preferred over nebulization. If patient is unable to accept or cooperate with MDI administration, the nebulized route may be considered (maximum three (3) doses).
- Technique for administration of MDI salbutamol: Provide one MDI spray, followed by 4 breaths to allow for inhalation. It will take 1 minute to deliver a full adult dose to a patient breathing at a rate of 32 breaths per minute.
- The MDI should be considered a single patient use device.
- Nebulization increases the mobilization of any contagion and a Paramedic should use PPE.

MODERATE TO SEVERE ALLERGIC REACTION MEDICAL DIRECTIVE

- The medical directive now includes a range of allergic reactions from moderate to severe and the administration of diphenhydramine.
- Anaphylaxis is life-threatening and delays in administration of epinephrine are associated with greater mortality. If the patient meets the indications and none of the contraindications, epinephrine should be administered because it may prove to be life-saving.
- Epinephrine 1:1000 in anaphylaxis is administered via the IM route only.
- Epinephrine Dose: 0.01 mg/kg to a maximum of 0.5 mg (rounded to the nearest 0.05 mg). The directive now enables the paramedic to administer a second dose after a “minimum 5 minutes” if there has not been clinical improvement. If the patient’s clinical condition does not improve and that in the opinion of the Paramedic(s) the patient would benefit from further doses, a patch to a BHP must be initiated.
- Skin findings are most common but up to 20% of patients do not have hives or other skin symptoms. Therefore ensure that all body systems are assessed to determine the most appropriate treatment plan.
- Urticaria alone is not an indication for administration of epinephrine IM, the patient must present with at least one other sign or symptom.
- Diphenhydramine administration (when available) should always follow the administration of epinephrine as outlined in the Medical Directive.

Please refer to the following table as a reference for differentiating an anaphylactic reaction from a local reaction.

How to differentiate between a localized allergic reaction and an anaphylactic reaction[1]

Diagnosis based on detailed history and recognition of presenting signs & symptoms post possible exposure to a possible allergen

Body System Involvement

- **Integumentary** (skin): Hives, itching, flushing, swelling, angioedema
- **Cardio-Vascular**: Increased HR, decrease BP, syncope, decrease LOC, hypoxemia
- **Respiratory**: Shortness of breath, wheeze, cough, stridor
- **Gastro-Intestinal**: Cramping, nausea, vomiting, diarrhea

Localized Allergic Reaction	Anaphylactic Reaction
→ **Minor to Moderate Allergic Reaction**	→ **Moderate to Severe Allergic Reaction**
Localized reaction	Systemic reaction
Degranulation of localized mediators	Degranulation of systemic mediators
Involves one local area or one body organ system ****Severe symptoms to a single body system (respiratory system) should be considered as a severe allergic reaction****	***Usually*** involves symptoms in more than one body organ or system, with symptoms presenting as per above post exposure ****Severe symptoms to a single body system should be considered as a severe allergic reaction****
Degranulation of localized chemical mediators	Degranulation of systemic chemical mediators
	Some patients may present with a biphasic reaction within 72 hours of the initial symptoms having resolved without further exposure to an allergen
	Consider the following groups High Risk Patients: • Very young and very old • Hx asthma • Hx Cardiovascular disease • Hx Mast cell disease
Primary treatment: • Diphenhydramine (slow onset) relieves symptoms (itching, flushing, urticaria, angioedema, eye and nasal symptoms) does NOT prevent or relieve upper airway obstruction, hypotension, shock.	**Primary treatment:** • Epinephrine 1:1000 IM (fast onset) will increase blood pressure, prevent and relieves hypotension, decreases upper airway obstruction, decreases wheezing, decreases urticaria and angioedema. **Secondary treatment to be considered post Epinephrine administration:** • Diphenhydramine IM/IV • PRN IV Fluids as per Medical Directive • PRN Salbutamol as per Medical Directive

(Simons, 2013)

CROUP MEDICAL DIRECTIVE

- The presentation must be severe. Most presentations of croup are mild and are well tolerated by the patient.
- Prior to initiating nebulized epinephrine, moist air and cold air may be attempted if available and patient's condition permits.
- Croup is occurring more and more frequently in older patients including adults, and if the indications are met, a patch to a BHP would be required to consider treatment under this medical directive.
- All patients treated with epinephrine need to be transported for observation for rebound as the medication wears off.

ADULT ANALGESIA MEDICAL DIRECTIVE

- The redundant condition regarding trauma being isolated hip or extremity trauma has been removed from the conditions for acetaminophen, ibuprofen and ketorolac.
- Ketorolac dosing remains as a range of 10 – 15 mg. The range has been provided to simplify dose preparation. A 10 mg dose is considered to be the analgesic effective dose.
- As indicated in the clinical considerations, the preferred treatment for isolated hip and / or extremity trauma is acetaminophen and ibuprofen. Oral administration is as effective and is less invasive (Wright, Price, & Watson, 1994).

Suspected Renal Colic:

- Suspected renal colic patients should routinely be considered for ketorolac administration because of the anti-inflammatory action and smooth muscle relaxant effects (reduces the glomerular filtration rate which reduces renal pelvic pressure and stimulation of the stretch receptors) as well as its inhibition of prostaglandin production makes them ideal agents to treat renal colic (Davenport & Waine, 2010).
- Ketorolac should not be administered in conjunction with ibuprofen as they are both NSAIDs and concomitant administration of both would increase the adverse effects.

Active Bleed Defined:

- External trauma that has been dressed and controlled is not considered an active bleed.
- Occult bleeding should be considered active bleeding (hematuria/GI bleed).

Unable to Tolerate Oral Medications Defined:

- Definition of 'unable to tolerate oral medications': For example: A patient that: must remain in the supine position (ie. on a backboard), is vomiting or nauseated, has difficulty swallowing or has a feeding tube in place would not be able to tolerate oral medications.

OPIOID TOXICITY MEDICAL DIRECTIVE

- The inability to adequately ventilate is a requirement to proceed with the application of this medical directive. The inability to adequately ventilate could apply to situations like moving a patient down a flight of stairs and the inability to ventilate during that time.
- Contraindication lists uncorrected hypoglycemia – this is a specific reversible cause that is appropriate to correct prior to determining the need for additional therapy.

- Remember, Naloxone is ONLY being administered to improve respiratory status, NOT to improve LOA or for any other purpose.

- The mandatory patch point has been removed.

Routes of Administration:

- In keeping with the conventions of the medical directives, the order of preference of route of administration is as listed: SC is first, then IM, then IN and then IV (where certified and authorized in IV initiation). SC is the preferred route (Clarke, Dargan & Jones, 2005). Specific details for each subsequent route are included below.
- IM
    - faster onset and shorter duration than via SC route.
- IN
    - rapid absorption,
    - concern with proximity to the patient's mouth (for safety),
    - no sharps,
    - consider splitting doses between nares.
- IV
    - smaller dose,
    - virtually instantaneous effect,
    - very short duration,
    - ideal in the apneic patient.

- Note: IV Naloxone titration refers to administering only small increments of the 0.4 mg dose at a time to restore respiratory effort, but limit the rise in wakefulness.

- The directive now allows for three (3) total doses of naloxone, administered in ten (10) minute intervals by the SC, IM and IN routes, and immediately for the IV route.

- In the setting of bystander administered naloxone, the Paramedic should use his/her judgment to determine the most appropriate patient care, being mindful of the potential risks (i.e. unmasking alternative toxidromes and those associated with the route of administration) with the administration of subsequent naloxone.

