

Symptomatic Bradycardia

- Hemodynamic instability refers specifically to hypotension (SBP < 90 mmHg) that requires pharmacologic or electrical intervention(s).
- 12 lead ECG should be obtained as early as possible.
- Atropine is to be administered in the setting of sinus bradycardia, junctional 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 should not be delayed to initiate IV access if the patient is unstable.
- 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.
- 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.
- 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.
- A contraindication to DOPamine administration is mechanical shock. Examples of mechanical shock include tension pneumothorax, pulmonary embolism, and cardiac tamponade.
- Notify the receiving hospital staff if the DOPamine drip goes interstitial as DOPamine can cause tissue necrosis which can be mitigated by a phentolamine injection at the hospital into the affected tissue.

Tachydysrhythmia Medical Directive

Introduction

Tachydysrhythmias are abnormal cardiac rhythms characterized by a rate over 100 beats per minute (BPM) and can be broadly classified as either narrow-complex (QRS duration < 120 ms) or wide-complex (QRS duration $\geq$ 120 ms). Supraventricular tachycardia (SVT) is one type of narrow complex tachycardia. The term SVT refers to any tachydysrhythmia originating above the level of the Bundle of His and can include regular and irregular tachydysrhythmias. This division assists with rhythm differentiation and treatment. Patient factors such as age and comorbidities play a significant role in determining which tachyarrhythmia they are experiencing. Patients can experience a sudden onset of symptoms, which may include:

- Chest pain
- Palpitations
- Dyspnea or shortness of breath
- Presyncope or syncope
- Light-headedness
- Anxiety

These symptoms can be due to the heart pumping less efficiently as a result of the increased rate and/or the altered cardiac conduction pathway.

Essentials

The generic symptoms experienced as a result of tachydysrhythmias can create a long list of differential diagnoses for paramedics to consider. Taking a thorough history, performing a physical exam, and obtaining a 12-Lead ECG, where possible, are necessary to accurately identify the cause of these symptoms.

Obtaining a 12-lead ECG is strongly recommended, where possible, to accurately identify the cardiac rhythm. A 3-lead or rhythm strip does not always provide enough information to make a complete or accurate assessment. A paramedic should observe the rate, regularity, presence and morphology of P waves, and the width of the QRS complex to assist in identifying the correct tachycardic rhythm to provide appropriate treatment.

Tachycardia can be a physiologic compensatory mechanism in response to various underlying causes (e.g. pain, hypovolemia, fever, and hypoxia). In these cases, the underlying cause of tachycardia should be treated, and interventions within this medical directive should not be initiated.

Patients may experience chest pain as a result of the increased cardiac demand created by the tachydysrhythmia. Chest pain is not a contraindication to treatment under this Medical Directive. A paramedic should use their clinical judgment after treating the tachydysrhythmia to determine whether the chest pain is ongoing and ischemic in nature,

and whether the patient meets the conditions for treatment under the Cardiac Ischemia Medical Directive.

Valsalva Maneuvers

Before initiating a Valsalva maneuver, it is best practice to start an intravenous on the patient (if authorized) due to the small risk that the patient may become hypotensive during the procedure. Both PCPs and ACPs can safely perform a Valsalva maneuver or modified Valsalva maneuver for a patient experiencing a supraventricular tachycardia (SVT). Paramedics should use their clinical judgment in determining if the modified Valsalva or Valsalva maneuver should be utilized. The standard Valsalva maneuver may be considered in circumstances when the patient is unable to lay flat or paramedics are not safely able to elevate the patient's legs.

- Complications that may occur are:
- Rupture of the round window of the ear
- Light-headedness, dizziness or syncope
- Chest pain
- Nausea/vomiting

There is a low risk of initiating labour in pregnant patients by performing a Valsalva technique. Pregnancy is not a contraindication; however, pregnant patients are excluded from the Treat & Discharge portion of the Tachydysrhythmia Medical Directive.

Adenosine (ACP only)

Adenosine is the preferred treatment option for patients exhibiting mild to moderate symptoms associated with supraventricular tachycardia that is unresponsive to the Valsalva technique. However, in cases where patients present with severe symptoms or demonstrate significant hemodynamic instability, electrical cardioversion is warranted.

A diagnosed history of asthma is not a contraindication to the administration of adenosine. The patient must be actively exhibiting signs and symptoms of bronchoconstriction.

Cardioversion (ACP Only)

In the hemodynamically unstable patient experiencing tachycardia, electrical cardioversion is the safest and most reliable treatment. Patients who are not obtunded may require analgesia and sedation in order to tolerate this procedure. Consider discussing this with the BHP during the patch.

Interventions

Specific to this Medical Directive, treatments are not listed in the order in which they should be administered. The initial choice will be based on the rhythm interpretation (narrow vs wide) and the hemodynamic stability of the patient.

Narrow Complex Tachycardia

The maximum attempts listed in the ALS PCS are two (2) attempts per episode. Patients may convert with a Valsalva technique and revert to an SVT several minutes later. In these circumstances, this is considered a new episode, and the paramedic may provide additional Valsalva attempts, however, the patient would not qualify for Treat and Discharge.

Adenosine (ACP only)

When adenosine is administered, it should be immediately followed by a 20 mL normal saline bolus.

Lidocaine and Wide Complex Tachycardia (ACP only)

Any topical lidocaine doses administered during orotracheal intubation count toward the 5 mg/kg total dose.

In the event that the patient receives the maximum dose of lidocaine and then experiences cardiac arrest, further doses of lidocaine should be withheld due to the potential for adverse effects. Local Anesthetic Systemic Toxicity (LAST) occurs when local anesthetics, like lidocaine, accumulate in the bloodstream at toxic levels, often from excessive dosing, rapid absorption, or accidental intravascular injection. LAST can affect the central nervous and cardiovascular systems, causing symptoms that range from mild to severe. Symptoms may include dizziness, tinnitus, confusion, seizures, and arrhythmias.

References

1. Appelboam, A., Reuben, A., Mann, C., Gagg, J., Ewings, P., Barton, A., Lobban, T., Dayer, M., Vickery, J., & Bengler, J. (2015). Postural modification to the standard valsalva manoeuvre for emergency treatment of supraventricular tachycardias (REVERT): A randomised controlled trial. *The Lancet*, 386(10005), 1747–1753. [https://doi.org/10.1016/s0140-6736\(15\)61485-4](https://doi.org/10.1016/s0140-6736(15)61485-4)
2. Groth, M., & Gaviola, M. (2015, March 30). Adenosine in reactive airway disease. ALiEM. <https://www.aliem.com/adenosine-in-reactive-airway-disease/#:~:text=Problems%20occur%20when%20adverse%20reactions>
3. Knight, B. P. (2023, May 19). Narrow QRS complex tachycardias: Clinical manifestations, diagnosis, and evaluation. UptoDate. https://www.uptodate.com/contents/narrow-qrs-complex-tachycardias-clinical-manifestations-diagnosis-and-evaluation?search=SVT&source=search_result&selectedTitle=1%7E91&usage_type=default&display_rank=1
4. Panchal, A. R., Bartos, J. A., Cabañas, J. G., Donnino, M. W., Drennan, I. R., Hirsch, K. G., Kudenchuk, P. J., Kurz, M. C., Lavonas, E. J., Morley, P. T., O'Neil, B. J., Peberdy, M. A., Rittenberger, J. C., Rodriguez, A. J., Sawyer, K. N., Berg, K. M., Arafah, J., Benoit, J. L., Chase, M., & Fernandez, A. (2020). Part 3: Adult basic and advanced life support: 2020 american heart association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*, 142(16_suppl_2). <https://doi.org/10.1161/cir.0000000000000916>
5. Singh, S., & McKintosh, R. (2019, March 22). Adenosine STAT Pearls. Nih.gov; StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK519049/>

Tension Pneumothorax Medical Directive

Introduction

A tension pneumothorax is a life-threatening condition caused by the continuous entry and entrapment of air in the pleural space, thereby compressing the lungs, heart, blood vessels and other structures. As pressure increases, the patient experiences worsening shortness of breath and decreased cardiac output. Initial signs may include tachypnea, asymmetrical breath sounds, tachycardia and hypotension, eventually leading to cardiac arrest if untreated. Note that signs such as jugular venous distention and tracheal deviation are often hard to assess and are rarely seen. While the cause is often trauma-related, it can also occur spontaneously.

Essentials

A needle thoracostomy is performed to treat a tension pneumothorax by allowing air to escape from the pleural space, thereby improving the patient's respiratory and cardiovascular status. This intervention requires careful monitoring for potential complications such as catheter occlusion, in which cases an alternative site may be necessary to avoid re-tension.

Consider tension pneumothorax as a differential (i.e. DOPES) for intubated patients where a sudden increase in airway resistance and a drop in SpO₂ and EtCO₂ during ventilations is noted.

Additional differential diagnoses such as pulmonary embolism, COPD exacerbation or cardiac tamponade should be considered prior to needle decompression.

Interventions

The primary recommended location for adults and children is the anterior axillary line, due to higher success and reduced iatrogenic injury rates. Consider using the triangle of safety to assist in landmarking. The mid-clavicular line remains an alternative site when clinically appropriate.

When determining catheter length for pediatric patients, the patient's age and size should be considered. A 14G or 16G, 1.5-inch angiocath needle is appropriate for performing a needle thoracostomy in patients who are less than 13 years of age or small adolescents. Any needle that is longer can increase the risk of iatrogenic injury to the patient. A 2-inch needle is more than double the chest wall thickness of most children. Adults or adolescents of adult size should be treated using a minimum 14G 2.5-inch angiocath needle or larger.

Occlusive chest seals should not be placed over the catheter, as there is no evidence to support their use. The site may be left open, or a chest drainage valve (for example, Heimlich valve or Cook chest drain) may be applied at or below the level of the catheter.

References

1. Scand J Trauma Emerg Resusc 2019
2. Prehospital Emerg Care 2019
3. Pleural cavity: Anatomy, location, function | Kenhub September 27, 2021
<https://www.ncbi.nlm.nih.gov/books/NBK519048/>
4. American Heart Association (2020). 2020 Handbook of Emergency Cardiovascular Care for Healthcare Providers (International English)
5. Manthey D. Nicks, A. 2017. Pneumothorax. Emergency Medicine. Elsevier. USA
6. Mills, T. 2017. Trauma Resuscitation. Emergency Medicine. Elsevier. USA
7. Jackimczyk, K. 2017 Altered Mental Status and Coma. Emergency Medicine Secrets Elsevier
8. Leigh-Smith S, Harris T. 2005 Tension Pneumothorax – time for a re-think? Emerg Med J 2005;22:8-16 <https://emj.bmj.com/content/emjmed/22/1/8.full.pdf>
9. Laan, Danuel, and Trang Diem. “Chest Wall Thickness and Decompression Failure: A Systematic Review and Meta-Analysis Comparing Anatomic Locations in Needle Thoracostomy.” Pub Med, Apr. 2016
10. Rezaie, S. 2016, March 21 What is the Best Anatomic Location for Needle Thoracostomy? Retrieved from <https://rebelem.com>
11. Alison, R. Braithwaite, S. 2014. Needle Decompression of Tension Pneumothorax. ITLS Retrieved from: www.itrauma.org
12. Shertz, M. (2019). Crisis Medicine. Pediatric Needle Decompression: Are We Using the Right Site and Needle Length? Retrieved from: https://www.crisis-medicine.com/pediatric-needle-decompression/?srsltid=AfmBOordbXFWXuy0aoOSL_IT1X9ytTNL2db0JeYayvTrxCGMgMBhaYr8

Trauma Cardiac Arrest Medical Directive

- An intravenous fluid bolus may be considered to assist with reversible causes if transport to the ED will not be delayed.

