MEDICATIONS

TABLE OF CONTENTS

ACTIVATED CHARCOAL	**4**
ADENOSINE (Adenocard)	**5**
ALBUTEROL (Proventil, Ventolin)	**6**
AMIODARONE (Pacerone)	**7**
AMYL NITRITE	**8**
ASPIRIN (Acetylsalicylic Acid)	**9**
ATIVAN (Lorazepam)	**10**
ATROPINE	**11**
ATROVENT (Ipratropium Bromide)	**12**
CALCIUM GLUCONATE	**13**
CAPTOPRIL (Capoten)	**14**
DEXAMETHASONE (Decadron)	**15**
DEXTROSE (Glucose)	**16**
DIPHENHYDRAMINE (Benadryl)	**17**
DOPAMINE (Intropin)	**18**
DROPERIDOL (Inapsine)	**19**
DUONEB (Albuterol/Atrovent mix)	**20**
ECALLANTIDE (Kalbitor)	**21**
EPINEPHRINE 1:1,000	**22**
EPINEPHRINE 1:10,000	**23**
ETOMIDATE (Amidate)	**24**
FENTANYL (Sublimaze)	**25**
FUROSEMIDE (Lasix)	**26**
GLUCAGON	**27**
HALOPERIDOL LACTATE (Haldol)	**28**
HYDROXYCOBALAMIN (Cyanokit)	**29**
IV SOLUTION (BSS)	**30**
KETAMINE (Ketalar)	**31**
KETOROLAC (Toradol)	**33**
LIDOCAINE (Xylocaine)	**35**
HIXSON LIDOCAINE CHART	**36**
MAGNESIUM SULFATE	**37**
MIDAZOLAM (Versed)	**38**
MORPHINE SULFATE	**39**
NALOXONE (Narcan)	**40**
NITROGLYCERIN	**41**
NOREPINEPHRINE (Levophed)	**42**
OLANZAPINE (Zyprexa)	**43**
OXYGEN	**44**
OXYGEN FLOW CHART	**45**
OXYMETAZOLINE HYDROCHLORIDE (Afrin)	**46**
OXYTOCIN (Pitocin)	**47**
ROCURONIUM (Zemuron)	**48**
SODIUM BICARBONATE	**49**
SUCCINYLCHOLINE (Anectine)	**50**
THIAMINE	**51**
TRANEXAMIC ACID	**52**

VECURONIUM (Norcuron) **53**
ZOFRAN (Ondansetron) **54**
2022 MEDICATION REVISIONS **55**

ACTIVATED CHARCOAL

Activated Charcoal	[EMT/AEMT/EMT-I/RN/EMT-P] OLMC Approval Required
Class:	Absorbent
Actions:	Absorbs toxins by binding to them to prevent GI absorption.
Indications:	Adsorbent used in overdoses and poisonings eg. Acetaminophen [Tylenol] ingestion
Contraindications:	Absolute (may be harmful): 1. Vomiting/Inability to protect airway 2. Petroleum product ingestion 3. Corrosive ingestion (mineral acids, strong bases) Relative (unlikely to be effective): 1. Toxic Alcohol ingestion (ethanol, methanol, isopropanol, ethylene glycol) 2. Lithium ingestion 3. Metals ingestion (iron, lead, mercury, etc.)
Precautions:	1. Patient must be alert and able to avoid aspiration.
Side Effects:	Vomiting, aspiration, constipation, bowel obstruction
Dosage:	*Adults:* 50 gm PO *Pediatric:* 1 gm/kg PO, NMT 50 gm
Supply:	25 gm bottles
Comments:	1. Activated Charcoal interferes with some antidotes. 2. It is unlikely to be useful unless given in the first hour after ingestion. 3. Shake vigorously before using.

ADENOSINE (Adenocard)

Adenosine (Adenocard)	[EMT-P]
Class:	Anti-arrhythmic
Actions:	Slows conduction through the AV node.
Indications:	1. Stable Narrow-QRS Tachycardia refractory to vagal maneuvers 2. Unstable Narrow-QRS Tachycardia if IV access immediately available: a. Rate ≥ 150/min. (adult), ≥ 220 (children) b. Regular rhythm c. QRS < 0.12 seconds
Contraindications:	1. Hypersensitivity/allergy 2. Wide QRS (> 0.12 seconds) Tachycardia 3. Second or Third degree heart block 4. Sick Sinus Syndrome
Precautions	In the presence of carbamazepine (Tegretol), may produce higher degrees of heart block or may develop asystole (1%) which can last for 3 days
Side Effects:	Transient asystole, AV block, PVCs, Hypotension
Dosage:	*Adults:* 6 mg (2 ml) IV/IO over 1-2 sec. If not effective after 2 min., administer: 12 mg [4 ml] IV/ IO. Follow each dose with a 20 ml NS IV flush. *Pediatric:* 0.1 mg/kg IV/IO over 1-2 sec. If not effective after 2 minutes, administer: 0.2 mg/kg. NMT 12 mg. Follow each dose with a 5 ml NS IV flush.
Supply:	6mg/2ml Prefilled syringe 12mg/4ml Prefilled syringe
Comments:	1. Does not convert atrial flutter, atrial fibrillation, or ventricular tachycardia. May cause temporary slowing. 2. Adenosine is antagonized by methylxanthines (such as caffeine, theophyline) May require larger dose to treat. 3. Adenosine effects are potentiated by dipryidomole and will require smaller doses to treat. 4. Use injection port closest to body and follow immediately with flush.

Albuterol (Proventil, Ventolin)	[EMT/AEMT/EMT-I/RN/EMT-P]
Class:	Sympathomimetic (β2 selective)
Actions:	Bronchodilation
Indications:	Wheezing and respiratory distress due to asthma, emphysema, COPD, anaphylaxis Hyperkalemia
Contraindications:	1. Hypersensitivity/allergy 2. Avoid in the following unless symptoms are severe: a. Chest pain b. Pulse > 140/min. (adults) or > 180/min. (children) c. Systolic BP > 180
Precautions:	Risk of transient hypokalemia
Side Effects:	Tachycardia, hypertension, arrhythmias, tremor, anxiety, headache
Dosage:	*Adults:* 1 unit dose, nebulized *Pediatric:* 1 unit dose, nebulized May repeat in 10 minutes if inadequate response
Supply:	Bottle of 0.083% solution contains 2.5 mg in 3 ml.
Comments:	Set oxygen at 6-10 LPM [until nebulizer mists] < 4 yrs old: nebulizer held under the face ≥ 4 yrs old: nebulizer with mouth piece or face mask

AMIODARONE (Pacerone)

Amiodarone (Pacerone)	[EMT-I/RN/EMT-P]
Class:	Anti-arrhythmic
Actions:	1. Depresses automaticity of SA node. 2. Slows conduction & increases refractoriness of the AV node. 3. Increases Atrial & Ventricular refractoriness
Indications:	Pulseless VF / VT, V-tach with pulse, Wide complex Tachycardia
Contraindications:	1. Hypersensitivity/allergy 2. Sinus node dysfunction, 2°/3° AV block, bradycardia, cardiogenic shock
Precautions:	May cause hyperthyroidism
Side Effects:	May produce vasodilation, hypotension, a prolonged QT interval, and a negative inotropic effect
Dosage:	*Adults:* 1. V-fib / Pulseless V-tach: 300 mg IV/IO may repeat once in 3 – 5 min at 150 mg IV/IO. If pt converts administer maintenance drip at 1mg/min 2. V-tach with pulse / Wide complex Tachycardia: 150mg in 50ml LR or NS. Rapid infusion of 15 mg/min over 10 min. may repeat 150mg rapid infusion in 10 min. If pt converts administer maintenance drip at 1mg/min *Pediatric: 1.* V-fib / Pulseless V-tach: 5 mg/kg IV/IO may repeat once in 3 – 5 min. at 2.5 mg/kg IV/IO. 2. V-tach with pulse / Wide complex Tachycardia: 2.5 mg/kg IV/IO over 10 min.
Supply:	50mg in 3 ml preload 150mg in 3 ml vial
Comments:	*Maintenance Drip*: Mix 150mg in 50ml LR or NS and administer 1mg/min on micro drip set. (Approx 20 gtts/min) *Rapid Infusion*: Mix 150mg in 50ml LR or NS and administer at 15 mg/min infusion with macro drip set. (Approx. 75gtts/min) *Pediatric Infusion:* Mix pediatric dose (2.5 mg/kg) with 50ml of NS and infuse over 10 min. May mix pediatric dose with 2ml/kg of NS in solu-set for patients less than 25kg.

Amyl Nitrite	[EMT-P]
Class:	Inhalant
Actions:	Amyl Nitrate has affinity for cyanide ions; reacts with hemoglobin to form methemoglobin.
Indications:	Cyanide or hydrocyanic poisoning
Contraindications:	1. Hypersensitivity/allergy to organic nitrites 2. Recent (last 24 hr) Sildenafil (Viagra) or other phosphodiesterase-5 inhibitor use. 3. Severe anemia
Precautions:	May cause postural hypotension. Patient should be sitting down during and immediately after inhaling.
Side Effects:	Headache
Adults & Pediatric:	*Adults & Pediatric:* Breathe Amyl Nitrate vapors for 30 seconds, then breathe Oxygen for 30 seconds repeat this procedure continuously
Supply:	0.3 mL capsules
Comments:	Protect yourself from exposure to cyanide sources. DO NOT BECOME A VICTIM YOURSELF.