HOME DIALYSIS EMERGENCY DISCONNECT MEDICAL DIRECTIVE

- With the implementation of ALS PCS 4.0.1, this is now a core directive.

- While there are several variations of dialysis machines/tubing, the best practice is to disconnect the patient by using the materials and instructions that are typically found in the disconnect kit. In the event instructions are not available, the tubing should be clamped first on the patient side, secondly on the machine side, and finally separated in the middle.

SUSPECTED ADRENAL CRISIS MEDICAL DIRECTIVE

- Patients with primary adrenal failure generally require little assistance from EMS, except in cases of stress when they can become critically ill; in which case they will require the administration of hydrocortisone. Hydrocortisone is not carried by paramedics.

- If the patient presents with signs and symptoms consistent with the medical directive, **AND** his/her medication is available, a Paramedic may administer 2 mg/kg up to 100 mg IM of hydrocortisone.

- These patients require transportation to a receiving facility for additional care and follow up.

ENDOTRACHEAL AND TRACHEOSTOMY SUCTIONING MEDICAL DIRECTIVE

- This directive enables the PCP to suction a pre-existing tracheostomy tube or an endotracheal tube (ETT) beyond the oropharynx.
- Insert the catheter and apply suction (ten (10) seconds or less) while gently twisting and withdrawing the catheter.
- To minimize hypoxia, do not suction more frequently than once per minute.
- Exceeding the recommended suction pressures or maximum number can cause injury and swelling to the mucosal tissues of the airway and increases the risk of arrhythmia. Starting at the lower end of the suction pressure range will also help minimize adverse events.
- In the event a pre-existing tracheostomy tube is withdrawn from the airway, follow your local RBH policy regarding airway management.

PRIMARY CARE PARAMEDIC AUXILIARY MEDICAL DIRECTIVES

INTRAVENOUS AND FLUID THERAPY MEDICAL DIRECTIVE – AUXILIARY

- The contraindication of a suspected fracture may not seem obvious, but a lack of integrity in a bone may jeopardize the integrity of the associated vascular structures and may result in extravasation.
- Pulmonary edema is a sign of fluid overload secondary to a fluid bolus. As such, frequent chest assessments are required.
- The treatment line specifies “consider IV cannulation”. This may encompass upper and lower extremity veins depending on your Base Hospital’s authorization.

Mandatory Patch Point:

- Required before administering a fluid bolus to a hypotensive patient that is diabetic and ≥ 2 years and < 12 years of age, and is suspected of being in ketoacidosis. A patch is required so that the physician can carefully control the volume of fluid administered to prevent cerebral edema.

Cardiogenic Shock and ROSC:

- The maximum volume of NaCl is lower for patients in cardiogenic shock or with ROSC. The maximum volume in those settings is 10 ml/kg or 1,000 ml.
- Formulas for pediatric normotension and hypotension are to be used until the calculation meets or exceeds the adult definitions at which point the adult values are to be used. For example, at 6 years of age, the pediatric calculation for normotension results in 102 mmHg; therefore use the adult value of 100 mmHg.
- Hypotension in pediatric patients (up to age 10) is based on the formula: SBP = 70 + (2 x age).
- The references to macro, mini, and buretrol drip sets have been removed. Although the choice of drip sets have been left to service operators based on local requirements and RBH insight, some form of rate control must be utilized for patients less than 12 years of age to prevent accidental fluid overload.
- Prior to initiating a fluid bolus, two blood pressures (of which one should be manually obtained) indicating

hypotension are preferred.

- Once a bolus has been initiated, a minimum volume of 100 ml in pediatrics and 250 ml in adults may be administered prior to discontinuing the fluid bolus should the patient become normotensive.

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) MEDICAL DIRECTIVE – AUXILIARY

- This is for the treatment of severe respiratory distress AND acute pulmonary edema (regardless of origin) or COPD.
- CPAP should be considered as additive therapy to the bronchoconstriction (specifically COPD exacerbation) or acute cardiogenic pulmonary edema medical directives, not a replacement.
- CPAP may be interrupted momentarily to administer nitroglycerin (salbutamol can be administered via MDI port).
- CPAP is not used to treat an asthma exacerbation.
- CPAP should be discontinued when the patient becomes hypotensive (SBP < 100 mmHg) as described in the conditions of the directive.

SUPRAGLOTTIC AIRWAY MEDICAL DIRECTIVE– AUXILIARY

Active Vomiting Defined:

- Active vomiting is considered ongoing vomiting where the paramedic is unable to clear the airway. In this situation, the supraglottic airway (SGA) should not be inserted.
- If the patient vomited once and the airway was cleared successfully, a supraglottic airway may be inserted.
- The number of attempts is clearly defined as two (2) total per patient, and not per provider.
- Confirmation of SGA insertion requires $ETCO_2$ waveform capnography. It is the most reliable method to monitor placement of an advanced airway (AHA guidelines 2015, Part 7). If it is not available, at least two (2) secondary methods must be used. SGA placement should be verified frequently and again at transfer of care. Findings and witness (where possible) should be documented on the patient care record.

ROSC:

- In the event the patient with an SGA is place sustains a ROSC, the SGA should only be removed if the gag reflex is stimulated; expect to remove it as the level of awareness improves.

NAUSEA / VOMITING MEDICAL DIRECTIVE – AUXILIARY

- While the indications list nausea or vomiting, patients presenting with these symptoms do not necessarily require treatment.
- Overdose on antihistamines, anticholinergics or TCAs are contraindications for the administration of dimenhydrinate. For a comprehensive list of these medications, please refer to the most current CPS or contact your RBH.
- If dimenhydrinate is administered via the IV route, it must be diluted as per the medical directive with saline to facilitate a slower and less painful administration. Based on a supply of 50 mg in 1 ml, either dilution method of 5 mg/ml (diluted with 9 ml of NaCl) or 10 mg/ml (diluted with 4 ml of NaCl) is acceptable.

ELECTRONIC CONTROL DEVICE PROBE REMOVAL MEDICAL DIRECTIVE – AUXILIARY

- Probes are sharps that should be considered contaminated and need to be handled and disposed of accordingly.
- Conditions indicate that an “unaltered” LOA is required for probe removal. If the patient’s LOA is “altered” they are not able to provide consent to remove the probes and as such, the probes will not be removed by Paramedics.
- It is important to understand why the electronic control device was deployed in relation to the patient’s presenting or underlying medical condition with specific attention to the potential for excited delirium.

MINOR ABRASIONS MEDICAL DIRECTIVE – AUXILIARY – SPECIAL EVENT

- Topical antibiotic ointment is left generic to allow for service provider specifications in consultation with the BHP.

MINOR ALLERGIC REACTION MEDICAL DIRECTIVE – AUXILIARY – SPECIAL EVENT

- Signs and symptoms MUST be consistent with a mild allergic reaction.

MUSCULOSKELETAL PAIN MEDICAL DIRECTIVE – AUXILIARY – SPECIAL EVENT

- The patient cannot have taken acetaminophen within the last 4 hours to receive it from the Paramedic.

HEADACHE MEDICAL DIRECTIVE – AUXILIARY – SPECIAL EVENT

- The patient cannot have taken acetaminophen within the last 4 hours to receive it from the Paramedic.

ADVANCED CARE PARAMEDIC CORE MEDICAL DIRECTIVES

MEDICAL CARDIAC ARREST MEDICAL DIRECTIVE

- The initial rhythm interpretation/analysis and defibrillation should be performed as soon as possible. Following the initial rhythm interpretation/analysis, additional rhythm interpretations/analyses should occur at two (2) minute intervals with a focus on the delivery of high quality chest compressions.