Traumatic Hemorrhage Medical Directive

Introduction

Trauma management involves rapid assessment and treatment of life-threatening injuries at the scene. Priorities should focus on maintaining hemodynamic stability and preventing hypovolemic shock in the prehospital setting.

Paramedics should suspect severe traumatic hemorrhage when there is evidence of severe blood loss (either external or internal) and altered hemodynamics in the presence of a traumatic mechanism of injury.

Essentials

Tranexamic acid (TXA) is an antifibrinolytic and reversibly inhibits the plasminogen activation, thereby stabilizing blood clots and preventing further hemorrhage⁵. Currently, published prehospital research has only demonstrated the efficacy of TXA in adult populations¹.

External hemorrhage can often be controlled with direct pressure; however, tranexamic acid (TXA) can be administered to help manage uncontrolled traumatic hemorrhage, whether internal or external.

TXA has not shown efficacy in traumatic cardiac arrests and should not be administered in these situations. Additionally, the current Field Trauma Triage Standard and Traumatic Hemorrhage Medical Directive are exclusive of each other, so patients need to be assessed appropriately to determine if they meet one or both.

Interventions

The preferred route of administration is IV due to its rapid onset, provided IV initiation does not delay transport. This can be accomplished by adding 1 g of TXA into a 50 mL bag of normal saline or D5W and administering it over 5 minutes. If a 50 mL bag of normal saline or D5W is unavailable, administration in a 10 mL syringe can be accomplished by pushing the medication over at least 5 min. The alternate route of administration is IM^{5, 4}.

TXA should not delay transport and should not be prioritized over the management of other reversible causes.

References

1. Biffi A, Porcu G, Castellini G, Napoletano A, Coclite D, D'Angelo D, Fauci AJ, Iacorossi L, Latina R, Salomone K, Iannone P, Gianola S, Chiara O; Italian National Institute of Health Guideline Working Group. Systemic hemostatic agents initiated in trauma patients in the pre-hospital setting: a systematic review. *Eur J Trauma Emerg Surg*. 2023 Jun;49(3):1259-1270. doi: 10.1007/s00068-022-02185-6. Epub 2022 Dec 16. PMID: 36526811; PMCID: PMC10229449
2. "Initial Management of Trauma in Adults." UpToDate, [Initial management of trauma in adults - UpToDate](#) Accessed 3 July 2024.
3. Caroline, Nancy. Nancy Caroline's Emergency Care in the Streets: Canadian Edition, Chapter on Trauma.

4. "Tranexamic Acid: Drug Information." UpToDate, www.uptodate.com/contents/tranexamic-acid-drug-information?search=tranexamic%20acid&source=panel_search_result&selectedTitle=1~148&usage_type=panel&kp_tab=drug_general&display_rank=1#F57229552 . Accessed 3 July 2024.
5. Cai, J., et al. "The Many Roles of Tranexamic Acid: An Overview of the Clinical Indications for TXA in Medical and Surgical Patients." *European Journal of Haematology*, vol. 104, no. 2, 2020, pp. 79-87, doi:10.1111/ejh.13348.
6. Basic Life Support Patient Care Standards (BLS-PCS) Version 3.4. Ontario Ministry of Health and Long-Term Care, 2022.
7. American College of Surgeons. (2018). *ATLS: Advanced Trauma Life Support Student Course Manual* (10th ed.). American College of Surgeons.

Special Event Medical Directives

Headache

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

Minor Abrasions

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

Minor Allergic Reaction

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

Musculoskeletal Pain

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

Drug Monographs



Disclaimer

The information contained herein does not supersede or negate the Ministry of Health's Ontario Provincial Advanced Life Support Patient Care Standards (ALS PCS) and should only serve as general information about the medication itself. For medication dosages, please refer to the current version of the ALS PCS. The included information focuses on common adverse reactions, drug interactions, and special considerations relevant to prehospital care. For more information, please review the suggested references below:

References

- Lexicomp
- Up to Date
- Compendium of Pharmaceuticals and Specialties (CPS)
- Drugbank.com (Open-source resource for paramedics)

Acetaminophen

Drug Name:	Acetaminophen
Brand Names:	Tylenol
Drug Classifications:	Analgesic, Nonopioid
Pharmacodynamics:	Although not fully elucidated, the analgesic effects are believed to be due to activation of descending serotonergic inhibitory pathways in the CNS. Interactions with other nociceptive systems may be involved as well. Antipyresis is produced from inhibition of the hypothalamic heat-regulating center.
Onset:	< 1 hour
Peak:	10 to 60 minutes
Duration:	4 to 6 hours
Route:	PO
Common Adverse Reactions:	n/a
Drug Interactions:	None significant
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/acetaminophen-paracetamol-drug-information?search=acetaminophen&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1

Adenosine

Drug Name:	Adenosine
Brand Names:	Adenocard
Drug Classifications:	Antiarrhythmic Agent
Pharmacodynamics:	Adenosine slows the conduction time through the AV node by interrupting the re-entry pathways through the AV node, ultimately restoring normal sinus rhythm.
Onset:	Rapid
Peak:	N/A
Duration:	Very brief
Route:	IV Push
Common Adverse Reactions:	Cardiac arrhythmias, nausea, chest pressure, dizziness, headache.
Drug Interactions:	dipyridamole carbamazepine
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/adenosine-drug-information?search=adenosine&source=panel_search_result&selectedTitle=1~150&usage_type=panel&kp_tab=drug_general&display_rank=1#F130654

Amiodarone

Drug Name:	Amiodarone
Brand Names:	Amiodarone
Drug Classifications:	Antiarrhythmic Agent, Class III
Pharmacodynamics:	Both alpha and beta blocking characteristics, affecting the sodium, potassium and calcium channels. This prolongs the action potential and refractory period in myocardial tissue, ultimately reducing cardiac muscle cell excitability.
Onset:	IV - 15 minutes
Peak:	IV - 1 to 4 hours
Duration:	IV - 3-6 hours
Route:	CVAD, IO, IV
Common Adverse Reactions:	Bradycardia, hypotension, nausea/vomiting
Drug Interactions:	None significant
Special Considerations:	Vesicant medication, ensure adequate IV site prior to. For IV push administration, side effects include hypotension from its beta blocker and calcium channel blockade action.
References:	https://www.uptodate.com/contents/amiodarone-drug-information?search=amiodarone&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1#F133585

Acetylsalicylic Acid (ASA)

Drug Name:	Acetylsalicylic acid (ASA)
Brand Names:	Aspirin, Novasen, Entrophen
Drug Classifications:	Analgesic, Nonopioid; Antiplatelet Agent; Nonsteroidal Anti-inflammatory Drug (NSAID)
Pharmacodynamics:	Inhibits COX-1 and 2 enzymes, which results in decreased formation of prostaglandin precursors; inhibits formation of prostaglandin derivative, thromboxane A2, thus inhibiting platelet aggregation; has antipyretic, analgesic, and anti-inflammatory properties
Onset:	~ 20 min
Peak:	1-2 hours
Duration:	4-6 hours
Route:	PO
Common Adverse Reactions:	Abdominal pain, nausea, vomiting
Drug Interactions:	None significant
Special Considerations:	Concomitant use of ASA and other NSAIDS may increase the risk of GI side effects
References:	https://www.uptodate.com/contents/aspirin-drug-information?search=acetylsalicylic%20acid&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1

Atropine

Drug Name:	Atropine
Brand Names:	AtroPen
Drug Classifications:	Anticholinergic
Pharmacodynamics:	Blocks the action of acetylcholine at parasympathetic sites in smooth muscle, secretory glands, and the CNS; increases cardiac output, and dries secretions. Atropine reverses the muscarinic effects of cholinergic poisoning due to agents with acetylcholinesterase inhibitor activity by acting as a competitive antagonist of acetylcholine at muscarinic receptors. The primary goal in cholinergic poisonings is reversal of bronchorrhea and bronchoconstriction.
Onset:	Inhibition of saliva: IM: within 30 minutes Increased heart rate: IM: 15 - 30 minutes; IV: immediate
Peak:	Inhibition of saliva: IM: 30-60 minutes Increased heart rate: IM: 45-60 minutes; IV: 1-4 minutes
Duration:	Inhibition of saliva: IM: less than 4 hours
Route:	IV, SC
Common Adverse Reactions:	Flushing, dry mouth/throat, tachycardia
Drug Interactions:	None significant
Special Considerations:	SC route is for patients being treated under the Palliative Care Medical Directives.
References:	https://www.uptodate.com/contents/atropine-systemic-drug-information?search=atropine&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&showDrugLabel=true&display_rank=1

Buprenorphine/Naloxone

Drug Name:	Buprenorphine/Naloxone
Brand Names:	Suboxone
Drug Classifications:	Opioid agonist/antagonist
Pharmacodynamics:	Suboxone is a partial agonist (activation of receptor) at the mu-opioid receptor and an antagonist (non-activation of receptor) at the kappa-opioid receptor. As a result, Suboxone has a high affinity for the mu-opioid receptor but lower intrinsic activity than full mu-opioid agonists.
Onset:	20-45 minutes
Peak:	1-4 hours
Duration:	Up to 3 days
Route:	Oral strips
Common Adverse Reactions:	Dizziness, confusion, and withdrawal symptoms, which may include nausea, vomiting, sweating, tachycardia, increased blood pressure, and tremulousness.
Drug Interactions:	long-acting opioids
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/buprenorphine-and-naloxone-drug-information?source=auto_suggest&selectedTitle=1~1---1~4---suboxone&search=suboxone

Calcium Gluconate

Drug Name	Calcium Gluconate
Brand Names:	Calcium Sandoz
Drug Classifications:	Calcium Salt; Electrolyte Supplement
Pharmacodynamics:	Moderates nerve and muscle performance via action potential threshold regulation.
Onset:	Rapid
Peak:	n/a
Duration:	n/a
Route:	CVAD, IO, IV
Common Adverse Reactions:	Rapid IV administration may cause bradycardia, hypotension, and syncope
Drug Interactions:	None significant
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/calcium-gluconate-drug-information?search=calcium%20gluconate&source=panel_search_result&selectedTitle=1%7E59&usage_type=panel&kp_tab=drug_general&display_rank=1

