Acetaminophen (Tylenol)	**antipyretics, nonopioid analgesics**

Mechanism of Action:	Inhibits synthesis of prostaglandins that may serve as mediators of pain & fever, primarily in the CNS. Has no significant anti-inflammatory properties or GI toxicity. ● Analgesia. Antipyresis.
Indications:	PO, Rect: Tx of: Mild pain, Fever. IV: Tx of: Mild to moderate pain. Moderate to severe pain with opioid analgesics. Fever.
Contraindications:	Products containing alcohol, aspartame, saccharin, sugar, or tartrazine should be avoided in pts. who have hypersensitivity or intolerance to these compounds. Severe hepatic impairment/active liver disease.
Adverse Reactions:	**HEPATOTOXICITY, ACUTE GENERALIZED EXANTHEMATOUS PUSTULOSIS, SJS, TEN**
Routes:	PO, IV, Rectal
Assessment/Education:	Assess overall health status & alcohol usage before administration. Pts. who are malnourished or chronically abuse alcohol are at higher risk of developing hepatotoxicity with chronic use of usual doses of this drug. Prolonged use of acetaminophen increases risk of adverse hepatic & renal effects. Do not exceed max daily dose of acetaminophen when considering all routes of administration & all combination products containing acetaminophen. Assess for rash periodically during therapy. May cause SJS. D/c therapy if rash or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis, &/or eosinophilia.
Considerations:	Rate: Infuse over 15 min. valuate hepatic, hematologic, & renal function periodically during prolonged, high-dose therapy. May alter results of BG monitoring. May cause falsely decrease values when measured with glucose oxidase/peroxidase method, but probably not with hexokinase/G6PD method. Increase bilirubin, LDH, AST, ALT, & prothrombin time may indicate hepatotoxicity.

Acetylcysteine (Mucomyst)	**Antidote, mycolytic**

Mechanism of Action:	**PO**, **IV**: Decreases the buildup of a hepatotoxic metabolite in acetaminophen overdosage. **Inhaln**: Degrades mucus, allowing easier mobilization & expectoration. ● **PO**: Prevention or lessening of liver damage following acetaminophen overdose. ● **Inhaln**: Lowers the viscosity of mucus.
Indications:	To prevent or lessen hepatic injury following potentially hepatotoxic overdosage of acetaminophen
Contraindications:	Lactation
Adverse Reactions:	**ANAPHYLAXIS, ANGIOEDEMA**, bronchospasm, n/v
Routes:	PO, IV
Assessment/Education:	Monitor AST, ALT, & bilirubin levels along with prothrombin time every 24 hr for 96 hr in pts. with plasma acetaminophen levels indicating potential hepatotoxicity. Monitor cardiac & renal function (Cr, BUN), glucose, & electrolytes. Maintain fluid & electrolyte balance; correct hypoglycemia.
Considerations:	Give within 8 hours of acetaminophen ingestion. I*V:* Assess for anaphylaxis. Erythema & flushing are common, usually occurring 30–60 min after initiating infusion, & may resolve with continued administration. If rash, hypotension, wheezing, or dyspnea occur, initiate Tx for anaphylaxis. Interrupt acetylcysteine infusion until Sx resolve & restart carefully. If anaphylaxis recurs, d/c acetylcysteine & use alternative form of Tx

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Acyclovir (Zovirax)	Antivirals, purine analogues