- The energy settings used for defibrillation typically follow specific manufacturer guidelines and are supported by each respective RBH program.

- As a general rule, Paramedics do **NOT** count pre-arrival interventions into their patient care. Care delivered prior to arrival can be "considered" and documented. However, in the setting of cardiac arrest where a medical TOR might apply, the Paramedics will complete three (3) rhythm interpretations themselves rather than "count" the number completed prior to their arrival.

- In all cardiac arrest directives, manual defibrillation has been moved ahead of AED defibrillation in keeping with the preferred treatment being listed first.

- Compressions during the charge cycle should be considered to minimize the peri-shock pause.

- When en-route and using manual or semi-automated defibrillator rhythm interpretation, the ambulance must be stopped to minimize artifact and the risk of an incorrect rhythm interpretation.

Supraglottic Airways (SGA):

- The sequence listed for the advanced airways is deliberate, and based on:
    1. The reduced importance placed on the airway as outlined in the 2015 AHA guidelines,
    2. The ease of supraglottic airway insertion vs. the complexity and risks of intubation,
    3. The emphasis placed on minimally interrupted compressions.

  and does not preclude the ACP from placing an Endotracheal Tube (ETT) when there is airway compromise or in a prolonged resuscitation. Intubation should normally not require compressions to be stopped or altered as any pause in compressions can lead to a poor outcome.

- Once the ETT or supraglottic airway is placed, compressions should be continuous and ventilations provided asynchronously at a rate of 10 breaths/minute (one every six seconds).

Amiodarone:

- Is the preferred antiarrhythmic medication if an alternate is available. This is demonstrated in the directive by the preferred medication being listed first.

Lidocaine:

- Dosing (reference to weight and age) has been simplified.
- Patients aged 30 days to < 12 years of age receive 1 mg/kg via the IV/IO/CVAD routes, or 2 mg/kg via the ETT route.
- Patients ≥ 12 years of age receive 1.5 mg/kg via the IV/IO/CVAD routes, and 3 mg/kg via the ETT route.

Antiarrhythmic Administration:

- Is indicated in VF and pulseless VT that is refractory or recurrent following defibrillation.
- Is indicated (if not previously maxed out) following the shock if the patient had been previously defibrillated or following a second defibrillation if none delivered previously.

- Once epinephrine is administered, it is to be repeated every 4 minutes until the arrest is terminated, ROSC is achieved, transfer of care is completed or TOR is ordered.

- Fluid bolus may be indicated for patients in PEA to provide preload and possibly enough circulation to support vital functions. If hypovolemia is suspected, a bolus is also indicated. The dose is 20 ml/kg to a maximum of 2,000 ml.

Mandatory Patch Point:

- For ACPs, the patch will follow the 3rd administration of Epinephrine, but in the event an IV, IO or ETT cannot be placed (and there is no CVAD access) the patch should follow the 3rd rhythm interpretation. This patch will be to obtain additional orders not addressed within the directive or to terminate resuscitation.

- For cardiac arrests that occur on scene or en-route the patient should, in absence of unusual circumstances, be treated utilizing the entire medical cardiac arrest directive.

Unusual Circumstances:

- In regards to unusual circumstances, the wording of the clinical consideration regarding early transport has been revised to indicate **transport after the first (1st) rhythm interpretation**. As well, the circumstances for early transport have been broadened.

Re-Arrest:

- In the event a return of spontaneous circulation (ROSC) is achieved and the patient re-arrests en-route, Paramedics utilizing semi-automated defibrillators will adhere to the following sequence:
  1. Pull over,
  2. Initiate one immediate rhythm interpretation,
  3. Treat the rhythm appropriately AND,
  4. Continue with transportation to the receiving facility with no further stops.
- If in the opinion of the Paramedic(s), the patient would benefit from further interpretations/defibrillation, a patch to the BHP would be indicated for direction.

Blood Glucometry:

- Glucometry in the vital signs absent (VSA) patient is of no clinical value and is not indicated.

Anaphylactic Cardiac Arrest:

- A single dose of IM Epinephrine 1:1,000 is indicated if the Paramedic believes the arrest is directly related to the anaphylactic reaction. This patient then continues to be treated under the medical arrest directive and may be transported early as specified in the “unusual circumstance” clinical consideration. An IM dose of epinephrine for anaphylaxis does not alter the sequence and timing of IV administered epinephrine and should not delay defibrillation.

Asthmatic Cardiac Arrest:

- While there is provision for treatment with epinephrine 1:1,000 in the anaphylactic arrest, there is no similar recommendation in the asthmatic cardiac arrest. It is very difficult to deliver salbutamol effectively in cardiac arrests, so the focus is placed on effective ventilation and oxygenation.

Electrocution:

- The Paramedic must use judgment in this setting. A simple electrocution is a medical cardiac arrest that should respond well to defibrillation. In the event the electrocution is associated with significant trauma, it should be treated as a trauma cardiac arrest.

Commotio Cordis and Hangings:

- Should be treated as medical cardiac arrests (unless life threatening trauma is noted).

Opioid Overdose:

- There is no clear role for the administration of naloxone in cardiac arrest (Lavonas et al., 2015).

ACP vs. PCP Care Plan:

- An ACP crew will not defer patient care decisions when a PCP crew is on-scene with a potential TOR. Once an ACP arrives on scene; the ACP shall assume patient care.

Medication Administration:

- If the timing were to fall such that epinephrine and an antiarrhythmic were to be administered within the same CPR cycle, proceed, ensuring to provide a saline flush between the two medications. The IV and IO (and CVAD) routes of administration are preferred over ETT. ETT may be utilized if the preferred routes are delayed by more than 5 minutes.

Pulse Checks:

- Following the initial pulse check, subsequent pulse checks are indicated when a rhythm interpretation/analysis reveals a non- shockable rhythm (PEA or Asystole).

Clinical Consideration:

- Considering early transportation is not limited to the 2 examples provided (pediatrics and toxicological overdoses).

TRAUMA CARDIAC ARREST MEDICAL DIRECTIVE

- Fluid bolus is not listed in the directive and is not indicated.
- The age difference between Medical and Trauma TOR reflects the accepted definition of a pediatric trauma patient.
- The 30 minute time reference is a reflection of transportation time and is relevant only in PEA rhythms.
- The flow chart has been updated to reflect the 2015 AHA guidelines.

HYPOTHERMIA CARDIAC ARREST MEDICAL DIRECTIVE

Pulse Check:

- The specific reference to a prolonged pulse check was removed because the AHA guidelines advocate for a 10 second pulse check.
- When treating the hypothermic arrest, the focus is on passive rewarming and gentle handling. Epinephrine is not indicated in this setting.
- The expectation is that these patients will be transported. The old adage says that "***the patient is not dead until they are warm and dead.***"

FOREIGN BODY AIRWAY OBSTRUCTION CARDIAC ARREST MEDICAL DIRECTIVE

- This directive is intended to apply to a simple airway obstruction that is unrelieved and where the patient presents in cardiac arrest. Initiating a medical cardiac arrest treatment plan is most appropriate.
- Once the obstruction is removed, continue treatment as per the medical arrest directive.
- If the obstruction is not relieved, early/rapid transport is indicated following the first (1^{st}) rhythm interpretation.
- This is an infrequently encountered patient presentation but quick and accurate interventions can make a significant impact on the patient's outcome

Procedure Sequencing for Foreign Body Airway Obstruction:

- Perform chest thrusts. If unsuccessful,
- Attempt direct laryngoscopy with the use of Magill forceps. If unsuccessful and authorized,
- Contact a BHP for authorization to utilize the Auxiliary Cricothyrotomy Medical Directive.