Dexamethasone

Drug Name	Dexamethasone
Brand Names:	APO-Dexamethasone
Drug Classifications:	Anti-inflammatory Agent; Corticosteroid
Pharmacodynamics:	Long-acting corticosteroid with minimal sodium-retaining potential. It decreases inflammation by suppression of neutrophil migration, decreased production of inflammatory mediators, and reversal of increased capillary permeability; suppresses normal immune response.
Onset:	PO: 30 min IV: Rapid
Peak:	PO: 1-2 hours IM: 30-120 minutes IV: 5-10 minutes
Duration:	IV: 36- 72hrs
Route:	IM, IV, PO
Common Adverse Reactions:	n/a
Drug Interactions:	None significant
Special Considerations:	A single dose is unlikely to cause significant side effects. Hyperactivity and insomnia are more likely to occur when multiple doses of corticosteroids are administered.
References:	https://www.uptodate.com/contents/dexamethasone-systemic-drug-information?search=dexamethasone&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&showDrugLabel=true&display_rank=1

Dextrose

Drug Name	Dextrose (D50W, D10W)
Brand Names:	Glucodex
Drug Classifications:	Hypoglycemic antidote
Pharmacodynamics:	Immediate source of calories/glucose.
Onset:	Immediate
Peak:	D50W: 3-5 min D10W: 5-10 min
Duration:	D50W: 10-20 min D10W: 30-60 min
Route:	IV
Common Adverse Reactions:	Phlebitis, venous thrombosis
Drug Interactions:	None significant
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/instant-glucose-and-intravenous-dextrose-drug-information?search=glucodex&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1 2024 american heart association and american red cross guidelines for first aid. Circulation, 2024 guidelines for the use of an insulin infusion for the management of hyperglycemia in critically ill patients. Critical Care Medicine, 2012

DimenhyDRINATE

Drug Name	DimenhyDRINATE
Brand Names:	Gravol
Drug Classifications:	Antiemetic, Antihistamine (Histamine H1 Antagonist)
Pharmacodynamics:	Competes with histamine for H1-receptor sites on effector cells in the gastrointestinal tract, blood vessels, and respiratory tract; blocks chemoreceptor trigger zone, diminishes vestibular stimulation, and depresses labyrinthine function through its central anticholinergic activity.
Onset:	IV: immediate IM: 20-30 minutes
Peak:	1-4 hours
Duration:	3-6 hours
Route:	CVAD, IM, IV, SC
Common Adverse Reactions:	Dizziness, drowsiness, restlessness, tachycardia
Drug Interactions:	None significant
Special Considerations:	If dimenhyDRINATE is administered via the IV route, it must be diluted with normal saline to facilitate a slower and less painful administration. Based on a supply of 50 mg in 1 mL, either a dilution method of 5 mg/mL (diluted with 9 mL of NaCl) or 10 mg/mL (diluted with 4 mL of NaCl) is acceptable. CVAD and SC routes are for patients being treated under the Palliative Care Medical Directives.
References:	https://www.uptodate.com/contents/dimenhydrinate-drug-information?search=dimenhydrinate&source=panel_search_result&selectedTitle=1%7E23&usage_type=panel&kp_tab=drug_general&display_rank=1#F160732

DiphenhydrAMINE

Drug Name	DiphenhydrAMINE
Brand Names:	Benadryl
Drug Classifications:	Antihistamine (Histamine H1 Antagonist)
Pharmacodynamics:	Competes with histamine for H ₁ -receptor sites on effector cells in the gastrointestinal tract, blood vessels, and respiratory tract. May also produce anticholinergic and sedative effects.
Onset:	IV: 5-10 minutes IM: 30-60 minutes PO: within 60 minutes
Peak:	~2 hours
Duration:	10-12 hours
Route:	IM, IV, PO
Common Adverse Reactions:	Tachycardia, nausea, drowsiness, and nervousness.
Drug Interactions:	None significant
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/diphenhydramine-systemic-drug-information?search=diphenhydramine&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&showDrugLabel=true&display_rank=1#F8082114 Canadian Pharmacists Association. (2023). <i>Compendium of pharmaceuticals and specialties (CPS): The Canadian drug reference for health professionals</i> (58th ed.). Canadian Pharmacists Association.

DOPamine

Drug Name	DOPamine
Brand Names:	n/a
Drug Classifications:	inotrope
Pharmacodynamics:	Stimulates both adrenergic and dopaminergic receptors. Low doses (2 mcg/kg/min IV) are primarily dopaminergic and produce renal and mesenteric vasodilation. Medium doses (5-10 mcg/kg/min IV) stimulate B1-adrenergic receptor activity, resulting in increased inotropic and chronotropic myocardial effects. High doses (10-20 mcg/kg/min IV) stimulate alpha-adrenergic activity, resulting in vasoconstriction of certain smooth muscle.
Onset:	Within 5 minutes
Peak:	5 minutes
Duration:	<10 minutes
Route:	IV
Common Adverse Reactions:	Arrhythmias, dyspnea, nausea, vomiting, palpitations
Drug Interactions:	None significant
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/dopamine-drug-information?search=dopamine&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1 https://handbook.bcehs.ca/drug-monographs/dopamine/

EPINEPHrine

Drug Name	EPINEPHrine
Brand Names:	Adrenalin, Allerject, Anapen, EpiPen
Drug Classifications:	Sympathomimetic agent; Alpha-/Beta- Agonist
Pharmacodynamics:	Stimulates α_1 , β_1 , and β_2 adrenergic receptors, resulting in relaxation of smooth muscle of the bronchial tree, cardiac stimulation (increasing myocardial oxygen consumption), and dilation of skeletal muscle vasculature; small doses can cause vasodilation via β_2 vascular receptors; large doses may produce constriction of skeletal and vascular smooth muscle
Onset:	IV: rapid IM: 3-10 minutes NEB: 3-5 minutes
Peak:	IV: <5 minutes IM: 20 minutes
Duration:	IV: 5-10 minutes IM: 20-30 minutes NEB: 1-3 minutes
Route:	CVAD, ETT, IM, IO, IV, NEB
Common Adverse Reactions:	Anxiety, dizziness, headache, restlessness, palpitations
Drug Interactions:	Beta blockers may diminish the therapeutic effects of epinephrine.
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/epinephrine-adrenaline-systemic-drug-information?search=epinephrine&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&showDrugLabel=true&display_rank=1

FentaNYL

Drug Name	FentaNYL
Brand Names:	Fentanyl Citrate
Drug Classifications:	Analgesic, Opioid
Pharmacodynamics:	Binds with stereospecific receptors at many sites within the CNS, increases pain threshold, alters pain reception, and inhibits ascending pain pathways
Onset:	IV: 1-2 min IN: 5-10 min
Peak:	IV: 3-5 min IN: 10-20 min
Duration:	IV: 30-60 min IN: 30-60 min
Route:	CVAD, IN, IO, IV
Common Adverse Reactions:	Respiratory depression, drowsiness, dizziness
Drug Interactions:	Caution is advised when co-administering CNS depressants with fentanyl; may cause additive or synergistic CNS depressant effects leading to profound sedation and respiratory depression. Caution is advised when administering with hypotensive agents; may cause profound hypotension, bradycardia, and circulatory collapse with underlying cardiovascular disease. In each case, lower dose and close monitoring may be necessary.
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/fentanyl-drug-information?search=fentanyl&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1#F170659

Glucagon

Drug Name	Glucagon
Brand Names:	Baqsimi, Glucagen
Drug Classifications:	Glucose elevating agent
Pharmacodynamics:	Stimulates adenylate cyclase to produce increased cyclic AMP, which promotes hepatic glycogenolysis and gluconeogenesis, causing a rise in blood glucose levels; antihypoglycemic effect requires pre-existing hepatic glycogen stores. Extrahepatic effects of glucagon include relaxation of the smooth muscle of the stomach, duodenum, small bowel, and colon
Onset:	IM: 10 minutes IN: 13-16 minutes
Peak:	IM: 30-90 minutes IN: 60-90 minutes
Duration:	60-90 minutes
Route:	IM, IN
Common Adverse Reactions:	Headache, nausea, vomiting
Drug Interactions:	None significant
Special Considerations:	Administration of glucagon to those with pheochromocytoma can trigger a dangerous release of catecholamines (epinephrine and norepinephrine) from the tumor, resulting in an increase in blood pressure/hypertensive crisis.
References:	https://www.uptodate.com/contents/glucagon-drug-information?search=glucagon&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1

Glycopyrrolate

Drug Name	Glycopyrrolate
Brand Names:	Cuvposa
Drug Classifications:	Anticholinergic Agent
Pharmacodynamics:	Blocks the action of acetylcholine at parasympathetic sites in smooth muscle, secretory glands, and the CNS; indirectly reduces the rate of salivation by preventing the stimulation of acetylcholine receptors
Onset:	1 minute
Peak:	30-45 minutes
Duration:	Inhibition of salivation: up to 7 hours
Route:	CVAD, IV, SC
Common Adverse Reactions:	Palpitations, flushing
Drug Interactions:	None significant
Special Considerations:	Glycopyrrolate is only to be administered to patients being treated under the Palliative Care Medical Directives; intended for use ONLY in patients with a decreased LOC in their last hours of life
References:	https://www.uptodate.com/contents/glycopyrrolate-glycopyrronium-systemic-drug-information?search=glycopyrrolate&source=panel_search_result&selectedTitle=1%7E110&usage_type=panel&showDrugLabel=true&display_rank=1

Haloperidol

Drug Name	Haloperidol
Brand Names:	APO-Haloperidol; TEVA-Haloperidol
Drug Classifications:	First-generation (typical) antipsychotic
Pharmacodynamics:	Non-selectively blocks postsynaptic dopaminergic D2 receptors in the brain
Onset:	IV: 3-20 minutes
Peak:	IV: 30 - 45 minutes
Duration:	IV: 3-24 hours
Route:	CVAD, IV, SC
Common Adverse Reactions:	Drowsiness, hypertonia, tremors, abdo pain, extrapyramidal side effects: dystonia (continuous spasms and muscle contractions), akathisia (may manifest as motor restlessness), parkinsonism characteristic symptoms such as rigidity, bradykinesia (slowness of movement), tremor, and tardive dyskinesia (irregular, jerky movements)
Drug Interactions:	None significant
Special Considerations:	Haloperidol is only to be administered to patients being treated under the Palliative Care Medical Directives
References:	https://www.uptodate.com/contents/haloperidol-drug-information?search=haloperidol&source=panel_search_result&selectedTitle=1%7E142&usage_type=panel&kp_tab=drug_general&display_rank=1#F178512

