

Adenosine (Adenocard)

Actions:	<ul style="list-style-type: none"> • Slows conduction time and can interrupt AV reentry. • Slows the sinus rate
Indications:	<ul style="list-style-type: none"> • Supra Ventricular Tachycardia • Paroxysmal Supra Ventricular Tachycardia
Contraindications:	<ul style="list-style-type: none"> • Atrial fibrillation • Atrial flutter • Ventricular tachycardia • Wolf Parkinson's White
Precautions:	<ul style="list-style-type: none"> • It is helpful to inform the patient of likely side effects prior to medication administration
Side Affects:	<ul style="list-style-type: none"> • Facial flushing • Shortness of breath/dyspnea • Chest discomfort • Brief period of sinus arrest • Headache • Dizziness • Hypotension
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none"> • 6 mg rapid IV, repeat every 2 minutes at 12 mg rapid IV (max dose 30 mg). • Each administration should be quickly followed by Normal Saline 20 ml IV
Pediatric Dose:	<ul style="list-style-type: none"> • 0.1 mg/kg rapid IV/IO, repeat every 2 minutes at 0.2 mg/kg rapid IV (max dose 12 mg). • Each administration should be quickly followed by Normal Saline 5-10 ml IV/IO
Key Points:	<ul style="list-style-type: none"> • Adenosine has a short half life, and should be administered rapidly followed by a rapid IV flush • Reassess after each medication administration and refer to the appropriate protocol and treat accordingly. • Perform a 12-Lead EKG prior to the administration of Adenosine and after the rhythm converts.

Albuterol Sulfate (Proventil) (Ventolin)

Actions:	<ul style="list-style-type: none"> • Acts directly on the beta 2 adrenergic receptors to relax bronchial smooth muscle, resulting in reduced airway resistance and relief of bronchospasm.
Indications:	<ul style="list-style-type: none"> • To reverse bronchospasm • To reverse bronchoconstriction
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity.
Precautions:	<ul style="list-style-type: none"> • Use precaution when administering to pregnant women or patients with cardiac history.
Side Affects:	<ul style="list-style-type: none"> • headache • drowsiness • dizziness • restlessness • nausea/vomiting • tachycardia • palpitations • peripheral vasodilatation • tremors • PVCs
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required for adult or pediatric administration.
Adult Dose:	<ul style="list-style-type: none"> • 2.5 mg in 3 ml via unit dose nebulizer and 6 lpm oxygen. (10 lpm if using a face mask). Albuterol can be repeated every 10 minutes to a max of 3 treatments. • Albuterol can be administered via ETT by doubling the dose and diluting it in 10 ml of Normal Saline.
Pediatric Dose:	<ul style="list-style-type: none"> • 2.5 mg in 3 ml via unit dose nebulizer and 6 lpm oxygen. (10 lpm if using a face mask). Albuterol can be repeated every 10 minutes to a max of 3 treatments. • Albuterol can be administered via ETT by doubling the dose and diluting it in 10 ml of Normal Saline.
Key Points:	<ul style="list-style-type: none"> • Monitor the patient's cardiac rhythm and frequently reassess the patient's vital signs while administering Albuterol.


Amiodarone

Actions:	<ul style="list-style-type: none"> • Prolongs the refractory period and action potential duration.
Indications:	<ul style="list-style-type: none"> • Ventricular fibrillation • Pulseless Ventricular Tachycardia • Wide Complex Tachycardia with a pulse • More than 6 multifocal PVCs per minute with ST elevation • Runs of Ventricular Tachycardia with a pulse
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • Renal failure • If Lidocaine is used, DO NOT use Amiodarone
Precautions:	<ul style="list-style-type: none"> • Second and Third degree AV block
Side Affects:	<ul style="list-style-type: none"> • Vasodilation • Hypotension • Prolonged QT interval
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none"> • Ventricular Fibrillation and Pulseless Ventricular Tachycardia- Amiodarone 300 mg IV/IO diluted in 20-30 ml of Normal Saline. (Amiodarone may be repeated one time after 5 minutes at 150 mg IV/IO diluted in 20-30 ml of Normal Saline) • Wide Complex Tachycardia- Amiodarone 150 mg IV over 10 minutes, may repeat once in 10 minutes. • More than 6 multifocal PVCs per minute with ST elevation- Amiodarone 150 mg IV in 100 ml of D5W ran wide open. • Runs of Ventricular Tachycardia with a pulse- Amiodarone 150 mg IV in 100 ml of D5W ran wide open.
Pediatric Dose:	<ul style="list-style-type: none"> • Ventricular Fibrillation and Pulseless Ventricular Tachycardia- 5 mg/kg IV/IO diluted in 20-30 ml of Normal Saline over 2-3 minutes. • If the rhythm converts to a perfusing rhythm, administer 2.5 mg/kg IV/IO over 2-3 minutes. • Wide Complex Tachycardia- 5 mg/kg IV/IO in 100 ml of D5W ran wide open (max dose 150 mg).
Key Points:	<ul style="list-style-type: none"> • Amiodarone is the preferred anti-arrhythmic medication to treat ventricular arrhythmias. • Avoid excessive movement and shaking of the medication.