ASPIRIN (Acetylsalicylic Acid)

Acetylsalicylic Acid (Aspirin)	[EMR/EMT/AEMT/EMT-I/RN/EMT-P]
Class:	Analgesic, antipyretic
Actions:	Blocks platelet aggregation
Indications:	Chest pain suggestive of AMI
Contraindications:	1. Allergy to aspirin or aspirin induced asthma. 2. History of active bleeding disorder (i.e., hemophilia). 3. Current GI bleeding. 4. Suspected aortic dissection. 5. Not to be used in suspected CVA patients until intracranial hemorrhage has been ruled out by CT
Precautions:	Caution in patients with known active peptic ulcer.
Side Effects:	Urticaria, angioedema, bronchospasm, anaphylactic shock, nausea, vomiting, heartburn, GI bleed and prolonged bleeding
Dosage:	*Adults:* 4 chewable baby aspirin (81 mg each) PO *Pediatric:* ***Not Indicated***
Supply:	81 mg tablets
Comments:	Do not use in pediatric patients with chicken pox or influenza like illness due to association with increased risk of Reye's Syndrome

Ativan (Lorazepam)	[EMT-P]
Class:	Benzodiazepine
Actions:	Anti-convulsant, tranquilizer and skeletal muscle relaxant
Indications:	1. Seizures/status epilepticus 2. As an amnesic / anxiolytic prior to cardioversion 3. Chemical restraint
Contraindications:	1. Hypersensitivity/allergy 2. Severe respiratory insufficiency (unless mechanically ventilated) 3. CNS depression
Precautions:	1. Inadvertent intra-arterial injection may produce arteriospasm, potentially leading to amputation. 2. Use cautiously and monitor closely in patients with sleep apnea.
Side Effects:	1. Drowsiness, dizziness, fatigue and ataxia. 2. Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially alcohol and barbiturates, or when given rapidly.
Dosage:	*Adults:* 0.5-2.0 mg IV/IO/IM *Pediatric:* 0.1mg/kg IV/IO/IM May repeat in 10 min NMT 4.0 mg.
Supply:	2 mg/ml Carpuject / Vial 2 mg/ml – 2 ml Vial
Comments:	1. If given IM, do not dilute. 2. Dilute 1:1 for IV/IO. 3. Consider rectal administration (if unable to administer IV) in seizing children. Contact Medical Control hospital prior to doing so.

ATROPINE

Atropine Sulfate	[EMT*/AEMT*/EMT-I/RN/EMT-P]
Class:	Parasympatholytic (anticholinergic)
Actions:	Blocks acetylcholine receptors (decreases vagal tone thus increasing heart rate)
Indications:	1. Narrow-QRS (< 0.12 sec) bradycardia with systolic BP < 90, decreased LOC, chest pain, or PVC's 2. *Severe organophosphate (insecticide) poisoning
Contraindications:	Wide-QRS (≥ 0.12 sec) Bradycardia
Precautions:	Glaucoma
Side Effects:	Tachycardia, chest pain, blurred vision, headache, dry mouth, flushing, urinary retention
Dosage: *Bradycardia*	*Adults:* 0.5 - 1 mg IV/IO q 5 min, NMT 3 mg (double dose for ETT) *Pediatric:* 0.02 mg/kg IV/IO or 0.04 mg/kg ET (Avoid age < 1 month). MINIMUM DOSE: 0.1 mg MAXIMUM TOTAL DOSE (child): 1.0 mg (0.04 mg/kg) MAXIMUM TOTAL DOSE (adolescent): 2.0 mg (0.04 mg/ kg)
Dosage: *Organophosphate Poisoning*	*Adults:* 1 - 2 mg IV/IO *Pediatric:* 0.05 mg/kg IV/IO NMT 1mg/dose Repeat q 5 - 10 min until muscarinic symptoms disappear or atropine toxicity appears.
Supply:	Prefilled syringe: contains 1 mg (10 ml) Vial: 20 ml – 0.4 mg/ml
Comments:	1. Use cautiously in patients with chest pain 2. ***EMT/AEMT's are only authorized to give atropine in auto-injector for organophosphate poisoning**. 3. Severe organophosphate poisoning may require double doses if: a. Systolic BP < 90 b. Decreased LOC c. Respiratory distress d. Excessive oral secretions e. Pulse < 60

ATROVENT (Ipratropium Bromide)

Atrovent (ipratropium bromide)	[EMT/AEMT/EMT-I/RN/EMT-P]
Class:	Anticholinergic
Actions:	Inhibits interaction of acetylcholine at receptor sites of the bronchial smooth muscle resulting in bronchial dilation
Indications:	For Relief of Bronchospasms in those with COPD
Contraindications:	Hypersensitivity/allergy
Precautions:	Narrow angle glaucoma,
Side Effects:	N/V, Dry mouth, cramps, anxiety, dizziness, H/A, cough , worsening of Bronchospasms
Dosage:	*Adults & Pediatric:* 0.5 mg nebulized mixed with albuterol dose.
Supply:	2.5 ml of solution (0.5 mg) per unit dose for nebulization
Comments:	Mix with Albuterol to form “Duoneb” – Administer once, all subsequent Neb treatments are to be Albuterol. Duoneb will be second treatment for pediatric patients if Albuterol treatment does not break asthma.

CALCIUM GLUCONATE

Calcium Gluconate	[EMT-P]
Class:	Membrane stabilizer and antidote
Actions:	1. Calcium is the most common cation in the human body and the majority of the body stores are located in bone. 2. It is critical in many different cellular processes and is essential for the functional integrity of muscle (skeletal, smooth and cardiac) and nervous tissues.
Indications:	1. Hyperkalemia (suspected hyperkalemia in PEA/Asytole) 2. Calcium channel blocker overdoses 3. Hydrofluoric acid poisoning 4. Iatrogenic magnesium intoxication
Contraindications:	1. Hypersensitivity/allergy 2. Digoxin Poisoning. 3. Hypercalcemia
Precautions:	Avoid use with patients who are on Digoxin since calcium can augment the positive inotropic and negative chronotropic effects of digitalis preparations.
Side Effects:	Rapid IV administration can cause: 1. Bradycardia 2. Vasodilatation 3. Hypotension 4. Syncope 5. Local irritation & burning
Dosage: PEA/ Asystole	*Adults:* 3 gm (30 ml) IV/IO over 10 mins *Pediatric: 50 mg/kg* (0.5 ml/kg) IV/IO over 10 mins
Dosage: All other indications	*Adults:* 1 gm (10 ml) IV/IO over 10 mins *Pediatric: 10 mg/kg* (0.1 ml/kg) IV/IO over 10 mins
Supply:	1 gm in 10 ml
Comments:	1. Administer slowly (no faster than 2.0 ml/min) and stop if the patient complains of pain. 2. Inject using a small needle in large vein and do not mix with bicarbonate. 3. As a membrane stabilizer in suspected hyperkalemia, it reverses EKG changes pending correction of the extracellular potassium concentration. Suspect hyperkalemia in patient with wide complex arrhythmia or tall peaked T-waves and Hx of renal failure.

CAPTOPRIL (Capoten)

Captopril (Capoten)	[EMT-P]
Class:	Angiotensin Conversion Inhibitor (ACE-I)
Actions:	Inhibits angioensin-II mediated vasoconstriction Lowers blood pressure
Indications:	1. Flash pulmonary Edema 2. CHF
Contraindications:	Hypersensitivity/allergy to any ACE-I
Precautions:	Impaired renal function Auto-immune disease (Lupus, etc.) Elderly may be more sensitive to drug's hypotensive effects.
Side Effects:	Tachycardia, hypotension, angina. Nausea, vomiting, abdominal pain. Allergic Reaction may be rash, swelling of tongue, angioedema of the face and extremities.
Dosage:	*Adults:* 12.5 mg sublingual (May dampen with small amount of sterile water or normal saline to help tablet to dissolve.)
Supply:	12.5 mg white tab.
Comments:	1. Prevents conversion of angiotensin I to angiotensin II, a potent vasoconstrictor. 2. Decreases peripheral arterial resistance so there is reduced sodium and water retention and lowers blood pressure. 3. Onset occurs in 15-30 minutes. Duration is 6-12 hours.

DEXAMETHASONE (Decadron)

Dexamethasone (Decadron)	[EMT-P]
Class:	Corticosteroid
Actions:	Anti-inflammatory
Indications:	1. Moderate to severe asthma/COPD 2. Severe allergic reactions 3. Croup 4. Adrenal insufficiency
Contraindications:	Systemic fungal infection
Precautions:	Pregnancy, peptic ulcer disease Hypersensitivity/allergy
Side Effects:	1. Hyperglycemia 2. Hypertension 3. Anxiety/psychosis 4. Adrenal suppression 5. N/V, headache or dizziness
Dosage:	*Adults (>40 lb):* 10 mg IV/IO/IM/PO *Pediatric (< 40 lb) dose:* *Airway Emergencies: 0*.6 mg/kg IV/IO/IM/PO NMT 10 mg Adrenal Insufficiency: 0.05 mg/kg IV/IO/IM
Supply:	10 mg/1 ml Vial
Comments:	Dexamethasone is a synthetic steroid that suppresses acute and chronic inflammation. In addition, it potentiates vascular smooth muscle relaxation by beta-adrenergic agonists and may alter airway hyperactivity.

