

Activated Charcoal

Indications

Poisonings or overdoses by mouth

Contraindications

Altered mental status, ingestions of acids, alkalis, petroleum products, cyanide, and organophosphates, inability to swallow.

Precautions

Use with extreme caution in patients who may become unconscious.

Side Effects

Black stools, constipation. Some patients, particularly those who have ingested poisons that cause nausea, may vomit.

Supplied

25 grams in 120 ml suspension

Dosage

Adult = 1 gram / kg PO not to exceed 50 gm/dose after OLMC or Poison Control contact

Pediatric = 1 gram / kg PO not to exceed 30 gm/dose after OLMC or Poison Control contact

Notes

If patient vomits, dose may be repeated once after OLMC or Poison Control contact

Pharmacological and Actions

Absorbs toxic substances ingested and inhibits gastrointestinal absorption by forming an effective barrier between remaining particulate material and the gastrointestinal mucosa.

Adenosine (Adenocard)

Indications

To convert PSVT with heart rate of 150 bpm or greater to NSR

Contraindications

2nd and 3rd degree heart block
Sick Sinus Syndrome
Ventricular tachycardia
Atrial Fib/Flutter
Patients taking Tegretol (carbamazepine)
Known hypersensitivity, pregnancy (relative)

Precautions

May cause bronchoconstriction in patients with asthma
Not effective in converting atrial fibrillation, atrial flutter, or v-tach
The effects may be antagonized by caffeine and theophylline

Side Effects

Facial flushing, dyspnea, chest pressure, nausea, hypotension
Headache and lightheadedness usually last only 5-10 seconds

Supplied

6mg/2ml and 12mg/4ml prefilled syringes

Dosage

Adult = First dose 6 mg rapid IV bolus and flush. Elevate extremity with IV site
Second dose 12 mg rapid IV bolus and flush in 1-2 minutes if first dose fails

Pediatric = 0.2 mg/kg (not to exceed 6 mg) rapid IV bolus
0.4 mg/kg (not to exceed 12 mg) rapid IV bolus in 1-2 minutes if first dose fails

Pharmacology and Actions

Adenosine is a naturally occurring nucleoside.
Acts on AV node to slow conduction and inhibit reentry pathways.
Half-life of 10 seconds.
Onset immediate.

Albuterol (Ventolin®) (Provental)

Indications

Bronchial asthma
COPD
Bronchospasm and wheezing
Anaphylaxis
Bronchospasm secondary to toxic inhalation
Hyperkalemia

Contraindications

Caution in pregnancy, coronary vessel disease, hyperthyroidism, diabetes, seizure disorders, and hypokalemia

Precautions

The EKG should be monitored for arrhythmias.
Stop treatment if:
 Frequent PVC's develop
 Any tachyarrhythmia other than sinus occur
Use with caution in CHF and hypertension

Side Effects

Skeletal muscle tremors
May cause tachycardia

Supplied

2.5mg/3ml bullets

Dosage

Adult and Pediatric = 2.5 mg in 3 ml of saline per nebulizer

Pharmacology and Actions

Aqueous solution administered by oral inhalation with the aid of hand-held nebulizer system. It is a very selective Beta-2 agonist with very little Beta-1 stimulation.
Onset of action 5-15 minutes.
Duration of action 4-6 hrs.
Primary effect is to relax bronchial smooth muscles and relieve bronchospasm.

Aspirin

Indications

Unstable angina and AMI
Ischemic chest pain

Contraindications

Allergy or aspirin-induced asthma
Bleeding disorder
Current ulcer or GI bleeding
Current anticoagulation

Precautions

None

Side Effects

High doses may cause ringing in the ears

Supplied

81mg children's chewable tablets

Dosage

Adult = 324 mg PO (four chewable baby aspirin)

Pharmacology and Actions

Aspirin is an analgesic, anti-inflammatory, and fever reducer that increases bleeding time by inhibiting platelet function.

Atropine

Indications

Increase the heart rate in bradycardias and slow-rate PEA, to counteract excessive vagal influences responsible for some bradysystolic and asystolic arrests
As an antidote for some insecticide exposures (organophosphates) and nerve gas
Use for pediatric intubations to prevent excessive secretions and vital sign instability in RSI setting.