Aspirin

Actions:	<ul style="list-style-type: none"> • Blocks platelet aggregation
Indications:	<ul style="list-style-type: none"> • Chest pain suggestive of a MI • 12-Lead EKG indicating a possible MI
Contraindications:	<ul style="list-style-type: none"> • Hypersensitivity • Active ulcer disease • Took A 324-325 mg dose of Aspirin within the last 24 hours • GI bleeding
Precautions:	<ul style="list-style-type: none"> • Upset stomach
Side Affects:	<ul style="list-style-type: none"> • Heartburn • Nausea and vomiting
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none"> • Total dose of 324 – 325 mg by mouth.
Pediatric Dose:	<ul style="list-style-type: none"> • Aspirin is not recommended for pediatric patients in the pre-hospital setting.
Key Points	<ul style="list-style-type: none"> • Aspirin can be administered to a patient who currently takes Coumadin, unless they were advised to avoid it by their physician. • 4-81 mg baby Aspirin tablets equals 324 mg. • If the patient took a dose of Aspirin that was less than 324-325 mg in the last 24 hours, then additional Aspirin can be administered to achieve a therapeutic dose of 324-325 mg. For example, if a patient took a 81 mg dose of Aspirin 12 hours ago, then the paramedic can administer 3 baby Aspirin (243 mg) to achieve a total dose of 324 mg.


Atropine

Actions:	<ul style="list-style-type: none"> Increases sinus node firing and cardiac output Increases conduction through the AV node by blocking vagal activities Decreases ectopic beats or fibrillation of the ventricles.
Indications:	<ul style="list-style-type: none"> Symptomatic sinus bradycardia Junctional escape and indioventricular beats Asystole Organophosphate poisoning/Nerve agent exposure Bradycardic PEA
Contraindications:	<ul style="list-style-type: none"> Known hypersensitivity Second Degree AV Block Third Degree Heart Block
Precautions:	<ul style="list-style-type: none"> Avoid use in atrial flutter or atrial fibrillation with a rapid response May increase myocardial oxygen demand May trigger tachy-dysrhythmias
Side Effects:	<ul style="list-style-type: none"> Dry mouth Blurred Vision Flushed skin Urinary retention Headache Tachycardia Pupillary dilation
Medical Command: 	<ul style="list-style-type: none"> Medical Command authorization is not required
Adult Dose:	<ul style="list-style-type: none"> Bradycardia: 0.5-1.0 mg IV (2.0 mg ETT) every 3-5 minutes (max dose 3 mg) Asystole, Bradycardia, or Pulseless Electrical Activity: 1 mg IV (2.0 mg ETT) every 3-5 minutes (max dose 3 mg) Organophosphate Poisoning : 2-5 mg every 15 minutes (no max dose)
Pediatric Dose:	<ul style="list-style-type: none"> Bradycardia: 0.02 mg/kg IV/IO, repeated once in 5 minutes. Organophosphate Poisoning: If the patient is less than 2 years, 0.05 mg/kg IM or 0.02 mg/kg IV every 5-10 minutes until symptoms improve. If the patient is 2 years old or older, 1 mg IV or IM every 5-10 minutes until symptoms improve.
Key Points:	<ul style="list-style-type: none"> The minimum dose of Atropine for pediatric patients is 0.1 mg. Refer to the Key Points in the Mark 1 Kit Procedure for more information on Atropine administration. Atropine can be administered via ETT. However, the dose must be doubled. In the adult patient, the max dose would be 6 mg ETT.

Dextrose (D10, D25, and D50)

Actions:	<ul style="list-style-type: none"> Restores circulating blood sugar
Indications:	<ul style="list-style-type: none"> Correction of altered mental status due to hypoglycemia Adult BGL less than 80 mg/dl, Child BGL less than 60 mg/dl, Newborn BGL less than 40 mg/dl) Coma with associated hypoglycemia Delirium tremens with associated hypoglycemia Seizure or status epilepticus with associated hypoglycemia
Contraindications:	<ul style="list-style-type: none"> Known hyperglycemia. No contraindications for hypoglycemic patients with altered mental status.
Precautions:	<ul style="list-style-type: none"> Use with caution for stroke patients. Precede Dextrose with Thiamine 100 mg IV/IM if the patient is suspected of chronic alcoholism or malnourishment. A blood sample should be collected prior to dextrose administration. Use a large vein to administer D50/D25.
Side Effects:	<ul style="list-style-type: none"> Extravasation of D50/D25 may cause necrosis Hyperglycemia
Medical Command:	<ul style="list-style-type: none"> Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none"> Dextrose 50% (D50) 25 g IV, may repeat one time in 10 minutes.
Pediatric Dose:	<ul style="list-style-type: none"> 0 – 2 months old: Dextrose 10% (D10) 5 ml/kg IV/IO, may repeat once in 10 minutes. 2 months – 2 years old: Dextrose 25% (D25) 2 ml/kg IV/IO, may repeat one time in 10 minutes. 2 years old or older: Dextrose 50% (D50) 2 ml/kg IV/IO, may repeat in 10 minutes.
Key Points:	<ul style="list-style-type: none"> If D10 is not available: Mix one part D50 in four parts Normal Saline. If D25 is not available: Mix one part D50 in one part Normal Saline.