DEXTROSE (Glucose)

DEXTROSE (Glucose)	[EMR/EMT/AEMT/EMT-I/RN/EMT-P]
Class:	Carbohydrate
Actions:	Elevates blood glucose level
Indications:	1.Symptomatic hypoglycemia a.BGL < 60 mg/dl b.BGL < 60 mg/dl in Child (1 year to puberty) c.BGL < 40 mg/dl in Infant (Birth to 1 year) 2.Consider in patients when unable to assess BGL or if: a.GCS ≤ 12 b.Seizures lasting ≥ 3 minutes
Contraindications:	No absolute contraindications.
Precautions:	Relative contraindications are intracranial hemorrhage and stroke.
Side Effects:	Tissue injury if infiltration occurs. Aspirate blood before and during injection.
Dosage: **EMR/EMT**	*Adults:* 15 - 25 g orally if patient can protect airway *Pediatric:* 0.5 g/kg orally if patient can protect airway
Dosage: **AEMT/EMT-I/RN** **EMT-P**	*Adults:* D50: 10-50 mL (5 - 25 g) IV or IO; Consider diluting 1:5 to decrease risk of tissue necrosis. *Any age:* D10: 5 ml/kg (0.5 gm/kg) IV/IO up to 25g *Any age:* D5: 10 ml/kg (0.5 gm/kg) IV/IO up to 25g May repeat 0.5 gm/kg if pt remains hypoglycemic
Supply:	25 g per tube; Glutose: 15 gm tube Prefilled syringe contains 25 gm (50 ml) D50 contains 5 g glucose per 10 ml (50% glucose) D10 contains 5 g glucose per 50 ml (10% glucose) D5 contains 2.5 g glucose per 50 ml (5% glucose)
Comments:	Perform rapid glucose determination before administration. Maximum single dose: 25 g dextrose = 500ml D5 = 250 ml D10 = 50 ml D50. Recheck BGL before administering additional glucose. May repeat every 3-5 minutes as needed for persistent hypoglycemia. Effect is delayed in elderly people with poor circulation.

DIPHENHYDRAMINE (Benadryl)

Diphenhydramine HCL (Benadryl)	[EMT-I/RN/EMT-P]
Class:	Antihistamine
Actions:	1. Blocks histamine receptors 2. Antiemetic effect
Indications:	1. Second Line for Anaphylaxis 2. Dystonic reactions to antipsychotic drugs
Contraindications:	1. Hypersensitivity/allergy 2. Weight < 22 lbs (10 kg)
Precautions:	May precipitate narrow angle glaucoma BPH
Side Effects:	Sedation, confusion Anticholinergic effects such as urinary retention
Dosage:	*Adults:* Adults 25 to 50 mg slow PO/IV/IO/IM *Pediatric:* 1 mg/kg PO/IM/IV/IO NMT 50 mg
Supply:	Prefilled carpuject contains 50 mg (1 ml) 25 mg capsules
Comments:	Reduce dose in elderly

DOPAMINE (Intropin)

Dopamine HCL (Intropin)	[EMT-P]
Class:	Sympathomimetic
Actions:	1. Increases cardiac contractility 2. Causes peripheral vasoconstriction 3. Increases chronotropic and inotropic effects
Indications:	Non-hypovolemic shock
Contraindications:	1. Hypersensitivity/allergy 2. Hypovolemic shock (volume replacement MUST be accomplished prior to using Dopamine)
Precautions	Not compatible with Sodium Bicarbonate or other alkaline solution
Side Effects:	Tachycardia, hypertension, arrhythmias, chest pain
Dosage:	*Adults:* 5-20 mcg/kg/minIV/IO. Titrate to systolic BP ≥ 100. Mix 400 mg in 250 ml D5W (1600 mcg/ml]). *Pediatric:* Start at 2 – 5 mcg/kg/min IV/IO. Titrate for effect. NMT 30 mcg/kg/min Mix 100mg in 250ml D5W (400 mcg/ml) Shake to mix
Supply:	Vial contains 200 mg (5 ml) Premixed – 1600mcg/250ml
Comments:	1. Very Low Dose (0.5 - 2 mcg/kg/min): dopaminergic 2. Low Dose (2 - 10 mcg/kg/min): β effects predominate 3. High Dose (> 10 mcg/kg/min):α effects predominate

mcg/kg/min	Patient weight in kg											
	2.5	5	10	20	30	40	50	60	70	80	90	100
2 mcg				1.5	2	3	4	5	5	6	7	8
5 mcg		1	2	4	6	8	9	11	13	15	17	19
10 mcg	1	2	4	8	11	15	19	23	26	30	34	38
15 mcg	1.4	3	6	11	17	23	28	34	39	45	51	56
20 mcg	2	4	8	15	23	30	38	45	53	60	68	75
Microdrops per minute (or ml/hr)												
Mix 400 mg in 250 ml D5W (1600 mcg/ml) or Mix 800 mg in 500 ml D5W (1600 mcg/ml) & run at:												

DROPERIDOL (Inapsine)

Droperidol (Inapsine)	[EMT-P]
Class:	Neuroleptic
Actions:	1. Dopamine D2 receptor antagonist. 2. Produces mild alpha-adrenergic blockade, peripheral vascular dilation, reduction of the pressor effect of epinephrine 3. Produces marked tranquilization and sedation, allays apprehension and provides a state of mental detachment and indifference while maintaining a state of reflex alertness. 4. Anti-emetic effect.
Indications:	1. Sedation of combative patients to facilitate restraint. 2. Nausea and vomiting not responsive to ondansetron
Contraindications:	1. Systolic BP < 100 2. Known QT prolongation (QTc > 450 msec in females or > 400 in males) 3. CNS depression or coma 4. Pregnancy 5. Known allergy to droperidol
Precautions:	1. Hypotension may occur; IV fluids and other measures to manage hypotension should be readily available. 2. Use caution when administering droperidol to patients who have taken other CNS depressant drugs (barbiturates, tranquilizers, alcohol). 3. Droperidol may induce Torsades de Pointes. Monitor the patient's ECG Q-T interval when possible following use.
Side Effects:	1. The most common side effects are hypotension and tachycardia which usually respond to a fluid bolus. 2. Dysphoric (restlessness) and dystonic reactions have been reported following administration. These symptoms can be treated with the administration of Diphenhydramine.
Dosage: Patient restraint	*Adults:* 2.5 mg IV or 5 mg IM. May repeat once in 10 minutes. *Pediatric: ≥ 14 yo, same as adult. For < 14 yo, OLMC consult*
Dosage: Nausea and vomiting	*Adults:* 0.625 mg IV/IO. (0.625 mg = 0.25 ml based on a 5 mg/ 2 ml package) *Pediatric: ≥ 14 yo, same as adult. For < 14 yo, OLMC consult*
Supply:	5 mg / 2 ml vial
Comments:	Onset of action is from 3-10 minutes following administration and peak effect may not be apparent for up to 30 minutes. Duration is generally 2-4 hours.

DUONEB (Albuterol/Atrovent mix)

Duoneb (Albuterol/Atrovent mix)	[EMT/AEMT/EMT-I/RN/EMT-P]
Class:	Bronchodilator
Actions:	Smooth muscle relaxant. Opens up narrowed breathing passages
Indications:	1. Asthma 2. Emphysema 3. COPD 4. Anaphylactic respiratory distress
Contraindications:	Albuterol or atrovent allergy
Precautions:	Chest pain. Pulse > 140 /min. (adults) or > 180/min. (children) Systolic B/P > 180 Narrow angle glaucoma
Side Effects:	Chest discomfort, angina. Fast or irregular heartbeat
Dosage:	*Adults & Pediatric:* 3 ml vial in nebulizer.
Supply:	3 ml vial (Fish) containing 2.5 mg Albuterol/0.5 mg Atrovent
Comments:	1. First line in adults. 2. 2nd line in children. (1st line is albuterol) 3. All subsequent neb treatments are to be Albuterol unless directed otherwise by OLMC.

ECALLANTIDE (Kalbitor)	[EMT-P]
Special Administration Order:	For patients with known diagnosis of Hereditary Angioedema (HAE) who has signs or symptoms of laryngeal edema. Patient carries 2 - 30 mg doses of drug (10mg/1ml vials)
Class:	Kallikrein Blocker
Actions:	Blocks the activity of a protein in the body called plasma kallikrein, preventing the release of the chemical that causes veins to leak fluid. This allows the pain and swelling associated with HAE attack to improve.
Indications:	HAE patient with signs & symptoms of laryngeal edema
Contraindications:	Allergy to ecallantide
Precautions:	Symptoms of a serious allergic reaction can be similar to the symptoms of hereditary angioedema.
Side Effects:	1. Anaphylaxis/serious allergic reaction 2. Headache, nausea, diarrhea, fever, stuffy nose 3. Injection site reactions, such as redness, rash, swelling, itching, or bruising
Dosage:	1. Administered subcutaneously in three 10 mg (1 mL) injections. Injections should be minimum of 2" apart, in non-effected area - eg. thigh, arm, abdomen 2. If an attack persists, an additional dose of 30 mg may be administered in 2 hours, NTE 20 mg within a 24-hour period.
Supply:	10mg/1ml vials
Comments:	Laryngeal edema is the most worrisome feature of HAE, because swelling can close the airway and cause death by asphyxiation. After administration patient must be transported to ED and monitored for signs of a serious allergic reaction which may include - wheezing, shortness of breath, cough, chest tightness, trouble breathing, dizziness, fainting, palpitations, swelling of the throat or tongue, throat tightness, hoarse voice, trouble swallowing, runny nose, nasal congestion or sneezing, reddening of the face, itching, hives, or feeling warm.

EPINEPHRINE 1:1,000

Epinephrine 1:1,000 (Adrenalin)	[*EMR/EMT/**AEMT/EMT-I/RN/EMT-P]
Class:	Sympathomimetic
Actions:	α - Vasoconstriction: improves coronary blood flow and supports BP in anaphylactic shock β1 – Inotropic and chronotropic effects.
Indications:	1. ACLS: (VF, pulseless VT, Asystole, PEA) 2. Anaphylaxis 3. Stridor & lower airway wheezing not broken by albuterol
Contraindications:	Pediatric cardiac arrest (see Epinephrine 1:10,000)
Precautions:	Avoid use in the following unless symptoms are severe: 1. Chest pain 2. Pulse > 140/min. (adults) or > 180/min. (children) 3. Systolic BP > 180
Side Effects:	Tachycardia, hypertension, arrhythmias, tremor, anxiety, headache, chest pain
Dosage: **Anaphylaxis**	*Adult:* 0.3 mg (0.3 ml) IM *Child:* 0.2 mg (0.2 ml) IM *Infant:* 0.1 mg (0.1 ml) IM May repeat this dose once after 10 min PRN Consult OLMC if patient is 50 years or older or has history of heart disease. *EMR use Epipen (0.3 mg) or Epipen Jr (0.15 mg) IM auto-injector only
Dosage: **Respiratory Distress** ****AEMT & above**	*Adult & Pediatric:* 3 ml in nebulizer for stridor, wheezing or severe respiratory distress not broken with Albuterol ± Atrovent May repeat this dose once after 10 min PRN Use with caution if patient is 50 years or older or has history of heart disease. Consider OLMC consult before administration.
Dosage: **ACLS** ****AEMT & above**	*Adult & Pediatric:* See Epinephrine 1:10,000 for IV/IO dosing *Adult ETT:* 2 mg ETT *Pediatric ETT only:* 0.1 mg/kg ETT (0.1 ml/kg) *Neonatal:* See Epinephrine 1:10,000 for IV/IO/ET dosing
Supply:	1 mg/ml, 30 ml or 1 ml vial
Comments:	IM route now recommended instead of SQ due to improved absorption in shock state.