Hydrocortisone

Drug Name	Hydrocortisone
Brand Names:	Cortef, Solu-Cortef
Drug Classifications:	Systemic corticosteroid, adrenal glucocorticoid
Pharmacodynamics:	Short-acting corticosteroid; when used in adrenal crisis or adrenocortical deficiency, it replaces/mimics one's own cortisol, which regulates glucose, regulates the immune system and is released during stressors to help support the cardiovascular system.
Onset:	IV: within 1 hour
Peak:	1.5 – 2 hours
Duration:	
Route:	CVAD, IM, IO, IV
Common Adverse Reactions:	
Drug Interactions:	None significant
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/hydrocortisone-systemic-drug-information?search=hydrocortisone&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&showDrugLabel=true&display_rank=1 Micromedex. (2024). Hydrocortisone: Pharmacology. IBM Watson Health. Retrieved from https://www.micromedexsolutions.com

HYDROmorphone

Drug Name	HYDROmorphone
Brand Names:	Dilaudid, HYDROmorph
Drug Classifications:	Analgesic, opioid
Pharmacodynamics:	Binds to opioid receptors in the CNS, causing inhibition of ascending pain pathways, altering the perception of and response to pain; causes cough suppression by direct central action in the medulla; produces generalized CNS depression
Onset:	IV: 5 minutes
Peak:	IV: 10-20 minutes
Duration:	IV: 3-4 hours
Route:	CVAD, IV, SC
Common Adverse Reactions:	Dizziness, drowsiness, CNS depression, hypotension
Drug Interactions:	Can cause additive sedation and hypotension when combined with other opiate and sedation medications
Special Considerations:	HYDROmorphone is 5 times more potent than morphine on a mg to mg basis. HYDROmorphone is only to be administered to patients being treated under the Palliative Care Medical Directives.
References:	https://www.uptodate.com/contents/hydromorphone-drug-information?search=hydromorphone&source=panel_search_result&selectedTitle=1%7E117&usage_type=panel&kp_tab=drug_general&display_rank=1

Ibuprofen

Drug Name	Ibuprofen
Brand Names:	Advil
Drug Classifications:	Analgesic, Nonsteroidal Anti-inflammatory Drug (NSAID)
Pharmacodynamics:	Reversibly inhibits COX-1 and 2 enzymes, which results in decreased formation of prostaglandin precursors; has antipyretic, analgesic, and anti-inflammatory properties.
Onset:	30-60 minutes
Peak:	1-2 hours
Duration:	6-8 hours
Route:	PO
Common Adverse Reactions:	GI irritation/inflammation
Drug Interactions:	None significant
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/ibuprofen-drug-information?search=ibuprofen&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1

Ketamine

Drug Name	Ketamine
Brand Names:	Ketalar
Drug Classifications:	Dissociative anesthetic with analgesic properties at lower doses
Pharmacodynamics:	Ketamine is a non-competitive NMDA receptor antagonist that produces a cataleptic-like state, causing dissociation from the surrounding environment at higher doses. At lower sub-anesthetic doses, ketamine's action is mediated via NMDA receptor antagonism and its effect on the pain amplification pathway. Ketamine also interacts with other receptors and channels, including nicotinic and muscarinic acetylcholine receptors, opioid receptors, monoaminergic receptors, and voltage-sensitive sodium channels. It enhances endogenous antinociceptive systems, increasing the descending inhibitory serotonergic pathway.
Onset:	IM: 3- 4 minutes (anesthetic); 10-15 minutes (analgesia) IN: within 10 minutes (analgesia) IV: within 30 seconds
Peak:	IM: 5-30 minutes IN: 10-14 minutes
Duration:	IM: 12-25 minutes (anesthetic); 15-30 minutes (analgesia)
Route:	IM, IN, IV
Common Adverse Reactions:	Tachycardia, hypertension, nausea, vomiting, respiratory depression, increased secretions/salivation, laryngospasm
Drug Interactions:	None significant
Special Considerations:	Separate intramuscular injection sites may be required if the required weight-based dose exceeds a volume of 5 mLs. When administering IV Ketamine, diluting the medication may be helpful in administering doses to pediatrics populations.
References:	https://www.uptodate.com/contents/ketamine-drug-information?search=ketamine&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1 https://pmc.ncbi.nlm.nih.gov/articles/PMC6181464/&sa=D&source=docs&ust=1747753279972932&usg=AOvVaw0QnX11EZjZQTjpaGd4PUkc

Ketorolac

Drug Name	Ketorolac
Brand Names:	Toradol
Drug Classifications:	Analgesic, Nonsteroidal Anti-inflammatory Drug (NSAID)
Pharmacodynamics:	Reversibly inhibits COX-1 and 2 enzymes, which results in decreased formation of prostaglandin precursors; has antipyretic, analgesic, and anti-inflammatory properties
Onset:	30 minutes
Peak:	2-3 hours
Duration:	4-6 hours
Route:	IM, IV
Common Adverse Reactions:	GI irritation/inflammation
Drug Interactions:	None significant
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/ketorolac-systemic-drug-information?search=ketorolac&source=panel_search_result&selectedTitle=1%7E107&usage_type=panel&showDrugLabel=true&display_rank=1#F52869214

Midazolam

Drug Name	Midazolam
Brand Names:	Nayzilam
Drug Classifications:	Benzodiazepine: anti-seizure agent, sedative agent
Pharmacodynamics:	Binds to stereospecific benzodiazepine receptors on the postsynaptic GABA neuron at several sites within the central nervous system, including the limbic system and reticular formation. Enhancement of the inhibitory effect of GABA on neuronal excitability results in a less excitable state and stabilization.
Onset:	IV: 1-5 minutes
Peak:	3-5 minutes
Duration:	30 minutes - 2 hours
Route:	Buccal, CVAD, IM, IN, IO, IV, SC
Common Adverse Reactions:	CNS depression, respiratory depression, headache, nausea, vomiting
Drug Interactions:	None significant
Special Considerations:	SC route is for patients being treated under the Palliative Care Medical Directives.
References:	https://www.uptodate.com/contents/midazolam-drug-information?search=midazolam&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1

Morphine

Drug Name	Morphine
Brand Names:	Morphine, MS Contin, Statex
Drug Classifications:	Analgesic, Opioid
Pharmacodynamics:	Binds to opioid receptors in the CNS, causing inhibition of ascending pain pathways, altering the perception of and response to pain; produces generalized CNS depression
Onset:	IV: 5-10 minutes
Peak:	SC: 50-90 minutes IV: 20 minutes
Duration:	3-5 hours
Route:	CVAD, IV, SC
Common Adverse Reactions:	Respiratory depression, hypotension, nausea/vomiting
Drug Interactions:	None significant
Special Considerations:	CVAD route is for patients being treated under the Palliative Care Medical Directives.
References:	https://www.uptodate.com/contents/morphine-drug-information?search=morphine&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1

Naloxone

Drug Name	Naloxone
Brand Names:	Narcan
Drug Classifications:	Opioid Antagonist
Pharmacodynamics:	Opioid antagonist that reverses the effects of opioids. Naloxone competes with opioids and has a greater affinity for the opioid receptor sites.
Onset:	IV/IN: <2mins SC/IM: 2-5mins
Peak:	IV: ~ 2 min SC/IM: 2-5 min IN: 3-17 min
Duration:	SC/IM: ~15 min IN: ~20-30 min
Route:	IM, IN, IV, SC
Common Adverse Reactions:	Withdrawal symptoms which may include nausea, vomiting, sweating, tachycardia, increased blood pressure, tremulousness.
Drug Interactions:	None significant
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/naloxone-drug-information?search=naloxone&source=panel_search_result&selectedTitle=1~150&usage_type=panel&kp_tab=drug_general&display_rank=1

Nitroglycerin

Drug Name	Nitroglycerin
Brand Names:	Nitro-Dur (transdermal patch), Transderm-Nitro (transdermal patch)
Drug Classifications:	Antianginal agent; vasodilator
Pharmacodynamics:	Nitroglycerin forms the free radical nitric oxide. In smooth muscle, nitric oxide causes relaxation, which produces a vasodilator effect on the peripheral veins and arteries. Primarily reduces cardiac oxygen demand by decreasing preload (left ventricular end-diastolic pressure); may modestly reduce afterload; dilates coronary arteries and improves collateral flow to ischemic regions.
Onset:	1-3 minutes
Peak:	4-15 minutes
Duration:	25 minutes
Route:	SL
Common Adverse Reactions:	Hypotension, dizziness, headache
Drug Interactions:	Concomitant phosphodiesterase type 5 (PDE5) inhibitor use can cause severe hypotension
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/nitroglycerin-glyceryl-trinitrate-drug-information?search=nitroglycerin&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1#F202064

Ondansetron

Drug Name	Ondansetron
Brand Names:	Zofran
Drug Classifications:	Antiemetic
Pharmacodynamics:	Ondansetron is a selective 5-HT ₃ -receptor antagonist which blocks serotonin, both peripherally on vagal nerve terminals and centrally in the chemoreceptor trigger zone.
Onset:	30 minutes
Peak:	1 hour
Duration:	n/a
Route:	CVAD, IM, IV, PO, SC
Common Adverse Reactions:	Headache, fatigue, QTc prolongation
Drug Interactions:	When ondansetron is administered concurrently with other QTc-prolonging medications, there is a heightened risk of additive QT interval prolongation, which can lead to serious arrhythmias, including torsades de pointes.
Special Considerations:	CVAD and SC routes are for patients being treated under the Palliative Care Medical Directives.
References:	https://www.uptodate.com/contents/ondansetron-drug-information?source=auto_suggest&selectedTitle=1~1---1~4---ondan&search=ondansetron

Oxytocin

Drug Name	Oxytocin
Brand Names:	Pitocin, Syntocinon
Drug Classifications:	Oxytotic agent, uterotonic agent
Pharmacodynamics:	Oxytocin stimulates uterine contractility by acting on receptors that trigger the release of intracellular calcium and local prostaglandin production.
Onset:	IM: 3-5 minutes
Peak:	up to 1 hour
Duration:	IM: 2-3 hours
Route:	IM
Common Adverse Reactions:	Cardiac arrhythmia, hypotension, nausea, vomiting
Drug Interactions:	None significant
Special Considerations:	There is some evidence indicating that oxytocin can induce vasoconstriction, therefore exacerbating hypertension. Peak presence of uterine oxytocin receptors is at full term and not present before 13 weeks' gestation.
References:	https://www.uptodate.com/contents/oxytocin-drug-information?search=oxytocin&source=panel_search_result&selectedTitle=1%7E131&usage_type=panel&kp_tab=drug_general&display_rank=1#F205460 https://www.drugs.com/mtm/oxytocin.html AR, Fuchs F, Husslein P, Soloff MS. Oxytocin receptors in the human uterus during pregnancy and parturition. Am J Obstet Gynecol. 1984 Nov 15;150(6):734-41. doi: 10.1016/0002-9378(84)90677-x. PMID: 6093538.rs

