



# Pharmacology



South Cook County EMS System

# Pharmacology

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- ▶ **Pregnancy category in the United States:**
    - ▶ **A** – Adequate and well-controlled studies have failed to demonstrate a risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters).
    - ▶ **B** – Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women.
    - ▶ **C** – Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.
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# Pharmacology

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- ▶ Pregnancy category in the United States:
  - ▶ **D** – There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.
  - ▶ **X** – Studies in animals or humans have demonstrated fetal abnormalities and/or there is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience, and the risks involved in use of the drug in pregnant women clearly outweigh potential benefits.



# Pharmacology

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- ▶ Adenosine (Adenocard)
  - ▶ Drug class – Antiarrhythmic
  - ▶ Pregnancy category C



# Pharmacology

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- ▶ Adenosine (Adenocard)
  - ▶ Indications:
    - ▶ Stable Reentry SVT
      - \*\*\*\*\* Will not convert Atrial Fibrillation, Atrial Flutter, or Ventricular Tachycardia \*\*\*\*\*
  - ▶ Contraindications:
    - ▶ Sick sinus syndrome
    - ▶ Second or third degree AVB
    - ▶ Poison or drug induced tachycardia



# Pharmacology

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- ▶ Albuterol (Proventil, Ventolin)
  - ▶ Drug Class – Bronchodilator, Beta agonist
  - ▶ Pregnancy category C



# Pharmacology

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- ▶ Albuterol (Proventil, Ventolin)
  - ▶ Indications:
    - ▶ Asthma
    - ▶ Bronchitis with bronchospasm
    - ▶ COPD
  - ▶ Contraindications:
    - ▶ Angioedema
    - ▶ Medication sensitivity
    - ▶ \*\*\*\*\* Use with caution in patients with cardiovascular disorders, cardiac arrhythmias, and in patients who are lactating \*\*\*\*\*



# Pharmacology

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- ▶ Amiodarone (Cordarone)
  - ▶ Drug class – antiarrhythmic, class III
  - ▶ Pregnancy class D





# Pharmacology

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- ▶ Amiodarone (Cordarone)
  - ▶ Indications
    - ▶ Ventricular arrhythmias; second line agent for atrial arrhythmias
  - ▶ Contraindications
    - ▶ Sick sinus syndrome, second and third degree heart block, cardiogenic shock, and bradycardia induced syncope.



# Pharmacology

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- ▶ Aspirin, ASA
  - ▶ Drug Class – Antiplatelet, nonnarcotic analgesic
  - ▶ Pregnancy category C, late pregnancy category D



# Pharmacology

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- ▶ Aspirin, ASA
  - ▶ Indications:
    - ▶ Fever
    - ▶ Inflammation
    - ▶ Angina
    - ▶ Acute MI
    - ▶ Patients complaining of chest pressure, squeezing, or crushing that may be cardiac in nature.



# Pharmacology

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- ▶ Aspirin, ASA
  - ▶ Contraindications:
    - ▶ GI bleeding
    - ▶ Active ulcer
    - ▶ Hemorrhagic stroke
    - ▶ Bleeding disorders
    - ▶ Children with chicken pox or flu like symptoms
    - ▶ Known sensitivity



# Pharmacology

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- ▶ Benzocaine (Hurricane) Spray
  - ▶ Drug Class – Local anesthetic
  - ▶ Indications:
    - ▶ Topical anesthetic used to lessen the gag reflex during conscious intubations.
  - ▶ Contraindications:
    - ▶ Do not use in children under 2 years
    - ▶ Pregnancy category C



# Pharmacology

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## ▶ Atropine Sulfate

- ▶ Drug Class – Anticholinergic
- ▶ Pregnancy category C, unsafe for lactating mothers



# Pharmacology

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- ▶ Atropine Sulfate
  - ▶ Indications:
    - ▶ Symptomatic bradycardia
    - ▶ Nerve agent exposure
    - ▶ Organophosphate poisoning



# Pharmacology

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## ▶ Atropine Sulfate

### ▶ Contraindications:

- ▶ Acute MI
- ▶ Myasthenia gravis
- ▶ GI obstruction
- ▶ Known sensitivity to atropine, belladonna alkaloids, or sulfites.
- ▶ \*\*\*\*\* Will not be effective for 2<sup>nd</sup> degree type II AVB and new 3<sup>rd</sup> degree AVB with wide QRS.