EPINEPHRINE 1:10,000

Epinephrine 1:10,000 (Adrenalin)	[EMT-I/RN/EMT-P]
Class:	Sympathomimetic
Actions:	α - Vasoconstriction: improves coronary blood flow and supports BP in anaphylactic shock β1 – Inotropic and chronotropic effects.
Indications:	1. ACLS: (VF, pulseless VT, Asystole, PEA) 2. (EMT-P Only) a. Pediatric Bradycardia unresponsive to ventilation b. Anaphylaxis not responding to IM treatment
Contraindications:	No absolute indications in ACLS
Precautions:	Avoid use in the following unless symptoms are severe: 1. Chest pain 2. Pulse > 140/min. (adults) or > 180/min. (children) 3. Systolic BP > 180
Side Effects:	Tachycardia, hypertension, arrhythmias, tremor, anxiety, headache, chest pain
Dosage: **Anaphylaxis**	*Adults: 0.1-0.3 mg (1-3 ml) IV/IO* *Child/Infant:* 0.01 mg/kg (0.1 ml/kg) IV/IO NMT 0.5 mg Use with caution if patient is 50 years or older or has history of heart disease. Consider OLMC consult before administration. (EMT-P Only)
Dosage: **ACLS**	*Adult:* 1 mg (10 ml) IV/IO. Repeat every 3-5 minutes until pulse returns. *Pediatric:* 0.01-0.03 mg/kg (0.1-0.3 ml/kg) IV/IO. Repeat every 3-5 minutes until pulse returns or bradycardia resolves. *Neonatal:* 0.01 mg/kg (0.1 ml/kg) IV/IO with 1 ml flush NS 0.05 mg/kg ETT (0.5 ml/kg) (+3 PPV breaths,no flush) Repeat every 3-5 minutes until HR > 60 BPM
Supply:	Preload 1 mg /10 ml (1 ml = 0.1mg)

❖ Epinephrine infusion Titrate 0.1- 0.5 mcg/kg per minute
Mix 200 mcg in 50 mL NS (4 mcg/ml)
Drip for 0.1 mcg/kg per minute:

Pt wt (lbs)	44	66	88	110	132	154	176	198	220	242
Pt wt (kg)	20	30	40	50	60	70	80	90	100	110
mcg/min	2	3	4	5	6	7	8	9	10	11
Microdrips	30	45	60	75	90	105	120	135	150	165

ETOMIDATE (Amidate)

Etomidate (Amidate)	[EMT-P]
Class:	Sedative/hypnotic Induction Agent
Actions:	Non-barbiturate hypnotic; lacks analgesic activity
Indications:	Induction for RSI
Contraindications:	1. Hypersensitivity/allergy 2. Sepsis/septic shock
Pregnancy:	Category C - not recommended
Precautions:	1. Excessively rapid injection may be followed by a fall in blood pressure. 2. IV incompatibility with vecuronium
Side Effects:	1. Adrenal suppression 2. Myoclonus 3. Transient pain on injection 4. Nausea/vomiting
Dosage:	*Adults:* 0.3 mg/kg IV/IO *Pediatric:* 0.3 mg/kg IV/IO Administer undiluted over 10 - 20 seconds
Supply:	2 mg/mL Supplied in a pre-load syringe containing 40 mg in 20 mL
Kinetics:	*Onset:* within 60 seconds *Duration:* 3-5 minutes
Comments:	1. First line induction agent for RSI. 2. Advantages: Cerebroprotective and minimal myocardial/ respiratory depression 3. Disadvantages: Adrenal suppression/increased risk of death in septic patients.

FENTANYL (Sublimaze)

Fentanyl (Sublimaze)	[EMT-I/RN/EMT-P]
Class:	Narcotic Analgesic
Actions:	Acts on the opiate receptors in the brain to cause: 1. Analgesia 2. CNS depression 3. Vasodilation
Indications:	1. Hypersensitivity/allergy 2. Treatment of acute pain if patient has allergy to Morphine 3. 1st line analgesic with the following: a. Traumatic injuries with severe pain (i.e. orthopedic injuries.) b. Pain from burns
Contraindications:	1. Respiratory depression 2. Acute severe bronchial Asthma 3. Within 2 weeks of MAO inhibitor use
Precautions:	Use with Caution in patients with head injury at risk for ICH
Side Effects:	1. Sedation 2. Respiratory depression or arrest. 3. Chest wall rigidity 4. Bradycardia, QT-prolongation, arrhythmia 5. Hypotension 6. Nausea & vomiting, constipation 7. Raised ICP
Dosage:	*Adults:* 25-100 mcg (0.5-1 mcg/kg) IV/IO/IM/IN slowly over 1-2 min NMT 200 mcg *Pediatric:* 1 mcg/kg IV/IO/IM slowly over 1-2 min NMT 4 mcg/kg or 200 mcg. Repeat with ½ initial dose prn. Or, 2 mcg/kg IN repeated with 1 mcg/kg every 5 minutes as needed to a maximum of 8 mcg/kg.
Supply:	Carpuject 100 mcg / 2 ml 100mcg/2ml Single Dose Vial (SDV)
Kinetics:	*Onset:* 2 – 3 min *Duration:* 30 – 60 min
Comments:	1. Approximately 80 times more potent than Morphine 2. Rapid administration may cause muscle rigidity of respiratory muscles. Muscle rigidity may be treated with benzodiazepine, but may require treatment with paralytic.

FUROSEMIDE (Lasix)

Furosemide (Lasix)	[EMT-I/RN/EMT-P]
Class:	Diuretic
Actions:	1. Inhibits reabsorption of NaCl 2. Promotes prompt diuresis 3. Vasodilatation
Indications:	Pulmonary edema with signs and symptoms of volume overload (recent weight gain, peripheral edema, JVD, rales)
Contraindications:	1. Hypersensitivity/allergy 2. Systolic BP < 100 3. Known severe hypokalemia
Pregnancy:	Category C - not recommended
Precautions:	1. Should be not given prior to nitrates in patients with CHF 2. Small risk of cross-reaction in patients with allergy to sulfa compounds
Side Effects:	1. Hypotension 2. Hypokalemia
Dosage: *	*Adults:* 20 mg (2ml) IV/IO at 15-20 mg/min. 40 mg (4 ml) for patients taking PO Lasix daily. *Pediatric:* 1 mg/kg (0.1 ml/kg) IV/IO at 15-20 mg/min
Supply:	Vial contains 40 mg (4 ml) Ansyr LL Syringe – 40 mg / 4 ml
Comments:	*Note newer recommendations for reduced doses of lasix

GLUCAGON

Glucagon HCL	[AEMT/EMT-I/RN/EMT-P]
Class:	Hormone (Antihypoglycemic agent)
Actions:	1. Causes breakdown of glycogen to glucose 2. Elevates blood glucose level
Indications:	Unable to administer IV D50 in: 1. Rapid glucose determination < 70 mg/dl. 2. Rapid glucose determination suspected stroke pt.< 60 mg/dl 3. Suspected hypoglycemia if: a. GCS ≤ 12 b. Seizure lasting ≥ 3 min.
Contraindications:	1. Hypersensitivity/allergy 2. Pheochromocytoma
Precautions:	Caution if history of pheochromocytoma or insulinoma
Side Effects:	Nausea, vomiting, hyperglycemia
Dosage:	*Adults:* 1 mg (1 ml) IM/IV/IO q 20 min PRN *Pediatric:* 0.02 mg/kg IM/IV/IO NMT 1 mg (1 ml) q 20 min PRN
Supply:	Vial containing 1 mg powder Mix with vial containing 1 ml diluent for 1 mg/ml solution
Comments:	1. May be useful in β-blocker or Ca-channel blocker overdose. Requires significant quantity to be effective. 2. Call OLMC for dosing in overdose.