NEONATAL RESUSCITATION MEDICAL DIRECTIVE

- Approximately 10% of newborns require some assistance to begin breathing following delivery; less than 1% require extensive resuscitation (Wyckoff et al., 2015).

- If any of the following are **absent** or **abnormal**, begin with resuscitative assessment and interventions:
  - Term gestation,
  - Good muscle tone,
  - Breathing or crying.

- While drying, positioning and stimulating are intended for the newborn, this medical directive is applicable to all patients under 30 days of age. In the patient that is not newly born, begin by assessing respirations and heart rate; then proceed.

- The flow chart has been updated to reflect the 2015 AHA guidelines.

- When a newborn or patient less than 30 days old is in cardiac arrest, chest compressions are indicated immediately and would not be delayed to warm, dry, stimulate or provide only ventilations.

- At the 60 second treatment bubble, it is correctly stated that BVM ventilations are to be performed with room air ONLY and not with an attached oxygen source. The neonate is more susceptible to harm from increased oxygen concentrations (hyperoxemia).

- An oxygen saturation chart has been added as a guideline. These values are ideal targets and require application of the SpO2 probe to the right hand.

- Ensure cardiac monitoring is initiated (Wyckoff et al., 2015).

- Meconium with poor muscle tone and breathing/crying needs to be addressed by suctioning the mouth and pharynx before the nose while ensuring oxygenation is maintained. Routine meconium suctioning is not required (Wyckoff et al., 2015).

Epinephrine:

- The administration of epinephrine IM for anaphylaxis **does not apply to this directive**. It would be a very rare circumstance, and the differential diagnosis even more complicated.
- The dosing of epinephrine is very specific in this directive. ONLY the 1:10,000 solution is used for any route of administration. Unlike the adult, the dose administered via the ETT route is 10 times the dose of the IV/IO routes.

Oxygenation:

- If respirations appear adequate and the heart rate is greater than 100 bpm, yet there is central cyanosis:
- If there are no signs of respiratory distress, oxygen administration is not required;
- If there are signs of respiratory distress, ie sternal retractions, grunting, nasal flaring, administer oxygen by mask at 5-6 L/min or by cupping the hand around the oxygen tubing and holding the tubing 1-2 cm from the patient's face. Slowly withdraw as patient color improves.

RETURN OF SPONTANEOUS CIRCULATION (ROSC) MEDICAL DIRECTIVE

- Optimizing oxygenation and targeting an SpO_2 of 94 to 98% (avoiding 100%) will provide adequate oxygenation and will minimize vasoconstriction and the development of oxygen free radicals. Despite ideal SpO_2 values, oxygen administration should be continued if the patient remains unstable (Callaway et al., 2015).

- There is insufficient evidence to support the routine use of an antiarrhythmic post ROSC (AHA guidelines 2015, Part 7)

Fluid Bolus and Dopamine Administration:

- The fluid bolus precedes the administration of dopamine. If started, ensure time is allowed for the intervention to have effect and be evaluated prior to initiating dopamine. IO and CVAD have been added as appropriate routes for fluid administration.
- Dopamine in ROSC may be administered to a patient ≥ 8 years of age. For symptomatic bradycardia and cardiogenic shock, the age for administration of dopamine is ≥ 18 years of age.
- Dopamine is optimally administered via a dedicated IV line, however if required, may be piggybacked onto a primary line.
- When initiating dopamine, begin at 5 mcg/kg/min and increase incrementally.
- Where it is electively discontinued, Dopamine administration must be weaned slowly.

Therapeutic Hypothermia:

- Is beneficial, however not in the prehospital setting and has therefore been removed (Callaway et al., 2015).

$ETCO_2$:

- Post ROSC, the goal is to maintain ventilation at a rate of approximately ten (10) breaths per minute (or one [1] breath every six [6] seconds) and titrate to achieve an $ETCO_2$ (with waveform capnography) of 30 - 40 mmHg (Callaway et al., 2015). Hyperventilation MUST be avoided, but be mindful not to hypoventilate in an attempt to artificially raise a low $ETCO_2$; a low $ETCO_2$ may reflect metabolic acidosis.

Fluid Therapy:

- Regardless of the amount of fluid administered prior to ROSC and if chest auscultation is “clear”, a fluid bolus may be administered to a maximum of 1,000 ml targeting a SBP of ≥ 90 mmHg.

CARDIAC ISCHEMIA MEDICAL DIRECTIVE

12 Lead Acquisition:

- Considering 12 lead acquisition and interpretation for STEMI is now a defined step in the treatment of cardiac ischemia and precedes Nitroglycerin consideration.

- While not specified, manual interpretation of the 12 lead is preferred over a computer generated interpretation.

- In the event the 12 Lead ECG identifies an Inferior STEMI, a 15 Lead ECG (specifically V4R) is to be performed to rule in or out a right ventricular infarct. These patients are often preload dependent and the administration of Nitroglycerin to these patients may cause significant hypotension.

ASA Administration:

- ASA is a safe medication with a wide therapeutic index (the effective dose without side effects can be from 80 – 1500 mg). The additional dose provided by paramedics will not exceed the therapeutic dose while ensuring the correct administration of correct dose of the medication. Therefore, apply the cardiac ischemia medical directive as if no care had been rendered prior to your arrival.

Nitroglycerine Administration:

- Conditions for nitroglycerin use are: “a prior history OR an established IV”. An IV must be initiated prior to the

administration of nitroglycerin in first time suspected cardiac ischemia patients. If the patient already had an IV in place (i.e. outpatient), the IV would need to be assessed for patency and once confirmed, would allow for first time administration. This will only apply to the PCP(s) with Autonomous IV Certification.

- Prior history is defined as previously authorized or prescribed to the patient for use by a certified Medical Doctor.
- Nitroglycerin doses taken by the patient for their current ischemic episode should not be used to decide whether to administer morphine.
- The nitroglycerin canister should be considered a single patient use device.

- Treatment with nitroglycerin has been revised. In the event of a STEMI positive patient, a maximum of 3 doses of nitroglycerin are to be administered. The research has indicated that nitroglycerin may cause adverse effects in the setting of STEMI.

Phosphodiesterase Inhibitors:

- The use of these medications has diversified to include treatment of pulmonary hypertension and congestive heart failure (CHF).
- The most appropriate categorization is as phosphodiesterase (PDE) 5 inhibitors.
- Phosphodiesterase (PDE) 5 inhibitor list (also known as erectile dysfunction drugs [EDD]): Viagra, Levitra, Cialis, Revatio, Sildenafil, Tadalafil, Vardenafil, Udenafil and Avanafil, Lodenafil, Mirodenafil, Acetildenafil, Aildenafil, Benzamidenafil, Zaprinast and Icariin (a natural product). This may not be an exhaustive list and was current as of the date written.

- If myocardial ischemic symptoms/acute coronary syndromes resolve prior to the arrival of Paramedics, a decision to administer ASA will be made based on patient assessment and critical thinking.

- Morphine is only to be considered following the third dose of nitroglycerin (unless nitroglycerin is contraindicated) and where pain is severe in nature (≥ 7/10).

- If a patient's vital signs fall outside the medical directive's parameters (i.e.: hypotension), the patient can no longer receive that medication (i.e.: nitroglycerin or morphine) even if the patient's vital signs return to acceptable ranges.

ACUTE CARDIOGENIC PULMONARY EDEMA MEDICAL DIRECTIVE

- The notes listed above regarding the Cardiac Ischemia Medical Directive are applicable to the Acute Cardiogenic Pulmonary Edema Medical Directive as well.