Contraindications

Atrial fibrillation and flutter, glaucoma
Has little effect in 2nd degree type II and 3rd degree heart block

Precautions

Do not treat bradycardias unless there are signs of poor perfusion or chest pain.
Use with caution in atrial fibrillation and atrial flutter because increased conduction will speed ventricular rate excessively.
Use with caution in the myocardial infarcted patient.

Side Effects

Blurred vision, headache, pupillary dilation, dry mouth, thirst
Paradoxical effect if given slowly or in too small a dose

Supplied

1mg/10ml prefilled syringe

Dosage

Asystole and slow PEA

Adult = 1.0 mg rapid IV every 5 minutes up to 0.04mg/kg or 2 mg ET

Pediatric >1 = 0.02 mg / kg IV or ET

Bradycardia

Adult = 0.5 mg rapid IV repeated every 3-5 minutes up to 3 mg

Pediatric >1 = 0.02 mg / kg IV

Organophosphate Poisoning

Adult = 1-2 mg IV repeated every 5 minutes to dry secretions

Pediatric < 8 = 0.02 mg / kg IV (minimum dose 0.1 mg)

Rapid Sequence Intubation

Pediatric = 0.02 mg/ kg IV if pre-existing bradycardia or < 6 years old (0.1 mg minimum dose)

Notes

In cardiac arrest, atropine will dilate the pupils.
ET dose should be double the IV dose.

Atropine

Pharmacology and Actions

Atropine Sulfate is a muscarinic-cholinergic blocking agent. As such, it has the following effects:

Increases the heart rate by blocking vagal influences.

Increases conduction through AV node.

Reduces motility and tone of gastrointestinal tract.

Reduces action and tone of urinary bladder.

Dilate pupils.

50% Dextrose (D50)

Indications

Hypoglycemic states
Unconscious, unknown etiology
Focal or partial neurological deficit or altered state of consciousness
Generalized hypothermia

Contraindications

Intracranial hemorrhage, acute CVA

Precautions

Infiltrations will cause tissue necrosis
The IV should be secure with free return of blood into syringe or tubing
The IV should be checked 2-3 times during administration
If infiltration should occur, immediately stop administration
Report infiltrations of the drug to the receiving hospital personnel and document

Side Effects

Hyperglycemia may worsen some medical conditions

Supplied

25grams/50ml pre-filled syringe

Dosage

Adult =12.5 grams (25 ml) IV first dose, recheck glucose level and give second dose of 12.5 grams (25 ml) if glucose level < 60

Child <8 = 1-2 grams (2-4 ml)/ kg IV of dextrose 25%, waste 25 ml of dextrose 50% then draw up 25 ml of normal saline

Pharmacology and Actions

Glucose is the body's basic fuel. It produces most of the body's quick energy.

Diphenhydramine (Benadryl)

Indications

Anaphylactic shock
Severe allergic reaction
Dystonic reactions

Contraindications

Acute glaucoma, pregnancy or lactating females, prostate enlargement

Side Effects

Drowsiness, confusion, blurred vision, dry mouth, thickening of bronchial secretions

Supplied

50mg/1ml prefilled syringe

Dosage

Adult: 25-50 mg slow IV or IM

Pediatrics: 1-2 mg/kg slow IV or IM

Pharmacology and Action

May be useful for long transports. It may also be useful for acute dystonic reactions.

Dopamine (Intropin)

Indications

Primary indication: cardiogenic shock
May be useful for other forms of shock, except hypovolemia
Useful in the treatment of hypotension associated with bradycardia and heart failure
Improved perfusion to vital organs as in acute renal failure

Contraindications

Hypovolemic shock

Precautions

May induce tachyarrhythmia; decrease or stop infusion
High doses may cause extreme peripheral vasoconstriction.
Low doses may cause a decreased blood pressure due to peripheral dilation.
Certain antidepressants potentiate the effects of this drug. Check for medications.