Mechanism of Action	Interferes with viral DNA synthesis. Inhibition of viral replication decreased viral shedding, & reduced time for healing of lesions.
Indications	PO: Recurrent genital herpes infections. Localized cutaneous herpes zoster infections (shingles) & chickenpox (varicella). Buccal: Recurrent herpes labialis (cold sores) in nonimmunosuppressed pts. IV: Severe initial episodes of genital herpes in nonimmunosuppressed pts. Mucosal or cutaneous herpes simplex infections or herpes zoster infections (shingles) in immunosuppressed pts. Herpes simplex encephalitis. Topical: Cream ● Recurrent herpes labialis (cold sores). Ointment — Tx of limited non–life-threatening herpes simplex infections in immunocompromised pts. (systemic Tx is preferred).
Contraindications	Hypersensitivity to acyclovir or valacyclovir. Hypersensitivity to milk protein concentrate (buccal only)
Adverse Reactions	**SEIZURES, RENAL FAILURE, SJS, THROMBOTIC THROMBOCYTOPENIC PURPURA/HEMOLYTIC UREMIC SYNDROME**, dizziness, headache, n/v/d, pain, phlebitis
Routes	PO, IV, topical, buccal
Assessment/Education	Advise pts. that the additional use of OTC creams, lotions, & ointments may delay healing & may cause spreading of lesions. Inform pt. that acyclovir is not a cure. The virus lies dormant in the ganglia, & acyclovir will not prevent the spread of infection to others. Advise pt. that condoms should be used during sexual contact & that no sexual contact should be made while lesions are present.
Considerations	Monitor BUN, Cr, & CCr before & during therapy. Increased BUN & Cr levels or Decreased CCr may indicate renal failure.

Adenosine (Adenocard)	Antiarrhythmics

Mechanism of Action:	Restores normal sinus rhythm by interrupting re-entrant pathways in the AV node. Slows conduction time through the AV node. Also produces coronary artery vasodilation. ● Restoration of normal sinus rhythm.
Indications:	Conversion of paroxysmal supraventricular tachycardia (PSVT) to normal sinus rhythm when vagal maneuvers are unsuccessful. As a diagnostic agent to assess myocardial perfusion defects occurring as a consequence of coronary artery disease.
Contraindications:	2nd/3rd degree AV block; sick sinus syndrome; MI
Adverse Reactions:	**SEIZURES & CVA (w/Adenoscan); MI, VENTRICULAR TACHYCARDIA, HYPERSENSITIVITY REACTIONS** Shortness of breath, facial flushing, transient arrhythmias
Routes:	IV
Assessment/Education:	Prepare pt. for “strange” feeling/sensation; have defib pads in place
Considerations:	Warm to room temp if refrigerated; administer undiluted; IV site close to heart; RAPID administration; monitor HR, ECG; short period of a block or asystole may occur

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Albumin (normal human albumin)	**volume expanders, blood products, colloids**

Mechanism of Action	Provides colloidal oncotic pressure, which serves to mobilize fluid from extravascular tissues back into the intravascular space. Requires concurrent administration of appropriate crystalloid. ● Increase in intravascular fluid volume.
Indications	Expansion of plasma volume & maintenance of cardiac output in situations associated with fluid volume deficit, including shock, hemorrhage, & burns. ● Temporary replacement of albumin in diseases associated with low levels of plasma proteins, such as nephrotic syndrome or end-stage liver disease, resulting in relief or reduction of associated edema.
Contraindications	Severe anemia, HF. Normal or increased intravascular volume.
Adverse Reactions	**PULMONARY EDEMA**
Routes	IV
Assessment/Education	May be given without regard to pt. 's blood group. Assess for signs of vascular overload; during & after administration.
Considerations	albumin levels should increase with albumin therapy. Monitor Na levels; may cause Increased concentrations. Infusions of normal albumin may cause false Increased of alkaline phosphatase levels. Hemorrhage: Monitor H&H levels. These values may Decrease because of hemodilution.