Diazepam (Valium)

Actions:	<ul style="list-style-type: none"> • Sedation • Anticonvulsant
Indications:	<ul style="list-style-type: none"> • Status epilepticus or actively seizing • Sedation prior to transcutaneous pacing and synchronized cardioversion in the conscious patient
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • Altered mental status of unknown origin • Head injury unless actively seizing.
Precautions:	<ul style="list-style-type: none"> • Should be used with caution for hypotensive patients and patients with altered mental status. • Diazepam potentiates alcohol or other CNS depressants. • May cause respiratory depression, respiratory effort must be routinely monitored.
Side Effects:	<ul style="list-style-type: none"> • Light headed • Motor impairment • Impaired mental and psychomotor function • Confusion • Slurred speech • Amnesia • Irritability • Respiratory depression
Medical Command: 	<ul style="list-style-type: none"> • Medical Command authorization is required for sedation prior to transcutaneous pacing and synchronized cardioversion.
Adult Dose:	<ul style="list-style-type: none"> • Status epilepticus 5 mg slow IV, may repeated once in 10 minutes (max dose 10 mg). • Sedation prior to pacing and cardioversion- 2.5-5 mg slow IV
Pediatric Dose:	<ul style="list-style-type: none"> • Status epilepticus- 0.2 mg/kg slow IV/IO (max dose 5 mg), or 0.5 mg/kg rectal (max dose 10 mg) • Sedation prior to pacing and cardioversion- 0.2 mg/kg slow IV/IO (max dose 5 mg), or 0.5 mg/kg rectal (max dose 10 mg)
Key Points:	<ul style="list-style-type: none"> • Use a lubed syringe without a needle when administering medications rectally. • Frequently reassess the patient's vital signs and monitor their EKG after Diazepam (Valium) administration.


Diphenhydramine Hydrochloride (Benadryl)

Actions:	<ul style="list-style-type: none"> • Antihistamine
Indications:	<ul style="list-style-type: none"> • Allergic reaction/Anaphylaxis • Dystonic reaction (Extrapyramidal symptoms)
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • If the patient is experiencing an asthma attack
Precautions:	<ul style="list-style-type: none"> • Avoid the use of Diphenhydramine in nursing mothers • May induce vomiting • Carefully monitor patient while awaiting for medication to take effect (effect of medication begins approximately 15 minutes after administration) • Acute asthma not associated with anaphylaxis
Side Affects:	<ul style="list-style-type: none"> • Sedation • Dries secretions • May exacerbate asthma • Blurred vision • Headache • Hypotension • Tachycardia • Thickening of bronchial secretions
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required
Adult Dose:	<ul style="list-style-type: none"> • Mild Allergic Reaction: 25 mg IV or IM • Moderate to Severe Anaphylaxis: 25-50 mg IV or IM • Dystonic Reaction: 25 mg IV or IM
Pediatric Dose:	<ul style="list-style-type: none"> • Mild Allergic Reaction: 1 mg/kg IV/IO/IM (max 25 mg) • Moderate to Severe Anaphylaxis: 1 mg/kg IV/IO/IM (max 25 mg) • Dystonic Reaction: 1 mg/kg IV/IO/IM (max 25 mg)
Key Points:	<ul style="list-style-type: none"> • Symptoms of a Dystonic reactions (Extrapyramidal symptoms) include; eye deviation, difficulty speaking due to a “thick” tongue, and involuntary twitching/jerking of the patient’s arms or legs.


Dopamine Hydrochloride

Actions:	<ul style="list-style-type: none"> • Alpha and beta adrenergic receptor stimulator • Dopaminergic receptor stimulator • Dilates renal and mesenteric blood vessels • Vasoconstriction • Arterial resistance • Increase cardiac output • Increase preload
Indications:	<ul style="list-style-type: none"> • Bradycardia • Cardiogenic shock • Septic shock • Anaphylactic shock • Hypovolemic shock (refractory to volume replacement therapy)
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • Hypovolemia without fluid replacement therapy • Pheochromocytoma
Precautions:	<ul style="list-style-type: none"> • Extravasation may cause tissue necrosis
Side Affects:	<ul style="list-style-type: none"> • Ectopic beats • Nausea/Vomiting • Tachycardia • Palpitations • Dyspnea • Headache • Angina
Medical Command: 	<ul style="list-style-type: none"> • Medical Command authorization is required for pediatric administration
Adult Dose:	<ul style="list-style-type: none"> • Dopamine 5-20 micrograms/kg/minute IV infusion titrated to effect.
Pediatric Dose:	<ul style="list-style-type: none"> • Dopamine 5-20 micrograms/kg/minute IV infusion titrated to effect.
Key Points:	<ul style="list-style-type: none"> • There are two ways to mix dopamine, if there is not a pre-filled bag: <ol style="list-style-type: none"> 1) Mix 400 mg of Dopamine into a 250 ml bag of Normal Saline. 2) Mix 800 mg of Dopamine into a 500 ml bag of Normal Saline.