HALOPERIDOL LACTATE (Haldol)

Haloperidol Lactate (Haldol)	[EMT-P]
Class:	Neuroleptic
Actions:	1. Dopamine D2 receptor antagonist. 2. Produces mild alpha-adrenergic blockade, peripheral vascular dilation, reduction of the pressor effect of epinephrine 3. Produces marked tranquilization and sedation, allays apprehension and provides a state of mental detachment and indifference while maintaining a state of reflex alertness. 4. Anti-emetic effect.
Indications:	1. Sedation of combative patients to facilitate restraint. 2. Nausea and vomiting
Contraindications:	1. Known allergy to haloperidol 2. CNS depression or coma
Precautions:	1. Hypotension may occur; IV fluids and other measures to manage hypotension should be readily available. 2. Use caution when administering haloperidol to patients who have taken other CNS depressant drugs (barbiturates, tranquilizers, alcohol). 3. Haloperidol may induce Torsade de Pointes. Monitor the patient's ECG Q-T interval following use.
Side Effects:	1. EPS: muscle stiffness, dystonia, parkinsonism, tardive dyskinesa 2. NMS: Neuroleptic Malignant Syndrome - potentially fatal reaction to neuroleptic medications causing altered mental status, rigidity, hyperthermia, and dysautonomia 3. Sedation, anticholinergic effects
Dosage: Patient restraint	*Adults:* 5-10 mg IV, IO, IM. May repeat to a maximum of 20 mg *Pediatric: > 12 yo, same as adult. For < 12 yo, OLMC consult*
Dosage: Nausea and vomiting	*Adults:* 1.25 mg IV/IM *Pediatric: Not authorized for < 12 yo*
Supply:	5 mg / 1 ml vial
Comments:	

HYDROXYCOBALAMIN (Cyanokit)

Hydroxycobalamin	[EMT-P]
Class:	Cyanide antidote
Actions:	A. Cyanide is an extremely toxic poison. In the absence of rapid and adequate treatment, exposure to a high dose of cyanide can result in death within minutes due to inhibition of cytochrome oxidase resulting in arrest of cellular respiration. B. Hydroxocobalamin (Vitamin B12a) is an effective antidote in the treatment of cyanide poisoning based on its ability to bind cyanide ions. Each hydroxocobalamin molecule can bind one cyanide ion to form cyanocobalamin (vitamin B12), which is then excreted in the urine.
Indications:	Coma, persistent hypotension or cardiorespiratory arrest in the setting of suspected cyanide poisoning or smoke inhalation
Contraindications:	None known
Precautions:	Hydroxocobalamin has physical (particulate) and chemical incompatibilities with many medications and it is best to administer all other drugs or products (e.g., blood) through a separate intravenous line.
Side Effects:	A. Serious side effects include allergic reactions, temporary increases in blood pressure, nausea, headache and infusion site reactions. B. Common side effects are chromaturia (red-colored urine) and erythema (skin redness) which occur in nearly all patients. May cause skin photosensitivity
Dose:	Adults: 5 grams (2 vials) IV, IO over 15 minutes Pediatric: 70 mg/kg IV, IO over 15 minutes May repeat 5 grams or 70 mg/kg over 15 minutes to 2 hours to NMT 10 grams after OLMC contact.
Supply:	2.5 gram vials. Each 2.5 gram vial of hydroxycobolamin should be reconstituted with 100 mL of Normosol. May store for up to 6 hours at room temp.
Comments:	A. Hydroxocobalamin interferes with laboratory tests based on light absorption including co-oximetric measurements of carboxyhemoglobin, methemoglobin and oxyhemoglobin. B. If patient has suspected cyanide poisoning, consider obtaining SpCO, if available, before administration of Cyanokit

IV SOLUTION (BSS)

IV Solution (BSS)	[AEMT/EMT-I/RN/EMT-P]
Class:	Electrolyte/Fluid Replacement
Actions:	Provide water and electrolytes for replacement of acute extracellular fluid losses
Indications:	1. Hypotension 2. PEA 3. Dehydration, moderate to severe, due to: a. Inadequate intake b. Acute loss from vomitting and/or diarrhea 4. Acute blood loss due to: a. Trauma b. GI Bleeding
Contraindications:	
Precautions:	Caution in patients with: 1. Renal impairment 2. CHF/Pulmonary edema 3. Extremes of age.
Side Effects:	Fluid overload resulting in pulmonary edema
Dosage:	*Adults:* 500 - 1000 mL bolus BSS IV/IO May repeat bolus PRN NMT 2 L *Pediatric:* 10 - 20 mL/kg bolus NS IV/IO May repeat bolus PRN NMT 40 mL/kg *Neonatal:* 10 mL/kg bolus NS IV/IO over 5 - 10 min ***only if signs of shock or history of acute blood loss and not responding to initial resuscitation (HR < 60)***. May repeat bolus PRN NMT 20 mL/kg
Supply:	100, 250, 500 and 1,000 ml bags of either Lactated Ringers or Normal Saline 0.9%
Comments:	NS is initial fluid of choice. May consider LR in trauma patients requiring more than 2 boluses of BSS. Warmed fluids in trauma patients if available. Chilled (4° C) fluids in ROSC to induce hypothermia Reassess fluid status and lung sounds between boluses. In elderly or patients with history of CHF or renal failure, use caution and bolus in increments of 250 mL.

KETAMINE (Ketalar)

Ketamine (Ketalar)	[EMT-P]
Class:	Sedative, Analgesic
Actions:	1. Analgesia 2. Amnesia 3. Releases endogenous catecholamines 4. Dilates bronchial smooth muscles 5. Stimulates beta receptors in the lungs
Indications:	1. Induction for RSI 2. Chemical sedation for agitated patient 3. 3rd line for severe pain control
Contraindications:	1. Hypersensitivity/allergy 2. Acute globe injury
Precautions:	1. Known or suspected schizophrenia 2. Coronary artery disease 3. Glaucoma
Pregnancy:	Category B
Kinetics	1. Onset: IV 30 seconds, IM 3-4 minutes 2. Duration: IV 5-10 min; IM 15 - 30 minutes
Side Effects:	1. Laryngospasm 2. Hypersalivation 3. Emesis 4. Hypertension 5. Emergence reaction 6. Possible increase intracranial and intraocular pressure
Dosage:	1. RSI - IV/IO: *Adults & Pediatric:* 2 mg/kg over 60 seconds, IM: *Adults & Pediatric:* 4 mg/kg *If patient is known to be ***pregnant*** reduce dose to 1 mg/kg IV/IO or 2 mg/kg IM 2. Chemical Restraint: *Adults & Pediatric: up to* 5 mg/kg IM or titrate 1 - 2 mg/kg IV/IO 3. Pain Control: *Adults* 25 mg IV/IO slow push or 50 mg IM *Pediatric: Not approved for use for pain control in patients < 15 yo* 0.3 mg/kg NMT 25 mg IV/IO over 60 seconds
Supply:	10 mg/mL, 50mg/mL

Comments:	1. Phencyclidine (PCP) derivative which causes dissociative anesthesia at higher dose, and analgesia at lower doses 2. Does not inhibit protective airway reflexes, spontaneous respirations or cardiopulmonary stability. 3. Monitor closely for laryngospasm. Treatment of laryngospasm consists of removing the noxious stimulus (eg, by suctioning blood or secretions) and employing positive pressure bag-mask ventilation concurrent with a jaw thrust maneuver. If bag-mask ventilation is not successful, a small dose of succinylcholine (0.1 mg/kg IV) may be administered 4. Administer midazolam 2.5 - 5 mg IV/IO in adults to treat severe emergence reaction 5. Good choice in Asthma/COPD due to bronchodilator effects 6. *Safety in pregnancy has not been established, but no evidence of teratogenicity. May be used in pregnancy, but use reduced dose

KETOROLAC (Toradol)	[EMTI/RN/P]
Class:	1. NSAID (Non-Steroidal Anti-inflammatory Drug) 2. Analgesic 3. Antipyretic
Actions:	1. Inhibits cyclooxygenase resulting in decreased prostaglandin synthesis
Indications:	Short-term management of moderate to severe acute pain: 1. Acute flank/abdominal pain likely secondary to kidney stone 2. Musculoskeletal pain without significant trauma or bleeding
Contraindications:	1. Aspirin or NSAID **allergy** 2. **Bleeding disorders** or patients with high risk of bleeding such as major trauma or anticipated need for surgery 3. Head trauma or risk of **cerebrovascular bleeding** 4. History of peptic ulcer disease, **GI bleed** or perforation 5. History of **renal impairment** or is at risk of acute renal failure due to volume depletion 6. 3rd trimester **Pregnancy** (can cause premature closure of ductus arteriosus) 7. **Nursing** Mothers (excreted in breast milk)
Precautions:	1. Coagulation therapy - do not give if taking anticoagulants such as warfarin, rivaroxaban, apixaban, Lovenox, etc 2. Potential risk of cardiovascular damage - do not give if history of CHF or suspected acute MI/CHF 3. Do not give if patient has taken oral NSAIDs in past 6 hours 4. History of hepatic impairment 5. Elderly - do not give if > 65 yo 6. Children - do not give if < 2 yo
Pregnancy:	Category C
Kinetics	1. Onset: 1 - 10 minutes IV; 15 - 45 minutes IM 2. Duration: 6 - 8 hours
Side Effects:	1. Anaphylaxis, bronchospasm, angioedema 2. CNS - headache, dizziness, drowsiness, depression 3. CV- edema, hypertension, vasodilatation, hypotension 4. Renal/Electrolytes - urinary rentention or failure, hyponatremia, hyperkalemia 5. GI - pain, dyspepsia, nausea/vomiting,diarrhea, constipation 6. Heme - possible anticoagulant effect which may exacerbate acute bleeding. 7. Derm- rash, pruritis, stomatitis, sweating

Dosage:	*Adults (>50 kg & < 65 yo):* 60 mg IM; 30 mg IV/IO *Adults (< 50 kg & < 65 yo): 3*0 mg IM; 15 mg IV/IO *Pediatric (> 2 yo):* 0.5 mg/kg IV to a max of 15 mg; 1 mg/kg IM to a max of 30 mg **Not recommended for children under 2 years of age**
Supply:	Tubex 15mg/ml (1 ml); 30mg/ml (1 ml) 30mg/1ml SDV
Comments:	

LIDOCAINE (Xylocaine)

