Thanks for using this guide. Please note that this is not meant to represent every drug an EP should know. This is simply a quick guide to many of the common and life saving drugs that we use every day. It does not include antibiotics and it does not include many important pediatric drugs. Use this with care and remember that every patient does not weigh 70kg.

Enjoy

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**Acetylcysteine - Mucomyst**

**MOA:** replenishes glutathione stores, serves as glutathione substitute, and enhances sulfate conjugation of acetaminophen (Tylenol)

**PO Dose:** 140 mg/kg x 1, then 70 mg/kg q 4 hours x 17 doses (72 hours total)

**IV Dose:** 150 mg/kg in 200ml D5W over 1 hour, 50 mg/kg in 500ml D5W over 4 hours, 100 mg/kg in 1 liter D5W over 16 hours (21 total hours, may need to continue until LFTs and APAP level normalize)

**Emergent Indications:** acetaminophen (Tylenol) overdose

**Where you’ll get in Trouble:** hypersensitivity reaction (stop infusion, switch to PO or slow infusion rate), while rare, you can also see hypersensitivity with PO as well, Preg B
**Adenosine - Adenocard/Adenoscan**

**MOA:** acts on A1 receptors in AV node causing temporary heart block

**Dose:** 6mg IV RAPID push, may give 12mg IV q 2 minutes if no effect x2

**Emergent Indications:** stable SVT, stable narrow complex tachycardias

**Where you’ll get in Trouble:** prodysrhythmic, do not give in preexisting 2nd or 3rd degree block, Preg C
Albuterol - Proventil, ProAir, Ventolin  

**MOA:** selective beta2 agonist

**Dose:** 2.5 - 5 mg q 20 minutes for 1st hour, then 2.5-10 mg q 1-4 hours prn (alt, 10-15 mg over 1 hour)

**Emergent Indications:** acute bronchospasm, hyperkalemia

**Where you’ll get in Trouble:** tachycardia, hyperglycemia, hypokalemia, Preg C
Amiodarone - Pacerone

**MOA:** blocks K efflux (Class III antidysrhythmic); also has Na channel blocking (class I), beta blocking (class II), and Ca channel blocking (class IV) properties

**Dose:**
- Pulseless VF/VT: 300mg IV rapid push followed by 150mg IV rapid push if necessary at next pulse check
- Stable wide complex tachycardias: 150mg IV over 10 minutes, followed by infusion of 1mg/min x 6 hours, then 0.5 mg/min thereafter

**Emergent Indications:** pulseless VF/VT, Wide complex tachydysrhythmias

**Where you’ll get in Trouble:** Causes hypotension, prodysrhythmic, Preg D
Atropine - AtroPen

**MOA:** direct anticholinergic

**Dose:**
- Organophosphate/carbamate toxicity: 1-6 mg IV q 3-5 minutes PRN, until dry secretions (can double dose each time until adequate response achieved)
- Peds Bradycardia: 0.02 mg/kg IVx1; 0.5 mg maximum single dose; 1 mg max cumulative dose
- Adult bradycardia: 0.5 mg IV, 3 mg max cumulative dose

**Emergent Indications:** Organophosphate/carbamate toxicity, bradycardia

**Where you’ll get in Trouble:** hyperthermic patients, tachydysrhythmias, Preg C
Calcium Gluconate/Chloride

**MOA:** increases serum calcium, stabilizes cardiac myocytes

**Dose:** 10% IV solution (gluconate or chloride) contains 1 gram per 10 mL

**Emergent Indications:** hyperkalemia, hypocalcemia with dysrhythmia

**Where you’ll get in Trouble:** dysrhythmia, tetany, calcium chloride 3x more potent than calcium gluconate (severe phlebitis with peripheral administration of calcium chloride), Preg C
Diazepam - Valium

**MOA:** enhances inhibitory effects of GABA

**Dose:** 2-10 mg PO/IV/IM q 6 hours PRN

**Emergent Indications:** Seizure abortion, alcohol withdrawal, agitation, muscle spasm

**Where you’ll get in Trouble:** respiratory depression, hypotension, Preg D
MOA: inhibits calcium influx in myocardium > vascular smooth muscle; prolongs AV nodal conduction

Dose: 0.25 mg/kg IV x1; may give 0.35 mg/kg IV x1 after 15 minutes; continuous infusion 5-15 mg/hr

Emergent Indications: stable Afib with RVR, stable SVT

Where you’ll get in Trouble: iatrogenic hypotension, bradycardia, Preg C
**Dobutamine**