Side Effects

Most common include headache, ectopic beats, nausea and vomiting. Angina and non-specific chest pain and Dyspnea

Notes

Tachycardia and other dysrhythmias less likely than with other catecholamines
Can precipitate hypertensive crisis in susceptible individuals (i.e. patients on MAO inhibitors: Parnate, Nardil, Marplan).
Consider hypovolemia and treat this with appropriate fluids before any administration of dopamine.
Best administered by infusion pump to accurately regulate rate. For this reason it is hazardous when used in the field. Monitor closely

Supplied

400mg/250 ml of D5W (1600 mcg/ml)

Dosage

Adult: (OLMC)

IV infusion only

Use premix or mix 400 mg in 250 ml D5W (1600 mcg/ml)

Use large-bore catheter

Start infusion between 5-10 mcg/kg/min

Consider gradual increase 10-20 mcg/kg/min. titrated to hemodynamic effect

Pediatric: (OLMC)

IV infusion only

Mix 100 mg in 250 ml D5W to produce a solution of 400 mcg/ml

Rate starts at 5 mcg/kg/min

Titrate to effect

Note 2AM rule patient weight in pounds, drop last number and run at that rate; example 180lbs = 18 drops per minutes = 5mcg/kg/mins

Dopamine (Intropin)

Pharmacology and Actions

Adrenergic chemical precursor of norepinephrine

Has dopaminergic and both alpha and beta adrenergic receptor stimulating actions

Adrenergic actions differ with dosage given:

- a. 5-10 mcg/kg/min: beta effects on heart which usually increase cardiac output without increasing heart rate or blood pressure
- b. 10-20 mcg/kg/min: alpha peripheral effects cause peripheral vasoconstriction and increased blood pressure
- c. 20-40 mcg/kg/min: alpha effects reverse dilation of renal and mesenteric vessels with resultant decreased flow

DuoNeb (Salbutamol)

Indications

Reversible bronchospasm associated with obstructive airway disease, bronchitis, or anaphylaxis

Contraindications

Allergy to Duoneb or Atrovent
Allergy to belladonna-type drugs
Sensitivity to atropine

Precautions

Use cautiously in patients with angle-closure glaucoma, poststatic hyperplasia, and bladder-neck obstruction
Use with caution for patients being treated with monoamine oxidase inhibitors (e.g. Nardil, Parnate) or tricyclic antidepressants (e.g. Elevel, Sinequan)
Use with caution in patients with a history of hypertension or coronary artery disease, CHF, hyperthyroidism or MI
Use with caution in Pregnancy

Side Effects

Tremor is most common. Also palpitations, tachycardia, nervousness, dizziness, hypertension, nausea, vomiting, angina, headache, diarrhea, constipation and drying of the oropharynx

Drug Interactions

Anticholinergics

Supplied

500 mcg Atrovent and 2.5mg Abuterol in 3ml normal saline in a bullet

Dosage

Adult = 500 mcg Atrovent and 2.5mg Albuterol in 3ml normal saline and administered by nebulizer once

Pediatric = 250 mcg Atrovent and 1.25mg Albuterol in 1.25ml and administered by nebulizer once

Pharmacology and Actions

Aqueous solution administered by oral inhalation with the aid of hand-held nebulizer system.

Epinephrine

Indications

Anaphylactic shock
Asthma
Cardiac Arrest

Contraindications

No contraindications when used in anaphylactic shock
Should not be added directly to bicarbonate infusion

Precautions

Use with caution in patients with tachydysrhythmias and coronary artery disease
When used for allergic reactions, increased cardiac work can precipitate angina and/or MI in susceptible individual
Epinephrine may also induce major arrhythmias
Due to peripheral vasoconstriction, epinephrine should be used with caution in patients with peripheral vascular insufficiency
In elderly patients, wheezing should be considered pulmonary edema or pulmonary embolus until proven otherwise
Do not give epinephrine in digits

Side Effects

Increased heart rate, pallor, dizziness, chest pain, headache, nausea and/or vomiting, excitability, anxiety