Epinephrine

Actions:	<ul style="list-style-type: none"> • Alpha and Beta adrenergic agonist • Bronchodilation • Increase heart rate and automaticity • Increases cardiac contractility • Increases myocardial electrical activity • Increases systemic vascular resistance • Increases blood pressure
Indications:	<ul style="list-style-type: none"> • Cardiac arrest • Allergic reaction/Anaphylaxis • Respiratory distress
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity
Precautions:	<ul style="list-style-type: none"> • Blood pressure, pulse, and EKG must be routinely monitored for all patients receiving Epinephrine
Side Affects:	<ul style="list-style-type: none"> • Palpitations • Anxiousness • Headache • Tremor • Nausea/Vomiting
Medical Command: 	<ul style="list-style-type: none"> • Medical Command authorization is required for respiratory distress and allergic reaction/anaphylaxis.
Adult Dose:	<ul style="list-style-type: none"> • Cardiac arrest- 1:10,000; 1 mg IV every 3-5 minutes (1:10,000; 2 mg diluted in 10 ml of Normal Saline ETT every 3-5 minutes) • Anaphylaxis- 1:1,000; 0.3 mg SQ • Respiratory distress due to status asthmaticus- 1:1,000; 0.3 mg SQ
Pediatric Dose:	<ul style="list-style-type: none"> • Cardiac arrest- 1:10,000; 0.01 mg/kg IV/IO every 3-5 minutes (1:1000; 0.1 mg/kg every 3-5 minutes ETT) • Neonatal Resuscitation- 1:10,000; 0.01 mg/kg IV/IO (1:1000; 0.1 mg/kg ETT) • Bradycardia- 1:10,000; 0.01 mg/kg IV/IO every 3-5 minutes (1:1000; 0.1 mg/kg every 3-5 minutes ETT) • Anaphylaxis- 1:1000; 0.01 mg/kg SQ (max dose 0.3 mg) • Severe Anaphylaxis- 1:10,000; 0.01 mg/kg IV/IO • Respiratory distress due to status asthmaticus- 1:1000, 0.01 mg/kg SQ (max dose 0.3 mg)
Key Points:	<ul style="list-style-type: none"> • If the patient develops chest discomfort after Epinephrine administration, refer to the <u>Chest Discomfort Protocol</u>. • Epinephrine can be administered via ETT. However, the dose must be doubled.

Fentanyl Citrate (Sublimaze)

Actions:	<ul style="list-style-type: none"> • Central nervous system depressant • Decreases sensitivity to pain
Indications:	<ul style="list-style-type: none"> • Pain management • Sickle Cell Crisis
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • Head injury or head trauma • Shock • Severe hemorrhage • Undiagnosed abdominal pain
Precautions:	<ul style="list-style-type: none"> • Fentanyl should NOT be administered to pediatric patients under the age of 10. It can be administered to patients under the age of 10 ONLY if they have severe burns and with Medical Command authorization. • Routinely monitor the patient's respiratory effort. • All patients MUST have supplemental oxygen administration.
Side Affects:	<ul style="list-style-type: none"> • Dizziness • Altered LOC/coma • Bradycardia
Medical Command: 	<ul style="list-style-type: none"> • Medical Command authorization is required for pediatric burn patients under 10 years of age, doses over 50 mcq for adult patients, and for any repeat doses.
Adult Dose:	<ul style="list-style-type: none"> • Pain Management/Sickle Cell- Fentanyl 25 – 50 mcg IV over 2 minutes
Pediatric Dose:	<ul style="list-style-type: none"> • Fentanyl 1 mcg/kg IV over 2 minutes. DO NOT exceed 25 mcq. The dose for pediatric patient over 25 kg is 25 mcg. over 2 mins.
Key Points:	<ul style="list-style-type: none"> • A 100 mcg dose of Fentanyl (Sublimaze) is equivalent to a 10 mg dose of Morphine. • A dose of Fentanyl should NOT exceed 100 mcg.

Furosemide (Lasix)

Actions:	<ul style="list-style-type: none"> • Potent diuretic • Inhibits renal sodium re-absorption • Vasodilation, especially of the pulmonary veins
Indications:	<ul style="list-style-type: none"> • Acute pulmonary edema secondary to CHF • Acute pulmonary edema secondary to hypertension
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • Known allergy to sulfamides • Dehydrated patient • Pregnant patient • Hypotension • Renal failure patient who does not produce urine
Precautions:	<ul style="list-style-type: none"> • May cause dehydration • May cause hypovolemia • May cause hypotension • May cause hypokalemia
Side Affects:	<ul style="list-style-type: none"> • Urination • Hypotension • Nausea and vomiting • Dehydration • Depletion of potassium
Medical Command: 	<ul style="list-style-type: none"> • Medical Command authorization is required for pediatric administration
Adult Dose:	<ul style="list-style-type: none"> • 20-80 mg slow IVP. • The IV dose of Furosemide (Lasix) should be the same amount of mg as their total daily dose, up to 80 mg. A patient taking a total dose Furosemide (Lasix) of 40 mg PO daily, should receive a 40 mg IV dose.
Pediatric Dose:	<ul style="list-style-type: none"> • 1mg/kg slow IV/IO (max dose 50 mg)
Key Points:	<ul style="list-style-type: none"> • Furosemide (Lasix) can take 5-20 minutes to take effect. • The IV form of Furosemide (Lasix) is generally considered to be twice as potent as the PO form.

Glucagon


Actions:	<ul style="list-style-type: none"> • Causes breakdown of glycogen to glucose • Inhibits glycogen synthesis • Elevates blood glucose level
Indications:	<ul style="list-style-type: none"> • Correction of hypoglycemia when an IV/IO is not able to be established and oral glucose is contraindicated
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity
Precautions:	<ul style="list-style-type: none"> • Glucagon is only effective in patients with sufficient stores of glycogen • Use caution in patients with renal or cardiovascular disease • Glucagon can be administered on scene, but do not wait for it to take effect.
Side Affects:	<ul style="list-style-type: none"> • Few in emergency situations • Nausea and vomiting
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required
Adult Dose:	<ul style="list-style-type: none"> • 1 mg IM, can be repeated once in 20 minutes.
Pediatric Dose:	<ul style="list-style-type: none"> • 0.01mg/kg IM
Key Points:	<ul style="list-style-type: none"> • Check the patient's BGL before and after the administration Glucagon. • Glucagon can be administered on scene, but do not wait on scene for the medication to take effect. • If an IV is established after administering Glucagon, and the patient is still symptomatic, then administer Dextrose 50% IV.

