ACETAMINOPHEN (TYLENOL)

Class

A. Antipyretic, analgesic

Pharmacology and Actions

A. Acetaminophen acts as an analgesic/antipyretic with little effect on platelet function. Indications: For mild to moderate pain and fever when aspirin is otherwise not tolerated. Contraindications: Hypersensitivity, children under 3 years. Precautions: Patients with hepatic disease; children under 12 years with arthritic conditions; alcoholism; malnutrition; and thrombocytopenia. Dosage/Route: 325 to 650 mg. PO/4 to 6 hours. 650 mg PR/4 to 6 hours.
B. Acetaminophen undergoes metabolism in the liver.

Indications

A. The treatment of mild to moderate pain.
B. Significant fever in the context of, or for the prevention of a febrile illness or seizure.

Contraindications

A. Known hypersensitivity to the drug.

Precautions

A. Patients with known hepatic disease, alcoholism, malnutrition, or thrombocytopenia.

Dosage

A. Suppository form:
B. The pediatric dose (age <12) is 15mg/kg orally or rectally

Side Effects and Notes

A. Nausea, rash, or headache

ADENOSINE (ADENOCARD)

Class
Antiarrhythmic

Pharmacology and Actions

C. Adenosine is an endogenous nucleoside with antiarrhythmic activity.
D. Because of its short plasma half-life (less than 10 seconds with IV doses), the clinical effects of adenosine occur rapidly and are very brief.
E. Produces a transient slowing of the sinus rate
F. Has a depressant effect on the AV node.

Indications

C. For termination of episodes of acute supraventricular tachycardia involving the AV-node.

Contraindications

B. Second or third-degree heart block
C. Sick sinus syndrome
D. Known hypersensitivity to drug

Precautions

B. Adverse effects include hypotension, flushing, dyspnea, chest pain, anxiety, and occasionally, hemodynamic disturbances – all of which are of short duration.
C. Transient arrhythmias including asystole and blocks are common at the time of chemical cardioversion.

Administration

C. Direct rapid intravenous bolus over 1-2 seconds of 6mg initially, followed immediately by 20mL saline flush. A second dose of 12 mg may be given after an interval of 1-2 minutes if the tachycardia persists.
D. Pediatric dose: rapid IV 0.1 mg/kg initial dose followed immediately with a saline flush (greater than 5mL). Second dose 0.2 mg/kg rapid IV if SVT persists. Maximum first dose is 6 mg. Maximum second dose is 12mg.

Side Effects and Notes

B. Whenever possible, establish the IV at the antecubital
C. Adenosine is safe in patients with Wolff Parkinson-White Syndrome.
D. Concomitant use of dipyridamole (Persantine) enhances the effects of adenosine. Smaller doses may be required.
E. Caffeine and theophylline antagonize adenosine's effects. Larger doses may be required.
F. Warn patients to expect a brief sensation of chest discomfort.
G. If patient becomes hemodynamically unstable, see appropriate tachycardia algorithm.
H. Stable, asymptomatic patients, without a history of PSVT, may not need to be treated.
I. Any patient receiving adenosine must be on a monitor and a 12-lead EKG should be performed and documented, if available.

ALBUTEROL (PROVENTIL, VENTOLIN)

Class
Sympathomimetic (B_2Selective)

Pharmacology and Actions
A. Has selective beta-adrenergic stimulating properties resulting in potent bronchodilation.
B. Rapid onset of action (under 5 minutes), and duration of action between 2 – 6 hours.

Indications
A. For relief of bronchospasm in patients with obstructive airway disease (asthma, emphysema, COPD) or allergic reactions.

Contraindications
A. Symptomatic tachycardia
B. Known hypersensitivity to drug

Precautions
A. Albuterol sulfate has sympathomimetic effects. Use with caution in patients with known coronary disease. Monitor pulse, blood pressure, and cardiac monitor, in CAD patients.
B. When inhaled, albuterol sulfate can result in paradoxical bronchospasm, which can be life threatening. If this occurs, the preparation should be discontinued immediately.

Administration
A. For nebulizer use only
    1. For adults and children: place 2.5 mg/3mL albuterol into an oxygen-powered nebulizer and run at 6-8 LPM. Deliver as much of the mist as possible by nebulizer over 5-15 minutes.
    2. Endotracheally intubated patients may be given albuterol sulfate by attaching the nebulizer in-line.
    3. Patients placed on CPAP may be given albuterol sulfate by attaching the nebulizer in-line.

Side Effects and Special Notes

A. Monitor blood pressure and heart rate closely and contact medical control if any concerns arise.
B. Medications such as MAO inhibitors and tricyclics may potentiate tachycardia and hypertension.

AMIODARONE (CORDARONE)

Class
Antiarrhythmic agent

Pharmacology and Actions
A. Suppresses ventricular ectopy and increases ventricular fibrillation threshold.
B. Noncompetitive blocker of alpha- and beta-adrenergic receptors which can cause:
    1. Negative chronotropic effects
    2. Negative inotropic effects (the effect on cardiac output by the negative inotropic effect is balanced by a decrease in afterload and increase in coronary blood flow, which in turn improves cardiac performance [especially for patients with left ventricular failure]).
    3. Peripheral vasodilation (reduces afterload).
    4. Coronary vessel dilation
C. Prolongs duration of cardiac potential and prolongs effective refractory period

Indications
A. Shock resistant ventricular fibrillation or pulseless ventricular tachycardia
B. Unstable ventricular tachycardia
C. May be used for rate control in treatment of symptomatic atrial fibrillation or flutter when other therapies are ineffective.

Contraindications
A. None in cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia
B. 2nd or 3rd degree heart block in the absence of functioning pacemaker
C. Marked bradycardia
D. Cardiogenic shock
E. Known hypersensitivity

Precautions
A. Increased hypotension and bradycardia can occur when given with other beta-blockers or calcium channel blockers.
B. May prolong QT interval. Do not administer with other medications that prolong QT interval (e.g., procainamide).
C. Use with caution if renal failure is present, terminal elimination of amiodarone is extremely long (half-life can last up to 40 days).

Administration
A. Pulseless VT / VF: 300 mg IV push. Consider repeating 150 mg IV/IO push in 3-5 minutes (Maximum cumulative dose is 2.2 grams IV over 24 hours).
B. Unstable VT: 150 mg IV diluted in NS over 10 minutes. Consider repeating at same dose.

Side Effects and Special Notes
A. Medication must be carefully and slowly drawn from vial to avoid excess air bubbles.
B. The most commonly reported side effects include hypotension, bradycardia, AV block, PEA, and hepatoxicity.

ASPIRIN (ASA)

Class
Platelet inhibitor/Anti-inflammatory

Pharmacology and Actions
A. ASA inhibits blood clotting. It inhibits the formation of thromboxane A2, a platelet aggregating, vasoconstricting prostaglandin. ASA in low doses, however, inhibits the production of thromboxane A2 in the platelet more than it does the production of prostacyclin in the endothelial cells.
B. Platelet aggregation has been implicated in the pathogenesis of atherosclerosis contributing to the acute episodes of TIA's, unstable angina, and acute myocardial infarction.
C. Unstable angina is precipitated by a sudden fall in coronary blood flow. One possible mechanism is platelet aggregation.
D. ASA has been shown to be beneficial in decreasing sudden cardiac death and myocardial infarction in patients with unstable angina.
E. ASA has been shown to be of added benefit in maintaining vessel patency after thrombolytic therapy.

Indications
A. Patients with chest pain or other symptoms, which may be of cardiac origin.
B. ASA is not to be used for analgesia (i.e. headache).

Contraindications
A. Children under 12 years of age
B. Known hypersensitivity to drug, especially allergy induced asthma
C. Current ulcer or GI bleed

Administration
A. Chew four 81 mg ASA chewable tablets (324 milligrams total) if the patient is able to swallow voluntarily.