Supplied

Epinephrine 1:1,000 = 1mg/1ml amp or 30mg/30ml multi doses vial
Epinephrine 1:10,000 = 1mg/10ml prefilled syringe

Dosage

Anaphylactic shock or Asthma

Adult = 0.3mg - 0.5mg SQ/IM of epinephrine 1:1000 or epinephrine 1:10,000 IV

Pediatric = 0.01 mg/kg SQ/IM – Max 0.5 mg of epinephrine 1:1,000 or epinephrine 1:10,000 IV

Cardiac Arrest

Adult = 1 mg of epinephrine 1:10,000 IV every 3-5 min or 2 mg ET with a maximum of 40 cc.

Pediatric = 0.01mg/kg each 3-5 min. Consider 0.1mg/kg after initial dose of epinephrine 1:10,000 IV or 0.02mg/kg ET and 0.2mg/kg after initial dose ET of epinephrine 1:1,000

Notes

When in doubt, consult with physician

Pharmacology and Actions

Catecholamine with alpha and beta effects, following cardiovascular responses can be expected: increased heart rate, increased myocardial contractile force, increased systemic vascular resistance, increased arterial blood pressure, increased myocardial O₂ consumption, increased automaticity, potent bronchodilator

Fentanyl (Sublimaze)

Indications

For analgesic action of short duration in isolated extremity injuries

Contraindications

Known intolerance to fentanyl or other opioid agonists

Precautions

Use with caution in patients with COPD

Side Effects

Respiratory depression

Supplied

100mcg/2ml prefilled syringe

Dosage

Adult = 50 to 100 mcg IV (IM if needed) titrated to effect, max of 300 mcg, OLMC required to continue

Pediatric = 1 mcg/kg IV (IM if needed) up to a maximum 50 micrograms, dose may be repeated every 10-15 minutes to a max of 150 mcg

Notes

Over dosage is reversed with Narcan

Pharmacology and Actions

Binds to various opiate receptors producing analgesia and sedation

Glucagon

Indications

Known insulin shock when patient is stuporous or comatose, and D50 is not available and/or an IV cannot be started.

Treating life-threatening beta-blocker overdoses

Contraindications

None

Precautions

D50 is the treatment of choice for insulin shock. Use of Glucagon is restricted to patients who are seizing, combative, or with collapsed veins and when an IV cannot be started. In these rare situations, it may be invaluable

Side Effects

Nausea and vomiting

Persons with no liver glycogen stores (malnutrition, alcoholism) may not be able to mobilize glucose in response to glucagon

May be useful in treating life threatening beta-blocker overdoses.

Supplied

1mg power vial in kit with 1ml of saline vial for mixing

Dosage

Adult = 1 mg IM/SQ.

Pediatric = 0.1 mg/kg up to 1 mg IM/SQ

Pharmacology and Actions

Glucagon is a hormone that causes glucose mobilization in the body.

Works opposite of insulin, causing glucose storage. It is normally present in the body. It is released at times of injury when glucose is needed, and mobilizes glucose from body glycogen stores.

Return to consciousness should be within 20 min of IM dose if patient is hypoglycemic

Glucose

Indications

Hypoglycemia in a conscious patient

Contraindications

Unresponsive patients should not be given oral medication.

Precautions

Aspiration

Side Effects

None

Supplied

15 grams in a tube

Dosage

Adult = 15 grams by mouth, titrate to mental status and glucose levels

Pediatric = up to 15 grams by mouth, titrate to mental status and glucose levels

Pharmacology and Actions

Raises blood glucose levels

IV Solutions

Balanced salt solution (BSS):

Indications

For replacement of fluid volume losses such as in trauma, burns, dehydration or shock.
To provide a route for administering medications

Contraindications

None

Precautions

Patients with renal impairment (hyperkalemia), Cardiac and respiratory disorders (fluid overload) and extremes of age

Side effects

None

Notes:

Where IVs are used to maintain venous access, an IV saline lock may be substituted. After placement, these lines should be flushed with normal saline. The line should also be flushed after each administration of medication. Since BSS are compatible with all prehospital medications, including blood products, they offer more than LR as a trauma resuscitation fluid.