Lidocaine (Xylocaine)

Actions:	<ul style="list-style-type: none"> • Suppresses ventricular ectopy • Elevates ventricular tachycardia and ventricular fibrillation threshold
Indications:	<ul style="list-style-type: none"> • Ventricular tachycardia • Ventricular Fibrillation • Reduction of premature ventricular contractions (PVCs) • IO
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • AV blocks • Idioventricular escape rhythms • Accelerated idioventricular rhythm • Sinus bradycardia or arrest or block • Hypotension • Shock
Precautions:	<ul style="list-style-type: none"> • A reduced dose should be administered if the patient is over 70 years old or has a history of liver failure, or CHF • DO NOT use Lidocaine if Amiodarone has already been administered.
Side Affects:	<ul style="list-style-type: none"> • There may be a reduction in the force of ventricular contraction leading to decreased peripheral vascular resistance, cardiac output and blood pressure. • Dizziness • Numbness • Drowsiness • Confusion • Seizure • Respiratory depression
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required
Adult Dose:	<ul style="list-style-type: none"> • Wide Complex Tachycardia With a pulse - 1-1.5 mg/kg IV/IO (half dose if the patient is over 70 years old or has a history of liver failure, or CHF). Repeat at 0.5-0.75 mg/kg (half dose if the patient is over 70 years old or has a history of liver failure, or CHF) every 10 minutes to a max dose of 3 mg/kg. • If the patient converts due to Lidocaine administration to a NSR, initiate a Lidocaine drip at 2-4 mg/min. • If the patient converts due to cardioversion, administer a loading dose of Lidocaine at 1-1.5 mg/kg (half dose if the patient is over 70 years old or has a history of liver failure, or CHF) and initiate a Lidocaine Drip at 2-4 mg/min. • Ventricular Fibrillation or Ventricular Tachycardia without a pulse - Lidocaine 1-1.5 mg/kg every 5 minutes (Lidocaine 0.5-.75 mg/kg if the <ul style="list-style-type: none"> • patient is over 70 years old or has a history of liver failure, or CHF) to a max dose of 3 mg/kg. • <u>EZ-IO</u>- Prior to flushing, if patient is or becomes conscious. Administer Lidocaine 2% 0.8 mg/kg. Adult patients should not exceed 40 mg IO.

Pediatric Dose:	<ul style="list-style-type: none"> • <u>Wide Complex Tachycardia With a pulse</u> – 1 mg/kg IV/IO. Repeat once at 0.5 mg/kg. • <u>Ventricular Fibrillation or Ventricular Tachycardia without a pulse</u> • 1 mg/kg IV/IO. Repeat once at 0.5 mg/kg IV/IO. • If the patient converts due to Lidocaine administration to a NSR, initiate a Lidocaine drip at 20-50 mcg/kg/min. • If the patient converts due to cardioversion, administer a loading dose of Lidocaine at 1 mg/kg and initiate a Lidocaine Drip at 20-50 mcg/kg/min. • <u>EZ-IO</u>- Prior to flushing, if patient is or becomes conscious. Administer Lidocaine 2% 0.8 mg/kg. Adult patients should not exceed 40 mg IO.
Key Points:	<ul style="list-style-type: none"> • Lidocaine can be administered via ETT. If administered via ETT, double the dose.


Lorazepam (Ativan)

Actions:	<ul style="list-style-type: none"> • Suppresses the spread of seizure activity through the motor cortex of the brain • Sedative
Indications:	<ul style="list-style-type: none"> • Status epilepticus • Sedation prior to transcutaneous pacing and synchronized • Cardioversion in the conscious patient • Sedation for combative patient
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • Suspected head injury (unless actively seizing)
Precautions:	<ul style="list-style-type: none"> • Seizure activity may recur, because Lorazepam (Ativan) is short acting. • Lorazepam (Ativan) potentiates alcohol or other CNS depressants • Respiratory effort MUST be routinely monitored
Side Affects:	<ul style="list-style-type: none"> • Respiratory depression • Hypotension • Drowsiness • Headache • Amnesia • Blurred vision • Nausea and Vomiting
Medical Command: 	<ul style="list-style-type: none"> • Medical Command authorization is required for sedation prior to transcutaneous pacing and synchronized cardioversion.
Adult Dose:	<ul style="list-style-type: none"> • Seizure 1-2 mg IV or 2-4 mg IM every 10-15 minutes (max dose 8 mg within a 12-hour period) • Sedation prior to pacing or cardioversion 0.5-1 mg IV or 1-2 mg IM • Combative patient sedation 1-2 mg IV OR Lorazepam (Ativan) 2-4 mg IM • Delirium Tremens with severe tremors 1 mg IV or IM
Pediatric Dose:	<ul style="list-style-type: none"> • Seizure – Lorazepam (Ativan) 0.1 mg/kg IV/IO over 2-5 minutes (max dose 4 mg) OR Lorazepam (Ativan) 0.2 mg/kg rectally (max dose 4 mg) OR Lorazepam (Ativan) 0.1 mg/kg IM (max dose 4 mg) • Sedation prior to pacing or cardioversion- 0.05 mg IV/IO.
Key Points:	<ul style="list-style-type: none"> • Frequently reassess the patient's vital signs and monitor their EKG after Lorazepam (Ativan) administration.