Albuterol (Ventolin)	**Bronchodilators, Adrenergics**

Mechanism of Action:	Binds to beta$_2$-adrenergic receptors in airway smooth muscle, leading to activation of adenyl cyclase & increase levels of cyclic-3′, 5′-adenosine monophosphate (cAMP). increase in cAMP activate kinases, which inhibit the phosphorylation of myosin & decrease intracellular Ca. ● Decrease intracellular Ca relaxes smooth muscle airways. Relaxation of airway smooth muscle with subsequent bronchodilation. Relatively selective for beta$_2$ (pulmonary) receptors.
Indications:	Tx or prevention of bronchospasm in asthma or chronic obstructive pulmonary disease (COPD). **Inhaln**: Prevention of exercise-induced bronchospasm. **PO**: Used as a long-term control agent in pts. with chronic/persistent bronchospasm.
Contraindications:	Hypersensitivity to adrenergic amines.
Adverse Reactions:	**PARADOXICAL BRONCHOSPASM** (excessive use of inhalers) Chest pain, palpitations, nervousness, restlessness, tremor
Routes:	PO, Inhalation
Assessment/Education:	**Inhaln**: Shake inhaler well & allow at least 1 min between inhalations of aerosol medication. Prime the inhaler before first use by releasing 4 test sprays into the air away from the face. For nebulization, the 0.5-, 0.83-, 1-, & 2-mg/mL solutions do not require dilution before administration. The 5 mg/mL (0.5%) solution must be diluted with 1–2.5 mL of 0.9% NaCl for inhalation. For nebulizer, compressed air or oxygen flow should be 6–10 L/min; a single Tx of 3 mL lasts about 10 min. Instruct pt. to notify PCP if there is no response to the usual dose or if contents of one canister are used in less than 2 wk. Asthma & Tx regimen should be re-evaluated & corticosteroids should be considered.
Considerations:	Assess lung sounds, HR, & BP before administration & during peak of medication. Note amount, color, & character of sputum produced. Monitor pulmonary function tests before initiating therapy & periodically during therapy. Observe for paradoxical bronchospasm (wheezing). If condition occurs, withhold medication & notify PCP immediately. May cause transient decrease in K concentrations with nebulization or higher-than-recommended doses.

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Alendronate (Fosamax)	**bone resorption inhibitors, bisphosphonates**

Mechanism of Action	Inhibits resorption of bone by inhibiting osteoclast activity. Reversal of the progression of osteoporosis with decreased fractures. ● Decreased progression of Paget's disease.
Indications	Tx & prevention of postmenopausal osteoporosis. Tx of osteoporosis in men, Paget's disease of the bone, corticosteroid-induced osteoporosis in pts. (men & women) who are receiving prednisone with evidence of decreased bone mineral density.
Contraindications	Abnormalities of the esophagus which delay esophageal emptying. Inability to stand/sit upright for at least 30 min. Renal insufficiency (CCr <35 mL/min). OB. Lactation.
Adverse Reactions	Musculoskeletal pain
Routes	PO
Assessment/Education	First thing in the morning, 30 min before other medications, beverages, or food. Waiting longer than 30 min will improve absorption. Alendronate should be taken with 6–8 oz plain water (mineral water, orange juice, coffee, & other beverages decrease absorption).
Considerations	Osteoporosis: Assess Ca before & periodically during therapy. Hypocalcemia & vitamin D deficiency should be treated before initiating alendronate therapy. May cause mild, transient Increased of Ca & phosphate. Paget's Disease: Monitor alkaline phosphatase before & periodically during therapy. Alendronate is indicated for pts. With alkaline phosphatase twice, the upper limit of normal.

Allopurinol (Zyloprim)	**antigout agents, antihyperuricemics xanthine oxidase inhibitors**

Mechanism of Action:	Inhibits the production of uric acid by inhibiting the action of xanthine oxidase. ● Lowering of uric acid levels.
Indications:	PO: Prevention of attack of gouty arthritis & nephropathy. PO, IV: Tx of secondary hyperuricemia, which may occur during Tx of tumors or leukemias.
Contraindications:	Hypersensitivity
Adverse Reactions:	Rash (d/c use)
Routes:	PO, IV
Assessment/Education:	Monitor intake & output ratios. Decreased kidney function can cause drug accumulation & toxic effects. Ensure that pt. maintains adequate fluid intake (minimum 2500–3000 mL/day) to minimize risk of kidney stone formation. Assess pt. for rash or more severe hypersensitivity reactions. D/c allopurinol immediately if rash occurs.
Considerations:	Monitor for joint pain & swelling. Addition of colchicine or NSAIDs may be necessary for acute attacks. & urine uric acid levels usually begin to Decrease 2–3 days after initiation of oral therapy. Monitor blood glucose in pts. receiving oral hypoglycemic agents. May cause hypoglycemia. Monitor hematologic, renal, & liver function tests before & periodically during therapy, especially during the first few mo. May cause Increased alkaline phosphatase, bilirubin, AST, & ALT levels. Decreased CBC & platelets may indicate bone marrow depression. Increased BUN, Cr, & CCr may indicate nephrotoxicity. These are usually reversed with discontinuation of therapy.