Supplied

10 ml prefilled syringe
20 ml vial
250 ml bag
1000 ml bag

Dosage

Adult = To keep open (TKO) unless in shock then 500 ml fluid challenge

Pediatrics = To keep open (TKO) or 20 ml / kg (maximum of 500 ml) fluid challenge

Pharmacology and Actions

These are solutions, which consist of balanced electrolytes in water and contain sodium chloride, sodium acetate, sodium gluconate, potassium chloride and magnesium chloride hexahydrate. They provide water and electrolytes for replacement of acute extracellular fluid losses. They do not disturb the normal electrolyte balance since the electrolyte composition and toxicity approach that of normal plasma. They do not contain calcium and will not lead to precipitation when mixed with blood or prehospital medications.

Lidocaine

Indications

Significant PVCs in suspected myocardial infarction, PVCs more than 6/min, Close coupled PVCs (R on T), Multifocal PVCs, Runs of 2 or more PVCs in a row, Ventricular tachycardia or suspected ventricular tachycardia if clinical condition is not rapidly deteriorating, Recurrent ventricular fibrillation, Following successful defibrillation or to decrease intracranial pressure prior to RSI

Contraindications

Allergy to Lidocaine or local anesthetic
Treatment of supra-ventricular arrhythmias
Do not administer with heart rate less than 50; you may suppress the heart completely
Second or third degree heart block bradycardia

Precautions

Reduce dose by 50 % in patients over 70, CHF, and shock, toxicity is more likely in elderly patients

Side Effects

Decreased cardiac output, CNS disturbances, hypotension, decreased myocardial contractility, increased AV block at toxic levels only, rare instance of sudden cardiovascular collapse and death, numbness, drowsiness, seizures in elderly

Supplied

100mg/5ml prefilled syringe
1gr/250ml of D5W bag

Dosage

Cardiac Arrest:

Adult = 1.5 mg/kg, then 0.75 mg/kg every 5 min IV or 3 mg/kg ET then 1.5 mg/kg, should be given until patient's pulse returns or until maximum dose of 3 mg/kg IV or 6 mg/kg ET is reached. After patient's pulse returns, a drip should be started at 2-4 mg/min IV

Pediatric = 1.5 mg/kg IV or IO

Ectopy or V-Tach with pulse:

Adult = 1.5 mg/kg, then 0.75 mg/kg every 5 min. Should be given until PVCs are resolved or until maximum dose of 3 mg/kg is reached. After ectopy resolves, or patient converts, a drip should be started at 2-4 mg/min

RSI Dose:

Adult = 1.5 mg/kg

Pediatric = 1.5mg/kg

Lidocaine

Pharmacology and Actions

Depresses automaticity of Purkinje fibers; therefore, raising the stimulation threshold in the ventricular muscle fibers (making ventricles less likely to fibrillate).

Little antiarrhythmic effect at subtoxic levels on atrial muscle.

CNS stimulation: Tremor, restlessness and clonic convulsions followed by depression and respiratory failure at higher doses.

Cardiovascular effect: Decreased conduction rate and force of contraction, mainly at toxic levels.

The effect of a single bolus on the heart disappears in 10-20 minutes due to redistribution in the body. Metabolic half-life is about 2 hours. Therefore, toxicity develops with repeated doses.

Magnesium Sulfate (MgSO₄)

Indications

Recurrent VF/VT refractory to amiodarone or lidocaine
Torsades de pointes
Seizures caused by toxemia
Given prophylactically for preeclampsia, patients who have pregnancy-induced hypertension with diastolic pressures <110 mm Hg, altered mental status, headaches, or vision disturbances

Contraindications

3rd degree AV block

Precautions

Concurrent use with CNS depressants
Use with caution in patients on digitalis

Side Effects

Flushing, swelling, hypotension, loss of reflexes

Supplied

1gr/2ml vial

Dosage

Cardiac arrest

Adult = 1-2grams in 10 cc saline IVP over 1-2 minutes, follow up infusion of 0.5 - 1.0 grams/hr for 24 hrs