Magnesium Sulfate

Actions:	<ul style="list-style-type: none"> • Central Nervous System Depressant • Anticonvulsant • Antiarrhythmic
Indications:	<ul style="list-style-type: none"> • Eclampsia (up to 6 weeks post delivery) • Severe refractory ventricular fibrillation/pulseless ventricular tachycardia • Torsades de pointes
Contraindications:	<ul style="list-style-type: none"> • Shock • Heart block
Precautions:	<ul style="list-style-type: none"> • Patients who are receiving Digitalis • Hypotension • Patients with renal failure
Side Affects:	<ul style="list-style-type: none"> • Flushing • Respiratory depression • Drowsiness
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none"> • Ventricular Fibrillation: 1-2 g IV • Pulseless Ventricular Tachycardia: 1-2 g IV over 2 mins. • Eclampsia: 1-2 g IV over 2 minutes
Pediatric Dose:	<ul style="list-style-type: none"> • The administration of magnesium Sulfate is not recommended for pediatric patients.
Key Points:	<ul style="list-style-type: none"> • Magnesium is an essential element in many of the body's biochemical reactions.


Morphine Sulfate

Actions:	<ul style="list-style-type: none"> • Increases venous capacity reducing venous return • Mild vasodilatation • Decreases sensitivity to pain
Indications:	<ul style="list-style-type: none"> • Cardiac chest discomfort and acute MI • Pain management • Sickle Cell Crisis
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • Head injury or head trauma • Seizure • Altered LOC • Undiagnosed abdominal pain • Patients with hypotension secondary to volume depletion • Multiple trauma patients
Precautions:	<ul style="list-style-type: none"> • If the patient responds with respiratory depression or hypotension, then administer Naloxone (Narcan) to reverse the effects • Routinely monitor the patient's respiratory effort • All patients MUST have supplemental oxygen administration. • Morphine may mask pain, so conduct a complete assessment prior to administration • Routinely monitor oxygen saturation
Side Affects:	<ul style="list-style-type: none"> • Respiratory depression • Altered LOC • Bradycardia • Nausea and vomiting • Constricted pupils
Medical Command: 	<ul style="list-style-type: none"> • Medical Command authorization is required for pain management doses over 10 mg.
Adult Dose:	<ul style="list-style-type: none"> • Cardiac chest discomfort and acute MI-1-3 mg IV • Pain Management - 2-4mg IV/IM q 10 minutes (max dose 10 mg) • Sickle Cell Crisis - 2-4mg IV/IM q 10 minutes (max dose 10 mg)
Pediatric Dose:	<ul style="list-style-type: none"> • Pain Management - 0.05-0.1 mg/kg slow IV (max dose 2 mg) • Sickle Cell Crisis - 0.05-0.1 mg/kg slow IV (max dose 2 mg)
Key Points:	<ul style="list-style-type: none"> • Routinely monitor the patient's EKG and vital signs after Morphine administration. • For pain management, additional doses of Morphine maybe administered every 10 minutes. • Morphine Sulfate is no longer indicated to treat Pulmonary Edema.

Naloxone (Narcan)

Actions:	<ul style="list-style-type: none"> Reverses all effects from opioid agents such as respiratory depression and all central and peripheral nervous system effects.
Indications:	<ul style="list-style-type: none"> Respiratory depression due to opioids Altered mental status of unknown origin
Contraindications:	<ul style="list-style-type: none"> Known hypersensitivity
Precautions:	<ul style="list-style-type: none"> Naloxone may induce acute opiate withdrawal in patients who are physically dependent. Be prepared for a potentially combative patient. Should be used and titrated to desired respiratory effect, and not intended to restore full consciousness. The effects of Naloxone do not usually last as long as the effects of opiates, therefore subsequent doses may need to be administered.
Side Affects:	<ul style="list-style-type: none"> No significant side effects
Medical Command:	<ul style="list-style-type: none"> Medical Command authorization is not required for adult or pediatric administration.
Adult Dose:	<ul style="list-style-type: none"> 0.4-2 mg IV/IM (0.8-4 mg ETT).
Pediatric Dose:	<ul style="list-style-type: none"> 0.1 mg/kg IV/IO/IM (0.2 mg/kg ETT).
Key Points:	<ul style="list-style-type: none"> Be prepared for the patient to become combative after Naloxone (Narcan) administration. Titrate the dose of Naloxone (Narcan) to effect. Naloxone (Narcan) can be administered via ETT. However, the dose must be doubled.