Lidocaine HCL (Xylocaine)	[EMT-I/RN/EMT-P]
Class:	Antiarrhythmic
Actions:	1. Suppresses ventricular ectopy 2. Elevates threshold of ventricular fibrillation 3. Decreases ventricular automaticity
Indications:	1. Cardiac arrest from V-Fib/V-Tach 2. Stable V-Tach 3. Pain from IO in conscious patient
Contraindications:	1. Hypersensitivity/allergy 2. Slow V-Tach (heart rate < 100/min., QRS ≥ 0.12 sec) 3. Bradycardia (heart rate < 60/min. adult; < 80/min. children) 4. Torsades de pointes
Precautions:	1. Reduce maintenance dose in liver or LV dysfunction 2. Discontinue immediately if signs of toxicity develop
Side Effects:	1. Decreased LOC, dizziness, confusion, numbness, seizures 2. Arrhythmia, hypotension, cardiac arrest 3. Malignant hyperthermia
Dosage: **Cardiac Arrest**	*Adults:* 1.5 mg/kg rapid IV/IO PRN q 5 min NMT 3 mg/kg. 3 mg/kg ET (one dose only). *Pediatric:* 1 mg/kg rapid IV/IO PRN q 5 min NMT 100 mg. 3 mg/kg ET (one dose only).
Dosage: **Wide QRS** **Tachycardia**	*Adults:* 1.5 mg/kg IV/IO at 50 mg/min. or 3 mg/kg ET. Repeat IV doses: 0.75 mg/kg at 50 mg/ min q 5 min NMT 2 doses (3 mg/kg total). *Pediatric:* 1.0 mg/kg IV/IO over 1 minute or 2 mg/kg ET. Repeat IV doses: 1.0 mg/kg over 1 minute every 5 min NMT 2 doses (3 mg/kg total). Avoid additional doses in CHF, shock, liver failure, and age > 70
Dosage: **Conscious IO**	**Adults & Pediatric:* 0.5 mg/kg IO NMT 50 mg. (See Hixson Lidocaine Chart on following page) Onset 30 – 60 seconds
Supply:	Prefilled syringe: 100 mg (5 ml) 2% solution Pre-mixed: 2 gm in 250 ml D5W bag
Comments:	*A-EMT can administer as anesthetic for conscious IO

« Back

Hixson Lidocaine Chart

VOLUME OF PRESERVATIVE-FREE LIDOCAINE – *TITRATE IO TO ANALGESIC EFFECT*					
AGE	**WEIGHT (KG)**	**VOLUME OF 2% (ML) 1ML OF 2% = 20 MG/ML**		**VOLUME OF 1% (ML) 1ML OF 1% = 10 MG/ML**	
		Initial	*Subsequent*	*Initial*	*Subsequent*
Neonate	3	0.07	0.03	0.15	0.07
Neonate	4	0.1	0.05	0.2	0.1
7 weeks	5	0.12	0.06	0.25	0.12
3 months	6	0.15	0.07	0.3	0.15
5 months	7	0.17	0.08	0.35	0.17
7 months	8	0.2	0.1	0.4	0.2
1 year	9	0.22	0.11	0.45	0.22
15 months	10	0.25	0.12	0.5	0.25
2 years	12	0.3	0.15	0.6	0.3
3 years	14	0.35	0.17	0.7	0.35
4 years	16	0.4	0.2	0.8	0.4
5 years	18	0.45	0.22	0.9	0.45
6 years	20	0.5	0.25	1	0.5
7 years	23	0.57	0.28	1.1	0.57
8 years	26	0.65	0.32	1.3	0.65
9 years	29	0.72	0.36	1.4	0.72
10 years	32	0.8	0.4	1.6	0.8
11 years	35	0.87	0.43	1.7	0.87
12 years	39	0.97	0.48	1.9	0.97
13 years	44	1.1	0.55	2.2	1.1
14 years	50	1.2	0.62	2.5	1.2
15 years	54	1.3	0.67	2.6	1.3
16 years	58	1.4	0.72	2.8	1.4
Adult	60	1.5	0.75	3	1.5
	70	1.7	0.87	3.4	1.7
	80+	2	1	4	2

The lower volumes of 2% lidocaine (<1 ml) may be difficult to accurately measure and use of, or dillution to, 1% lidocaine should be considered under these cirumstances. Use the appropriate syringe site for the volume to administer to ensure maximum accuracy:	**Volume**	**Syringe Size**
	0 - 1 ml	1 ml
	1 - 2.5 ml	2.5 ml
	2.5 - 5 ml	5 ml

MAGNESIUM SULFATE

Magnesium Sulfate 50%	[EMT-P]
Class:	Anticonvulsant
Actions:	1. CNS depressant 2. Anticonvulsant 3. Smooth muscle relaxant (vasodilation, bronchodilation)
Indications:	1. Refractory V-Fib and Pulseless V-Tach 2. Cardiac arrest with suspected hypomagensemia 3. Torsades de Pointes 4. Eclampsia 5. Asthma not responding to other treatments
Contraindications:	1. Hypersensitivity/allergy 2. Complete heart block
Precautions:	Monitor reflexes in Eclampsia Monitor closely for hypotension in asthmatics
Side Effects:	Hypotension, bradycardia, complete heart block Respiratory paralysis, Depressed reflexes, confusion, flushing, sweating,
Dosage: Asthma	*Adults:* 2 gm (20 ml of 10% solution) IV/IO over 10-20 minutes *Pediatric:* 25 - 50 mg/kg IV/IO over 10 - 20 min NMT 2 gm
Dosage: V-Fib/ Pulseless V-tach/ Torsades de Pointes	*Adults:* 2 gm (20 ml of 10% Solution) IV/IO over 1 minute. May repeat in 5 min PRN NMT 4 gm *Pediatric:* 25 mg/kg IV/IO drip over 10 – 20 mins. NMT 2 gm
Dosage: Eclampsia	4 gm (40 ml of 10% solution) IV/IO over 4 minutes
Supply:	Vial contains 10 gm/ 20 ml = 1 gm/2 ml (a 50% solution)
Comments:	1. 10% solution: Add 8 ml of Normal Saline to each 1 gm (2 ml) of Magnesium Sulfate 2. Magnesium drip: Add dose of Magnesium Sulfate to 50 ml NS. Run through macro drip @ approx 38gtt/min for 20 min delivery. 3. In VF/VT, when the patient appears malnourished, alcoholic or rhythm suggests **Torsades de Pointes,** give magnesium sulfate before other anti-dysrhythmics.

Midazolam HCL (Versed)	[EMT-P]
Class:	Sedative, hypnotic (Benzodiazepine)
Actions:	Sedation by direct action on CNS
Indications:	1. Seizures 2. Sedation 3. Chemical restraint 4. Shivering during induced hypothermia
Contraindications:	1. Hypersensitivity/allergy 2. Hypotension 3. Shock 4. Coma
Precautions:	Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially opioids, alcohol and barbiturates, or when given rapidly.
Side Effects:	1. Respiratory depression, apnea 2. Hypotension 3. Drowsiness, dizziness, fatigue, amnesia, and ataxia
Dosage: **RSI**	*Adults:* 0.3 mg/kg IM/IV/IO NMT 20 mg Consider lower dose (0.2 mg/kg) in patients over 60 yo *Pediatric:* 0.2 mg/kg IM/IV/IO < 6 y.o. NMT 3 mg > 6 y.o. NMT 5 mg May repeat every 15 min PRN post-intubation to maintain sedation
Dosage: **Seizures** **Chemical Restraint** **Sedation** **Cardioversion**	*Adults:* 2 – 5 mg IV/IO/IM/IN May repeat in 5 min NMT 10 mg total *Pediatric:* 0.05 – 0.1 mg/kg IV/IO NMT 2.5 mg; 0.2 mg/kg IM/IN NMT 5 mg May repeat in 5 min NMT 5 mg total
Supply:	10mg / 2ml 2mg / 2ml
Comments:	Advanced airway management equipment must be readily available. Be prepared for respiratory depression

MORPHINE SULFATE

Morphine Sulfate	[EMT-I/RN/EMT-P]
Class:	Narcotic Analgesic
Actions:	Acts on the opiate receptors in the brain to cause: 1. Analgesia 2. CNS depression 3. Vasodilation
Indications:	1. *Acute pain* from isolated extremity trauma, back spasms, burns, kidney stones, non-traumatic abdominal pain 2. *Chronic pain* from cancer
Contraindications:	1. Hypersensitivity/allergy 2. Multiple trauma, especially head trauma 3. Decreased LOC from any cause 4. Systolic BP < 110 (children: systolic BP < 80) 5. RR < 14 breaths per minute, O2 saturation less than 90%, or significant respiratory depression.
Precautions:	For pediatric patients, vital signs should be maintained within the normal age-appropriate range.
Side Effects:	1. Sedation 2. Respiratory depression or arrest. 3. Hypotension 4. Nausea & vomiting, constipation
Dosage:	*Adults:* 2 - 5 mg IV/IO; 5 mg – 10 mg IM. May repeat q 5 min PRN NMT 10 mg (NMT 20 mg in burn patients) *Pediatric < 20 kg:* 0.1 mg/kg IV/IO/IM May repeat q 5 min PRN NMT 4 mg For children > 20 kg, follow adult dosing
Supply:	Vial contains 10 mg (1 ml) Carpuject 10 mg/1 ml
Comments:	With the exception of chronic pain from a terminal illness such as cancer, opiates should not be administered in the field to patients with chronic pain syndromes.