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Alprazolam (Xanax)	**Benzodiazepines**

Mechanism of Action	Acts at many levels in the CNS to produce anxiolytic effect. May produce CNS depression. Effects may be mediated by GABA, an inhibitory neurotransmitter.
Indications	Anxiety, panic disorder, anxiety associated with depression
Contraindications	Other benzodiazepines; coma or pre-existing CNS depression. Uncontrolled severe pain. Angle-closure glaucoma. Sleep apnea or pulmonary disease. Use of itraconazole or ketoconazole. Lactation
Adverse Reactions	Dizziness, drowsiness, lethargy
Routes	PO
Assessment/Education	DEA scheduled drug. Assess for prolonged CNS depression; may lead to dependence. No smoking.
Considerations	Monitor CBC & liver & renal function periodically during long-term therapy. May cause decreased hematocrit & neutropenia. **Flumazenil (Romazicon) is the antidote, but do not use if pt. has a seizure disorder**

Amiodarone (Nexterone)	**antiarrhythmics (class III)**

Mechanism of Action	Prolongs action potential & refractory period. Inhibits adrenergic stimulation. Slows the sinus rate, increases PR & QT intervals, & decreases peripheral vascular resistance (vasodilation). ● Suppression of arrhythmias.
Indications	Life-threatening ventricular arrhythmias unresponsive to less toxic agents.
Contraindications	Pts. with cardiogenic shock. Severe sinus node dysfunction, 2nd- & 3rd-degree AV block. Bradycardia (has caused syncope unless a pacemaker is in place). Hypersensitivity to amiodarone or iodine. OB, Lactation, Pedi
Adverse Reactions	**ADULT RESPIRATORY DISTRESS SYNDROME (ARDS), PULMONARY FIBROSIS, PULMONARY TOXICITY, HF, WORSENING OF ARRHYTHMIAS, QT INTERVAL PROLONGATION, TEN**, anorexia, constipation, N/V, photosensitivity, hypothyroidism, bradycardia, hypotension, ataxia, involuntary movement, paresthesia, peripheral neuropathy, poor coordination, tremor.
Routes	PO, IV
Assessment/Education	No Grapefruit. Monitor ECG continuously during IV therapy or initiation of oral therapy. Monitor HR & rhythm throughout therapy; PR prolongation, slight QRS widening, T-wave amplitude reduction with T-wave widening & bifurcation, & U waves may occur. QT prolongation may be associated with worsening of arrhythmias; monitor closely during IV therapy. Report bradycardia or increase in arrhythmias promptly; pts. receiving IV therapy may require slowing rate, discontinuing infusion, or inserting a temporary pacemaker. Assess for signs of pulmonary. Chest x-ray & pulmonary function tests are recommended before therapy. Monitor chest x-ray every 3–6 mo during therapy to detect diffuse interstitial changes or alveolar infiltrates. Bronchoscopy or gallium radionuclide scan may also be used for diagnosis. Usually reversible after withdrawal, but fatalities have occurred. Assess for signs & Sx of ARDS throughout therapy. Report dyspnea, tachypnea, or rales/crackles promptly. Bilateral, diffuse pulmonary infiltrates are seen on chest x-ray.
Considerations	Before administering, have 2nd practitioner check original order, dose calculations, & infusion pump settings. Pts. should be hospitalized & monitored closely during IV therapy & initiation of oral therapy. Infuse over 10 min. Do not administer IV push.

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Amitriptyline (Elavil)	**TCA**

Mechanism of Action	Potentiates the effect of serotonin & norepinephrine in the CNS. ● Has significant anticholinergic properties.
Indications	Depression
Contraindications	Angle-closure glaucoma; known hx of QT interval prolongation, recent MI, or heart failure
Adverse Reactions	**SI, ARRHYTHMIAS, TORSADE DE POINTES,** Lethargy, sedation, blurred vision, dry eyes, dry mouth, hypotension
Routes	PO
Assessment/Education	No smoking; assess for SI; monitor BP, HR; ECG before & during Tx
Considerations	Assess leukocyte & differential blood counts, liver function, & glucose before & periodically during therapy. May cause an increased bilirubin & alkaline phosphatase. May cause bone marrow depression. glucose may be decreased or increased.