Nitroglycerin

Actions:	<ul style="list-style-type: none"> • Vasodilation • Coronary artery dilation • Decreases myocardial oxygen demand • Decreases vascular resistance
Indications:	<ul style="list-style-type: none"> • Cardiac chest discomfort, angina and acute MI • Pulmonary edema • Hypertension
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • Hypotension • Took a erectile dysfunction medication within 48 hours. Erectile dysfunction include Sildenafil (Viagra), Vardenafil HCL (Levitra), and Tadalafil (Cialis).
Precautions:	<ul style="list-style-type: none"> • Avoid use in patients with intracranial pressure, glaucoma, hypotension • If the patient becomes hypotensive after Nitro administration, then place the patient in a semi-reclined position with legs elevated
Side Affects:	<ul style="list-style-type: none"> • Throbbing headache • Hypotension • Dizzy • Weakness
Medical Command: 	<ul style="list-style-type: none"> • Medical Command authorization is required for patients with hypertension without chest pain
Adult Dose:	<ul style="list-style-type: none"> • Cardiac chest discomfort 0.3-0.4 mg SL every 5 minutes to a max of 3 doses. • Pulmonary edema 0.3-0.4 mg SL every 5 minutes to a max of 3 doses. • Hypertension 0.3-0.4 mg SL
Pediatric Dose:	<ul style="list-style-type: none"> • The administration of Nitroglycerin is not recommended for pediatric patients.
Key Points:	<ul style="list-style-type: none"> • Nitroglycerin can still be administered if IV attempts were unsuccessful and the patient has a BP greater than 120 mmHg or (BP greater than 150 mmHg if over 70 years old). • DO NOT administer Nitroglycerin to a patient who took an erectile dysfunction medication (Viagra, Cialas, Levitra, etc) within the last 48 hours.

Oral Glucose

Actions:	<ul style="list-style-type: none">• Elevates blood glucose level
Indications:	<ul style="list-style-type: none">• Symptomatic hypoglycemia
Contraindications:	<ul style="list-style-type: none">• Known hypersensitivity
Precautions:	<ul style="list-style-type: none">• Patient must be alert and able to swallow• Be alert for difficulty swallowing or choking due to the thick consistency
Side Affects:	<ul style="list-style-type: none">• Few in emergency situations• Nausea and vomiting
Medical Command:	<ul style="list-style-type: none">• Medical Command authorization is not required
Adult Dose:	<ul style="list-style-type: none">• One complete tube (15-25 g)
Pediatric Dose:	<ul style="list-style-type: none">• Half a tube (Approximately 7.5-12.5 g)
Key Points:	<ul style="list-style-type: none">• To avoid aspiration, slowly place the Oral Glucose between the patient's cheek and gum.• If the patient prefers, they can self administer the Oral Glucose.

Oxygen

Actions:	<ul style="list-style-type: none"> • Increases oxygen content of blood • Improves tissue oxygenation • Decreases energy expended for respirations
Indications:	<ul style="list-style-type: none"> • Cardiac chest discomfort • Hypoxemia • Cardiopulmonary arrest • Trauma • Shortness of breath/dyspnea • Sedative drug administrations
Contraindications:	<ul style="list-style-type: none"> • None in the pre-hospital setting
Precautions:	<ul style="list-style-type: none"> • Never withhold oxygen from those who need it. • Be aware for respiratory depression in COPD patients on prolonged high flow oxygen. • All sedative medication administration must have oxygen administration.
Side Affects:	<ul style="list-style-type: none"> • High concentrations of oxygen may reduce the respiratory drive in some COPD patients; these patients should be carefully monitored.
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none"> • Nasal Cannula: 4-6 lpm • Simple or Partial Rebreather Mask: 10-15 lpm • Non-Rebreather Mask: 12-15 lpm • T-Piece Nebulizer: 6 lpm • Nebulizer with Face Mask: 10 lpm
Pediatric Dose:	<ul style="list-style-type: none"> • Nasal Cannula: 4-6 lpm • Simple or Partial Rebreather Mask: 10-15 lpm • Non-Rebreather Mask: 12-15 lpm • T-Piece Nebulizer: 6 lpm • Nebulizer with Face Mask: 10 lpm
Key Points:	<ul style="list-style-type: none"> • DO NOT let the patient smoke while administering Oxygen.


Pralidoxime (2-PAM Cl)

Actions:	<ul style="list-style-type: none"> • Reactivates cholinesterase • Slows the process of “aging” of phosphorylated cholinesterase to a non-reactivable form • Deactivates certain organophosphates and nerve agents by direct chemical reaction
Indications:	<ul style="list-style-type: none"> • Organophosphate exposure • Nerve agent exposure
Contraindications:	<ul style="list-style-type: none"> • Hypersensitivity
Precautions:	<ul style="list-style-type: none"> • Do not let other rescuers become contaminated. • Do not transport a contaminated patient until they have been decontaminated.
Side Effects:	<ul style="list-style-type: none"> • Pain at the site of injection • Various visual impairments • Dizziness • Hypertension • Tachycardia • Muscular weakness • Manic behavior
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none"> • Mild Reaction: One Mark 1 Kit (600 mg) • Moderate Reaction: Two Mark 1 Kits (1200 mg) • Severe Reaction: Three Mark 1 Kits (1800 mg)
Pediatric Dose:	<ul style="list-style-type: none"> • The administration of Pralidoxime (2-PAM Cl) is not recommended for pediatric patients.
Key Points:	<ul style="list-style-type: none"> • When administering Pralidoxime (2-PAM Cl), an adult is considered to be anyone over the age of 10, or over 40 kg. • Pralidoxime (2-PAM Cl) can only be administered by an auto-injector. • A Mark 1 Kit includes a 600 mg Pralidoxime (2-PAM Cl) auto-injector, 2 mg Atropine auto-injector, and a 10 mg Diazepam auto-injector (stored separately).