Side Effects and Special Notes
A. ASA is one of the few interventions that has been shown to improve mortality and therefore should be considered early in the care of the patient.
B. Patients taking Coumadin may receive aspirin.

ATROPINE

Class

Parasympatholytic (anticholinergic)

Pharmacology and Actions

A. Increases heart rate (by blocking vagal influences).
B. Increases conduction through AV node.
C. Reduces motility and tone of GI tract.
D. Reduces action and tone of urinary bladder (may cause urinary retention).
E. Dilates pupils

Note: This drug blocks cholinergic (vagal) influences already present. If there is little cholinergic stimulation present, effects will be minimal.

Indications

A. To counteract excessive vagal influences responsible for some bradyarrhythmia's.
B. To increase heart rate in hemodynamically significant bradycardia.
C. To improve conduction in AV heart block at the nodal level. Will not be effective when intranodal (Mobitz type II) block is suspected.
D. As an antidote for some insecticide exposures (organophosphate poisoning) and nerve gases with symptoms of excess cholinergic stimulation: salivation, constricted pupils, bradycardia, tearing, diaphoresis, vomiting, and diarrhea.

Precautions

A. Bradycardias in the setting of an acute MI are common and may be beneficial. Do not treat them unless there are signs of poor perfusion (low B/P, mental confusion). If in doubt, consult with the base physician.
B. People do well with chronic 2^{d} and 3`^{d} degree block. Symptoms occur mainly with acute change. Treat the patient, not the arrhythmia.
C. Pediatric bradycardias are most commonly secondary to hypoxia. Correct the ventilation first, and only treat the rate directly if that fails. Epinephrine is almost always the first-line medication for bradycardia in pediatric patients.

Administration

A. Hemodynamically unstable bradycardia:
    1. Adult: 1.0 mg IV/IO, repeated if needed at 3-5 minute intervals to a dose of 3mg. (Stop at ventricular rate which provides adequate medication and B/P).
    2. Pediatric: 0.02 mg/kg IV, minimum 0.1 mg.
B. May be given through the ET tube at 2 times the IV dose. Maximum ET dose is 6 mg.
C. For symptomatic insecticide/organophosphate poisoning exposures: Usually begin with 2 mg IV/IO and titrate (2 mg q 5 min) until secretions are dried. Total required dose may be massive.

Side Effects and Special Notes

Remember in cardiac arrest situations that atropine dilates the pupils

ATROVENT (IPATROPIUM)

Class
Anticholinergic

Pharmacology and Actions
A. Bronchodilation
B. Dries respiratory tract secretions

Indications
A. Bronchospasm related to asthma, chronic bronchitis, or emphysema

Contraindications
A. Hypersensitivity to this drug, atropine, soy, or peanuts.

Precautions
A. Should not be used as the primary agent for treatment of bronchospasm
B. Use with caution in patients with coronary artery disease
C. Pulse, blood pressure, and EKG must be monitored.

Administration
A. Adult and Pediatrics (>2 years) dosage: place 500 mcg into an oxygen-powered nebulizer and run at 6-8 LPM. Deliver as much of the mist as possible by nebulizer over 5-15 minutes.

Side Effects and Special Notes
A. Palpitations, dizziness, anxiety, tremors, headache, nervousness, and dry mouth
B. Can cause paradoxical bronchospasm, if this occurs discontinue treatment.

CALCIUM CHLORIDE

Class
Antidote
electrolyte

Pharmacology and Actions
Replacement of calcium

Indications
Hypocalcemia
Hyperkalemia
Hypermagnesemia
Calcium channel blocker overdose
Beta blocker overdose

Contraindications

Allergy to Medication
Vfib, asystole, PEA
Do not give IM or SC

Precautions

Irritant to veins
Give cautiously to Patients on Dig
If given too fast could cause V-Fib

Dosage (IV Only)

Hypocalcemia and Hypermagnesemia 500-1000mg over 5 minutes
Calcium channel overdose 1-2 grams over 10 minutes
Beta blocker overdose 1000mg via central line

Side Effects and Notes
Taste of calcium
Warm flush feeling

Left Blank

CYANOKIT-TRFD will not carry

Class
Toxicology

Pharmacology and Actions:
CYANOKIT is a cyanide antidote that contains hydroxocobalamin, a form of vitamin B12. Hydroxocobalamin binds to the cyanide, creating nontoxic cyanocobalamin, allowing the body to use oxygen again.

Indications
Symptoms: headache, confusion, dyspnea, chest tightness and nausea

Signs: altered mental status, seizure or coma, mydriasis, tachypnea, bradypnea, hypertension (early), hypotension (late), cardiovascular collapse, vomiting

Easily recognizable signs of cyanide poisoning in smoke inhalation victims:

- Exposure to fire or smoke in an enclosed area
- Soot around the mouth, nose or back of mouth
- Altered mental status (e.g., confusion, disorientation)

Contraindications
None

Precautions

- No adequate well-controlled studies in pregnant women. CYANOKIT should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.
- Safety and effectiveness have not been established in Pediatrics

Administration
1. **Reconstitute:** Place the vial in an upright position. Add **200 mL** of 0.9% Sodium Chloride injection* to the vial using the transfer spike. **Fill to the line.***0.9% Sodium Chloride injection is the recommended diluent (diluent not included in the kit). Lactated Ringer's injection and 5% Dextrose injection have also been found to be compatible with hydroxocobalamin and may be used if 0.9% Sodium Chloride is not readily available.

2. **Mix:** The vial should be repeatedly inverted or rocked, not shaken, for at least **60 seconds** prior to infusion.

- CYANOKIT solutions should be visually inspected for particulate matter and color prior to administration
- — Discard solution if particulate matter is present or solution is not dark red

3. **Infuse Vial:** Use vented intravenous tubing, hang and infuse over **15 minutes.**

Side Effects and Special Notes

Hypertension may occur in some patients (>180 mmHg SBP or >110 mmHg DBP).

CYANOKIT

Complete Starting Dose: 5 g

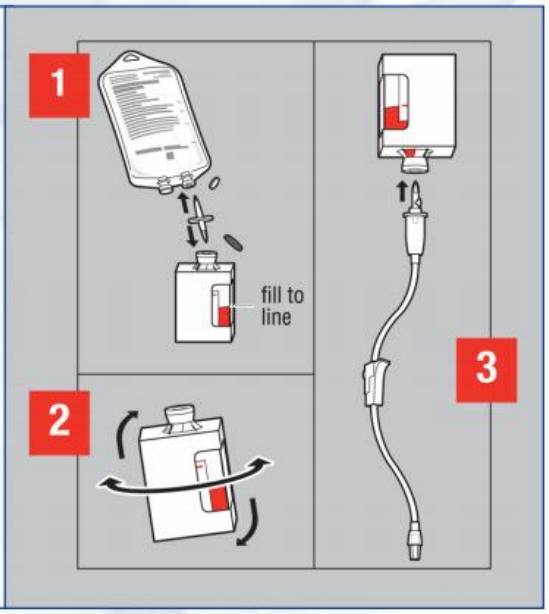
1 **Reconstitute:** Place the vial in an upright position. Add 200 mL of 0.9% Sodium Chloride injection* to the vial using the transfer spike. **Fill to the line.**

*0.9% Sodium Chloride injection is the recommended diluent (diluent not included in the kit). Lactated Ringers injection and 5% Dextrose injection have also been found to be compatible with hydroxocobalamin and may be used if 0.9% Sodium Chloride is not readily available

2 **Mix:** The vial should be repeatedly inverted or rocked, not shaken, for at least **60 seconds** prior to infusion.