Salbutamol

Drug Name	Salbutamol
Brand Names:	Ventolin, Albuterol
Drug Classifications:	Bronchodilator, beta-2 agonist
Pharmacodynamics:	Relaxes bronchial smooth muscle by action on beta-2 receptors with little effect on heart rate.
Onset:	≤ 5 minutes
Peak:	30 minutes
Duration:	3-6 hours
Route:	MDI, NEB
Common Adverse Reactions:	Tachycardia, hypertension, palpitations, flushing, tremor, headache, dizziness, nausea
Drug Interactions:	None significant
Special Considerations:	n/a
References:	https://www.uptodate.com/contents/albuterol-salbutamol-drug-information?search=salbutamol&source=panel_search_result&selectedTitle=1%7E150&usage_type=panel&kp_tab=drug_general&display_rank=1

Tranexamic Acid (TXA)

Drug Name	Tranexamic Acid (TXA)
Brand Names:	Cyklokapron
Drug Classifications:	Antifibrinolytic Agent; Antihemophilic Agent; Hemostatic Agent; Lysine Analog
Pharmacodynamics:	Forms a reversible complex that displaces plasminogen from fibrin resulting in inhibition of fibrinolysis; additionally, inhibits the proteolytic activity of plasmin.
Onset:	IV: Immediate IM: 10 - 15 minutes
Peak:	1 - 1.5 hours
Duration:	11 hours
Route:	IV, IM
Common Adverse Reactions:	Abdominal pain, n/v, headache, back pain/MSK pain, seizure, anaphylaxis, transient hypotension
Drug Interactions:	None significant
Special Considerations:	Multiple injection sites will be required due to fluid volume if given IM.
References:	https://www.uptodate.com/contents/tranexamic-acid-drug-information?search=TXA&source=panel_search_result&selectedTitle=1~150&usage_type=panel&kp_tab=drug_general&display_rank=1

Skill Sheets



The following delegated acts/procedures reference sheets have been developed to provide Paramedics across Ontario with a standardized, step-by-step guide to performing the delegated skills outlined in the Advanced Life Support Patient Care Standards. It is acknowledged that there may be multiple methods for performing some delegated acts/procedures, based on manufacturer recommendations for specific devices and/or equipment used by paramedics. Where possible, these delegated acts/procedures have been written to be generic with regard to the equipment used in performing the procedure.

Central Venous Access Device – External

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- | | |
|---|---|
| ☐ 10 mL syringe x 2 | ☐ Blunt tip needle |
| ☐ Alcohol swabs | ☐ Sharps container |
| ☐ Tape | ☐ 0.9% NaCl |
| ☐ Clear sterile dressing | |

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Fill a 10 mL syringe with sterile 0.9% NaCl.
- ☐ Ensure that the lumen to be accessed is clamped.
- ☐ Remove the cap/PRN adaptor from the Luer lock end (if necessary).
- ☐ Clean the connection area with an alcohol swab
- ☐ Connect an empty 10 mL syringe to the lumen.

Procedure

- ☐ Unclamp the lumen and aspirate 3-5 mL of blood from the lumen to remove instilled anticoagulant.
- ☐ Clamp the lumen and disconnect the syringe used to aspirate blood.
- ☐ Connect the 10 mL 0.9% NaCl filled syringe and then unclamp the lumen.
- ☐ Inject approximately 2 mL of NaCl, then withdraw 1-2 mL and visualize blood return to ensure the line is patent, then flush remaining NaCl. If resistance is met, assume the lumen is obstructed and repeat the procedure on the second lumen (if a second lumen is available).
- ☐ Alternatively, push 2 mL, pause, push 2 mL and continue until the full flush is delivered.
- ☐ Once lumen patency has been confirmed, re-clamp lumen and remove the syringe.
- ☐ Utilize CVAD as required.

Continuous Positive Airway Pressure (CPAP)

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- | | |
|---|--|
| ☐ CPAP Equipment | ☐ BVM with filter(s) |
| ☐ Oxygen source | ☐ EtCO ₂ monitor |

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Assemble circuit as per manufacturer requirements (*including face mask, filter and EtCO₂*) and attach to the CPAP device.
- ☐ Connect CPAP device to a pressure regulated oxygen source.
- ☐ Adjust the CPAP control to the level desired as per the current CPAP Medical Directive.

Procedure

- ☐ Guide mask to the patient's face.
- ☐ Attach the head strap on the hook rings.
- ☐ Check around the mask for any leaks.
- ☐ Adjust the mask and/or head strap accordingly.
- ☐ Consider titration of FiO₂ (*if available*) as per the medical directive.

Emergency Childbirth – Breech

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Obstetrical Kit

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Position the patient in labour to allow gravity to birth the newborn
- ☐ Upright or supported squat position; OR
- ☐ Buttocks to the edge of bed and place feet on a chair (*if possible*).
- ☐ Place pillows or blankets under the patient in labour to create a safe area for the newborn to descend onto.

NOTE: If the newborn is face up, consider turning the patient in labour to the hands and knees position (Gaskin position) to promote safe delivery.

Procedure

- ☐ Minimize handling of the newborn and umbilical cord to avoid stimulating premature respirations or cord constriction (hands off).
- ☐ Assess need and consider manual delivery of legs
 - When visible, apply pressure behind the knee joint (popliteal fossa) and sweep the foot towards the center and out.
- ☐ Note the time the umbilicus is visible.
- ☐ Assess need and consider manual delivery of arms
 - Gently sweep the arms towards the center and out.
- ☐ Another paramedic may apply gentle suprapubic pressure to maintain flexion of the head.
- ☐ Once the hairline is visible and/or 3 minutes have passed since the umbilicus was visualized, perform the Mauriceau-Smellie-Veit maneuver (MSV)
 - Discourage the patient in labour from pushing during the maneuver.
 - Support the newborn with a forearm, palm supporting the chest and place the second and fourth fingers on the malar bones (cheekbones), not in the mouth or eyes.
 - Exert pressure on the cheekbones to increase flexion of the neck.
 - Place the other hand on the newborn's back - two fingers hooked over the shoulders and the middle finger pushing the occiput to aid flexion.
 - Control the delivery of the head by lifting the body in an arc, assisting the head to pivot around the symphysis pubis and allowing the face to deliver.

☐ If limb presentation

- Cover the limb with a dry sheet; do not push the limb back into the vagina
- Discourage the patient in labour from pushing
- Place the patient in labour in an anti-gravity position.
- Initiate urgent transport to hospital.

Emergency Childbirth – Nuchal Cord

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Obstetrical Kit

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

Procedure

Slip umbilical cord over newborn's head:

- ☐ If the cord is present and loose, gently slip the cord over the newborn's head.

Somersault maneuver:

- ☐ If the cord is unable to be slipped over the newborn's head, then attempt a somersault delivery.
 - Ensure the patient in labour legs are flexed.
 - After the delivery of the head, gently flex the newborn's neck (face towards one thigh).
 - As the torso and legs are delivered, ensure the newborn's head remains close to the vaginal opening while the newborn's body is flipped (somersaulted) to prevent traction on the umbilical cord.

If previous maneuvers cannot be performed - Clamp and cut cord:

- ☐ Clamp and cut the cord, then unwind the cord from around the newborn's neck. Once the cord is cut, the newborn is no longer being perfused and needs to be delivered immediately.

Emergency Childbirth - Postpartum Hemorrhage

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Obstetrical Kit

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Encourage newborn latching and/or nipple stimulation.
- ☐ Encourage the patient in labour to void their bladder.

Procedure

If the placenta has NOT yet been delivered: Controlled Cord Traction

- ☐ Attempt to deliver the placenta through gentle, controlled cord traction. Stop if the placenta does not release.
- ☐ Guard the uterus (downward pressure superior to the symphysis pubis with the side of or by cupping your hand).
- ☐ Use gentle (only enough to keep the cord taut) controlled cord traction in an up/down motion, if possible, during a contraction with the patient in labour pushing.
 - If delivery of the placenta is successful, proceed with external uterine massage.
 - If delivery of the placenta is unsuccessful, proceed with external bimanual compression.

External Uterine Massage (EUM)

- ☐ Place one hand on the lower portion of the abdomen, at the level of the symphysis pubis, in a cupped position supporting the lower portion of the uterus.
- ☐ Place one hand at the top of the uterine fundus, located near the belly button. The uterus should now be palpable between the hands.
- ☐ Begin deeply massaging with the upper hand using a circular motion. The lower hand should remain still, supporting the lower portion of the uterus.
- ☐ Continue massaging until postpartum bleeding stops.
- ☐ If bleeding continues and the uterus does not become smaller and firmer, move to external bimanual compression.

External Bimanual Compression

- ☐ Place one hand on the lower portion of the abdomen, at the level of the symphysis pubis in a cupped position supporting the lower portion of the uterus.
- ☐ Place the other hand on the superior aspect of the uterine fundus. The uterus should now be palpable between the hands.
- ☐ Compress the uterus between each hand by pressing the hands together, not down.

Emergency Childbirth - Prolapsed Cord

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Obstetrical Kit

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Tell the patient in labour to stop pushing.
- ☐ Coach the patient in labour to begin panting to minimize/avoid pushing efforts.
- ☐ Position the patient in labour immediately in the knee to chest or exaggerated Sims position.
- ☐ Provide supplemental high-flow oxygen (if applicable) and keep the patient in labour warm.
- ☐ Don the sterile gloves found in the OBS kit.

Procedure

- ☐ Gently cradle the cord using one hand.
- ☐ Replace the cord into the vagina while inserting fingers/hand (i.e. index and middle finger) into the vagina
- ☐ Apply manual pressure to the presenting part to relieve pressure off the umbilical cord.
- ☐ Maintain digital pressure on the presenting fetal part until the transfer of care or unless delivery is imminent.

Emergency Childbirth – Shoulder Dystocia

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Obstetrical Kit

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Position the patient in labour supine on the edge of a firm surface (stretcher, couch, table etc. *if possible*).

NOTE: From the time the head delivers, paramedics have **approximately 8 MINUTES** to complete two rounds of ALARM due to cord compression. Perform 2 rounds of ALARM before “Load and GO.”

Procedure

Perform **ALARM** maneuvers. In between each contraction, you will move to the next step of ALARM.

- ☐ **Ask for help**
 - Alert the group and the patient in labour that this is a shoulder dystocia birth, a life threat for the newborn and elicit assistance for the following procedures.
- ☐ **Lift Legs – Legs abduction (*McRobert’s maneuver*)**
 - Lay the patient in labour flat and hyperflex their legs (squatting position) *and*
- ☐ **Apply suprapubic pressure (*McRobert’s maneuver*)**
 - Directly above the pubic bone, apply steady, firm downward pressure using the palm of your hand before the contraction begins
 - Encourage the patient in labour to push during the contraction
 - Continue holding pressure until the end of the contraction.
- ☐ **Roll Over**
 - Flip the patient in labour over to the hands and knees position (Gaskin position), applying upward lateral flexion of the newborn’s head to facilitate freeing the shoulders.
- ☐ **Manually deliver the posterior arm.**
 - If the hand is visible on inspection, proceed with manual release by gently sweeping the arm centrally across the chest and up towards the head.
 - Once the posterior arm is delivered, attempt to deliver the newborn
- ☐ If the fetus does not deliver, switch roles and consider a second round of ALARM (maximum 2 ALARMS on scene).