Amlodipine (Norvasc)	**Antihypertensives; CCB**

Mechanism of Action	Inhibits the transport of Ca into myocardial & vascular smooth muscle cells, resulting in inhibition of excitation-contraction coupling & subsequent contraction. ● Systemic vasodilation resulting in decreased BP. Coronary vasodilation resulting in decreased frequency & severity of attacks of angina.
Indications	Alone or with other agents in the management of HTN, angina pectoris, & vasospastic (Prinzmetal's) angina.
Contraindications	Systolic BP <90 mm Hg.
Adverse Reactions	Peripheral edema
Routes	PO
Assessment/Education	Monitor BP & HR before therapy, during dose titration, & periodically during therapy. Monitor ECG periodically during prolonged therapy. Monitor I&O ratios & daily weight. Assess for signs of HF (peripheral edema, rales/crackles, dyspnea, weight gain, jugular venous distention). Monitor frequency of prescription refills to determine adherence. Angina: Assess location, duration, intensity, & precipitating factors of pt's anginal pain.
Considerations	Total Ca concentrations are not affected by CCB. Instruct pt. to contact PCP if HR is <50 bpm.

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Amoxicillin (Amoxil)	**B-Lactam, anti-infectives**

Mechanism of Action:	Binds to bacterial cell wall, causing cell death. ● Bactericidal action; spectrum is broader than PCN.
Indications:	Tx of: Skin & skin structure infections. Otitis media. Sinusitis. Respiratory infections. Genitourinary infections. Endocarditis prophylaxis. Post exposure inhalational anthrax prophylaxis. Management of ulcer disease due to *Helicobacter pylori*.
Contraindications:	Hypersensitivity to PCN (cross-sensitivity exists to cephalosporins & other beta-lactams).
Adverse Reactions:	**SEIZURES (HIGH DOSES), C-DIFF, ANAPHYLAXIS, SICKNESS,** Diarrhea, rash
Routes:	PO
Assessment/Education:	Observe for s/s of anaphylaxis (rash, pruritus, laryngeal edema, wheezing). Notify PCP immediately if these occur. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-diff. May begin up to several wk. following cessation of therapy.
Considerations:	May cause increased alkaline phosphatase, LDH, AST, & ALT concentrations. May cause false-positive direct Coombs' test result.

Amoxicillin/Clavulante (Augmentin)	**anti-infectives, aminopenicillins beta lactamase inhibitors**

Mechanism of Action	Binds to bacterial cell wall, causing cell death; spectrum of amoxicillin is broader than PCN. Clavulanate resists action of beta-lactamase, an enzyme produced by bacteria that is capable of inactivating some penicillins. ● Bactericidal action against susceptible bacteria.
Indications	Tx of: Skin & skin structure infections, otitis media, sinusitis, respiratory tract infections, genitourinary tract infections.
Contraindications	Suspension & chewable tablets contain aspartame & should be avoided in phenylketonurics Hx of amoxicillin/clavulanate-associated cholestatic jaundice.
Adverse Reactions	**SEIZURES; C-DIFF; ANAPHYLAXIS, SICKNESS,** Diarrhea, rash
Routes	PO
Assessment/Education	Observe pt. for s/s of anaphylaxis. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP as a sign of C-Diff. May begin up to several wk following cessation of therapy.
Considerations	May cause increased alkaline phosphatase, LDH, AST, & ALT concentrations. Elderly men & pts. receiving prolonged tx are at increased risk for hepatic dysfunction. May cause false-positive direct Coombs' test result.