- CYANOKIT solutions should be visually inspected for particulate matter and color prior to administration
  - Discard solution if particulate matter is present or solution is not dark red

3 **Infuse Vial:** Use vented intravenous tubing, hang and infuse over **15 minutes.**



DEXTROSE 10%

Class

Carbohydrate

Pharmacology and Actions

A. Glucose is the body's basic fuel and is required for cellular metabolism. A sudden drop in blood sugar levels will result in disturbances of normal metabolism, manifested clinically as a decrease in mental status, sweating, and tachycardia. Further decreases in blood sugar may result in coma, seizures, and cardiac arrhythmias. Serum glucose is regulated by insulin, which stimulates storage of excess glucose form the blood stream, and glucagon, which mobilizes stored glucose into the bloodstream.

Indications

A. Hypoglycemic states (i.e., insulin shock in the diabetic).
B. The unconscious patient with an unknown history. Any patient with focal or partial neurologic deficit or altered state of consciousness, which may be due to hypoglycemia.
C. Blood glucose test < 60 mg/dL if clinically indicated.
D. In children with alcohol exposure, suspected sepsis, hypoperfusion or altered mental status.

Precautions

A. In patients with clinical findings suggestive of a CVA, caution should be used when considering dextrose unless the patient has a measurable hypoglycemia.
B. Draw appropriate blood tubes for blood sugar determination prior to administering dextrose.
C. Extravasation of glucose can cause tissue necrosis. Ensure IV patency before and during dextrose infusion.

Administration

A. Adult dose: 1 (one) 250 mL bag of D10 solution, IV into a secure vein (D_{10} is 25 grams of dextrose in 250 mL).
B. Pediatric dose: 5 mL/kg of D10 up to 125 mL. If blood glucose is below 60 mg/dL a repeat dose may be administered.
C. May give oral glucose preparations if the patient is awake and able to swallow effectively.

Side Effects and Special Notes

A. One bolus should raise the blood sugar 50-100 mg/dL and, therefore, will be adequate for most patients.
B. Effect may be delayed in elderly patients with poor circulation.
C. Dextrose should be diluted 1:1 with normal saline (to create $D_{25}W$) for patients 2 years and younger.
D. Do not withhold dextrose in a patient suspected of being hypoglycemic.

DEXTROSE 50%

Class

Carbohydrate

Pharmacology and Actions

B. Glucose is the body's basic fuel and is required for cellular metabolism. A sudden drop in blood sugar levels will result in disturbances of normal metabolism, manifested clinically as a decrease in mental status, sweating, and tachycardia. Further decreases in blood sugar may result in coma, seizures, and cardiac arrhythmias. Serum glucose is regulated by insulin, which stimulates storage of excess glucose form the blood stream, and glucagon, which mobilizes stored glucose into the bloodstream.

Indications

E. Hypoglycemic states (i.e., insulin shock in the diabetic).
F. The unconscious patient with an unknown history. Any patient with focal or partial neurologic deficit or altered state of consciousness, which may be due to hypoglycemia.
G. Blood glucose test < 60 mg/dL if clinically indicated.
H. In children with alcohol exposure, suspected sepsis, hypoperfusion or altered mental status.

Precautions

D. In patients with clinical findings suggestive of a CVA, caution should be used when considering dextrose unless the patient has a measurable hypoglycemia.
E. Draw appropriate blood tubes for blood sugar determination prior to administering dextrose.
F. Extravasation of glucose can cause tissue necrosis. Ensure IV patency before and during dextrose infusion.

Administration

D. In patients older than 2 years: 1 mL/kg of D_{50}
E. In patients 3 months to 2 years: 1mL/kg of D_{25}
F. In patients less than 3 months: 1 mL/kg of $D_{12.5}$
G. May give oral glucose preparations if the patient is awake and able to swallow effectively.

Side Effects and Special Notes

E. One bolus should raise the blood sugar 50-100 mg/dL and, therefore, will be adequate for most patients.
F. Effect may be delayed in elderly patients with poor circulation.
G. Dextrose should be diluted 1:1 with normal saline (to create $D_{25}W$) for patients 2 years and younger.
H. Do not withhold dextrose in a patient suspected of being hypoglycemic.

Dilaudid (Hydromorphone)

Class

A. Narcotic Analgesic
B. Central nervous system depressant

Pharmacology and Actions

A. Inhibits Pain
B. Respiratory Depression
C. Sedation

Indications

A. Chest pain of cardiac origin
B. Burns
C. Extremity trauma
D. Pain Control

Contraindications

A. Allergy to the drug
B. Hypotension
C. Head, chest, abdominal trauma
D. Respiratory depression

Precautions

Respiratory Depression. Monitor Pt with Endtidal and SPO2

Dosage

- 0.5 – 1 mg IV Bolus, may be repeated
  1.0 – 2 mg IM Injection, may be repeated

ROUTE: IV, IO, IM

Side Effects and Notes

A. Decreased level of consciousness
B. Bradycardia
C. Hypotension
D. Nausea, vomiting
E. Respiratory depression

Medication is addictive

DILTIAZEM- Cardizem

Class

A. Antidysrhythmic
B. Calcium Channel Blocker

Pharmacology and Actions

A. Calcium channel blocker that inhibits calcium ion influx across cardiac and smooth-muscle cells
B. Decreases myocardial contractility and oxygen demand
C. Dilates coronary arteries and arterioles

Indications

A. A-Fib/A-Flutter with rapid ventricular response
B. SVT/PSVT refractive to Adenosine

Contraindications

A. In patients with suspected Wolff-Parkinson-White syndrome
B. Those with sick sinus syndrome without a pacemaker
C. Those with 2nd or 3rd degree heart block
D. Ventricular Tachycardia
E. Systolic blood pressure less than 90 mmHg

Precautions

Dosage

A. 0.25mg/kg IV over 2 minutes. (Average Adult dose is 20mg)
B. If no response to above, 0.35mg/kg IV over 2 minutes

Routes: IV, I/O Onset 3 minutes

Side Effects and Notes

A. Headaches
B. Dizziness
C. Nausea
D. Conduction abnormalities

DIPHENHYDRAMINE (BENADRYL)

Class

Antihistamine

Pharmacology and Actions

A. An antihistamine that blocks action of histamine released from the cells during an allergic reaction.
B. Direct CNS effects, which may be a stimulant or, more commonly, a depressant, depending on individual variation.
C. Anticholinergic, antiparkinsonian effect, which is used to treat acute dystonic reactions to antipsychotic drugs (Haldol, Thorazine, Compazine, etc.). These reactions include oculogyric crisis, acute torticollis, and facial grimacing.

Indications

A. Moderate allergic reaction.
B. The second-line drug in anaphylaxis and severe allergic reactions (after epinephrine).
C. To prevent or counteract extrapyramidal reactions from antipsychotic medications.
D. For use in intractable vomiting.

Contraindications

A. Asthma (relative)
B. Nursing mothers

Precautions

May have additive effect with alcohol or depressants.

Administration

A. Adult: 25 mg slow IV push or 50 mg IM
B. Children 8 years and younger: 1 mg/kg slow IV (not to exceed 25 mg total).

Side Effects and Special Notes

A. May cause CNS stimulation in children.
B. Side effects include dry mouth, dilated pupils, flushing, and drowsiness.
C. Diphenhydramine should be used with caution in patients with asthma/COPD, glaucoma, and bladder obstruction, as all of these conditions can be exacerbated by its administration.
D. If an IV has been or will be established for other reasons, the IV route is preferred over the IM route.