Promethazine (Phenergan)

Actions:	<ul style="list-style-type: none"> • Mild anticholinergic activity • Antiemetic • Potentiates actions of analgesics
Indications:	<ul style="list-style-type: none"> • Persistent vomiting
Contraindications:	<ul style="list-style-type: none"> • Coma • Under the influence of depressants (including alcohol) with CNS depression
Precautions:	<ul style="list-style-type: none"> • Can cause serious complications if accidentally injected into an artery
Side Affects:	<ul style="list-style-type: none"> • Drowsiness • Impaired mental and physical ability • Dystonic Reactions (Extrapyramidal Symptoms)
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none"> • 12.5 mg IV or 25 mg IM
Pediatric Dose:	<ul style="list-style-type: none"> • The administration of Promethazine (Phenergan) is not recommended for pediatric patients.
Key Points:	<ul style="list-style-type: none"> • Always have Diphenhydramine (Benadryl) on hand when administering Promethazine (Phenergan).

Sodium Bicarbonate

Actions:	<ul style="list-style-type: none"> • Corrects acidosis
Indications:	<ul style="list-style-type: none"> • Used in cardiac arrest after a long down time • Hyperkalemia • Tricyclic antidepressant overdoses • Hemodialysis patients in cardiac arrest
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity
Precautions:	<ul style="list-style-type: none"> • Should be administered only after airway has been secured • May precipitate CHF
Side Affects:	<ul style="list-style-type: none"> • Hyperosmolality • Alkalosis
Medical Command: 	<ul style="list-style-type: none"> • Medical Command authorization is required for its use in all poisonings and for use as an antidote.
Adult Dose:	<ul style="list-style-type: none"> • Cardiac Arrest - 1 mEq/kg IV • Tricyclic Antidepressant Overdose: 1 mEq/kg IV
Pediatric Dose:	<ul style="list-style-type: none"> • Cardiac Arrest- 1 mEq/kg IV/IO (dilute solution 1:1 with Normal Saline) • Tricyclic Antidepressant Overdose: 1 mEq/kg IV/IO (dilute solution 1:1 with Normal Saline)
Key Points:	<ul style="list-style-type: none"> • A long down time is considered a down time of 15-20 minutes. • Tricyclic Anti-depressants include (but not limited to): Amitriptyline, Amoxapine, Clomipramine, Desipramine, Doxepin, Imipramine, Nortriptyline, Protriptyline, and Trimipramine.

Thiamine (Vitamin B₁)

Actions:	<ul style="list-style-type: none">• Allows the normal breakdown of glucose
Indications:	<ul style="list-style-type: none">• Hypoglycemia (if the patient is suspected to be a chronic alcoholic or appears to be malnourished)
Contraindications:	<ul style="list-style-type: none">• Known hypersensitivity
Precautions:	<ul style="list-style-type: none">• Rare anaphylactic reactions
Side Effects:	<ul style="list-style-type: none">• Rare, if any
Medical Command:	<ul style="list-style-type: none">• Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none">• 100 mg IV or IM
Pediatric Dose:	<ul style="list-style-type: none">• Thiamine is not recommended for pediatric patients in the pre-hospital setting.
Key Points:	<ul style="list-style-type: none">• Thiamine should NOT be administered unless Dextrose 50% or Glucagon is going to be administered.

Vasopressin (Pitressin)

Actions:	<ul style="list-style-type: none"> • Alpha agonist • Causes vasoconstriction • Increases smooth muscle activity
Indications:	<ul style="list-style-type: none"> • Asystole • Ventricular fibrillation • Pulseless ventricular tachycardia • Pulseless electrical activity
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity
Precautions:	<ul style="list-style-type: none"> • Risk of hyponatremia
Side Effects:	<ul style="list-style-type: none"> • Nausea/Vomiting • Diarrhea • Confusion
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none"> • 40 units IV push. (one dose only)
Pediatric Dose:	<ul style="list-style-type: none"> • The administration of vasopressin is not recommended for pediatric patients.
Key Points:	<ul style="list-style-type: none"> • After 10 minutes, Epinephrine can be administered. • If Vasopressin is used, it should be administered prior to any Epinephrine administrations.

5% Dextrose In Water D5W

Actions:	<ul style="list-style-type: none"> • Dilutes Amiodarone
Indications:	<ul style="list-style-type: none"> • To dilute Amiodarone in Wide Complex Tachycardia with a pulse. • To dilute Amiodarone in patients with more than 6 multifocal PVCs per minute with ST elevation. • To dilute Amiodarone in patients with runs of Ventricular Tachycardia with a pulse.
Contraindications:	<ul style="list-style-type: none"> • Known hypersensitivity • Hypovolemia • CVA (Stroke)
Precautions:	<ul style="list-style-type: none"> • Tissue necrosis from extravasation
Side Affects:	<ul style="list-style-type: none"> • Rare
Medical Command:	<ul style="list-style-type: none"> • Medical Command authorization is not required.
Adult Dose:	<ul style="list-style-type: none"> • Dilute the required dose of Amiodarone in 100 ml of D5W and run it wide open if the patient is experiencing wide complex tachycardia with a pulse, more than 6 multifocal PVCs per minute with ST elevation, or run of ventricular tachycardia with a pulse.
Pediatric Dose:	<ul style="list-style-type: none"> • Dilute the required dose of Amiodarone in 100 ml of D5W and run it wide open if the patient is experiencing wide complex tachycardia with a pulse.
Key Points:	<ul style="list-style-type: none"> • D5W should NOT used to dilute Amiodarone in patients who are in ventricular fibrillation or pulseless ventricular tachycardia. • If the patient is in cardiac arrest, do NOT use D5W to dilute Amiodarone. • When administering Amiodarone diluted in 100 ml of D5W, use the “piggy back” method with a microdrip administration set.