Torsade

Adult = For conscious patient IV loading dose of 1-2grams in 250 ml saline bag, administered over 5-60 minutes

Seizures of toxemia

Adult: = 1 gram slow IV push repeated every 5 minutes to total of 4 grams

Pharmacology and Actions

Anticonvulsant which reduces incidence of post infarction ventricular arrhythmias. Treatment of seizures due to toxemia of pregnancy. Recurrent VF/VT refractory to lidocaine or amiodarone

Midazolam (Versed®)

Indications

Status seizures (a continuous seizure with loss of consciousness lasting over 2 minutes; or repetitive seizures without regaining consciousness)
To relieve anxiety and produce amnesia during cardioversion, paralytic intubations, or pacing
To sedate a combative patient

Contraindications

Hypersensitivity
Narrow angle glaucoma

Precautions

Watch patient closely for signs of respiratory depression and hypotension

Side Effects

Drowsiness, dizziness, respiratory depression in presence of other depressants, hypotension, fatigue, ataxia, nausea, vomiting, coughing, headache

Notes

For conscious sedation prior to cardioversion
Decrease dose 25% if patient has a history of renal failure, COPD, CHF

Supplied

5mg/2ml vial

Dosage

Seizure Dosage:

Adult = 2.5 mg IV may repeat once to a maximum of 5 mg, or 5 mg IM may repeat once to a maximum of 10 mg (if no IV access)

Pediatric = 0.1 mg/kg IV may repeat once to a maximum of 5 mg, or 0.2 mg/kg IM may repeat once to a maximum of 10mg (if no IV access)

Sedation Dosage:

Adult = 2.5 – 5 mg IV/ IM. Repeat as needed to a maximum of 10 mg

Pediatric = 0.1 mg/kg IV, repeat as needed to a maximum of 5 mg, 0.2 mg/kg IM, repeat as needed to a maximum of 10 mg

Chemical Restraint

Adult = 2.5 – 5 mg IV/IM. May be repeated once to max 10 mg (if no IV access)

Pediatric = 0.1 mg/kg IV, repeat as needed to a maximum of 5 mg, 0.2 mg/kg IM, repeat as needed to a maximum of 10 mg

Pharmacology and Actions

Class Benzodiazepine. It is thought to depress the CNS at the limbic and subcortical levels of the brain by potentiating the effects of gamma-aminobutyric acid (GABA). Onset occurs 1 ½ to 5 minutes after IV injection, and within 15 minutes of IM injection. Peak effects occur rapidly after IV administration and within 15 to 60 minutes of IM injection. Effects typically last 2 hours, but may last up to 6 hours.

Morphine

Indications

Chest Pain due to angina
AMI
Pain control not affecting respiratory or hemodynamic status

Contraindications

Hypotension
Respiratory depression, asthma and COPD
Known allergy to morphine or sulfates

Precautions

Morphine sulfate causes predictable respiratory depression. Respiratory depression is much more likely to occur in patients with pre-existing respiratory insufficiency (COPD).

Side Effects

Respiratory depression, hypotension, nausea and vomiting

Notes

Reduces the perception of pain. Therefore analgesic effect should not be gauged solely by total elimination of pain. Morphine is quickly reversible with naloxone (Narcan)

Supplied

10mg/1ml prefilled syringe

Dosage

Adult = 2-5 mg IV every 5 min up to 20 mg

Pediatric = Child < 30 kg; 0.1 mg/kg IV

Pharmacology and Actions:

Morphine sulfate is a narcotic with potent analgesic and hemodynamic properties. It exerts its analgesic effects on the central nervous system, simultaneously inducing drowsiness, mental clouding and mood changes. It has several hemodynamic actions of considerable importance. It increases venous capacity and thereby pools blood peripherally and decreases its return (reduced preload). This assists in relieving pulmonary congestion, reduces left ventricular and diastolic dimensions, and myocardial wall stress. These all result in decreased myocardial oxygen requirement. Reduces systemic vascular resistance at the artery cellular level (reduced after load). This reduction in after-load also tends to decrease myocardial oxygen requirement. Central sedative effects of morphine also will reduce myocardial oxygen requirements and the chance of arrhythmias due to reduction of apprehension and fear in patients. Given intravenously, the onset of action is prompt (2-3 minutes). Peaks at 7 - 10 minutes and last up to 3 - 5 hours.