EPINEPHRINE

Class

Sympathomimetic

Pharmacology and Actions

A. Catecholamine with alpha and beta effects
B. Cardiovascular: Increased heart rate, increased blood pressure, arterial vasoconstriction, increased myocardial contractile force, increased myocardial oxygen consumption, and increased myocardial automaticity and irritability
C. Pulmonary: Potent bronchodilator

Indications

A. Medical cardiac arrest, including:
    1. Ventricular fibrillation and pulseless ventricular tachycardia, asystole, and PEA
B. Bradycardia:
    1. Pediatric patients with signs of poor perfusion.
C. Asthma
D. Mild to moderate allergic reactions, anaphylaxis or severe angioedema
E. Life-threatening airway obstruction suspected secondary to croup or epiglottitis.
F. Shock:
    1. First line pressor for non traumatic shock (hypotension, sepsis, cardeogenic, etc) due to its vasopressor and vasoconstrictor effects.

Contraindications

A. Epinephrine 1:1000:
    1. Hypertension
    2. Pregnancy
    3. Patients with tachyarrhythmias
B. Epinephrine 1:10,000 is for intravenous or endotracheal use; it should not be used in patients who do not require extensive resuscitive efforts.

Precautions

A. Do not add to solutions containing bicarbonate.
B. Increase in myocardial oxygen consumption can precipitate angina or MI in patients with coronary artery disease.
C. Use with caution in patients with hypertension, hyperthyroidism, peripheral vascular disease, or cerebrovascular disease or any patient over the age of 50.
D. Asthma is not the only cause of wheezing. Epinephrine is contraindicated in pulmonary edema.
E. Anaphylaxis is a systemic allergic reaction with cardiovascular collapse. Angioedema involves swelling of mucous membranes; potential exists for airway compromise. Mild or moderate allergic reactions with urticaria or wheezing may progress to anaphylaxis or severe angioedema. Monitor patient carefully and treat according to patient status.
F. Epinephrine comes in two strengths. Use of the wrong formulation will result in a ten-fold difference in dosage. Be sure to use the right one.

EPINEPHRINE CONTINUED

Administration

A. Adult
    1. Cardiac arrest
        a. 1.0 mg (10 mL of 1:10,000 solution) IV every 3-5 minutes
    2. Moderate or severe allergic reactions
        a. 0.3 (0.3 mL of 1:1000 solution) SQ/IM
    3. Anaphylaxis
        a. Consider administration of Epinephrine 0.1 mL of 1:1,000 solution or 1 mL of 1:10,000 solution IV for refractory anaphylactic shock. Dilute with 9-10 mL NS or administer with IV running wide open
    4. Shock
        i. See Medication Drip Charts on page 311 for correct dosage and mixing for infusions or push dose pressor
    5. Asthma
        a. 0.3 (0.3 mL of 1:1000 solution) SQ/IM

B. Pediatric
    1. Cardiac arrest
        a. IV/IO dose: 0.01 mg/kg (0.1 mg/kg of 1:10,000 concentration). Administer every 3 to 5 minutes during arrest.
        b. All tracheal doses: 0.1 mg/kg (0.1mL/kg of 1:1000 concentration). Note: Administer every 3-5 minutes of arrest until IV/IO access achieved; then begin with first IV dose.
    2. Symptomatic Bradycardia
        a. All IV/IO doses: 0.01 mg/kg (0.1 mL/kg of 1:10,000 concentration).
        b. All tracheal doses: 0.1 mg/kg (0.1 mL/kg of 1:1000 concentration).
    3. Mild or Moderte allergic reactions
        a. 0.01 mg/kg (0.01 mL/kg of 1:1000 solution) SQ/IM
    4. Anaphylaxis (**Contact medical control**)
        a. 0.01 mg/kg (0.1 mL/kg of 1:10,000 solution) IV.
    5. Asthma
        a. 0.01 mg/kg (0.1 mL/kg of 1:1000 solution) SQ/IM

C. IV doses may be given through ET at 10 times the IV dose.

Side Effects and Special Notes

A. Anxieity, tremor, palpitations, vomiting, and headache are common.

ETOMIDATE

Class

A. Hypnotic with no analgesic activity
B. General anesthetic

Pharmacology and Actions

Nonbarbiturate Hypnotic
Minimal Cardiovascular effects

Indications

Used as an induction agent for RSI

Contraindications

A. Allergy to the drug

B. Not for use in children under the age of 10

Precautions

Monitor Respiratory rate and effort

Dosage

Adult: 0.2-0.5mg/kg (normal adult dose 20mg IVP)
Pediatric (over 10): 0.3mg/kg IVP

ROUTE: IVP, IO

DURATION: 3-5 MINUTES. Will need additional sedation and analgesic after successful intubation.

Side Effects and Notes

A. Myoclonic twitches / hiccups
B. Apnea
C. Hypo or hypertension
D. Tachy or Bradycardia
E. Nausea and vomiting

FENTANYL (SUBLIMAZE)

Class

Narcotic analgesic

Pharmacology and Actions

A. Potent synthetic narcotic analgesic with actions similar to those of morphine, but action is more prompt and less prolonged
B. The emetic effect is less than morphine.

Indications

A. Adult and pediatric pain management
B. Chest pain
C. STEMI
D. RSI (Rapid Sequence Intubation) Post placement pain management

Precautions

A. Contraindicated in patients taking MOA inhibitors
B. Myasthenia gravis
C. Use with caution with head injuries, ICP, elderly, COPD, liver and kidney dysfunction, and bradydysrhythmias.

Administration

A. Adult Pain Management
    1. 100 mcg slow IV/IO/IN over 2 – 3 minutes; additional dose of 50 mcg may be administered IV provided systolic BP remains above 100 mm Hg for a total max dose of 150 mcg
B. Pediatric Pain Management
    1. 1 mcg/kg mixed in 5 mL normal saline and given IV push over 2-4 minutes to a maximum single dose of 100 mcg IV. Reassess patient vital signs and pain scale after 5 minutes.
C. Chest Pain/STEMI
    1. 50 mcg slow IV/IO over 2 – 3 minutes; may be repeated to a total dose of 150 mcg.
D. RSI/ Post placement pain management
    1. 50 mcg IV/IO up to 150 mcg total and SBP>100 mmHg

Side Effects and Special Notes

A. Sedation, euphoria, dizziness, and diaphoresis.
B. Seizures with high doses.
C. Nausea and vomiting.
D. Bronchoconstriction, respiratory depression or arrest if given as a rapid IV infusion.
E. Can be reversed with Narcan.

GLUCAGON TRFD will not carry

If the Patient has an unexpired glucagon kit the paramedic teams may contemplate using the patients kit.

Class

Hormone (antihypoglycemic agent)

Pharmacology and Actions

A. Increases blood sugar concentration by converting liver glycogen to glucose.
B. Relaxes smooth muscle of the GI tract.
C. Increases heart rate and cardiac contractility.

Indications

A. Symptomatic hypoglycemia when IV access is unsuccessful.
B. Hypotensiion from beta-blocker or calcium channel blocker overdose unresponsive to normal saline bolus.
C. Suspected symptomatic esophageal foreign body.

Contraindications

A. Hypersensitivity to the drug

Precautions

A. Use with caution in patients with a history of cardiovascular disease, renal disease, pheochromocytoma or insulinoma.

Administration

A. Hypoglycemia: Adult dose; 1 mg IM/IN
B. Beta blocker / Ca ++ Channel Blocker OD - Contact medical control
    1. Adult Dose: 2mg IV
    2. Pediatric Dose: 0.1 mg/kg IV/ IN (max dose is 1 mg).

Side Effects and Special Notes

A. Nausea, vomiting, and headache.
B. When glucagon is given for hypoglycemia the patient should receive glucose as soon as possible after the administration of glucagon.