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Amphetamine aspartate (Adderall)	**central nervous system stimulants**

Mechanism of Action	Causes release of norepinephrine from nerve endings. Pharmacologic effects are: CNS & respiratory stimulation, Vasoconstriction, Mydriasis (pupillary dilation). ● Increased motor activity, mental alertness, & decreased fatigue in narcoleptic pts. Increased attention span in ADHD.
Indications	ADHD. Narcolepsy.
Contraindications	Hyperexcitable states including hyperthyroidism. Psychotic personalities Concurrent use or use within 14 days of MAO inhibitors or MAO-like drugs (linezolid or methylene blue). Suicidal or homicidal tendencies. Chemical dependence. Glaucoma. Structural cardiac abnormalities (may Increase the risk of sudden death). OB
Adverse Reactions	**SUDDEN DEATH, RHABDOMYOLYSIS, HYPERSENSITIVITY REACTIONS (INCLUDING ANAPHYLAXIS & ANGIOEDEMA),** palpitations, tachycardia, hyperactivity, insomnia, restlessness, tremor, anorexia, libido changes
Routes	PO
Assessment/Education	Monitor BP, HR, & respiration before & periodically during therapy. Obtain a Hx, physical exam to assess for cardiac disease, & further evaluation, if indicated. If exertional chest pain, unexplained syncope, or other cardiac Sx occur, evaluate promptly.
Considerations	Monitor weight; May interfere with urinary steroid determinations. May cause Increase plasma corticosteroid concentrations; greatest in evening.

Apixaban (Eliquis)	**anticoagulants**

Mechanism of Action	Acts as a selective, reversible site inhibitor of factor Xa, inhibiting both free and bound factor. Does not affect platelet aggregation directly but does inhibit thrombin-induced platelet aggregation. Decreases thrombin generation and thrombus development.
Indications	Decreases risk of stroke/systemic embolism associated with nonvalvular AFib. Tx of and reduction in risk of recurrence of DVT or PE.
Contraindications	Previous severe hypersensitivity reactions. Active pathological bleeding. Severe hepatic impairment. Not recommended for use in patients with prosthetic heart valves. Concurrent use of strong dual inducers of CYP3A4 and P-gp. PE with hemodynamic instability or requiring thrombolysis or pulmonary embolectomy. Triple-positive antiphospholipid syndrome (↑ risk of thrombosis). Lactation
Adverse Reactions	**ANAPHYLAXIS**. Bleeding
Routes	PO
Assessment/Education	Assess patient for symptoms of stroke, DVT, PE, bleeding, or peripheral vascular disease periodically during therapy. Teach bleeding/bruising precautions. Advise female patient to contact PCP if pregnant.
Considerations	Administer BID. Can be crushed; can give with food. When *converting from warfarin*, discontinue warfarin and start apixaban when INR is <2.0. When *converting from apixaban to warfarin*, apixaban affects INR, so INR measurements may not be useful for determining appropriate dose of warfarin. Antidote is **andexanet alfa**. Effects persist for at least 24 hrs after last dose. Oral activated charcoal decreases apixaban absorption, lowering plasma concentrations. Risk of bleeding is increased with aspirin, NSAIDs, warfarin, heparin, SSRIs or SNRIs.

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Aripiprazole (Abilify)	**Antipsychotic**

Mechanism of Action	Psychotropic activity may be due to agonist activity at dopamine D2 & serotonin 5-HT1A receptors & antagonist activity at the 5-HT2A receptor; has alpha1 adrenergic blocking activity.
Indications	Schizophrenia; acute & maintenance therapy of manic & mixed episodes associated with bipolar disorder; adjunctive Tx of depression in adults; agitation associated with schizophrenia or bipolar disorder; irritability associated with autism spectrum disorder in children; Tourette's disorder
Contraindications	Hypersensitivity
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME; AGRANULOCYTOSIS; HYPERSENSITIVITY REACTIONS; SI,** Drowsiness; extrapyramidal reaction; constipation; tremor
Routes	PO; IM
Assessment/Education	Assess mental status; monitor BP, HR; monitor for extrapyramidal Sx; seek help: sore throat w/fever; teach extrapyramidal Sx & about tardive dyskinesia
Considerations	May cause increase Cr phosphokinase. Monitor CBC frequently during initial mo of therapy in pts. with pre-existing or hx of low WBC. May cause leukopenia, neutropenia, or agranulocytosis.