# Pharmacology

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- ▶ Calcium Gluconate
  - ▶ Drug class – Electrolyte
  - ▶ Pregnancy category C



# Pharmacology

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- ▶ Calcium Chloride, CaCl
  - ▶ Indications:
    - ▶ Acute hyperkalemia
    - ▶ Acute hypocalcemia
    - ▶ Calcium channel blocker overdose
    - ▶ Antidote for magnesium sulfate
  - ▶ Contraindications:
    - ▶ Patients receiving digitalis
    - ▶ VF
    - ▶ Hypercalcemia
    - ▶ \*\*\*\*\* Special precautions \*\*\*\*\* IV line should be flushed between calcium chloride and sodium bicarbonate



# Pharmacology

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- ▶ Dextrose
  - ▶ Drug class – Antihypoglycemic
  - ▶ Pregnancy category C



# Pharmacology

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## ▶ Dextrose

### ▶ Indications:

- ▶ Hypoglycemia

### ▶ Contraindications:

- ▶ Intra cranial and intra spinal hemorrhage
- ▶ Delirium tremens
- ▶ Solution is not clear
- ▶ Seals are not intact



# Pharmacology

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- ▶ Diphenhydramine HCL (Benadryl)
  - ▶ Drug Class – Antihistamine
  - ▶ Pregnancy category B



# Pharmacology

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- ▶ Diphenhydramine HCL (Benadryl)
  - ▶ Indications:
    - ▶ Anaphylactic reactions
  - ▶ Contraindications:
    - ▶ Hypersensitivity



# Pharmacology

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- ▶ Epinephrine 1:10,000 and 1:1,000
  - ▶ Adrenergic agent
  - ▶ Pregnancy category C



# Pharmacology

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- ▶ Epinephrine 1:10,000 and 1:1,000
  - ▶ Indications:
    - ▶ Cardiac arrest
    - ▶ Anaphylactic shock
    - ▶ Cardiogenic shock
  - ▶ Contraindications:
    - ▶ Pregnant woman in active labor
    - ▶ Known sensitivity





# Pharmacology

- ▶ Fentanyl Citrate (Sublimaze)
  - ▶ Drug Class – Narcotic analgesic
    - ▶ Pregnancy category B



# Pharmacology

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- ▶ Fentanyl Citrate (Sublimaze)
  - ▶ Indications
    - ▶ To relieve pain
  - ▶ Contraindications
    - ▶ Known sensitivity
    - ▶ Respiratory depression
    - ▶ Use with caution in patients with traumatic brain injury



# Pharmacology

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- ▶ Furosemide (Lasix)
  - ▶ Drug class – Loop diuretic
  - ▶ Pregnancy category C



# Pharmacology

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- ▶ Furosemide (Lasix)
  - ▶ Indications:
    - ▶ Pulmonary edema
    - ▶ Congestive heart failure
    - ▶ Hypertensive emergency
  - ▶ Contraindications:
    - ▶ Known sensitivity to sulfonamides or furosemide



# Pharmacology

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- ▶ Glucagon (GlucaGen)
  - ▶ Drug class – Hormone
  - ▶ Pregnancy category B



# Pharmacology

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- ▶ Glucagon (GlucaGen)
  - ▶ Indications:
    - ▶ Hypoglycemia
    - ▶ Beta blocker overdose
  - ▶ Contraindications:
    - ▶ Pheochromocytoma
    - ▶ Insulinoma
    - ▶ Known sensitivity



# Pharmacology

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- ▶ Ipratropium Bromide
  - ▶ Drug class – bronchodilator, anticholinergic
  - ▶ Pregnancy class B



# Pharmacology

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- ▶ Ipratropium Bromide

- ▶ Indications

- ▶ Asthma, bronchospasm associated with COPD

- ▶ Contraindications

- ▶ Glaucoma, known sensitivities to peanuts, soybeans, and atropine or atropine derivatives

- ▶ Special note:

- ▶ ***Not used as a stand alone medication, it is administered in conjunction with a beta agonist (Albuterol)***





# Pharmacology

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- ▶ Magnesium Sulfate
  - ▶ Drug class – Electrolyte, tocolytic, mineral
  - ▶ Pregnancy category A