- The condition requiring a prior history or an established IV has been removed. The dosing table is now correct as written.

- The maximum of 6 doses is of either 0.4 mg or 0.8 mg. The patient may not receive 6 doses for pulmonary edema and 6 more doses for cardiac ischemia symptoms should they co-exist.

- Note that 15 lead acquisition and interpretation is not a requirement in this medical directive because Right Ventricular infarcts do not generally present with acute pulmonary edema.

CARDIOGENIC SHOCK MEDICAL DIRECTIVE

- Cardiogenic shock is normally defined as a state in which the heart has been damaged to such an extent that it is unable to supply enough blood to the organs, tissues and cells of the body.

- The directive specifies that fluid (if applicable) is to be used as a means to reverse hypotension prior to

the administration of dopamine. IO and CVAD have been added as routes for fluid administration,

- The clinical consideration: 'contact BHP if patient is bradycardic' is intended to allow the Paramedic to use his/her judgment.

SYMPTOMATIC BRADYCARDIA MEDICAL DIRECTIVE

- Hemodynamic instability refers specifically to hypotension (SBP < 90 mmHg) that requires pharmacologic or electrical intervention(s).
- All symptomatic patients that present with a heart rate of < 50 bpm are eligible for atropine administration if found to be hypotensive.
- A fluid bolus may be administered to bradycardic patients according to the IV and fluid bolus medical directive.
- 12 lead ECG should be obtained as early as possible.
- Atropine is to be administered in the setting of sinus bradycardia, atrial fibrillation, first degree block or second degree block type I. Further, patients presenting in second degree type II or third degree block may receive a single dose of atropine while preparing pacing or if pacing is unavailable or unsuccessful.
- Transcutaneous pacing is to be initiated at a rate of 80 bpm with milliamps (mAmps) then increased to obtain electrical capture. Capture is highly variable depending on patient size, weight, pad placement, skin condition, etc. It is difficult to state the target values for capture, however 80 to 100 mAmps is common. If unable to gain capture at maximum mAmps, pacing should be discontinued. Treatment should not be discontinued if the patient responds and develops an improved blood pressure.
- Pad placement for pacing should follow the cardiac monitor manufacturer's recommendations but typically include anterior/posterior or sternum/apex.
- Patients may receive multiple interventions to maintain their heart rate and blood pressure. The treatment provided must be permitted time to take effect and to be evaluated before moving on to the next treatment.

TACHYDYSRHYTHMIA MEDICAL DIRECTIVE

- Specific to this directive, treatments do not necessarily follow the order in which they should be administered. The initial treatment choice will be based on rhythm interpretation (narrow vs. wide) and hemodynamic stability.
- Early lead II and 12 lead acquisitions will prove invaluable for determining the origin of the electrical impulses, the rhythm regularity and the QRS durations.

Contraindications for Adenosine Administration:

- Dipyridamole – brand name: Persantine.
- Carbamazepine – brand name: Tegretol
- Bronchoconstriction research has shown that inhaled adenosine provokes bronchoconstriction in asthmatic individuals (but not in the control group) and is therefore a contraindication for administration.

Adenosine Therapy:

- Has changed to 6 mg and 12 mg based on AHA guideline findings that a second 12 mg dose is likely ineffective. No BHP patch is required for the administration of adenosine for narrow complex tachycardia.

Lidocaine Dosing:

- Initial dose: 1.5 mg/kg to a max of 150 mg. The second and third doses are calculated as 0.75 mg/kg with the same maximum dose of 150 mg.
- Lidocaine is limited to a maximum of 3 mg/kg total dosing via IV.
- Topical doses of Lidocaine as administered in the intubation directive count towards a 5 mg/kg total dose.
- In the event the patient receives the maximum dose of Lidocaine and then experiences cardiac arrest, he/she will not receive further doses of Lidocaine.

INTRAVENOUS AND FLUID THERAPY MEDICAL DIRECTIVE

- The contraindication of a suspected fracture may not seem obvious, but a lack of integrity in a bone may jeopardize the integrity of the associated vascular structures and may result in extravasation.

- Pulmonary edema is a sign of fluid overload secondary to a fluid bolus. As such, frequent chest assessments are required.

- The treatment line specifies “consider IV cannulation”. This may encompass upper and lower extremity veins depending on your Base Hospital’s authorization.

Mandatory Patch Point:

- Is required before administering a fluid bolus to a diabetic patient ≥ 2 years and < 12 years of age, who is hypotensive and suspected of being in ketoacidosis. A patch is required so that the physician can carefully control the volume of fluid administered to prevent cerebral edema.

CVAD:

- Access is only for patients ≥ 12 years of age and by Paramedics who are authorized by their RBH. To access a CVAD for patients < 12 years of age, a patch to the BHP is required.

Cardiogenic Shock and ROSC:

- The maximum volume of NaCl is lower for patients in cardiogenic shock or with ROSC. The maximum volume in those settings is 10 ml/kg or 1,000 ml.

- Formulas for pediatric normotension and hypotension are to be used until the calculation meets or exceeds the adult definitions at which point the adult values are to be used. For example, at 6 years of age, the pediatric calculation for normotension results in 102 mmHg; therefore use the adult value of 100 mmHg.

- Hypotension in pediatric patients is based on the formula: SBP = 70 + (2 x age).

- The references to macro, mini, and buretrol drip sets have been removed. Although the choice of drip sets have been left to service operators based on local requirements and RBH insight, some form of rate control must be utilized for patients less than 12 years of age to prevent accidental fluid overload.

- External jugular access, while not stated in the directives, remains in the ACP scope of practice and is typically reserved for cardiac arrest.

- Prior to initiating a fluid bolus, two blood pressures (of which one must be manually obtained) indicating hypotension are expected.

- Once a bolus has been initiated, a minimum volume of 100 ml in pediatrics and 250 ml in adults may be administered prior to discontinuing the fluid bolus should the patient become normotensive.

PEDIATRIC INTRAOSSEOUS MEDICAL DIRECTIVE

- “IV access is unobtainable” does not imply that you must attempt an IV and fail before proceeding to the IO, but

it must be considered. Documentation on the ACR to support the rationale to bypass the IV attempt will be expected.

- The typical insertion site is the proximal tibia. Other sites are dependent on RBH approval.
- Aspiration may be recommended as part of the procedural skill, but an inability to aspirate should be confirmed by testing patency by attempting to push fluid.
- Typical IO needles range from 15 – 18 gauge.

HYPOGLYCEMIA MEDICAL DIRECTIVE

- The directive includes a fairly broad set of patient presentations to enable the Paramedic to use the glucometer to rule in or rule out a blood sugar related event.
- Performing glucometry is performed using the Paramedic's supplied device.

Capillary Blood Sample Sites:

- Finger tips and the heel of the foot (pediatric patients who have not begun to walk).
- Samples **cannot be obtained from the flash chamber of an IV catheter**. Not only is the practice inherently unsafe, but it involves manipulating a medical device for purposes that it is not intended for and the blood sample obtained is not a capillary sample.
- Premixed D10W should be run as a piggyback onto an existing IV line to ensure accurate dose administration.
- If Glucagon was initially administered with no patient improvement and an IV is subsequently established (if certified and authorized); perform a second glucometry and if the patient remains hypoglycemic administer dextrose regardless of the elapsed time since glucagon administration.

Preparation of 25% Solution:

- Waste 25 ml of the preload and replace the 25 ml with sterile water or saline. This will create a 12.5 g / 50ml solution. Administer 0.5 g/kg for the gram dose or 2 ml/kg for fluid volume and administer no more than 40 ml.