NALOXONE (Narcan)

Naloxone (Narcan)	[*EMR/EMT/AEMT/EMT-I/RN/EMT-P]
Class:	Narcotic Antagonist
Actions:	Reverses effects of narcotics by competing for opiate receptors.
Indications:	1. Altered mental status with: a. Respiratory depression b. Systolic BP < 90 c. Suspected narcotic overdose. 2. Cardiopulmonary arrest when narcotic overdose is suspected
Contraindications:	1. Hypersensitivity/allergy
Precautions:	May precipitate withdrawal seizures in neonates of narcotic addicted mothers.
Kinetics	1. Onset: 1 -2 min IV/IO; 2-5 min IM 2. Duration: 1 - 4 hours
Side Effects:	May precipitate withdrawal. Awakened or awakening patient may become anxious or combative and may develop nausea/ vomiting.
Dosage:	*Adults:* 0.4 - 4 mg IV/IO/IM/SL/IN NMT 8 mg *Pediatric (< 20 kg):* 0.1mg/kg IV/IO/IM/SL/IN NMT 2 mg; For children > 20 kg, follow adult dosing
Supply:	Carpuject contains 2 mg Prefilled Syringe – 2 mg Prefilled IN devices - 4 mg
Comments:	In most instances, a total dose of 2 mg will be sufficient to reverse opioid intoxication. In cases of methadone or designer drugs, larger doses of naloxone may be necessary, up to a MAX of 8 mg of naloxone. If no reaction, consider other causes. Halt the IV injection if agitation occurs. Reversal of coma, hypotension and respiratory depression is only temporary. **IN is preferred route to avoid the risk of accidental needlestick** *EMRs may administer naloxone via IN or auto-injector only

NITROGLYCERIN

Nitroglycerin (Nitrostat, nitro paste)	[EMT*/AEMT/EMT-I/RN/EMT-P] *EMT can assist patient with own NTG only
Class:	Coronary vasodilator
Actions:	1. Dilatation of coronary arteries 2. Reduces peripheral vascular resistance 3. Reduces cardiac work
Indications:	1. Angina - chest pain presumed due to coronary disease 2. Pulmonary Edema 3. Hypertensive emergency
Contraindications:	1. Hypersensitivity/allergy 2. Systolic BP < 100 3. NTG is contraindicated in patients who have recently taken Viagra® (sildenafil citrate) or Levitra® (vardenafil HCl) within 24 hours OR taken Cialis® (tadalafil) within 48 hours.
Precautions:	Should be avoided in acute CVA Use cautiously in suspected R sided MI or bradycardic patients
Side Effects:	Hypotension, tachycardia, syncope, headache.
Dosage: Angina/ CHF/HTN	*Adults:* 0.4 mg SL q 5 minutes PRN chest pain NTE 3 doses. Hold for systolic BP < 100. Nitropaste - 1" to ACW if SBP remains >160 mm Hg and/or the DBP is >100 mm Hg
Dosage: Autonomic Dysreflexia	*Adults:* Nitropaste - 1" to ACW if SBP remains >150 mm Hg after conservative measures. (Can give SL ntg if nitropaste unavailable)
Supply:	Tablet: 0.4 mg Pump Spray: each squirt = 0.4 mg Packets containing 2 % ointment (1 inch/packet)
Comments:	1. An IV should be attempted prior to nitroglycerin administration. If unsuccessful with IV, give NTG SL, then reattempt IV. 2. In inferior STEMI with suspected RV infarct, consider IV fluid bolus to increase preload before NTG administration 3. Wear gloves when applying ointment. 4. Because nitroglycerin causes generalized smooth muscle relaxation, it may also be effective in relieving chest pain caused by esophageal spasm.

NOREPINEPHRINE (Levophed)

Norpinephrine (Levophed)	[EMT-P]
Class:	Sympathomimetic
Actions:	1. Alpha-1 >> Beta-1 > Beta-2 adrenergic agonist activity 2. Has chronotropic and inotropic effects - increases cardiac output (CO) 3. Causes peripheral vasoconstriction - increases systemic vascular resistance (SVR)
Indications:	1st line pressor in septic, cardiogenic and hypovolemic shock
Contraindications:	1. Hypersensitivity/allergy 2. Hypovolemic shock (volume replacement MUST be accomplished prior to using pressors)
Precautions	Can cause tissue necrosis if extravasates
Side Effects:	Tachycardia, hypertension, arrhythmias, chest pain
Dosage:	*Adults:* Start at 4 mcg/min IV/IO. Titrate to SBP ≥ 90 mmHg or MAP ≥ 65 (except in hemorrhagic shock: target SBP 70 - 90), NMT 12 mcg/min Mix 200 mcg (0.2 mL) in 50 ml D5W or NS (4 mcg/ml) *Pediatric:* Start at 0.1 mcg/kg/min IV/IO. Titrate upward by 0.1 mcg/kg/min increments to age appropriate SBP. NMT 0.2 mcg/kg/min Shake to mix
Supply:	4 mg / 4 ml Vial
Comments:	

OLANZAPINE (Zyprexa)

Olanzapine	[EMT-P]
Class:	Antipsychotic
Actions:	1. Dopamine and serotonin (5-HT) antagonist, along with anticholinergic, antihistaminic, and anti-alpha adrenergic effects. 2. Anxiolytic properties.
Indications:	1. For the cooperative adult patient between 18-65 years. with a primarily behavioral health presentation and a history of psychiatric disorder. These patients will commonly be hearing voices or having paranoid thoughts after not taking their usual psychiatric medications. (RASS +1, see **Patient Restraint Protocol**) 2. To avoid the need for physical restraint.
Contraindications:	1. Patients less than 18 or greater than 65 years of age. 2. FDA Black Box warnings for increased mortality in elderly patients with dementia 3. Known hypersensitivity.
Precautions:	1. May prolong QT but unlikely in single dose. Obtain EKG before administration if known history or suspicion for prolonged QT or cardiovascular disease.
Side Effects:	1. Low incidence of extrapyramidal effects (EPS).
Dosage:	*Adults age 18-65:* 10mg PO *Pediatrics:* Requires OLMC consult
Supply:	10 mg orally dissolving tablets (ODT)
Comments:	1. Administer tablet immediately once it is removed from the blister unit or bottle. 2. Tablets disintegrate in the mouth and can be swallowed subsequently with saliva or with liquid.

OXYGEN

Oxygen	[EMR/EMT/AEMT/EMT-I/RN/EMT-P]
Class:	Medical gas
Actions:	1. Oxygen added to the inspired air raises the amount of oxygen in the blood and, therefore, the amount delivered to the tissues. 2. Excessive oxygen can be harmful. Additional oxygen is not indicated if SaO2 is ≥ 95%
Indications:	1. Hypoxemia or respiratory distress from any cause. 2. Acute chest pain in which a myocardial infarction is suspected if SaO2 < 95%. 3. Shock (decreased oxygenation of tissues) from any cause. 4. Major Trauma if SaO2 < 95% 5. Carbon monoxide poisoning.
Contraindications:	In some patients with chronic lung disease, administration of O2 will decrease respiratory drive. 1. Do not withhold oxygen because of this possibility. 2. Be prepared to assist ventilation if needed. 3. Initial O2 flow should be no greater than 2 liters per minute in these patients.
Precautions:	Restlessness may be an important sign of hypoxia. If the patient is not breathing adequately, the treatment of choice is ventilation, not just supplemental O2.
Side Effects:	Non humidified O2 is drying and irritating to mucous membranes.
Dosage: **Adults & Pediatric**	1. ***Mild*** *respiratory distress* or patients with chronic lung disease: **Low flow (1-2 L/min)** 2. ***Moderate*** respiratory distress, or patients with SaO2 < 95% on 2L via NC: **Moderate flow (4-6 L/min)** 3. ***Severe*** respiratory distress or SaO2 < 90% **High flow (10-15 L/Min)** 4. **Titrate flow downward to maintain SaO2 ≥95%**
Supply:	See Oxygen Flow Chart
Comments:	Oxygen supports combustion. Use caution around flames. Nasal cannulas work equally well on nose and mouth breathers.

OXYGEN FLOW CHART

Method	Flow Rate	% Oxygen Inspired (approximate)
Room air		21
Nasal Cannula (prongs)	1 L/min 2 L/min 8 L/min	24 28 40
Face Mask	6 L/min	50 to 60
Oxygen reservoir (mask)	10 to 12 L/min	90
Mouth to mask	10 L/min 15 L/min 30 L/min	50 80 100
Bag/valve/mask (Regulated to inflate bag at proper rate.)	Room air 12 L/min With Reservoir	21 40 90+
Blow-by for infants	1 - 4 L/min	

OXYMETAZOLINE HYDROCHLORIDE (Afrin)	[EMT-P]
Class:	Selective alpha 1 adrenergic receptor agonist and alpha 2 adrenergic receptor partial agonist which provides direct vasoconstriction.
Actions:	1. Vasoconstriction
Indications:	1. Epistaxis uncontrolled by direct pressure
Contraindications:	1. Hypersensitivity/allergy 2. MAOI use within the past 14 days 3. Diastolic blood pressure >110 mmhg
Pregnancy:	Category C
Kinetics	1. Onset: 1-10 minutes 2. Duration: Some effects can last up to several hours
Side Effects:	1. Avoid administration into eyes which will dilate pupils. 2. Temporary burning, stinging, dryness in the nose, runny nose, and sneezing may occur.
Dosage:	1. Adult: Two sprays into each affected nostril. 2. Peds: same as adult, however oxymetazoline should be avoided if child cannot follow instructions to blow their nose prior to administration.
Supply:	0.5 fl oz of nasal solution

OXYTOCIN (Pitocin)

Oxytocin (Pitocin)	[EMT-P] Call OLMC before administration
Class:	Hormone
Actions:	Increases electrical and contractile activity in uterine smooth muscle.
Indications:	Control of post-partum hemorrhage. Call Drug
Contraindications:	1. Hypersensitivity/allergy 2. IM use not indicated in the presence of intrauterine pregnancy
Precautions:	Prior to its administration, the presence of a second fetus must be considered. Administration with fetus in uterus can cause rupture of uterus and/or death of fetus.
Side Effects:	1. Vasodilatation 2. Reflex tachycardia. 3. Cardiac arrhythmias
Dosage:	*Adults:* 10 Units (20 mg) IM *Pediatric: not applicable*
Supply:	10 Units/ml (20mg/ml)
Comments:	Oxytocin can initiate or enhance rhythmic contractions at any time during pregnancy, but the uterus is most sensitive at term. Administration should follow delivery of placenta whenever possible

Rocuronium (Zemuron)	[EMT-P]
Class:	Neuromuscular blocking agent
Actions:	1. Non-depolarizing neuromuscular blockade 2. Cholinergic receptor agonist
Indications:	1. 2nd line paralytic for RSI 2. Maintenance of paralysis after intubation 3. 1st line paralytic for RSI in pregnancy
Contraindications:	1. Hypersensitivity/allergy 2. Lack of ventilatory support
Precautions:	1. Rocuronium produces paralysis, but does not alter a person's level of consciousness. 2. May experience resistance with > 25% TBSA burns 3. May experience hypersensitivity with electrolyte disorders (hyperMg, hypoK, hypoCa)
Kinetics	1. Onset: 1 -2 min 2. Duration: 30 - 60 minutes
Pregnancy:	Category B
Side Effects:	1. Apnea 2. Tachycardia
Dosage:	*Adults & Pediatric:* Initial Dose: 1 mg/kg IV/IO Maintenance: 0.1 – 0.3 mg/kg IV/IO q 20 - 30 min
Supply:	10 mg/ml - 10 ml vial
Comments:	1. Dose should be calculated when possible based on ideal body weight 2. Should be given at initial dose the first time (1mg/kg) even if the pt has already received Succinylcholine 3. Paralysis in the conscious patient is very frightening, therefore, sedation should be provided in any conscious or responsive patient. 4. Verbal explanations should be provided to the patient during the procedure, even if you do not think the patient can hear you.