KETAMINE (KETALAR)

Class

Dissociative Anesthetic, NMDA receptor antagonist
Schedule III controlled substance

Pharmacology and Actions

A. Dissociates
B. Analgesia with minimal respiratory depression
C. Sedation
D. Adrenergic support, including bronchodilation
E. Patient appears awake, but amnestic and unresponsive
F. Excellent Safety Profile

Indications

A. Analgesia, sedation, and dissociation for management of pain or behavior
B. Precursor to painful procedure or airway support in bronchospasm
C. Sedative and analgesic for Rapid Sequence Intubation (RSI)

Contraindications

A. Pregnancy (relative)
B. Known hypersensitivity to drug
C. Age < 3 months

Precautions

A. Coronary Artery Disease
B. Uncontrolled Hypertension or Stroke
C. Glaucoma or acute globe injury (conditions of IOP)

Administration

A. Adult/Peds: 1 mg/kg IV/ IO or 4 mg/kg IM

Side Effects and Notes

A. Hypertension
B. Tachycardia
C. Laryngospasm
D. Vomiting
E. Excessive salivation
F. Tremors
G. Diplopia

H. Emergence delirium in 12% (consider treatment with benzodiazepine)

Labetalol

Class
Beta blocker
Alpha activity

Pharmacology and Actions
Nonselective betta blocker with intrinsic sympathomimetic activity; also is an alpha blocker

Indications

Hypertensive emergency

Contraindications

Use in cation when bronchospasms are present.
Bradycardia
Hypotension
Cardiomegaly, Heart Failure
Thyrotoxicosis

Precautions

Use with cation if Patient is taking calcium channel blockers.

Dosage

Adult dose 20 mg IV slowly over 2 minutes. Repeat every 10 minutes at a dose of 40-80 mg IV every 10 minutes not to exceed 300 mg. Titrate to physician order.

Medication will peak around 15 minutes

Side Effects and Notes

Hypotension
Bronchospasm
Bradycardia
Dizziness, lightheadedness
Nausea
Tingling sensation to scalp
Fatigue

LIDOCAINE (XYLOCAINE)

Class
Antiarrhythmic

Pharmacology and Actions
A. Cardiovascular
   1. Increased ventricular fibrillation threshold
   2. Decreased conduction rate and myocontractility (at toxic levels)
B. CNS
   1. Stimulation
   2. Decreased cough reflex

Indications
A. Pediatric cardiac arrest from VT/VF
B. Sustained VT with a pulse
C. Prior to intubation in head trauma (suspected increased intracranial pressure)

Contraindications
A. Known hypersensitivity to lidocaine

Precautions
A. High grade AV block is a relative contraindication. Do not treat ventricular escape beats or accelerated idioventricular rhythm with lidocaine.
B. Lidocaine is metabolized in the liver, elderly patients and those with liver disease or poor liver perfusion secondary to shock or CHF are more likely to experience side effects.
C. Side effects include drowsiness, confusion, convulsion, hypotension, bradycardia, and tachycardia.
D. Head trauma requires careful airway management. If endotracheal intubation is appropriate, pretreatment with lidocane may help avoid further ICP.

Administration
A. Pediatric cardiac Arrest from VF/VT
   1. Initial dose of 1.0 mg/kg IV/IO
B. Adults: Sustained ventricular tachycardia with a pulse
   1. 0.5 mg/kg IV/IO over 2 minutes and may be repeated in 5 – 10 minutes
C. Pediatrics: Sustained ventricular tachycardia with a pulse
   1. 1 mg/kg IV/IO over 2 minutes
D. Head Trauma
   1. 1.0 mg/kg IV/IO bolus: no additional bolus is required

Side Effects and Special Notes
A. PVCs **should not** be treated with lidocaine. Hypoxia can generate PVCs and lidocaine will not help; treat the cause. Patients with PVCs and active chest pain should have their pain treated aggressively with oxygen, aspirin, and pain medications.
B. Best available evidence currently indicates that prophylactic lidocaine (in the setting of MI without PVCs) may actually increase mortality.

LORAZEPAM (Ativan)

Class
Benzodiazepine
Antianxiety
Anxiolytics
Anticonvulsant
Central nervous system depressant
Muscle relaxant

Pharmacology and Actions
Short onset hypnotic with a relatively long half-life

Indications
Seizures
Alcoholic withdrawal symptoms
anxiety

Contraindications
Allergic to medication
Hypotension
Altered LOC
Intoxication
Narrow angle Glaucoma

Precautions
Must be refrigerated. May be unrefrigerated for 60 days

Dosage

Adult dose- 1-2 mg IV diluted (May be given undiluted rectally or IM) IM dose 2-4mg

Peds dose- 0.05mg – 0.1mg/kg not to exceed 2mg

Routes IV, IM, Rectally

Side Effects and Notes
Hypotension
Rash
Respiratory depression
Bradycardia

MAGNESIUM SULFATE

Class

Anticonvulsant / Antiarrhythmic

Pharmacology and Actions

A. Cardiac: stabilizes potassium pump, correcting repolarization. Shortens the QT interval in the presence of ventricular arrhythmias due to drug toxicity or electrolyte imbalance.
B. Obstetrics: controls seizures by blocking neuromuscular transmission. Also lowers blood pressure and decreases cerebral vasospasm.

Indications

A. Cardiac:
    1. Recommended for use in cardiac arrest only if torsades de pointes or suspected hypomagnesemia is present.
    2. Refractory VF (after lidocaine).
    3. Torsades de pointes with a pulse
B. Obstetrics: Pregnancy >20 weeks with signs and symptoms of pre-eclampsia, defined as:
    1. Blood pressure > 180 mm systolic or > 120 mm diastolic with altered mental status, or,
    2. Seizures

Precautions

A. AV block
B. Decrease in respiratory or cardiac function
C. Use with caution in patients taking digitalis

Administration

A. Torsades de pointes (not in cardiac arrest): Loading dose of 1 gram infused slowly over 60 minutes.
B. In pre-eclampsia/eclampsia patients, 2 grams diluted in 100 mL of normal saline over 5-20 minutes. May repeat to a total dose of 6 grams.

Side Effects and Special Notes

A. Principle side effect is respiratory depression. Ventilatory assistance may be needed.
B. Not for pediatric use.
C. Magnesium sulfate is very irritating when administered IV, thus dilution is always recommended.

VERSED (MIDAZOLAM)

Class

Benzodiazepine, Sedative and Hypnotic

Pharmacology and Actions

A. CNS depressant leading to sedation and amnesia
B. Versed is 3 to 4 times more potent than Diazepam
C. Like other benzodiazepines, it has no effect on pain

Indications

A. Sedation for cardioversion or transcutaneous pacing (TCP)
B. Used with succinylcholine for rapid sequence intubation (RSI)
C. Continued sedation of the intubated patient

Contraindications

A. Patients with a history of hypersensitivity to benzodiazepines
B. Narrow angle glaucoma

Precautions

A. Can cause significant respiratory depression, apnea, and hypotension. Especially when used in combination with other sedatives such as alcohol or narcotics. Continuous pulse oximetry and cardiac monitoring are mandatory. Resuscitative equipment must be immediately available.
B. Consider lower doses for elderly patients; significant respiratory depression, apnea, and hypotension are more frequently encountered.

Administration

A. RSI: 2 mg IV/IO, may repeat one time if inadequate sedation obtained.
B. Cardioversion: 2 mg slowly IV/IO if indicated; May repeat to max dose of 4 mg
C. Pediatric maximum dosage is 10 mg.
D. Behavioral Emergencies: 2 mg slowly IV/IO/IN if indicated; May repeat to max dose of 4 mg

Side Effects and Special Notes

A. Hypotension
B. Respiratory depression
C. Amnesia

NARCAN (NALOXONE)

Class

Narcotic antagonist

Pharmacology and Actions

A. Narcan is a narcotic antagonist which completely binds to narcotic receptor sites, but which exhibits almost no pharmacological activity of its own. Duration of action: 1-4 hours.