Preparation of 10% Solution:

- To prepare a **10%** solution: Waste 40 ml of the preload and replace the 40 ml with sterile water or saline. This will create a 5g / 50 ml solution. Administer 0.2 g/kg for the gram dose or 2 ml/kg for fluid volume and administer no more than 50 ml.

Refusal of Service:

- Should the patient initiate a refusal of transportation post treatment, a repeat glucometry must be performed along with a full set of vital signs. The patient (along with family or bystanders) requires a clear explanation of the risks involved, what signs to be vigilant of, and instructions to eat complex carbohydrates. This is to be recorded in the procedures section of the ACR/ePCR as well as an appropriately completed refusal of care section. Paramedics should always attempt to ensure a responsible adult remains with the patient prior to leaving the scene. Minors refusing transport will need to be signed off by a substitute decision maker and left with that responsible person. Hypoglycemia due to oral hypoglycemic agents or long-acting insulin is associated with the need for ongoing IV therapy, hospital admission and poor outcomes (repeat EMS responses and death). Thus, these patients need to be advised of these risks.

SEIZURE MEDICAL DIRECTIVE

- The indications have been simplified to describe an active generalized motor seizure. This implies the classic

tonic clonic presentation (regardless of causation) and therefore excludes partial seizures, petit mals, Jacksonian, etc.

- Most seizures are self-limiting. The application of this directive is intended for patients experiencing a seizure that is continuous or repetitive.

- Contraindications list hypoglycemia – this is a specific reversible cause that is appropriate to correct prior to determining the need for midazolam.

Routes of Administration:

- Midazolam has the widest variety of routes of administration to suit the varied presentations.
- IV: best route to provide anti-seizure medication, but the administration and time required to secure the route can be difficult. When in place, midazolam should be administered over 1 – 2 minutes.
- IM: easy access to large muscle groups with excellent blood flow, but the patient may be difficult to restrain. Consider sharp safety.
- IN: rapid access to the circulation with no sharps to worry about. Split doses between nares.
- Buccal: good absorptive surface and ease of administration. Consider the risk of aspiration.

OPIOID TOXICITY MEDICAL DIRECTIVE

- The inability to adequately ventilate is a requirement to proceed with the application of this medical directive. The inability to adequately ventilate could apply to situations like moving a patient down a flight of stairs or the inability to ventilate during that time.

- Contraindication lists uncorrected hypoglycemia – this is a specific reversible cause that is appropriate to correct prior to determining the need for additional therapy.

- Remember, Naloxone is ONLY being administered to improve respiratory status, NOT to improve LOA or for any other purpose.

- The mandatory patch point has been removed.

Routes of Administration:

- In keeping with the conventions of the medical directives, the order of preference of route of administration is as listed: SC is first, then IM, then IN and then IV (where certified and authorized in IV initiation). SC is the preferred route (Clarke, Dargan & Jones, 2005). Specific details for each subsequent route are included below.
- IM
  - faster onset and shorter duration than via SC route.
- IN
  - rapid absorption,
  - concern with proximity to the patient's mouth (for safety),
  - no sharps.
- IV
  - smaller dose,
  - virtually instantaneous effect,
  - very short duration,
  - ideal in the apneic patient.
- Note: IV Naloxone titration refers to administering only small increments of the 0.4 mg dose at a time to restore respiratory effort, but limit the rise in wakefulness.

- The directive now allows for three (3) total doses of naloxone, administered in ten (1)0 minute intervals by the SC, IM and IN routes, and immediately for the IV route.

- In the setting of bystander administered naloxone, the Paramedic should use his/her judgment to determine the most appropriate patient care, being mindful of the potential risks (i.e. unmasking alternative toxidromes and those associated with the route of administration) with the administration of subsequent naloxone.

OROTRACHEAL INTUBATION MEDICAL DIRECTIVE

- ETI (Endotracheal Intubation) is not mandatory. The importance of definitive airway management has given way to basic airway management and less invasive approaches.
- The contraindication which references age < 50 refers specifically to patients experiencing an asthma exacerbation and who are NOT in or near cardiac arrest.
- Lidocaine spray is indicated for “awake” intubations only and should be applied to the hypopharynx.
- Topical Lidocaine dosing has been updated: A single spray is 10 mg, and the maximum body dose is 5 mg/kg which includes Lidocaine administered by any route (IV and topical)
- In the treatment statement, “consider intubation” is followed by “with or without facilitation devices”. This is a generic statement to address everything from the air trach, to the bougie to all things as yet undefined. The generic statement enables us to continue to use the directives despite changes in technology without being prescriptive.
- ETI confirmation has been updated and now requires $ETCO_2$ waveform capnography as the only primary method. It is the most reliable method to monitor placement of an advanced airway (AHA guidelines 2015, Part 7). In the event it is not available, three (3) secondary methods must be used; for example: colormetric detector that changes color with exposure to CO_2.
- Definition of intubation attempt: Introducing the laryngoscope into the patient’s mouth with the intent to then insert an endotracheal tube is considered an attempt and should be documented as such including success or failure.
- The number of attempts is clearly defined as two (2) intubation attempts per patient regardless of the route chosen.
- Lidocaine administration prior to intubating a head injured patient is not indicated and has been removed.

BRONCHOCONSTRICTION MEDICAL DIRECTIVE

- Suspected bronchoconstriction applies to asthma, COPD, and other causes of bronchoconstriction. Symptoms of bronchoconstriction may include wheezing, coughing, dyspnea, decreased air entry and silent chest.
- Epinephrine 1:1,000 IM is indicated when the patient is asthmatic and BVM ventilation is required. This is typically after salbutamol has had no effect, however salbutamol could be bypassed and epinephrine be administered immediately due to the severity of the patient’s condition. The indications to administer epinephrine do not change based on the ability to administer salbutamol.
- When a dose of MDI salbutamol is administered, the intent is to deliver all six (6) (pediatric) or eight (8) (adult) sprays to complete a dose. It would be under unusual circumstances to deliver less than the full dose.
- MDI administration is preferred over nebulization. If patient is unable to accept or cooperate with MDI administration, the nebulized route may be considered (maximum three (3) doses).

- Technique for administration of MDI salbutamol: Provide one MDI spray, followed by 4 breaths to allow for inhalation. It will take 1 minute to deliver a full adult dose to a patient breathing at a rate of 32 breaths per minute.
- The MDI should be considered a single patient use device.
- Nebulization increases the mobilization of any contagion and a Paramedic should use PPE.

MODERATE TO SEVERE ALLERGIC REACTION MEDICAL DIRECTIVE

- The medical directive now includes a range of allergic reactions from moderate to severe and the administration of diphenhydramine.
- Anaphylaxis is life-threatening and delays in administration of epinephrine are associated with greater mortality. If the patient meets the indications and none of the contraindications, epinephrine should be administered because it may prove to be life-saving.
- Epinephrine 1:1,000 in anaphylaxis is administered via the IM route only.
- Epinephrine Dose: 0.01 mg/kg to a maximum of 0.5 mg (rounded to the nearest 0.05 mg). The directive now enables the paramedic to administer a second dose after a “minimum 5 minutes” if there has not been clinical improvement. If the patient’s clinical condition does not improve and that in the opinion of the Paramedic(s) the patient would benefit from further doses, a patch to a BHP must be initiated.
- Skin findings are most common but up to 20% of patients do not have hives or other skin symptoms. Therefore ensure that all body systems are assessed to determine the most appropriate treatment plan.
- Urticaria alone is not an indication for administration of epinephrine IM, the patient must present with at least one other sign or symptom.
- Diphenhydramine administration (when available) should always follow the administration of epinephrine as outlined in the Medical Directive.