**MOA:** beta1 agonist > beta2 agonist

**Dose:** 2-20mcg/kg/min IV

**Emergent Indications:** decompensated heart failure, refractory hypotension

**Where you’ll get in Trouble:** tachycardia, hypotension if not euvoletic, PVCs, Preg B
**Dopamine**

**MOA:** alpha1, beta1, and dopaminergic agonist

**Dose:**
- < 5 mcg/kg/min IV dopaminergic effects (not recommended)
- 5-10 mcg/kg/min IV primarily beta effects
- 10-20 mcg/kg/min IV primarily alpha effects

**Emergent Indications:** decompensated heart failure, hypotension

**Where you’ll get in Trouble:** tachydysrhythmias, tissue necrosis if extravasation or arterial administration therefore needs to be given through central venous line, Preg C
Droperidol - Inapsine

**MOA:** antagonizes dopamine and alpha adrenergic receptors

**Dose:** 1.25 - 2.5mg IV q 4 hours PRN

**Emergent Indications:** vomiting prevention, migraine abortion

**Where you’ll get in Trouble:** QT prolongation (Torsades), NMS, extrapyramidal side effects, Preg C
MOA: alpha and beta receptor agonist

Dose: ACLS: 1 mg 1:10,000 IV  PALS: 0.01 mg/kg 1:10,000 IV
Anaphylaxis: 0.1-0.5 mg 1:1,000 IM/SQ (IM preferred)
Peds anaphylaxis/asthma: 0.01 mg/kg 1:1,000 IM/SQ (max single dose 0.3 mg)
Hypotension refractory to IVF: 1-10 mcg/min IV

Emergent Indications: anaphylaxis, ACLS arrest, PALS/NRP arrest, severe asthma

Where you’ll get in Trouble: dosing errors (10 fold errors), tissue necrosis (needs to administered via central venous line), dysrhythmias, Preg C
Enoxaparin - Lovenox

**MOA:** binds to antithrombin III and inactivates factor Xa > thrombin

**Dose:** 1 mg/kg SQ q 12hours OR 1.5 mg/kg SQ q 24hours

**Emergent Indications:** PE, NSTEMI, unstable angina

**Where you’ll get in Trouble:** monitor anti Xa levels in renal impairment or obesity (> 150 kg actual body weight), concomitant use with spinal anesthesia/analgesia or spinal puncture is an absolute contraindication (black box warning), Preg B
**Esmolol - Brevibloc**

**MOA:** selective beta1 antagonist

**Dose:** 500 mcg/kg loading dose, then continuous infusion of 50-300 mcg/kg/min

**Emergent Indications:** aortic dissection

**Where you’ll get in Trouble:** precipitated CHF, hypotension, bronchospasm, Preg C
Esomeprazole - Nexium

**MOA:** inhibits parietal cell hydrogen-potassium ATPase (PPI)

**Dose:** 80 mg IV bolus followed by 8 mg/hour

**Emergent Indications:** Upper GI bleed (non-variceal)

**Where you’ll get in Trouble:** fairly benign when used acutely, Preg B
Etomidate - Amidate

**MOA:** GABA-like effects on brain stem reticular formation causing hypnosis

**Dose:** 0.3 mg/kg IV

**Emergent Indications:** RSI induction

**Where you’ll get in Trouble:** cortisol depression (questionable clinical significance for single administration), lowers seizure threshold, Preg C
Fentanyl - Sublimaze

**MOA:** opioid agonist producing analgesia with adjunctive sedative effects

**Dose:** 25-100 mcg IV q 1-2 hours; recommended dose 1 mcg/kg

**Emergent Indications:** pain control, sedation adjunct

**Where you’ll get in Trouble:** respiratory depression, vasodilation (hypotension), laryngospasm, Preg C
Fomepizole - Antizol

**MOA:** inhibits alcohol dehydrogenase

**Dose:** 15 mg/kg IV loading dose, then 10 mg/kg q 12 hours x 4 doses, then 15 mg/kg q 12 hours until ethylene glycol levels < 20 mg/dL and patient asymptomatic with normal pH

**Emergent Indications:** methanol or ethylene glycol toxicity

**Where you’ll get in Trouble:** fairly safe, Preg C
Fosphenytoin - Cerebyx

**MOA:** stabilizes voltage dependent neuronal Na channels to stop seizure activity

**Dose:** 15-20 mg/kg IV loading dose administered at 150 mg/min

**Emergent Indications:** status epilepticus

**Where you’ll get in Trouble:** rapid administration can cause hypotension or dysrhythmias, give with patient on monitor, Preg D
Furosemide - Lasix