Emergency Dialysis Disconnect

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- | | |
|--|---|
| ☐ End caps found in patient's kit (preferred) | ☐ Alcohol swab |
| ☐ Filled saline lock (optional) | ☐ Gauze or abdominal pad |
| ☐ Sterile syringe (optional) | ☐ Tape |

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Ensure aseptic technique throughout the procedure.
- ☐ Prepare sterile end caps, filled saline lock or sterile syringe.
- ☐ Ensure that the dialysis machine is turned off.
- ☐ Vigorously clean the connection area with an alcohol swab before use.

Procedure

Hemodialysis Steps:

- ☐ Clamp the two clamps on the patient side (*vascular access*) of the connection tubing.
- ☐ Clamp the two clamps on the machine side (*hemodialysis*) of the connection tubing.
- ☐ Disconnect each Luer lock connection between the two sets of clamps, one at a time, and attach a sterile end cap (*if available*) or saline lock to the patient's connection tubing.
- ☐ Secure and cover all access tubing to the patient with tape and a sterile abdominal pad.

Continuous Ambulatory Peritoneal Dialysis (CAPD) and Continuous Cycling Peritoneal Dialysis (CCPD) Steps:

- ☐ Twist closed the transfer set clamp on the patient side of the connection.
- ☐ Clamp both the fill bag and drain bag tubing.
- ☐ Disconnect the Luer lock connection on the transfer set.
- ☐ Attach a sterile mini cap to the exposed transfer set tubing.
- ☐ Secure and cover all access tubing to the patient with tape and a sterile abdominal pad.

Automatic Peritoneal Dialysis (APD) Steps:

- ☐ Twist closed the transfer set clamp on the patient side of the connection.
- ☐ Disconnect the patient tubing from the machine tubing.
- ☐ Attach a sterile mini cap to the patient tubing.
- ☐ Attach a mini cap to the machine tubing.
- ☐ Secure patient tubing by coiling the tubing and taping it to the skin.
- ☐ Secure and cover all access tubing to the patient with tape and a sterile abdominal pad.

External Jugular Venous Access

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ 10mL syringe with normal saline
- ☐ IV catheter (appropriate size)
- ☐ Gauze dressing
- ☐ Alcohol swabs
- ☐ Sharps container
- ☐ Tape
- ☐ Transparent sterile dressing

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Place the patient in a supine position with the head turned away from the side being accessed.
- ☐ Cleanse the site with an alcohol swab. Maintain aseptic technique throughout.

Procedure

- ☐ Align the IV catheter with the vein to be punctured.
- ☐ Manually occlude the vein at the proximal end, just above the clavicle, with the index finger of the non-dominant hand. Use the thumb of the same hand to anchor the distal end of the vein.
- ☐ Puncture the vein in the middle, between the angle of the jaw and the clavicle. To prevent the vein from rolling, puncture from the side. Maintain a 5-10 degree angle throughout the puncture.
- ☐ Observe early for flashback along the catheter and/or flash chamber.
- ☐ Upon flashback, lower the catheter parallel with the skin and advance approximately 2 mm.
- ☐ Slide the catheter over the needle and into the vein while maintaining the anchor with the index finger and thumb.
- ☐ Remove the needle from the catheter and dispose of it in a sharps container.
- ☐ Release the non-dominant hand anchor and use the index finger to occlude the catheter hub to prevent air from entering the venous system. The thumb can also be used to manually stabilize the catheter hub.
- ☐ Secure the catheter and utilize it as required.
- ☐ Assess for patency using a normal saline flush or drip set.

Lateral Patellar Reduction

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Cold pack
- ☐ Roller gauze
- ☐ Splint
- ☐ Analgesia and associated supplies (if applicable)

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Position the patient to facilitate the reduction. Ensure there is sufficient space for the patient to fully extend the affected knee.
- ☐ Assess distal neurovascular status and pain before initiating the procedure.

Procedure

- ☐ Place your thumb on the lateral side of the patella and your index finger on the medial side, such that the hand's web space is cupping the superior aspect of the patella.
- ☐ With the opposite hand, grasp the leg at the ankle.
- ☐ Gently extend the knee with one hand, while simultaneously lifting the patella anteriorly and placing medial pressure on the lateral edge of the patella with the thumb.
- ☐ In the event of significant resistance, unmanageable pain, or interference with treatment, halt the procedure and consider rapid-acting analgesia for patient comfort (if authorized and available). Consider a two-person approach: one paramedic uses two thumbs on the patella, while the other helps straighten the leg.
- ☐ Regardless if the reduction is successful, splint the leg in a position of comfort, apply a cold pack to the affected knee, and continue to treat it as an unstable joint injury.
- ☐ Reassess distal neurovascular status and pain.

Medication Administration – Buccal

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- | | |
|--|---|
| ☐ Sharps container | ☐ Medication |
| ☐ Alcohol swab | ☐ Syringe |
| ☐ Gauze or Ampule Cracker (if applicable) | ☐ Blunt tip needle |

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

Syringe Technique

- ☐ Attach a blunt tip needle to an appropriately sized syringe.
- ☐ Fill the syringe to the desired volume, ensuring there is no air in the syringe. Be cautious of any medication overflow/spray.
- ☐ Remove the blunt tip needle and dispose in a sharps container.
- ☐ Perform a medication administration cross-check (MACC) with your partner, if available.
- ☐ Dispose of the ampule/vial into a sharps container.

Film

- ☐ Remove medication from the packaging.
- ☐ Perform a medication administration cross-check (MACC) with your partner, if available.

Procedure

Syringe Technique

- ☐ Place the patient in a head-up or lateral position.
- ☐ Open the patient's mouth.
- ☐ Stabilize the patient's head using the non-dominant hand.
- ☐ Insert the syringe tip into the patient's mouth, placing it between the gum and cheek.
- ☐ Depress the plunger slowly in a sweeping motion along the buccal mucosa until the entire dose is administered.
- ☐ Dispose of the syringe in a sharps container.

Film

- ☐ Place the medication in the patient's mouth, between the patient's gum and cheek.
- ☐ Instruct the patient to allow the film to dissolve.

Medication Administration – Endotracheal Tube (ETT)

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Alcohol swabs
- ☐ Normal saline
- ☐ Appropriate size syringe
- ☐ Sharps container
- ☐ Medication, which could be supplied as a preload, an ampule, or a vial
- ☐ Blunt tip needle

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Remove the dust cap from the vial, or use a gauze/ampule cracker to safely crack the ampule, and dispose of the top in a sharps container.
- ☐ If using a vial, clean the top of the vial with an alcohol swab.
- ☐ Attach a blunt tip needle to an appropriately sized syringe.
- ☐ Fill the syringe to the desired volume, ensuring there is no air in the syringe. Be cautious of any medication overflow/spray.
- ☐ Remove the blunt tip needle and dispose in a sharps container.
- ☐ If the medication requires dilution, draw up the required amount of saline using an aseptic technique with a new blunt tip needle.
- ☐ Perform a medication administration cross-check (MACC) with your partner, if available.
- ☐ Dispose of the ampule/vial into a sharps container.

Procedure

If Administering Medication via Syringe - NO Injection Port (includes preloads):

- ☐ Pre-oxygenate the patient.
- ☐ Remove ventilation adjuncts from ETT.
- ☐ Inject medication directly into the ETT.
- ☐ Re-attach ventilation adjuncts and continue with positive pressure ventilation (PPV).
- ☐ Dispose of the preload or remaining medication into a sharps container.

If Administering Medication via Syringe - WITH Injection Port (includes preloads):

- ☐ Continue oxygenation throughout the procedure.
- ☐ Clean the injection port with an alcohol swab.
- ☐ Inject medication directly into the injection port.
- ☐ Dispose of the preload or remaining medication into a sharps container.

Medication Administration – Intramuscular Injection

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- | | |
|--|---|
| ☐ Appropriately sized syringe | ☐ Gauze |
| ☐ Blunt-tip needle | ☐ Adhesive bandage |
| ☐ Appropriately sized needle | ☐ Gauze or Ampule Cracker (<i>if applicable</i>) |
| ☐ Alcohol swab | ☐ Sharps container |

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Draw up the medication using an appropriately sized syringe and blunt tip needle.
- ☐ Fill the syringe to the desired volume, ensuring there is no air in the syringe. Be cautious of any medication overflow/spray.
- ☐ Perform a medication administration cross-check (MACC) with your partner, if available.
- ☐ If using a blunt tip needle, remove it and dispose of it in a sharps container. Then, apply the appropriately sized needle to the syringe for injection.
- ☐ Dispose of the ampule/vial into a sharps container.
- ☐ Select an appropriate injection site for the medication volume and patient size.
- ☐ Cleanse the injection site using an aseptic technique.

Procedure

- ☐ Using the Z-track method, apply tension to the skin by pulling laterally away from the injection site until the dermis is taught over the injection site.
- ☐ Insert the needle swiftly, using a dart-like motion and well into the muscle tissue at a 90-degree angle.
- ☐ Depress the plunger slowly until the entire dose is administered.
- ☐ Wait 5 to 10 seconds before smoothly pulling out the needle and releasing the skin. Then, dispose of the syringe in a sharps container.
- ☐ Apply pressure to the site with a piece of gauze (do not massage the site).
- ☐ Apply an adhesive bandage to the injection site.

Note:

Maximum volume per site:

- | | |
|---|---|
| <ul style="list-style-type: none">• Adult<ul style="list-style-type: none">○ Vastus Lateralis: 5 mL○ Deltoid: 2.5 mL | <ul style="list-style-type: none">• Pediatric<ul style="list-style-type: none">○ Vastus lateralis: up to 2 mL○ Deltoid: 0.5-1 mL |
|---|---|

Medication Administration – Intranasal

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Syringe (1 mL, 3 mL)
- ☐ Blunt Tip Needle
- ☐ Sharps Container
- ☐ Alcohol Swabs
- ☐ Mucosal Atomizer Device
- ☐ Gauze or Ampule Cracker (*if applicable*)
- ☐ Ampule or vial of medication

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

Syringe Technique

- ☐ Attach a blunt tip needle to an appropriately sized syringe.
- ☐ Fill the syringe to the desired volume, ensuring there is no air in the syringe. Be cautious of any medication overflow/spray.
- ☐ Remove the blunt tip needle and dispose in a sharps container.
- ☐ Attach the atomizer to the syringe.
- ☐ Perform a medication administration cross-check (MACC) with your partner, if available.
- ☐ Dispose of the ampule/vial into a sharps container.

Prepared Intranasal Device

- ☐ Remove the protective wrap from the device.
- ☐ Open the lid and remove the device from the tube.
- ☐ Hold the device between your fingers and thumb.

Procedure

Syringe Technique

- ☐ Stabilize the patient's head with your non-dominant hand.
- ☐ Insert the atomizer into a nare and administer up to 1mL of medication per nare.
- ☐ Ensure that a reasonable amount of force is applied when depressing the plunger of the syringe to properly atomize the medication.
- ☐ Dispose of the atomizer and syringe into a sharps container.