Please refer to the table on page 14 as a reference for differentiating an anaphylactic reaction from a local reaction.

CROUP MEDICAL DIRECTIVE

- The presentation must be severe. Most presentations of croup are mild and are well tolerated by the patient.
- Prior to initiating nebulized epinephrine, moist air and cold air may be attempted if available and patient’s condition permits.
- Croup is occurring more and more frequently in older patients including adults, and if the indications are met, a patch to a BHP would be required to consider treatment under this medical directive.
- All patients treated with epinephrine need to be transported for observation for rebound as the medication wears off.

TENSION PNEUMOTHORAX MEDICAL DIRECTIVE

- Only the second inter-costal space is approved for chest needle placement for this reason: these patients are typically supine and/or spinal immobilized, and in that position, air rises and will escape at the second inter-costal space.

- A one way valve should be applied to cover and protect the needle to provide air escape from the chest.

PEDIATRIC PAIN MEDICAL DIRECTIVE

- Severe pain is intended to reflect a pain scale rating of 7/10 or more.

- This directive is intended for treatment of all patients under 18 year of age, **BUT** if the patient is less than 8 years of age, a BHP patch is required.

- SC injection is a new route for the administration of Morphine. SC has less variable absorption and a shorter time to peak effect in the pediatric population and is considerably less painful.

- Injury to the head, chest, abdomen or pelvis is a contraindication for Morphine administration in pediatrics, but not in adults. This is a new directive and therefore a conservative approach has been taken to minimize risk.

- The routes of administration for morphine are listed as IV/SC. Both routes are listed together and therefore are considered equivalent. The decision on the route chosen should be based on one of availability but also in discussion with the BHP during the patch.

ADULT ANALGESIA MEDICAL DIRECTIVE

- The redundant condition regarding trauma being isolated hip or extremity trauma has been removed from the conditions for acetaminophen, ibuprofen and ketorolac.

- Ketorolac dosing remains as a range of 10 – 15 mg. The range has been provided to simplify dose preparation. A 10 mg dose is considered to be the analgesic effective dose.

- As indicated in the clinical considerations, the preferred treatment for isolated hip and / or extremity trauma is acetaminhen and ibuprofen. Oral administration is as effective and is less invasive. (Wright et al., 1994).

- Consider administering Morphine in addition to oral therapy for patients with moderate pain.

Suspected Renal Colic:

- Suspected renal colic patients should routinely be considered for ketorolac administration because of the anti-inflammatory action and smooth muscle relaxant effects (reduces the glomerular filtration rate which reduces renal pelvic pressure and stimulation of the stretch receptors) as well as its inhibition of prostaglandin production makes them ideal agents to treat renal colic (Davenport & Waine, 2010).
- Ketorolac should not be administered in conjunction with ibuprofen as they are both NSAIDs and concomitant administration of both would increase the adverse effects.

- Ketorolac can be administered in conjunction with morphine.

Active Bleed Defined:

- External trauma that has been dressed and controlled is not considered an active bleed.
- Occult bleeding should be considered active bleeding (hematuria/GI bleed).

Unable to Tolerate Oral Medications Defined:

- Definition of 'unable to tolerate oral medications': For example: A patient that: must remain in the supine position (ie. on a backboard), is vomiting or nauseated, has difficulty swallowing or has a feeding tube in place would not be able to tolerate oral medications.

- The routes of administration for morphine are listed as IV/SC to mirror that of the pediatric analgesia medical directive. Both routes are listed together and therefore are considered equivalent. The decision on the route chosen should be based on one of availability.

- Injuries to the head, chest, abdomen or pelvis have been removed as contraindications to Morphine in adults to improve the treatment of patients in pain.

HYPERKALEMIA MEDICAL DIRECTIVE

- This directive enables ACPs to treat patients experiencing life threatening hyperkalemia. A patch to the BHP is required.

Pre-Arrest Defined:

- A patient presenting with one or more of:
  - Hypotension,
  - symptomatic bradycardia,
  - altered levels of awareness.

Recognition of hyperkalemia can be improved by considering:

- Patients most at risk:
  - Patients unable to excrete potassium, for example the chronic kidney disease patient on dialysis that may have missed treatment(s),
  - Conditions that may precipitate extracellular potassium shift such as crush syndrome, acid-base disturbances, prolonged status seizures, major burns or prolonged immobilization.
- Signs and symptoms:
  - CNS: muscle twitches, cramps or paresthesia.
  - GI: abdominal cramps, diarrhea or nausea/vomiting.
  - CVS: progression to hypotension, decreased LOA, bradycardia or ECG changes.
- ECG changes consistent with severe hyperkalemia:
  - Peaked T-waves, flattened P-waves, lengthened PR interval or widened QRS.
  - Progressive widening of QRS or bizarre QRS morphology such as sine-wave appearance.
  - Not all severe hyperkalemia manifests with all possible ECG changes. Consider the overall patient condition and risk factors and include these findings in your patch to the BHP.

Prehospital Goals in Hyperkalemia Treatment are focused on:

- Electrophysiological effects of excessive extracellular potassium on myocardium. Calcium Gluconate stabilizes cardiac cell membranes and may prevent life-threatening dysrhythmias. In circumstances of severe hyperkalemia such as cardiac arrest, multiple administrations may be indicated. In the unstable hyperkalemia patient, Calcium Gluconate should always be the priority treatment. In cases of cardiac arrest due to hyperkalemia, patch to the BHP early. Routine treatments common in medical cardiac arrest management may not respond until calcium is administered.
- Redistribution of extracellular potassium into the cells. Salbutamol in large doses may temporarily enhance potassium cellular uptake.

Safety Consideration:

- Ensure the IV line is patent and flowing well as Calcium Gluconate may cause necrosis if it extravasates.

- In the treatments, 12 lead acquisition and interpretation is listed both before and after treatment with calcium gluconate and salbutamol. This is intentional to measure ECG changes. This is only applicable to the patient NOT in cardiac arrest.

- CVAD has been included as a route of administration for calcium gluconate.

COMBATIVE PATIENT MEDICAL DIRECTIVE

- Prior to sedating patients, any possible reversible causes are to be addressed or ruled out. If the patient is combative to the point they cannot be assessed for reversible causes, patch to the BHP prior to treating with Midazolam.

- The dosing range enables the Paramedic to use his/her clinical judgment to determine an appropriate dose. The patient's physical size is not always the best determinant of required dose.

HOME DIALYSIS EMERGENCY DISCONNECT MEDICAL DIRECTIVE

- While there are several variations of dialysis machines/tubing, the best practice is to disconnect the patient by using the materials and instructions that are typically found in the disconnect kit. In the event instructions are not available, the tubing should be clamped first on the patient side, secondly on the machine side, and finally separated in the middle.

SUSPECTED ADRENAL CRISIS MEDICAL DIRECTIVE

- Patients with primary adrenal failure generally require little assistance from EMS, except in cases of stress when they can become critically ill; in which case they will require the administration of hydrocortisone. Hydrocortisone is not carried by paramedics.

- If the patient presents with signs and symptoms consistent with the medical directive, **AND** his/her medication is available, a Paramedic may administer 2 mg/kg up to 100 mg IM of hydrocortisone.

- These patients require transportation to a receiving facility for additional care and follow up.