Naloxone (Narcan)

Indications

Narcotic drugs overdose; Morphine, Demerol, Heroin, Dilaudid, Percodan, Codeine, Lomotil, propoxphene (Darvon®), pentazocine (Talwin®)
Altered mental status or coma of unknown etiology

Contraindications

None

Precautions

Give slowly using improvement in respirations as a gauge. Sudden and occasionally violent withdrawal symptoms may be precipitated.

Side Effects

None

Notes

The duration of some narcotics is longer than Narcan and the patient must be monitored closely. Repeated doses of Narcan may be required. Patients receiving this drug should be transported to the hospital because coma may reoccur when Narcan wears off.

Supplied

2mg/2ml prefilled syringe

Dosage

Adult = 2 mg IV, IM, SQ, ET every 5 min. Titrate for effect.

Pediatric = 0.1 mg/kg up to 2 mg IV, IM, SQ, ET every 5 min. Titrate for effect.

Pharmacology and Actions

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

Nitroglycerin

Indications

Angina
Chest, arm or neck pain (of suspected cardiac origin)
Hypertension
CHF/Pulmonary edema

Contraindications

Hypotension
Glaucoma

Precautions

May cause hypotension and reflex tachycardia
Hypotension and bradycardia following nitroglycerin usually are responsive to atropine

Side Effects

Headache, Hypotension

Notes

Therapeutic effect is enhanced but adverse effects are increased when patient is upright. Because nitroglycerin causes generalized smooth muscle relaxation, it may be effective in relieving chest pain caused by esophageal spasm

Supplied

0.4mg metered dose in multi dose spray

Dosage

Adult: 0.4 mg SL with spray or tablet every 5 minutes

Pharmacology and Actions

Cardiovascular effects include: Reduced venous tone causes pooling of blood in peripheral veins and decreased return of blood to the heart, decreased peripheral resistance, dilation of coronary arteries (if not already at maximum), general smooth muscle relaxation.

Oxygen

Indications

Carbon monoxide poisoning
Hypoxemia
Ischemic chest pain
Major trauma
Respiratory distress
Shock

Contraindications

None

Precautions

If the patient is not breathing adequately on his/her own, the treatment of choice is ventilation, not just O₂. A nasal cannula without a breath is a waste of O₂ (and patients)!!!
A small percentage of patients with chronic lung disease breathe because they are hypoxic. Administration of O₂ will shut off their respiratory drive. **DO NOT WITHHOLD OXYGEN BECAUSE OF THIS POSSIBILITY. BE PREPARED TO ASSIST VENTILATION IF NEEDED.**

Side Effects

High concentrations may decrease respiratory drive in COPD patients

Notes

Non-humidified O₂ is drying and irritating to mucous membranes. Restlessness may be an important sign of hypoxia. Oxygen supports combustion. Oxygen toxicity (overdose) is not a hazard from acute administration. Nasal prongs work equally well on nose and mouth breathers. Most hypoxic patients will feel quite comfortable with an increase of inspired O₂ from 21% to 24%.

Supplied

O₂ tanks of various sizes, 500 to 2300 psi

Dosage

Adult = 2- 15 LPM via bag valve mask, mask or nasal cannula

Pediatric = 2- 15 LPM via bag valve mask, mask, nasal cannula or blow by

Pharmacology and Actions

Increased oxygen pressure and oxygen content in the blood.

Rocuronium (Zemuron)

Indications:

For sustained neuromuscular blockade in the intubated patient

As the first line agent for Rapid Sequence Induction in the patient where Succinylcholine is contraindicated

Contraindication

Known sensitivity to Rocuronium

Precautions

Rocuronium has no effect on consciousness and must be used with a sedative or induction agent.

Patients with renal or hepatic failure may experience prolonged paralysis.