SODIUM BICARBONATE

Sodium Bicarbonate (NaHCO3)	[EMT-P]
Class:	Alkalizing agent
Actions:	1. Buffers metabolic acidosis 2. Increases pH
Indications:	1. Cardiac arrest in a dialysis patient or suspected hyperkalemia. 2. Tricyclic antidepressant overdose 3. Crush injury 4. Chlorine inhalation
Contraindications:	1. Hypersensitivity/allergy 2. Hypokalemia
Precautions:	1. Sodium Bicarbonate may worsen outcome in cardiac arrest. 2. Providing optimum chest compressions and ventilation is best treatment of acidosis in cardiac arrest. 3. May increase cerebral acidosis, especially in diabetics who are ketotic
Side Effects:	Metabolic alkalosis Increases sodium Decreases potassium
Dosage: Cardiac Arrest/TCA OD	*Adults & Pediatric:* 1 mEq/kg IV/IO (1 ml/kg). May repeat 0.5 mEq/kg or 1 amp until pulse is restored
Dosage: Crush Injury	*Adults :* 50 mEq IV/IO slow push. May repeat 2x PRN.
Dosage: Chlorine Inhalation	*Adults & Pediatric:* 2.5 ml of 8.4% nebulized.
Supply:	Prefilled syringe contains 50 mEq (50 ml)
Comments:	1. Sodium Bicarbonate should be an early treatment consideration in dialysis patients in cardiac arrest. 2. Common tricyclic antidepressants – Elavil ® (amitriptyline), Norpramin ® (desipramine), Pamelor ® (nortriptyline), Sinequan ® (doxepin), Tofranil ® (imipramine)

SUCCINYLCHOLINE (Anectine)

Succinylcholine (Anectine)	[EMT-P]
Class:	Depolarizing neuromuscular blocking agent
Actions:	Short acting, motor nerve depolarizing, skeletal muscle relaxant
Indications:	Rapid sequence intubation (RSI)
Contraindications:	1. Hypersensitivity/allergy 2. Major burns and crush injuries > 48 hours and < 6 months old. 3. Stroke or spinal cord injury with profound residual deficits > 48 hours and < 6 months old. 4. Neuromuscular disease (muscular dystrophy, multiple sclerosis, etc). 5. Suspected hyperkalemia such as end-stage renal disease patients who have missed dialysis.
Precautions:	Succinylcholine produces paralysis, but does not alter a person's level of consciousness.
Side Effects:	1. Apnea 2. Tachycardia, arrhythmia 3. Fasciculations
Dosage:	*Adults:* 1.5 mg/kg IV/IO push or 3 mg/kg IM *Pediatric:* > 6 years: see Adult dosing <6 years: 2 mg/Kg IV/IO push or 4 mg/kg IM
Supply:	200 mg/10 ml vial
Comments:	1. Paralysis in the conscious patient is very frightening, therefore, sedation should be provided in any conscious or responsive patient. 2. Verbal explanations should be provided to the patient during the procedure, even if you do not think the patient can hear you.

THIAMINE

Thiamine	[EMT-P]
Class:	B1 Vitamin
Actions:	Replace or supplement vitamin B1
Indications:	1. In suspected alcoholics before or after the administration of 50% dextrose. 2. In suspected Wernicke's or Korsakoff's syndrome. 3. In malnourished patients.
Contraindications:	Hypersensitivity/allergy
Precautions:	Rapid IV administration has been associated with hypotension.
Side Effects:	Allergic reactions occur but are extremely rare.
Dosage:	*Adults:* 100 mg IV/IO/IM. *Pediatric:*
Supply:	100 mg / 1 ml - vial 200 mg / 2 ml - vial
Comments:	

TRANEXAMIC ACID

Tranexamic Acid (Cyklokapron) (TXA)	[EMT-P]
Class:	Antifibrinolytic - Synthetic analog of the amino acid lysine
Actions:	Reversibly binds to lysine receptor sites on plasminogen to decrease the conversion of plasminogen to plasmin. This reduces breakdown of fibrin and helps to stabilize clots to reduce bleeding. TXA also has anti-inflammatory properties.
Indications:	1. Head trauma, moderate to severe, in patients with a GCS ≤ 12, Time of injury < 2 hours 2. Hemorrhagic Shock with SBP ≤ 70 mmHg, time of injury < 3 hours
Contraindications:	1. Patients less than 15 years old (or weight < 50 kg if age unknown) 2. GCS of 3 with non-reactive pupils 3. Any chest compressions (manual or mechanical) 4. Patients with clinical concern for epilepsy/seizures, MI, stroke, PE, DVT, renal failure, or dialysis 5. Known or suspected pregnancy 6. Drowning 7. Hanging 8. Burns > 20% TBSA 9. Other procoagulant (e.g. KCENTRA) drug already administered
Precautions:	1. Hypotension has been observed with rapid IV injection.
Side Effects:	Seizures Nausea & vomiting Chest pain
Dosage:	*Adults (Age ≥ 15, Weight > 50 kg):* 2 grams IV/IO slowly over 10 minutes *Pediatric: Not indicated in patients < 15 years of age.*
Supply:	1000 mg (1 gram) / 10 ml vial
Comments:	1. TXA, by causing clots to get stronger, can make MI, stroke, PE, and DVTs more challenging to manage. 2. TXA is renally cleared, so its use in patients with known renal failure or dialysis should be avoided.

VECURONIUM (Norcuron)

Vecuronium (Norcuron)	[EMT-P]
Class:	Neuromuscular blocking agent
Actions:	Non-depolarizing neuromuscular blockade Cholinergic receptor agonist
Indications:	1. Maintenance of paralysis after intubation 2. RSI
Contraindications:	1. Hypersensitivity/allergy 2. Lack of ventilatory support
Precautions:	Vecuronium produces paralysis, but does not alter a person's level of consciousness.
Kinetics:	1. Onset: 2 - 3 min 2. Duration: 20 - 35 minutes
Pregnancy:	Category C
Side Effects:	1. Apnea 2. Tachycardia 3. Hypersensitivity associated with histamine release (bronchospasm, flushing, urticaria, hypotension, tachycardia)
Dosage:	*Adults:* Intubation: 0.1 mg/kg IV/IO Maintenance: 0.01 mg/kg IV/IO q 20 min PRN *Pediatric:* Intubation: 0.1 mg/kg IV/IO Maintenance: 0.05 mg/kg IV/IO q 60 min PRN
Supply:	10 mg/10 ml – Vial (Comes in two vials, to be mixed)
Comments:	1. Paralysis in the conscious patient is very frightening, therefore, sedation should be provided in any conscious or responsive patient. 2. Verbal explanations should be provided to the patient during the procedure, even if you do not think the patient can hear you.

ZOFRAN (Ondansetron)

Zofran (Ondansetron HCL)	[EMT-I/RN/EMT-P]
Class:	Antiemetic
Actions:	1. Selective antagonist of 5-HT3 serotonin receptor 2. Acts centrally (DNS) and peripherally (vagus nerve)
Indications:	Prevention and control of nausea and vomiting
Contraindications:	1. Hypersensitivity/allergy 2. Pediatric < 6 months old 3. Pregnancy - category B, but recent guidelines recommend not using during pregnancy
Precautions:	Zofran contains phenylalanine (caution for phenylketonurics)
Side Effects:	Headache
Dosage:	*Adults:* 4 mg IM or slow IV/IO (Over 2 min) or >5 years old 4 mg ODT placed in mouth of conscious patient. Repeat 4 mg dose in 15 minutes if no relief from first dose *Pediatric: >6 months old 0.1mg/kg IM/IV/IO NMT adult dose* *ODT 6 months - 5 years old 2mg half tablet*
Supply:	2 mg/ml - 2 ml Vial 4 mg oral dissolving tablet.
Comments:	Does not typically cause sedation Peak concentration occurs 10 min after IV dose & 40 min after IM

2022 MEDICATION REVISIONS

Drug	Changes	Page #	Date of Change
Calcium Gluconate	Increased Dosing to 3g in PEA & Asystole, Calcium Chanel blocker Overdose, Hyperkalemia. Increased Pediatric dose to 50 mg/kg (0.5 ml/kg)	13	1/15/2022
Dexamethasone	Pediatric dose of dexamethasone decreased to 0.05 mg/kg IV/IM/IO	15	1/15/2022
Glucagon	Decreased pediatric dosing to 0.02 mg/kg	27	1/15/2022
Magnesium Sulfate	Changed dosing for asthma to reflect proper administration time. Added comment for VF/VT administration.	37	1/15/2022
Sodium Bicarb	Added new dosing for chlorine inhalation. Added Crush injury dosing to drug sheet.	49	1/15/2022