Prepared Intranasal Device

- ☐ Stabilize the patient's head with the non-dominant hand.
- ☐ Insert the tip gently in one of the nares until the fingers touch the outside of the nose.
- ☐ Using a reasonable amount of force, completely depress the plunger.
- ☐ Remove the intranasal device from the nare and discard the device and tube.

Medication Administration – Baqsimi Intranasal Device

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Baqsimi pre-filled 3 mg glucagon

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Remove the shrink wrap by pulling on red stripe.
- ☐ Open the lid and remove the device from the tube.
- ☐ Perform a medication administration cross-check (MACC) with your partner, if available.
- ☐ Hold the device between fingers and thumb.

Procedure

- ☐ Insert the tip gently in one of the nostrils until fingers touch the outside of the nose.
- ☐ Push the plunger all the way in.
- ☐ The dose is complete when the green line is no longer showing at the bottom of the device.
- ☐ Remove tip from nose and discard the device and tube.

Medication Administration – Intravenous (IV)

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Alcohol swabs
- ☐ Appropriate size syringe
- ☐ Blunt tip needle
- ☐ Medication, which could be supplied as a preload, an ampule, or a vial
- ☐ Sharps container
- ☐ Normal saline for flushing

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Remove the dust cap of the vial or use a gauze/ampule cracker to safely crack the ampule and dispose of the top into a sharps container.
- ☐ If using a vial, clean the top of the vial with an alcohol swab.
- ☐ Attach a blunt tip needle to an appropriately sized syringe.
- ☐ Fill the syringe to the desired volume, ensuring there is no air in the syringe. Be cautious of any medication overflow/spray.
- ☐ Remove the blunt tip needle and dispose into a sharps container.
- ☐ If the medication requires dilution, draw up the required amount of saline using an aseptic technique with a new blunt-tip needle.
- ☐ Perform a medication cross-check with your partner, if available.
- ☐ Dispose of the ampule/vial into a sharps container.

Procedure

- ☐ Confirm patency of IV line or saline lock.
- ☐ Clean the Luer lock or IV port on the main IV line nearest to the patient that will be used as a connection point to administer the medication with an alcohol swab.
- ☐ Connect the medication.

For IV line:

- ☐ Occlude the IV line between the medication port being used and the IV solution bag.
- ☐ Administer the appropriate volume (*dose*) of the medication over the appropriate time frame.
- ☐ Flush the IV line with an appropriate volume of normal saline.

For saline locks:

- ☐ Administer the appropriate volume (*dose*) of the medication over the appropriate time frame.
- ☐ Flush the saline lock with an appropriate volume of normal saline.

IV bag 0.9% NS or D5W (mini bag) preparation and administration:

- ☐ Cleanse the injection port of the 0.9% NS bag or D5W bag with an alcohol swab.
- ☐ Insert the needle of the syringe with the prepared medication into the bag via the injection port and inject the prepared dose.
- ☐ Ensure only a single dose is prepared in the bag and is appropriately labelled:
 - Medication name.
 - Medication dose.
 - Time initiated.
 - Paramedic name and initials.
- ☐ Attach a drip set to the bag with medication and prime the line.
- ☐ Attach the drip set to the IV line or saline lock using an aseptic technique.
- ☐ Open the roller clamp and set the desired drip rate based on the time required to infuse the specific medication.

Medication Administration – Metered Dose Inhaler (MDI)

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Metered dose inhaler medication with mouthpiece (inhaler)
- ☐ Aerochamber
- ☐ Face mask (*if required*)
- ☐ Oxygen Source (if applicable)
- ☐ BVM with filter (if applicable)
- ☐ In-line MDI adaptor

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

To prime inhalation aerosol medication:

- ☐ Perform a medication cross-check with your partner, if available.
- ☐ Remove plastic cap and shake the inhaler according to manufacturer guidelines
- ☐ Discharge 4 sprays away from you and the patient, into the air.

Procedure

Using an Aerochamber:

- ☐ Insert the MDI with mouthpiece into the Aerochamber.
- ☐ Ask the patient to slowly breathe out as much as possible (*without inducing a coughing spell*).
- ☐ Bring the Aerochamber to the patient's mouth. Ask the patient to place the mouthpiece of the aerochamber in their mouth, between the teeth and seal with the lips. If the patient is unable to do this, use a face mask with the aerochamber.
- ☐ Instruct the patient to breathe in slowly and administer 1 puff of the medication into the aerochamber. Instruct the patient to continue to breathe in/out and wait until at least 4 breaths have been taken prior to taking the aerochamber away for a break.
- ☐ Shake the canister per manufactures direction prior to delivering a subsequent puff
- ☐ Continue above process to administer full dose of medication.

Using a Metered Dose Inhaler with In-line BVM Adapter:

- ☐ Attach MDI BVM adaptor to the BVM with filter
- ☐ Prime inhaler as needed.
- ☐ Shake MDI canister according to manufacturer direction prior to the delivery of the first puff.
- ☐ Insert MDI canister into BVM adaptor and deliver 1 puff of medication.
- ☐ Remove MDI canister from BVM adaptor and re-shake according to manufacturer's direction.
- ☐ Continue with Positive Pressure Ventilations (*PPV*).
- ☐ Repeat the above steps for subsequent puffs until the appropriate full dose of the medications is delivered as per the medical directive.

Medication Administration – Oral (PO)

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Medication
- ☐ Appropriately sized syringe (*if applicable*)
- ☐ Blunt-tip needle (*if applicable*)
- ☐ Alcohol swab (*if applicable*)
- ☐ Sharps container (*if applicable*)
- ☐ Water (*if available*)

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Ensure the patient is in a semi-sitting or sitting position.
- ☐ Prepare medication in a sterile manner.
- ☐ Perform a medication cross-check with your partner, if available.

Solution Medications:

- ☐ Draw up the medication dosage using an appropriately sized syringe and a blunt tip needle.
- ☐ Remove the sharp/blunt tip needle and dispose in a sharps container.
- ☐ Fill the syringe to the desired volume, ensuring there is no air in the syringe. Be cautious of any medication overflow/spray.

Procedure

Tablets - non-chewable:

- ☐ Place in mouth and swallow using water or other oral fluids.

Tablets - chewable:

- ☐ Direct the patient to chew the tablet, make a paste, and then swallow without the use of water or oral fluids

Orally disintegrating medications:

- ☐ Place the medication on top of the patient's tongue and direct the patient to avoid chewing it. Allow the medication to fully dissolve.

Oral solution medications:

- ☐ Insert (or direct the patient to insert) the syringe into their mouth and depress the plunger fully to ensure the entire dose is administered.
- ☐ Instruct the patient to swallow the medication and provide water or other oral fluids (as required).

Medication Administration – Subcutaneous Injection (SQ)

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- | | |
|--|---|
| ☐ Appropriate size syringe | ☐ Gauze/ampule cracker |
| ☐ Needle 25G - 27G, 3/8" – 5/8" | ☐ Adhesive bandages |
| ☐ Blunt-tip needle | ☐ Sharps container |
| ☐ Alcohol swabs | ☐ Ampule or vial of medication |

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Remove the top of the vial or use a gauze/ampule cracker to safely crack the ampule and dispose of the top into a sharps container.
- ☐ If using a vial, clean the top of the vial with an alcohol swab.
- ☐ Attach a blunt tip needle to an appropriately sized syringe.
- ☐ Fill the syringe to the desired volume, ensuring there is no air in the syringe. Be cautious of any medication overflow/spray.
- ☐ Remove the blunt tip needle, dispose into a sharps container, and apply the appropriate needle for injection.
- ☐ Perform a medication cross-check, if available.
- ☐ Dispose of the ampule/vial into a sharps container.

Procedure

- ☐ Select and landmark an appropriate site for the injection.
- ☐ Cleanse the insertion site in an aseptic manner.
- ☐ Hold the syringe in your dominant hand.
- ☐ With your non-dominant hand, pinch the skin and insert the needle bevel-up at a 45-degree angle until the syringe is well into subcutaneous tissue.
- ☐ Stabilize the syringe with the fingers of your non-dominant hand and proceed with the injection.
- ☐ Withdraw the syringe with the needle at the same angle of insertion and dispose into a sharps container.
- ☐ Cover with a self-adhesive bandage.

Medication Administration – Sublingual

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Medication

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

Spray:

- ☐ Do not shake the container.
- ☐ Prime the device, if applicable, before use by releasing a test spray away from your face and other people.
- ☐ Perform a medication cross-check with your partner, if available.

Tablet:

- ☐ Prepare the appropriate dose of medication in a sterile manner.
- ☐ Perform a medication cross-check with your partner, if available.

Procedure

Spray:

- ☐ Instruct the patient to open their mouth and lift their tongue to the roof of their mouth.
- ☐ Bring the container as close to under the tongue as possible.
- ☐ Deliver the appropriate number of sprays under the patient's tongue.
- ☐ Instruct the patient **not** to:
 - inhale or breathe in the spray.
 - immediately swallow.
 - rinse their mouth for at least 5 to 10 minutes.

Tablet:

- ☐ Instruct the patient to open their mouth and lift their tongue to the roof of their mouth.
- ☐ Place the tablet(s) under the patient's tongue.
- ☐ Advise the patient to let it dissolve under their tongue.

Modified Valsalva Maneuver

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ 10 mL syringe

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Position the patient in a semi-recumbent (45-degree) position.

Procedure

- ☐ Instruct the patient to perform a forced expiration into a 10 mL syringe for 15 seconds.
- ☐ At the end of the forced expiration, put the syringe aside and lay the patient supine. Simultaneously, elevate the patient's straight legs to a 45-degree angle for 15 seconds.
- ☐ Return the patient to a semi-recumbent (45-degree) position for 45 seconds.

Needle Thoracostomy

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Syringe
- ☐ 0.9% Normal saline (*optional*)
- ☐ Appropriately sized catheter-over-needle
- ☐ chest drain valve
- ☐ Alcohol swab
- ☐ Blunt tip needle (*optional*)
- ☐ Sharps container

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Perform appropriate oxygenation and ventilation during preparation.
- ☐ Partially fill a syringe with saline (*optional*) and attach the syringe to the needle.
- ☐ Landmark point of insertion:
 - Primary site - 4th intercostal space anterior axillary line, superior aspect of the 5th rib
 - Secondary site - 2nd intercostal space, midclavicular line, superior aspect of the 3rd rib
- ☐ Clean the site with an alcohol swab.