Indications

A. Reversal of narcotic effects, particularly respiratory depression, due to narcotic drugs ingested, injected, or administered in the course of treatment. Narcotic drugs include morphine, fentanyl, meperidine (Demerol), heroin, hydromorphone (Dilaudid), oxycodone (Percodan, Percocet), codeine, propoxyphene (Darvon), pentazocine (Talwin).
B. Diagnostically in coma or altered mental status of unknown etiology, to rule out (or reverse) narcotic respiratory depression.
C. Seizures of unknown etiology, to rule out narcotic overdose (particularly propoxyphene).

Precautions

A. In patients physically dependant on narcotics, frank and occasionally violent withdrawl symptoms may be precipitated. Be prepared to restrain the patient. Titrate the dose slowly to reverse cardiac and respiratory depression, but to keep the patient groggy.
B. May need large doses to reverse propoxyphene (darvon) overdose.

Administration

A. Adult: 0.4mg IV/IO/IN for narcotic overdose case; May repeat up to max dose of 8 mg
B. If no response is observed, this dose may be repeated after 5 minutes, if narcotic overdose is strongly suspected.
C. May be given through ET tube at 2 times the IV dose.

Side Effects and Special Notes

A. This drug is remarkably safe and free from side effects. Do not hesitate to use if indicated.
B. The duration of some narcotics is longer than narcan and the patient must be monitored closely. Repeated doses of narcan may be required. Patients who have received this drug mast be transported to the hospital because coma may reoccur when the narcan wears off.
C. With an endotracheal tube in place and assisted ventilation, narcotic overdose patients may be safely managed without narcan. Think twice before totally reversing coma; airway may be lost, or (worse) the patient may become violent and may refuse transport.

NITROGLYCERIN

Class
Vasodilator

Pharmacology and Actions
A. Cardiovascular effects include:
   1. Reduced venous tone, causes blood pooling in peripheral veins, decreasing venous return to the heart.
   2. Decreased peripheral resistance
   3. Dilatation of coronary arteries (if not already at maximum) and relief of coronary artery spasm.
B. Generalized smooth muscle relaxation

Indications
A. Angina
B. Chest, arm, or neck pain caused by coronary ischemia
C. Patients with 12-lead evidence of acute MI, with / without chest pain
D. Cardiogenic pulmonary edema: to increase venous pooling, lowering cardiac preload and afterload.

Contraindications
A. Children younger than 12 years of age.
B. Patients currently using Viagra or similar drugs (male or female).

Precautions
A. Generalized vasodilitation may cause profound hypotension and reflex tachycardia.
B. Use with extreme caution in hypotensive patients.
C. Use with caution in patients with EKG evidence of a right ventricular infarct.

Administration
A. Oral: 0.4 mg tablet / spray sublingually, may repeat every 3-5 minutes as needed for effect.

Side Effects and Special Notes

A. Common side effects include throbbing headache, flushing, dizziness, and burning under the tongue (if given orally), these side effects may be used to check potency.
B. Less common: orthostatic hypotension, sometimes marked.
C. NOTE: Therapeutic effect is enhanced, but adverse effects are increased when patient is upright.
D. Because nitroglycerin causes generalized smooth muscle relaxation, it may be effective in relieving chest pain caused by esophageal spasm.
E. May be effective even in patients using paste, discs, or oral long-acting nitrate preparation.
F. Patients taking Viagra or similar drugs should not be given nitroglycerin.

NITRO PASTE

Class

Vasodilator

Pharmacology and Actions

A. Cardiovascular effects include:
   1. Reduced venous tone, causes blood pooling in peripheral veins, decreasing venous return to the heart.
   2. Decreased peripheral resistance
   3. Dilatation of coronary arteries (if not already at maximum) and relief of coronary artery spasm.
B. Generalized smooth muscle relaxation

Indications

A. Angina
B. Chest, arm, or neck pain caused by coronary ischemia
C. Patients with 12-lead evidence of acute MI, with / without chest pain
D. Cardiogenic pulmonary edema: to increase venous pooling, lowering cardiac preload and afterload.
E. Hypertension

Contraindications

A. Children younger than 12 years of age.
B. Patients currently using Viagra or similar drugs (male or female).

Precautions

A. Generalized vasodilitation may cause profound hypotension and reflex tachycardia.
B. Use with extreme caution in hypotensive patients.
C. Use with caution in patients with EKG evidence of a right ventricular infarct.

Administration

A. Topical – 1 inch of paste applied to patch. Place date, time and initials on patch. Tape patch on bare chest

Side Effects and Special Notes

A. Common side effects include throbbing headache, flushing, dizziness, and burning under the tongue (if given orally), these side effects may be used to check potency.
B. Less common: orthostatic hypotension, sometimes marked.
C. NOTE: Therapeutic effect is enhanced, but adverse effects are increased when patient is upright.
D. Because nitroglycerin causes generalized smooth muscle relaxation, it may be effective in relieving chest pain caused by esophageal spasm.
E. May be effective even in patients using paste, discs, or oral long-acting nitrate preparation.

F. Patients taking Viagra or similar drugs should not be given nitroglycerin.

ONDANSETRON (ZOFRAN)

Class

Antiemetic

Selective antagonist of the serotonin receptor subtype

Pharmacology and Actions

A. Very effective antiemetic
B. Action is not known, probably due to the selective antagonist receptors on neurons located in either the peripheral or central nervous systems or both

Indications

A. Nausea and vomiting

Contraindications

A. Known sensitivity to the drug.

Precautions

A. Not effective in preventing motion-induced nausea and vomiting

Administration

A. 4 mg IV

Side Effects and Special Notes

A. Headache
B. Constipation
C. Dizziness
D. Musculoskeletal pain
E. Drowsiness
F. Fatigue
G. Urinary retention
H. Chest pain (rarely)

Racemic Epinephrine (Vaponephrine)

Class

Alpha and Beta agonists

Pharmacology and Actions

Alpha effects-vasoconstriction may reduce swelling in upper airway.
Beta effects may relieve bronchial spasms.
Has same or similar effects of epinephrine

Indications

Stridor
Smoke inhalation with stridor
Croup

Contraindications

Allergy to Medication

Precautions

Monitor for respiratory failure / arrest.

Dosage

0.5ml of racemic Epi diluted in 3ml of saline given via neb at 6-8lpm

Side Effects and Notes

Tachycardia
Anxiety
Palpitations

ROCURONIUM (ZEMURON)

Class

Skeletal muscle relaxant, neuromuscular blocking agent

Pharmacology and Actions

A. Non-depolarizing neuromuscular blocking agent with intermediate to rapid onset
B. Acts by competitive inhibition of cholinergic receptors at the motor endplate
C. Higher doses produce a longer duration of action

Indications for Use:

A. Facilitate endotracheal intubation. Should be the second-choice paralytic in RSI (Rapid Sequence Intubation)
B. Provide skeletal muscle relaxation for mechanical ventilation

Contraindications

A. Known hypersensitivity to Rocuronium
B. Myasthenia gravis

Precautions

A. Severe liver disease.
B. Vancomycin and tetracycline antibiotics prolong the effects.
C. Tegretol and Dilantin decrease the effects and duration.

Side Effects:

A. Cardiovascular: arrhythmias, tachycardia
B. Respiratory: bronchospasm, hiccups
C. Dermatologic: rash, itching, injection site edema
D. Gastrointestinal: nausea, vomiting

Administration:

A. Rapid Sequence Intubation Dose: 1 mg/kg IVP, may repeat one time after 2 minutes if inadequate response is obtained.

Side Effects and Special Notes:

A. Duration of effect is slightly increased in patients > 65 year
B. Compatible with all IV solutions

SODIUM BICARBONATE

Class
Alkalinizing agent

Pharmacology and Actions
Sodium bicarbonate is an alkalotic solution, which neutralizes acids found in the body. Acids are increased when body tissues become hypoxic due to cardiac or respiratory arrest.