**MOA:** inhibits Na and Cl reabsorption in distal renal tubule and ascending loop of Henle

**Dose:** usual dose in ED 20-40 mg IV, reassess, increase to desired effect (maximum single dose 200mg)

**Emergent Indications:** pulmonary edema, CHF exacerbation, hyperkalemia (if making urine)

**Where you’ll get in Trouble:** volume depletion, hypokalemia, metabolic alkalosis, ototoxicity, Preg C
Glucagon - GlucaGen

**MOA:** stimulates cAMP production independent of beta receptor, increases gluconeogenesis and glycogenolysis

**Dose:** Beta-blocker/Ca channel blocker toxicity: 3-10 mg IV loading dose, then 1-10 mg/hour IV continuous infusion if responsive to loading dose

   Hypoglycemia: 1 mg IV/SQ/IM

**Emergent Indications:** beta-blocker toxicity, Ca channel blocker toxicity, hypoglycemia

**Where you’ll get in Trouble:** anaphylactoid reaction, can cause hypotension, emesis (aspiration risk in altered patient), Preg B
Haloperidol - Haldol

**MOA:** Antagonist at D1 and D2 receptors

**Dose:** 5-10 mg PO/IM/IV q 2 hours (max 100 mg/day)

**Emergent Indications:** agitation, psychosis

**Where you’ll get in Trouble:** do not give for dementia-related psychosis, NMS, EPS, QT prolongation, Preg C
Heparin

**MOA:** binds to antithrombin III thereby potentiating inactivation of thrombin and factors IX, Xa, XI, XII; prevents fibrinogen → fibrin; preferential inactivation of thrombin over other clotting factors

**Dose:** Venous thromboembolism: 80 units/kg IV x 1, then 18 units/kg/hour
ACS or Afib: 60 units/kg IV x 1, then 12 units/kg/hr

**Emergent Indications:** thromboembolism; ACS (enoxaparin preferred for NSTEMI)

**Where you’ll get in Trouble:** bleeding (protamine may be given for reversal), dosing errors, Preg C
Hydrocortisone - SoluCortef

**MOA:** produces multiple gluco and mineralocorticoid effects

**Dose:**
- Adrenal insufficiency: 100mg IV bolus, then 50 mg IV q 6 hours x24 hours followed by a taper
- Septic shock: 50 mg IV q 6 hours
- Status asthmaticus: 1-2 mg/kg IV q 6 hours x24 hours followed by a maintenance regimen

**Emergent Indications:** acute adrenal insufficiency, status asthmaticus, vasopressor refractory septic shock

**Where you’ll get in Trouble:** immunosuppression, hyperglycemia, Preg C
Hydromorphone - Dilaudid

**MOA:** opioid agonist producing analgesia with adjunctive sedative effects

**Dose:** 1-2 mg IV q 3-6 hours

**Emergent Indications:** Analgesia

**Where you’ll get in Trouble:** Respiratory depression, vasodilation (hypotension), 1 mg of IV Dilaudid is approximately equal to 7 mg of IV morphine, Preg C
Insulin Regular
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**MOA:** ↑ peripheral glucose uptake, increased inotropy, shifts potassium intracellularly

**Dose:** Hyperkalemia: 5-10 units IV x 1
CCB overdose: 1 unit/kg bolus given with 25 grams of dextrose if initial BG < 250 mg/dL; then initiate insulin drip at 0.1 – 1 unit/kg/hr titrated to SBP along with 0.5 g/kg/hr of dextrose titrated to maintain BG 100 – 200 mg/dL
DKA/HHS: 0.1 unit/kg bolus followed by continuous infusion 0.1 unit/kg/hour

**Emergent Indications:** hyperkalemia, DKA/HHS, CCB overdose

**Where you’ll get in Trouble:** hypokalemia, hypoglycemia, only regular insulin can be given IV, Preg B
Ketamine - Ketalar

**MOA:** Acts on cortex and limbic system, NMDA receptor antagonist

**Dose:**
- Subdissociative: 0.1-0.5 mg/kg IV
- Procedural sedation: 0.5-1 mg/kg IV
- RSI induction: 2 mg/kg IV

**Emergent Indications:** analgesia, sedation, RSI induction

**Where you’ll get in Trouble:** emergence reactions (treat with benzos or barbs), laryngospasm, IOP increase, ICP increase, tachycardia, hypertension, Preg D
Labetolol - Trandate