# Pharmacology

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## ▶ Magnesium Sulfate

### ▶ Indications:

- ▶ Torsade's de pointes
- ▶ Cardiac arrhythmias associated with hypomagnesaemia
- ▶ Eclampsia
- ▶ Seizure prophylaxis in preeclampsia
- ▶ Status asthmaticus

### ▶ Contraindications:

- ▶ GI obstruction
- ▶ AV block



# Pharmacology

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- ▶ Methylprednisolone (Solu-Medrol)
  - ▶ Drug class – Corticosteroid
  - ▶ Pregnancy category C



# Pharmacology

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- ▶ Methylprednisolone (Solu-Medrol)
  - ▶ Indications:
    - ▶ Anaphylaxis
    - ▶ Asthma
    - ▶ COPD
  - ▶ Contraindications:
    - ▶ Cushing's syndrome
    - ▶ Fungal infection
    - ▶ Measles
    - ▶ Varicella
    - ▶ Known sensitivity



# Pharmacology

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- ▶ Midazolam (Versed)
  - ▶ Drug class – Benzodiazepine
  - ▶ Pregnancy category D



# Pharmacology

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- ▶ Midazolam (Versed)

- ▶ Indications:

- ▶ Sedation

- ▶ Anxiety

- ▶ Smooth muscle relaxation

- ▶ Contraindications:

- ▶ Pregnancy

- ▶ Known sensitivity



# Pharmacology

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- ▶ Naloxone (Narcan)
  - ▶ Drug class – Opiate antagonist
  - ▶ Pregnancy category C



# Pharmacology

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- ▶ Naloxone (Narcan)
  - ▶ Indications:
    - ▶ Narcotic overdose
  - ▶ Contraindications:
    - ▶ Known sensitivity





# Pharmacology

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- ▶ Nitroglycerin (Nitro Stat)
  - ▶ Drug class – Antianginal agent
  - ▶ Pregnancy category C



# Pharmacology

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- ▶ Nitroglycerin (Nitro Stat)
  - ▶ Indications:
    - ▶ Angina
    - ▶ Ischemic chest discomfort
    - ▶ Hypertension
    - ▶ Myocardial ischemia
  - ▶ Contraindications:
    - ▶ Hypotension
    - ▶ Severe bradycardia / tachycardia
    - ▶ ICP
    - ▶ Intracranial bleeding
    - ▶ Patients taking medications for erectile dysfunction



# Pharmacology

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- ▶ Sodium Bicarbonate
  - ▶ Drug class – Electrolyte
  - ▶ Pregnancy category C



# Pharmacology

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- ▶ Sodium Bicarbonate
  - ▶ Indications:
    - ▶ Acidosis
  - ▶ Drug intoxications
  - ▶ Contraindications:
    - ▶ Metabolic alkalosis



# Pharmacology

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- ▶ Tetracaine (Pontocaine)
  - ▶ Drug class – Local anesthetic
  - ▶ Pregnancy c



# Pharmacology

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- ▶ Tetracaine (Pontocaine)
  - ▶ Indications:
    - ▶ Topical anesthetic for eye
  - ▶ Contraindications:
    - ▶ Heart block
    - ▶ Liver disease
    - ▶ Hypersensitivity



# Pharmacology

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- ▶ Tranexemic Acid (TXA)
  - ▶ Drug class – antifibrinolytic
  - ▶ Pregnancy class B



# Pharmacology

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- ▶ Tranexemic Acid (TXA)
- ▶ Indications
  - ▶ Hemorrhagic shock
- ▶ Contraindications
  - ▶ Coronary or vascular stent placed within the past 6 months, DVT, PE, MI or ischemic stroke within the past 6 months, Subarachnoid hemorrhage, Retinal vein or artery occlusion, and hypersensitivity





# Pharmacology

- ▶ Zofran (Ondansetron) ODT
  - ▶ Drug class – Antiemetic
  - ▶ Pregnancy category B



# Pharmacology

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- ▶ Zofran (Ondansetron) ODT
  - ▶ Indications:
    - ▶ Prevention/treatment of nausea and vomiting
  - ▶ Contraindications:
    - ▶ Liver disease
    - ▶ Stomach/intestinal problems
    - ▶ Patients less than 1 year old