Indications
A. Tricyclic overdose with arrhythmias, widened QRS complex, hypotension, and seizures.
B. Consider in patients with prolonged cardiac arrest.
C. Consider in dialysis patients with cardiac arrest (presumed secondary to hyperkalemia).

Contraindications
A. Alkalotic states

Precautions
A. Addition of too much sodium bicarbonate may result in alkalosis. Alkalosis is very difficult to reverse and can cause as many problems in resuscitation as acidosis.
B. Not to be given with catecholamines or calcium
C. May increase cerebral acidosis

Administration
A. Contact medical control with any questions or concerns.
B. For cardiac arrest / tricyclic overdose:
    1. Adult: 1 mEq/kg IV.
    2. Pediatric: 1 mEq/kg
    3. Neonatal: 1 mEq/kg

Side Effects and Special Notes
A. Sodium bicarbonate administration increases $C0_2$ which rapidly enters cells, causing a paradoxical intracellular acidosis.
B. Hyperosmolality of the blood can occur, resulting in cerebral impairment.
C. Sodium bicarbonate's lack of proven efficacy and its numerous adverse effects have lead to the reconsideration of its role in cardiac resuscitation. Effective ventilation and circulation of blood during CPR are the most effective treatments for academia associated with cardiac arrest.
D. Administration of sodium bicarbonate has not been proven to facilitate ventricular defibrillation or to increase survival in cardiac arrest. Metabolic acidosis lowers the threshold for the induction of ventricular fibrillation, but has no effect on defibrillation threshold.
E. The inhibition effect of metabolic acidosis on the actions of catecholamines has not been demonstrated at the pH levels encountered during cardiac arrest.
F. Metabolic acidosis from medical causes (e.g. diabetes) develops slowly, and field treatment is rarely indicated.
G. Sodium bicarbonate may be considered for the dialysis patient in cardiac arrest due to suspected hyperkalemia.

Tranexamic Acid -TXA (Cyklokapron)

Class
Antifibrinolytic Agent

Pharmacology and Actions
A. Inhibits fibrinolysis by dispoacing plasminogen from fibrin.

Indications
A. Uncontrollable bleeding
B. Nose bleeds that do not stop after 30 minutes. 1ml may be administered IN.
C. External bleeding- May be given IV or topical on a dressing
D. Internal bleeding-May be given IV/IO

Contraindications
A. Known hypersensitivity to the drug.
B. Sub arachnoid Hemmorhage.

Precautions
A. May cause visual abnormalities
B. May cause Hypotension with rapid injection

Administration
A. Adult: 10mg/kg IV slowly over 5-10 minutes.
B. Epistaxis: If bleeding longer than 30 minutes 1ml given IN

Side Effects and Special Notes
A. Can cause visual impairment, seizures, headaches, backache, abdomoninal pain, nausea and or vomiting.
B. Can also cause DVT and PE

Vecuronium (Norcuron)

Class

Long duration, non-depolarizing neuromuscular blocker

Pharmacology and Actions

B. Vecuronium is a long-acting, non-depolarizing skeletal muscle relaxant.
C. Following IV injection, complete paralysis is obtained within 1-3 minutes and persists for approximately 20 to 40 minutes.
D. It has no effect on consciousness.

Indications

E. Vecuronium is indicated in RSI (Rapid Sequence Intubation) to achieve temporary paralysis when endotracheal intubation is indicated and muscle tone or seizure activity prevents it.

Contraindications

C. Known hypersensitivity to the drug.

Precautions

A. Vecuronium should not be administered unless personnel skilled in endotracheal intubation are present and ready to perform the procedure.
B. A team time out should be discussed prior to RSI

Administration

C. Adult: 0.1mg/kg IVP

Side Effects and Special Notes

A. Oxygen therapies and suction should be readily available, as should all emergency resuscitative drugs and equipment.
B. This agent has no effect on consciousness, cerebration or pain threshold. Thus, it is crucial that an analgesic or sedative is administered prior to Vecuronium.
C. Lidocaine administration, prior to paralytic administration, reduces the rise in ICP associated with paralytic endotracheal intubation. This is especially important if there is already the possibility of ICP secondary to a head injury.

Methylprednisolone (SoluMedrol)

Class

Corticosteriod, anti-inflammatory agent

Pharmacology and Actions

A.Potent glucocorticoid with minimal to no mineralocorticoid activity.
B.Abosorption rate less than one hour via IV

Indications

A.Allergic Reactions
B. Status Asthmaticus

Precautions

Untreated serious infections
Pregnancy is a class C

Administration

Reconstitute medication. Normal adult dose is 125 mg IV/IO
Peds dose 1-2 mg/kg IV

Side Effects and Special Notes

GI Upset
Restlessness

Medication Charts (Epinephrine)

Epi Infusion:

Mix 1mg of Epi 1:1,000 **OR** 1 mg of Epi 1:10,000 in 1000 mL of NS. Using 10 drop macro set.

Dosage is 2-20 mcg/min per guideline

Doses in mcg/min

Micrograms per minute	2	4	6	8	10	12	14	16	18	20
Drops of 10 gtt tubing per minute	20	40	60	80	100	120	140	160	180	200

Push Dose Epi:

Items needed:

- – Epi 1:10,000 prefilled syringe (cardiac dose)
- 1 – Normal Saline Flush
- 1 – Needle to draw medication

Mixing Instructions:

1. Take a 10 mL NS flush and waste 1 mL of saline so you are left with 9 mL
2. With this syringe of 9 mL of NS, draw up 1 mL of Epi 1:10,000 from the prefilled syringe

Now you will have 10 mL of Epi with a concentration of 10 mcg/mL

Onset: 1 minute

Duration: 5-10 minutes

Dosing/ administration:

0.5 to 2 mL every 2-5 minutes (2-10 mcg)

Medication Charts (Pain Medication Conversion)

Morphine Oral Daily	Recommended starting Fentanyl IV/IN (mcg) dosing
10 mg	33 mcg
20 mg	67 mcg
30 mg	100 mcg
40 mg	133 mcg
50 mg	167 mcg
Hydrocodone Oral Daily	
10 mg	33 mcg
20 mg	67 mcg
30 mg	100 mcg
40 mg	133 mcg
50 mg	167 mcg
Hydromorphone (Dilaudid) Daily	
10 mg	33 mcg
20 mg	67 mcg
30 mg	100 mcg
40 mg	133 mcg
50 mg	167 mcg
Oxycodone Daily	
10 mg	50 mcg
20 mg	75 mcg
30 mg	100 mcg
40 mg	150 mcg
50 mg	200 mcg

Approved Medical Abbreviations

The following is a list of approved medical abbreviations. In general, the use of abbreviations should be limited to this list.

A&O x 3	- alert and oriented to person, place and time
A&O x 4	- alert and oriented to person, place, time and event
A-FIB	- atrial fibrillation
AAA	- abdominal aortic aneurysm
ABC	- airway, breathing, circulation
ABD	- abdomen (abdominal)
ACLS	- advanced cardiac life support
AKA	- above the knee amputation
ALS	- advanced life support
AMA	- against medical advice
AMS	- altered mental status
AMT	- amount
APPROX	- approximately
ASA	- aspirin
ASSOC	- associated
BG	- blood glucose
BILAT	- bilateral
BKA	- below the knee amputation
BLS	- basic life support
BM	- bowel movement
BP	- blood pressure
BS	- breath sounds
BVM	- bag-valve-mask
C-SECTION	- caesarean section
C-SPINE	- cervical spine
C/O	- complaint of (complains of)
CA	- cancer
CABG	- coronary artery bypass graft
CAD	- coronary artery disease
CATH	- catheter
CC	- chief complaint
CEPH	- cephalic
CHF	- congestive heart failure
CNS	- central nervous system
COPD	- chronic obstructive pulmonary disease
CP	- chest pain
CPR	- cardiopulmonary resuscitation
CSF	- cerebrospinal fluid