**MOA:** alpha1, beta1, and beta2 antagonist

**Dose:** Bolus dose: 20-80 mg IV q 10 minutes PRN
Continuous infusion: 1-8 mg/min titrated to effect

**Emergent Indications:** hypertensive emergency

**Where you’ll get in Trouble:** precipitated CHF, bradycardia, bronchospasm, Preg C
Lorazepam - Ativan

**MOA:** Enhances inhibitory effects of GABA

**Dose:** Usual bolus dose: 1-2mg IV
Usual continuous infusion: 1-10 mg/hr

**Emergent Indications:** delirium tremens, status epilepticus, serotonin syndrome, agitation

**Where you’ll get in Trouble:** respiratory depression, hypotension, Preg D
Magnesium Sulfate

**MOA:** participates in physiologic processes

**Dose:**
- Eclampsia: 2-4 grams IV over 5 minutes
- Pulseless torsades: 2 grams IV push
- Asthma exacerbation: 2 grams over 15 minutes

**Emergent Indications:** torsades, ventricular dysrhythmias, eclampsia, status asthmaticus

**Where you’ll get in Trouble:** respiratory depression, hypotension, Preg A
Mannitol - Osmitrol

**MOA:** osmotic diuretic

**Dose:** 1 gram/kg IV x 1

**Emergent Indications:** elevated ICP, impending herniation

**Where you’ll get into trouble:** may cause dehydration, osmotic nephrosis
Methohexital - Brevital

**MOA:** produces cortical and cerebellar sedation, hypnosis (ultra short-acting barbiturate)

**Dose:** 1mg/kg IV, then 0.5 mg/kg q 2-5 minutes PRN

**Emergent Indications:** procedural sedation

**Where you’ll get in Trouble:** laryngospasm (give more brevital), respiratory depression, hypotension, Preg B
**Methylprednisolone - SoluMedrol**

**MOA:** multiple gluco and mineralocorticoid effects

**Dose:** Asthma: 1mg/kg IV  
Hypersensitivity reaction: 1 mg/kg IV  
PCP PNA: 30mg IV BID x 5 days followed by a gradual taper

**Emergent Indications:** severe asthma, PCP PNA with elevated A-a gradient or PaO2 < 70 mmHg, acute hypersensitivity reaction

**Where you’ll get in Trouble:** immunosuppresion, hyperglycemia, Preg C
Metoclopramide - Reglan

**MOA:** antagonizes dopamine receptors in the chemoreceptor trigger zone

**Dose:** 10 mg IV q 6 hours PRN

**Emergent Indications:** vomiting prevention and treatment

**Where you’ll get in Trouble:** tardive dyskinesia, extrapyramidal symptoms, dystonia, methemoglobinemia, Preg B
Midazolam - Versed

**MOA:** enhances inhibitory effects of GABA

**Dose:**
- RSI induction: 0.1 mg/kg IV
- Usual continuous infusion: 1-10 mg/hour
- Procedural Sedation: 0.02 - 0.04 mg/kg IV

**Emergent Indications:** seizure abortion, procedural sedation, ventilator sedation, RSI

**Where you’ll get in Trouble:** respiratory depression, hypotensive effects, Preg D
Morphine sulfate

**MOA:** opioid agonist producing analgesia with adjunctive sedative effects

**Dose:** 2-10 mg IV q 2-6 hours PRN; recommended dose 0.1 mg/kg IV

**Emergent Indications:** pain control

**Where you’ll get in Trouble:** respiratory depression, vasodilation (hypotension), Preg C
Nimodipine - Nimotop

**MOA:** Ca channel blocker that is selective for cerebral arteries

**Dose:** 60 mg PO qh4

**Emergent Indications:** SAH

**Where you’ll get in Trouble:** hypotension although this is minimized due to its selectivity, Preg C
Nitroglycerin

**MOA:** venodilator, stimulates cGMP production

**Dose:** 5-200 mcg/min, increase 10 mcg q 3-5 min until desired effect; higher doses are usually required for pulmonary edema therefore recommend starting at a dose > 5 mcg/min

**Emergent Indications:** CHF, angina

**Where you’ll get in Trouble:** hypotension, methemoglobinemia, Preg C
Nitroprusside - Nipride

**MOA:** direct vasodilator, breaks down to release NO

**Dose:** Initiate at 0.3 mcg/kg/min IV and titrate to effect; maximum dose 10 mcg/kg/min; if blood pressure not controlled after 10 minutes at max dose, nitroprusside should be discontinued

**Emergent Indications:** hypertensive emergency

**Where you’ll get in Trouble:** CN toxicity, methemoglobinemia, hypotension, Preg C
Norepinephrine - Levophed

MOA: alpha1 agonist > beta1 agonist

Dose: 1-30 mcg/min IV

Emergent Indications: hypotension refractory to IVF

Where you’ll get in Trouble: tachydysrhythmias, tissue necrosis if catheter infiltrates or administered through an arterial line therefore needs to be given via a central venous line, Preg C
**Octreotide - Sandostatin**