Procedure

- ☐ Insert the catheter-over-needle with a syringe attached at a 90-degree angle.
- ☐ Aspirate for air while advancing the catheter.
- ☐ When free air is obtained, advance the needle about 2 mm further to ensure the bevel is through the chest wall.
- ☐ Slide catheter off needle into chest.
- ☐ Remove the needle and syringe and place them immediately into a sharps container.
- ☐ Apply the chest drain valve over the site

Needle Thoracostomy – Turkel™ Thoracentesis System

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- | | |
|--|---|
| ☐ Alcohol swab | ☐ Chest drain valve |
| ☐ Turkel™ | ☐ Sharps container |
| ☐ #10/11 scalpel (<i>if available and authorized</i>) | ☐ 4 x 6-inch gauze rolls |
| | ☐ Tape |

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Perform appropriate oxygenation and ventilation during preparation.
- ☐ Landmark point of insertion:
 - Primary site - 4th intercostal space anterior axillary line, superior aspect of the 5th rib
 - Secondary site - 2nd intercostal space, midclavicular line, superior aspect of the 3rd rib
- ☐ Clean site with alcohol swab.
- ☐ Holding the scalpel vertically, create a dermal puncture where the Turkel will be inserted. (*if available and authorized*)

Procedure

- ☐ Using a 90-degree angle, insert the Turkel at the landmark point and/or through the scalpel incision. Advance the Turkel™ until the colour change indicator turns red to green. Advance 1 cm more to ensure placement in the pleural space.
- ☐ Stabilize the needle with one hand and advance the catheter into the pleural space completely.
- ☐ Withdraw the needle and dispose of it in the sharps container.
- ☐ Ensure the one-way valve on the Turkel™ is open to allow air to be released.
- ☐ Apply the chest drain valve over the site.
- ☐ Secure system for transport with gauze rolls and tape.

Pelvic Binder – Circumferential Sheet

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Non-stretch sheet
- ☐ Clamps (optional)
- ☐ Tape (optional)

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Fold a non-stretch sheet to measure from the patient's iliac crest to the pubic symphysis.

Procedure

- ☐ Maneuver the middle of the non-stretch sheet to align with the greater trochanters.
- ☐ Cross the sheet over the pubic symphysis and pull as tightly as possible (preferably with two people.) Twist the sheet 2-3 revolutions.
- ☐ Secure the ends of the sheet by tucking in or with clamps or tape.

Pelvic Binder – Pelvic Sling by SAM Medical

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Pelvic Sling by SAM Medical

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Remove SAM Pelvic Sling from package

Procedure

- ☐ Maneuver the middle of the belt under the pelvis to align with the greater trochanters.
- ☐ Place the black strap through the buckle.
- ☐ While holding onto the orange strap, tighten the black strap until you hear and feel the buckle click and lock.
- ☐ Maintain tension and press the black strap onto the velcro surface of the SAM Pelvic Sling to secure it.

Pelvic Binder – T-POD

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ T-POD Pelvic Stabilization Device
- ☐ Shears

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

Procedure

- ☐ Maneuver the middle of the belt under the pelvis to align with the greater trochanters
- ☐ Cut the belt, leaving a 6 - 8" (15 - 20 cm) gap between the two ends at the patient's midline.
- ☐ Apply the velcro-backed mechanical advantage pulley system to each side of the trimmed belt.
- ☐ Slowly draw tension on the pull tab, creating simultaneous, circumferential compression.
- ☐ Secure the velcro-backed pull tab to the belt.

Suctioning of Endotracheal and Tracheostomy Tubes

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- | | |
|--|---|
| ☐ Electronic suction unit | ☐ Suction catheters (<i>appropriate sizes</i>) |
| ☐ Syringe | ☐ BVM with filter |
| ☐ Saline | ☐ EtCO ₂ adapter |
| | ☐ SpO ₂ monitor |

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Position patient at 30 to 90 degree sitting position (*if applicable*).
- ☐ Pre-oxygenate the patient.
- ☐ Ensure pulse oximetry and end-tidal are attached and being monitored.
- ☐ Select the appropriately sized catheter (*half the inner diameter of the artificial airway*).
- ☐ Select the appropriate negative pressure setting:
 - Infant = 60-100 mmHg
 - Child = 100 - 120 mmHg
 - Adult = 100-150 mmHg

Procedure

Closed Suctioning:

- ☐ Support the endotracheal tube (ETT) or tracheostomy tube with one hand and then grasp the catheter and advance the catheter slowly until there is a cough reflex or resistance is met. Do not suction while advancing the catheter.
- ☐ Withdraw 0.5 cm, activate suctioning and gently pull back slowly until the suction catheter is fully retracted (*10 seconds or less*).
- ☐ Re-oxygenate the patient between suctioning events.
- ☐ Clean the catheter with saline thoroughly prior to the next attempt (if applicable).

Open Suctioning:

- ☐ Lubricate the catheter with water/saline.
- ☐ Gently advance the catheter into the ETT or Tracheostomy tube until cough reflex or resistance is met. Do not suction while advancing the catheter.
- ☐ Withdraw the suction catheter approximately 0.5 cm.
- ☐ Begin suctioning, then gently withdraw the catheter with a continuous twisting motion for up to 10 seconds, or until the suction catheter is removed from the ETT or tracheostomy tube.
- ☐ Re-oxygenate the patient between suction attempts.
- ☐ Rinse the catheter thoroughly in sterile water or normal saline prior to each attempt.

Supraglottic Airway Gastric Port Suctioning – i-gel

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Suction catheters (appropriate sizes)
- ☐ Water-based lubricant
- ☐ Suction equipment
- ☐ Tape

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

Conventional Suction Catheter**

- ☐ Using the appropriate suction catheter diameter, measure the i-gel cradle and add 2 cm.
- ☐ Place a piece of tape circumferentially on the catheter at that measurement marker to control the depth of insertion.
- ☐ Set suction to the appropriate setting and attach it to the suction catheter.

Long Suction Catheter - Insertion into Stomach (ACPs only)

- ☐ Using the catheter, measure the distance from the epigastrium (between the xiphoid process and umbilical area) to the ear lobe and then to the gastric port of the i-gel.
- ☐ Place a piece of tape circumferentially on the catheter at that measurement marker to control the depth of insertion.
- ☐ Set suction to the appropriate setting and attach it to the suction catheter.

Procedure

- ☐ Apply a small bolus of lubricant to the gastric port.
- ☐ Insert the catheter a short distance into the channel and move it in and out to prime it.

Conventional Suction Catheter**

- ☐ Insert the suction catheter into the gastric channel until the taped marker is reached.
- ☐ Secure the catheter in place with tape.
- ☐ Continue suctioning until fluid disappears **OR** there is no fluid return after 15 seconds.

Long Suction Catheters - Insertion into Stomach (ACPs only)

- ☐ Insert the suction catheter into the gastric channel until the taped marker is reached.
- ☐ Secure the catheter in place with tape.
- ☐ Continue suctioning until fluid disappears **OR** there is no fluid return after 15 seconds.

**Long suction catheters may be used as conventional suction catheters

Supraglottic Airway Insertion – i-gel

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- | | |
|---|---|
| ☐ i-gel SGA (<i>appropriately sized</i>) | ☐ Pillow +/- blankets (<i>for positioning</i>) |
| ☐ Securing device or tape | ☐ Bag-valve mask with filter |
| ☐ Water-based lubricant | ☐ EtCO ₂ device |
| ☐ Suction equipment | ☐ Stethoscope |
| | ☐ O ₂ source |

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Add lubricant to the cradle channel.
- ☐ Apply lubricant from the cradle to the front and back of the distal tip, sides and spine of the device.
- ☐ Position the patient to facilitate insertion (*sniffing position*).
- ☐ Suction the oropharynx.
- ☐ Position the device so that the i-gel cuff outlet is facing toward the chin of the patient.

Procedure

- ☐ With the non-dominant hand, gently push the chin down before insertion.
- ☐ Introduce the leading soft tip into the mouth towards the hard palate.
- ☐ Glide the device downwards and backward along the hard palate with a continuous but gentle push until definitive resistance is felt (*teeth resting on integral bite block*).
- ☐ Attach BVM with filter and assess ventilation.
- ☐ Confirm placement using primary or secondary methods
- ☐ Secure the i-gel with the appropriate device or tape.

Synchronized Cardioversion

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Towel
- ☐ Razor
- ☐ Cardiac monitor with defibrillation pads and limb leads

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Patch to BHP for synchronized cardioversion
- ☐ Prepare the chest for the application of defibrillation pads (*shave and/or dry if required*).
- ☐ Apply limb leads and defibrillation pads as per the manufacturer's recommendation.

Procedure

- ☐ Activate synchronization as per the manufacturer's recommendations.
- ☐ Confirm SYNC markers appear above each QRS complex.
- ☐ Select joule setting ordered by BHP/manufacturer settings and charge the defibrillator.
- ☐ Confirm no one is touching the patient.
- ☐ **Press AND HOLD** “shock” button until energy is delivered.

Tracheostomy Reinsertion

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ 10 mL syringe
- ☐ Tracheostomy tube (*supplied by patient*)
- ☐ Sterile water/normal saline

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Prepare a new tracheostomy tube. If a new one is not available, clean the existing tracheostomy tube with clean water.
- ☐ Inspect the stoma for patency and remove any foreign bodies if present.
- ☐ Prepare the tracheostomy kit by
 - Deflate the cuff (*if present*).
 - Remove the inner cannula (*if applicable*).
 - Insert the obturator into the outer cannula (*if available*).
 - Lubricate the end of the outer cannula (with the obturator tube in place) with a water-based lubricant or sterile water/normal saline.

****In the absence of an obturator, paramedics can insert a lubricated outer cannula but must be cautious as the outer cannula may damage the soft tissue of the trachea.**

Procedure

- ☐ Slightly extend the neck to open the stoma.
- ☐ Time insertion with the patient's breathing cycle. As the patient inhales, gently insert the tube into the stoma following the natural curvature of the neck into the trachea, but do not force it.
- ☐ Hold the outer cannula in place and immediately remove the obturator (*if applicable*).
- ☐ Secure the outer cannula by inflating the cuff with the appropriate volume of air (5 to 8 cc, *if applicable*) and by using the tube tie provided.
- ☐ Insert a new inner cannula into the outer cannula and lock it in place (*if applicable*).

Transcutaneous Pacing

Equipment

Set up equipment and ensure provider safety by applying appropriate PPE

- ☐ Towel
- ☐ Razor
- ☐ Cardiac monitor with defib pads and limb leads

Preparation

Stop all non-essential activity, establish provider roles, patient care goals and obtain consent

- ☐ Prepare the chest for the application of defibrillation pads (*shave and/or dry if required*).
- ☐ Apply limb leads and defibrillator pads as per the manufacturer's recommendation.

Procedure

- ☐ Select pacing mode (*as per manufacturer recommendation*).
- ☐ Set the pacing rate to 80 bpm.
- ☐ Gradually increase output (*mA*) until electrical capture or maximum mA setting is achieved.
- ☐ Confirm correlating mechanical capture (*palpable pulse + pulse oximetry at pacing rate*).
- ☐ Increase output (*mA*) by 10% mA above the initial threshold capture to ensure mechanical capture is maintained.
- ☐ Continuously monitor the patient for maintenance of electrical/mechanical synchrony.