CT	- cat scan
CVA	- cerebrovascular accident (stroke)

Appendix A

Approved Medical Abbreviations

D5W	- 5% dextrose in water
DBP	- diastolic blood pressure
DKA	- diabetic ketoacidosis
DNR	- do not resuscitate
DOA	- dead on arrival
DT	- delirium tremens
Dx	- diagnosis
ECG	- electrocardiogram
EEG	- electroencephalogram
ET	- endotracheal
ETOH	- ethanol (alcohol)
ETT	- endotracheal tube
EXT	- external (extension)
FB	- foreign body
FLEX	- flexion
Fx	- fracture
g	- gram(s)
GI	- gastrointestinal
GSW	- gunshot wound
gtts	- drops
GU	- gastrourinary
GYN	- gynecology (gynecological)
H/A	- headache
HEENT	- head, eyes, ears, nose, throat
HR	- heart rate (hour)
HTN	- hypertension
Hx	- history
ICP	- intracranial pressure
ICU	- intensive care unit
IM	- intramuscular
IV	- intravenous
JVD	- jugular vein distension
kg	- kilogram
KVO	- keep vein open
L-SPINE	- lumbar spine
L/S-SPINE	- lumbar sacral spine
L&D	- labor and delivery
LAT	- lateral
lb.	- pound
LLQ	- left lower quadrant
LMP	- last menstrual period

LOC	- level of consciousness (loss of consciousness)
LR	- lactated ringers

Appendix A

Approved Medical Abbreviations

LUQ	- left upper quadrant
MAST	- military anti-shock trousers
mcg	- microgram(s)
MED	- medicine
mg	- milligram(s)
MI	- myocardial infarction (heart attack)
min	- minimum / minute
MS	- mental status
MS	- mental status change
MSO4	- morphine
MVC	- motor vehicle crash
N/V	- nausea/vomiting
N/V/D	- nausea/vomiting/diarrhea
NAD	- no apparent distress
NC	- nasal cannula
NEB	- nebulizer
NKDA	- no known drug allergies
NRB	- non-rebreather
NS	- normal saline
NSR	- normal sinus rhythm
NTG	- nitroglycerine
OB/GYN	- obstetrics/gynecology
PALP	- palpation
PAC	- premature atrial contraction
PE	- pulmonary embolus
PEARL	- pupils equal and reactive to light
PMHx	- past medical history
PO	- orally
PRB	- partial rebreather
PRN	- as needed
PT	- patient
PVC	- premature ventricular contraction
RLQ	- right lower quadrant
RUQ	- right upper quadrant
Rx	- medicine
RXN	- reaction
SBP	- systolic blood pressure
S/P	- status post
SOB	- shortness of breath
SQ	- subcutaneous
ST	- sinus tachycardia

SVT	- supraventricular tachycardia
Sx	- symptom
SZ	- seizure

Appendix A

Approved Medical Abbreviations

T-SPINE	- thoracic spine
T	- temperature
TIA	- transient ischemic attack
TKO	- to keep open (□□□□□□□□□□□□□□□□- same as KVO)
Tx	- treatment
UOA	- upon our arrival
URI	- upper respiratory infection
UTI	- urinary tract infection
VF	- ventricular fibrillation
VS	- vital signs
VT	- ventricular tachycardia
WAP	- wandering atrial pacemaker
WNL	- within normal limits
YO (YOA)	- years old (years of age)
+	- positive
-	- negative
?	- questionable
~	- approximately
>	- greater than
<	- less than
=	- equal
A	- before
p	- after
c	- with
s	- without
L	- left
R	- right
1°	- primary
2°	- secondary

Nasopharyngeal Specimen Collection

E	EMR	E
B	EMT	B
P	PARAMEDIC	P

Clinical Indications:

Collecting a sample for testing of possible infectious disease where test sample is obtained nasopharyngeally

*****This is an uncomfortable procedure, be gentle with patient *****

Procedure for collecting:

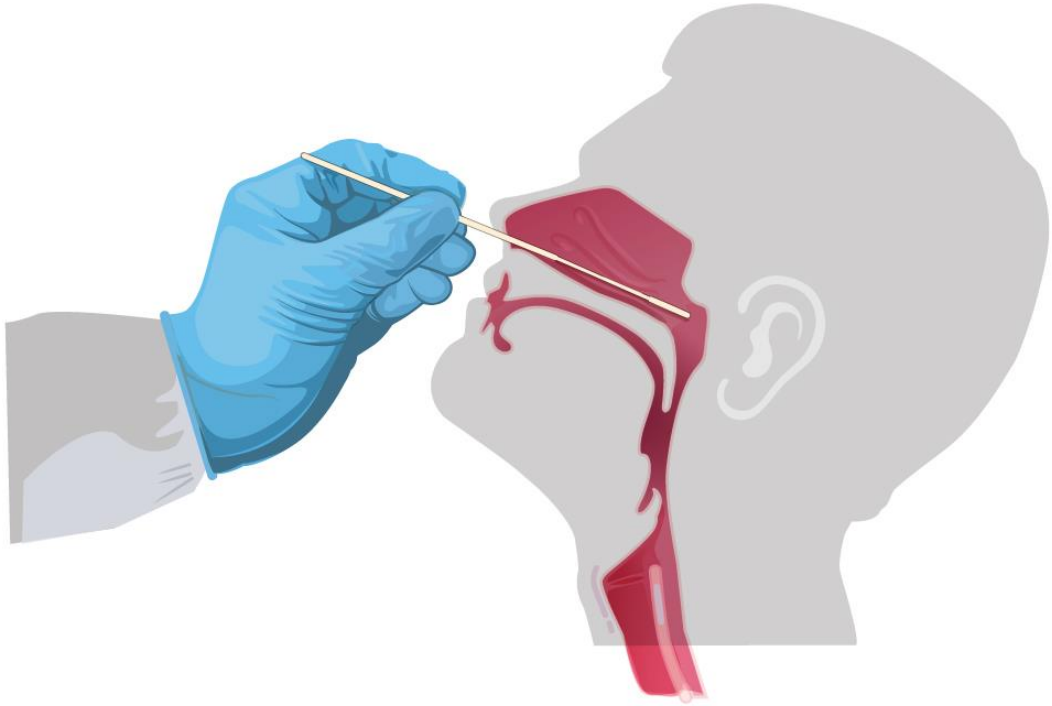
1) Don appropriate PPE
   - N95 Mask
   - Gown
   - Gloves
   - Eye protection
2) Place patient in seated position
3) Tilt patient's head back slightly to visualize nasal passages
4) Ask patient to remove face mask and close eyes
5) **Gently insert swab along nasal septum, just above the floor of the nasal passage, to the nasopharynx**
   a. Stop when resistance is met
   b. Do not force swab further
   c. If you detect resistance to the passage of the swab, back off and try reinserting it at a different angle, closer to the floor of the nasal canal.
   d. The swab should reach a depth equal to the distance from the nostrils to the outer opening of the ear.
6) Rotate swab several times (keep in passage 10 seconds)
7) Gently remove swab while rotating
8) Place swab into collection tube according to directions
   a. Place swab into tube before breaking stick
   b. Tighten cap securely
9) Have patient reapply face mask

Procedure for packing sample collected:

10) Label tube
    a. Patient name
    b. Patient DOB
    c. Date of collection
    d. Time of collection
    e. Source (eg. NP)
11) Place tube in plastic bag
12) Place bagged sample on ice pack
13) Follow instructions according to referral source or ordering physician for shipping or delivery.

Addendum 1

Nasopharyngeal Specimen Collection Cont.



- Questions or issues with packaging should be handled by referral source, according to directions on collection materials provided
- Get in person training and/or see training video https://www.nejm.org/doi/full/10.1056/NEJMvcm2010260