**MOA:** vasoconstricts vessels (more selective for GI vessels), reduces portal vessel pressure

**Dose:**
- Bleeding esophageal varices: 50 mcg IV bolus, then 50 mcg/hour IV
- Sulfonylurea toxicity: 50 mcg SQ q 6 hours PRN

**Emergent Indications:** bleeding esophageal varices, sulfonylurea overdose

**Where you’ll get in Trouble:** Precipitated biliary dz, Preg B
Olanzapine – Zyprexa

**MOA:** antagonizes dopamine, histamine, alpha1, and 5HT2 receptors

**Dose:** 5-10mg IM/ODT (max 30mg/day)

**Emergent Indications:** agitation, psychosis

**Where you’ll get in Trouble:** do not give for dementia-related psychosis, NMS, EPS, orthostatic hypotension, QT prolongation, not to be given IV, Preg C
Ondansetron - Zofran

**MOA:** antagonizes serotonin 5-HT3 receptors, centrally acting antiemetic

**Dose:** usual dose 4-8 mg IV q 4-6 hours PRN

**Emergent Indications:** vomiting prevention and treatment

**Where you’ll get in Trouble:** QT prolongation, torsades (rare), Preg B
Phenobarbital

**MOA:** barbiturate, causes sedation, hypnosis and anesthesia

**Dose:** 20 mg/kg IV x 1, may repeat with an additional 5-10 mg/kg dose in 20 minutes (max dose 30 mg/kg); max infusion rate 50 mg/min

**Emergent Indications:** status epilepticus

**Where you’ll get in Trouble:** respiratory depression, hypotension, Preg D
Prednisone

**MOA:** produces various gluco and mineralocorticoid effects

**Dose:** 1 mg/kg/day PO (usual dose 5-60 mg based on patient response)

**Emergent Indications:** Asthma exacerbation, PCP PNA with A-a gradient >35 or PaO2 < 70mmHg, allergic reaction

**Where you’ll get in Trouble:** immunosuppresion, GI ulceration/perforation, hyperglycemia, Preg C
**MOA:** GABAa agonist, Na channel blocker

**Dose:**
- Procedural Sedation: 1 mg/kg IV bolus then 0.5 mg/kg q 3 minutes to effect
- RSI induction: 1.5-2.5 mg/kg IV x 1
- Ventilator Sedation: 5-50 mcg/kg/min

**Emergent Indications:** procedural sedation, RSI induction, ventilator sedation

**Where you’ll get in Trouble:** hypotension, anaphylaxis, bradycardia, apnea, Preg B
Protamine sulfate

**MOA:** ionically binds heparin

**Dose:** 1 mg neutralizes 100 units of heparin (max dose 50 mg); administer at a rate of 5 mg/minute

**Emergent Indications:** heparin induced bleeding

**Where you’ll get in Trouble:** anaphylaxis in previous use or fish allergy, rapid infusion can cause hypotension, Preg C
Rocuronium

**MOA:** non-depolarizing neuromuscular agent

**Dose:** 1mg/kg IV

**Emergent Indications:** RSI paralysis

**Where you’ll get in Trouble:** prolonged paralysis, Preg B
Sodium Bicarbonate

**MOA:** increases serum bicarbonate (increases buffer stores)

**Dose:**
- Hyperkalemia or metabolic acidosis: 50 mEq IV x 1 (1 amp = 50 mEq)
- TCA toxicity: 1-2 mEq/kg IV bolus to achieve a serum pH of 7.45-7.55 and QRS narrowing; effective serum alkalinization unlikely with continuous infusion
- Salicylate toxicity: 3 amps (150 mEq) in 1 liter D5W given as 10-20 ml/kg bolus, then 2-3 ml/kg/hr; goal urine pH 7.5-8.0

**Emergent Indications:** hyperkalemia, TCA toxicity, salicylate toxicity, metabolic acidosis

**Where you’ll get in Trouble:** caution in CHF, overshooting into metabolic alkalosis, hypernatremia, Preg C
Succinylcholine

**MOA:** depolarizing neuromuscular agent

**Dose:** 1.5 mg/kg (or 3-4 mg/kg IM)

**Emergent Indications:** RSI paralysis

**Where you’ll get in Trouble:** hyperkalemia, subacute burn/crush with hyperkalemia, glaucoma (increases IOP), increases ICP, Preg C