ENDOTRACHEAL AND TRACHEOSTOMY SUCTIONING MEDICAL DIRECTIVE

- This directive enables the ACP to suction a pre-existing tracheostomy tube or an endotracheal tube (ETT) beyond the oropharynx.

- Insert the catheter and apply suction (10 seconds or less) while gently twisting and withdrawing the catheter.

- To minimize hypoxia, do not suction more frequently than once per minute.

- Exceeding the recommended suction pressures or maximum number can cause injury and swelling to the mucosal tissues of the airway and increases the risk of arrhythmia.

- In the event a pre-existing tracheostomy tube is withdrawn from the airway, follow your local RBH policy regarding airway management.

ADVANCED CARE PARAMEDIC AUXILIARY MEDICAL DIRECTIVES

ADULT INTRAOSSEOUS MEDICAL DIRECTIVE – AUXILIARY

- This auxiliary directive requires service operator and Base Hospital advocacy, training and education prior to implementation.
- The IO needles for the adult are typically the same gauge as the pediatric patient.
- The typical insertion site is the proximal tibia. Other sites are dependent upon RBH approval.
- Aspiration may be recommended as part of the procedural skill, but an inability to aspirate should be confirmed by testing patency by attempting to push fluid in.

CENTRAL VENOUS ACCESS DEVICE ACCESS (CVAD) MEDICAL DIRECTIVE – AUXILIARY

- The patient must be critically ill to access a CVAD device. This requirement is due to the associated risks involved with CVAD access.
- The following are some examples of CVAD devices (not an exhaustive list):
    - Hickman: Central catheter inserted through the anterior chest wall.
    - Subcutaneous Implanted Port (SIP): Port that resides under the skin and requires the use of a Huber needle to access it.
    - Peripherally Inserted Central Catheter (PICC): Located on the patient's upper arm, but is still direct to central circulation.
- The steps for accessing a CVAD are very specific. Please refer to provided skill sheets.

NASOTRACHEAL INTUBATION MEDICAL DIRECTIVE – AUXILIARY

- The contraindication which references age < 50 refers specifically to patients experiencing an asthma exacerbation and who are NOT in or near cardiac arrest.
- NTI should only be attempted when deemed necessary and is reserved only for the "spontaneously breathing" patient in severe respiratory distress.
- Lidocaine spray is indicated for "awake" intubations only and should be administered to both nares and hypopharynx.
- Topical Lidocaine dosing has been updated: A single spray is 10 mg, and the maximum body dose is 5 mg/kg which includes Lidocaine administered by any route (IV and topical).
- NTI confirmation has been updated and now requires ETCO2 waveform capnography as the only primary method. It is the most reliable method to monitor placement of an advanced airway (AHA guidelines 2015, Part 7). In the event it is not available, three (3) secondary methods must be used; for example: colormetric detector that changes color with exposure to CO2.
- Definition of intubation attempt: Insertion into a nare is considered one attempt and should be documented as such including success or failure.
- The number of attempts is clearly defined as two (2) intubation attempts per patient regardless of the route chosen.

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) MEDICAL DIRECTIVE – AUXILIARY

- This is for the treatment of severe respiratory distress AND acute pulmonary edema (regardless of origin) or COPD.
- CPAP should be considered as additive therapy to the bronchoconstriction (specifically COPD exacerbation) or acute cardiogenic pulmonary edema medical directives, not a replacement.
- CPAP may be interrupted momentarily to administer nitroglycerin (salbutamol can be administered via MDI port).
- CPAP is not used to treat an asthma exacerbation.
- CPAP should be discontinued when the patient becomes hypotensive (SBP < 100 mmHg) as described in the conditions of the directive.

SUPRAGLOTTIC AIRWAY MEDICAL DIRECTIVE– AUXILIARY

- **Active Vomiting Defined**:
  Active vomiting is considered ongoing vomiting where the paramedic is unable to clear the airway. In this situation, the supraglottic airway (SGA) should not be inserted.
- If the patient vomited once and the airway was cleared successfully, a supraglottic airway may be inserted.
- The number of attempts is clearly defined as two (2) total per patient, and not per provider.
- Confirmation of SGA insertion requires $ETCO_2$ waveform capnography. It is the most reliable method to monitor placement of an advanced airway (AHA guidelines 2015, Part 7). If it is not available, at least two (2) secondary methods must be used. SGA placement should be verified frequently and again at transfer of care. Findings and witness (where possible) should be documented on the patient care record.

ROSC:

- In the event the patient with an SGA is place sustains a ROSC, the SGA should only be removed if the gag reflex is stimulated; expect to remove it as the level of awareness improves.

CRICOTHYROTOMY MEDICAL DIRECTIVE – AUXILIARY

- This is a last resort option for airway management. Cricothyrotomy should only be considered if the Paramedic cannot ventilate with the BVM and is unable to intubate or place a supraglottic airway. **A patch to the BHP is required prior to the attempt.**
- The frequency of complete airway obstructions that cannot be relieved is very low and therefore the frequency of use of this medical directive application is equally low. Frequent practice and review is necessary.
- In the clinical considerations, it specifies that you must use at least two (2) secondary methods to confirm placement.

NAUSEA / VOMITING MEDICAL DIRECTIVE– AUXILIARY

- While the indications list nausea or vomiting, patients presenting with these symptoms do not necessarily require treatment.

- Overdose on antihistamines, anticholinergics or TCAs are contraindications for the administration of dimenhydrinate. For a comprehensive list of these medications, please refer to the most current CPS or contact your RBH.

- If dimenhydrinate is administered via the IV route, it must be diluted as per the medical directive with saline to facilitate a slower and less painful administration. Based on a supply of 50 mg in 1 ml, either dilution method of 5 mg/ml (diluted with 9 ml of NaCl) or 10 mg/ml (diluted with 4 ml of NaCl) is acceptable.

PROCEDURAL SEDATION MEDICAL DIRECTIVE – AUXILIARY

- This directive applies only after the ETT has been placed **OR** after pacing has been initiated.

- Transcutaneous pacing is initiated when the patient is hypotensive. As the blood pressure improves, pacing is not discontinued, but the patient may be more aware of the discomfort and may require sedation.

- The conditions for midazolam have been revised. The respiratory rate is now ≥ 10 breaths/min. This is now consistent with other respiratory rate conditions used within the medical directives (opioid toxicity).

ELECTRONIC CONTROL DEVICE PROBE REMOVAL MEDICAL DIRECTIVE – AUXILIARY

- Probes are sharps that should be considered contaminated and need to be handled and disposed of accordingly.

- Conditions indicate that an “unaltered” LOA is required for probe removal. If the patient’s LOA is “altered” they are not able to provide consent to remove the probes and as such, the probes will not be removed by Paramedics.

- It is important to understand why the electronic control device was deployed in relation to the patient’s presenting or underlying medical condition with specific attention to the potential for excited delirium.

MINOR ABRASIONS MEDICAL DIRECTIVE – AUXILIARY – SPECIAL EVENT

- Topical antibiotic ointment is left generic to allow for service provider specifications in consultation with the BHP.

MINOR ALLERGIC REACTION MEDICAL DIRECTIVE – AUXILIARY – SPECIAL EVENT

- Signs and symptoms MUST be consistent with a mild allergic reaction.

MUSCULOSKELETAL PAIN MEDICAL DIRECTIVE – AUXILIARY – SPECIAL EVENT

- The patient cannot have taken acetaminophen within the last 4 hours to receive it from the Paramedic.

HEADACHE MEDICAL DIRECTIVE – AUXILIARY – SPECIAL EVENT

- The patient cannot have taken acetaminophen within the last 4 hours to receive it from the Paramedic.

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