Due to the prolonged duration of action, the endotracheal tube or pharyngeal tube must be continually monitored to ensure correct placement with ETCO₂ and pulse oximetry.

Side Effects

None noted

Notes

Rocuronium can be used to maintain paralysis even if intubation was performed without Succinylcholine

Supplied

10 mg/ml in 10ml or 5 ml vials

Dosage

RSI = Adult and Pediatric 1mg/kg IV/IO

Post intubation = 0.2mg/kg IV/IO

Pharmacology and Actions

Rocuronium is a non-depolarizing neuromuscular blocking agent causing muscle relaxation. Neuromuscular blockade occurs within 1-2 minutes. Time to recovery is 30-60 minutes.

Sodium Bicarbonate

Indications

Cardiac arrest acidosis
Tricyclic antidepressants overdoses
Hyperkalemia

Contraindications

None

Precautions

Do not give in the same syringe as epinephrine

Side Effects

See note

Notes

Bicarbonate should not be considered for use before other therapies have been tried. There is little evidence to support the use of bicarbonate in the cardiac arrest setting to improve outcome.

Supplied

50mEq/50ml prefilled syringe

Dosage

Cardiac arrest

Adult = 1 mEq/ kg IV

Pediatric = 1 mEq/ kg IV

Tricyclic antidepressants overdoses (OLMC)

Adult = 1 mEq/ kg IV. Repeat up to 3 times.

Pediatric = 1 mEq/ kg IV

Pharmacology and Actions:

Acids are increased when body tissues become hypoxic due to cardiac or respiratory arrest. Sodium bicarbonate is an alkalotic solution, which neutralizes acids found in the blood. Each amp. of bicarbonate contains 50 mEq of sodium bicarb. In persons with cardiac disease, this will increase intravascular volume and further stress the heart. Hyperosmolarity of the blood can occur because the NaHCO_3 is concentrated. This results in cerebral impairment. These dosages are a very rough guide. Blood gases should be obtained as soon as possible to direct further therapy. In the presence of a respiratory arrest without cardiac arrest, the treatment of choice is ventilation to correct the respiratory acidosis. No NaHCO_3 should be given unless cardiac arrest has also occurred.

Succinylcholine (Anectine®)

Indications

Paralyzation prior to emergent intubation

Contraindications

None in prehospital emergency setting

Precautions

Burns over 7 days old, organophosphate poisoning. Succinylcholine should not be used during pregnancy unless clearly needed for airway management

Side Effects

Airway compromise, respiratory arrest, cardiac arrest, arrhythmias, bradycardia, tachycardia, hypertension or hypotension, increased intraocular pressure, fasciculations

Notes

Alert patients should be sedated

Supplied

200mg/10ml vial

Dosage

Adult = 1.5 mg/kg IV with the onset of action taking approximately 30 seconds to 1 minute

Pediatric = for children <6 years old, 2mg/kg IV

Pharmacology and Actions

Succinylcholine is used to produce skeletal muscle relaxation during procedures of short duration such as endotracheal intubation. Because of its short duration of action, succinylcholine is generally considered the neuromuscular blocking agent of choice for procedures lasting less than 3 minutes. Repeated administration may lead to tachyphylaxis and therefore, multiple fractional doses of succinylcholine should generally not be used. Succinylcholine causes a slight, transient increase in intraocular pressure immediately after injection and during the fasciculation phase.

Zofran (Ondansetron)

Indications

Prevention and control of nausea and vomiting in adults

Contraindications

None

Precautions

Hypersensitivity reactions have been reported on patients who have exhibited hypersensitivity to other 5-HT₃ receptor antagonists (i.e., dolasetron [Anzemet] and granisetron [Kytril]).

Use of ondansetron (Zofran) in the presence of alkaline preparations may cause precipitate formation

Supplied

4mg/2ml vial

Dosage

Adult = 4 mg IV or IM slowly

Pediatric = 0.1 mg/kg IV or IM (max 4 mg), children <12 OLMC is required

Pharmacology and Actions

Ondansetron (Zofran) is a 5HT₃ type serotonin antagonist that has effects both centrally and peripherally.