Asenapine (Saphris)	**Antipsychotic**

Mechanism of Action	May act through combined antagonism of dopaminergic (D_2) & 5-HT_{2A} receptors
Indications	Schizophrenia; acute Tx of manic/mixed episodes associated with bipolar I disorder. Maintenance Tx of manic/mixed episodes associated with bipolar I disorder.
Contraindications	Dementia-related psychoses; severe hepatic impairment
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME; AGRANULOCYTOSIS; HYPERSENSITIVITY REACTIONS; SI; QT INTERVAL PROLONGATION; SEIZURES** Akathisia; dizziness; drowsiness; extrapyramidal Sx; weight gain
Routes	SL
Assessment/Education	Assess mental status; monitor BP, HR; monitor for extrapyramidal Sx; seek help: sore throat w/fever; teach extrapyramidal Sx & about tardive dyskinesia. Monitor for SI
Considerations	Obtain fasting BG, lipid profile, & cholesterol levels initially & periodically during therapy. Monitor CBC frequently during initial mo of therapy in pts. with pre-existing or Hx of low WBC. May cause leukopenia, neutropenia, or agranulocytosis. Monitor pts. with neutropenia for fever or other Sx of infection & treat promptly. D/c therapy if ANC <1000/mm3 occurs. May cause transient Increased in ALT.

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Aspirin	**antipyretics, nonopioid analgesics, salicylates**

Mechanism of Action:	Produce analgesia & reduce inflammation & fever by inhibiting the production of prostaglandins. Decreases platelet aggregation. ● Analgesia. Reduction of inflammation/fever. Decreased incidence of TIA & MI.
Indications:	Inflammatory disorders including: Rheumatoid arthritis, Osteoarthritis. Mild to moderate pain. Fever. Prophylaxis of transient ischemic attacks & MI.
Contraindications:	Hypersensitivity to aspirin or other salicylates. Cross-sensitivity with other NSAIDs may exist (less with nonaspirin salicylates). Bleeding disorders or thrombocytopenia. Pedi: May increase risk of Reye's syndrome in children or adolescents with viral infections.
Adverse Reactions:	**GI BLEEDING, ANAPHYLAXIS, LARYNGEAL EDEMA** dyspepsia, epigastric distress, nausea
Routes:	PO, Rectal
Assessment/Education:	Monitor for the onset of tinnitus, headache, hyperventilation, agitation, mental confusion, lethargy, diarrhea, & sweating. If these Sx appear, withhold medication & notify PCP immediately.
Considerations:	Pts. who have asthma, allergies, & nasal polyps or who are allergic to tartrazine are at an increased risk for developing hypersensitivity reactions. Monitor hepatic function before antirheumatic therapy & if Sx of hepatotoxicity occur; more likely in pts., especially children, with rheumatic fever, systemic lupus erythematosus, juvenile arthritis, or pre-existing hepatic disease. May cause increase AST, ALT, & alkaline phosphatase, especially when plasma concentrations exceed 25 mg/100 mL. Monitor salicylate levels periodically with prolonged high-dose therapy to determine dose, safety, & efficacy, especially in children with Kawasaki disease. May alter results of uric acid, urine vanillylmandelic acid (VMA), protirelin-induced TSH, urine hydroxyindoleacetic acid (5-HIAA) determinations, & radionuclide thyroid imaging. Prolongs bleeding time for 4–7 days &, in large doses, may cause prolonged prothrombin time. Monitor HCT periodically in prolonged high-dose therapy to assess for GI blood loss.

Atenolol (Tenormin)	**antianginals, antihypertensives, beta blockers**

Mechanism of Action	Blocks stimulation of beta1(myocardial)-adrenergic receptors. Does not usually affect beta2(pulmonary, vascular, uterine)-receptor sites. ● Decreased BP & HR. Decreased frequency of attacks of angina pectoris. Prevention of MI.
Indications	Management of HTN. Management of angina pectoris. Prevention of MI.
Contraindications	Uncompensated HF. Pulmonary edema. Cardiogenic shock. Bradycardia or heart block.
Adverse Reactions	**BRADYCARDIA, HF, PULMONARY EDEMA,** fatigue, weakness, erectile dysfunction
Routes	PO
Assessment/Education	Monitor BP, ECG, & HR frequently during dose adjustment period & periodically throughout therapy. Monitor I&O ratios & daily weights. Assess routinely for HF. Advise pt. to notify PCP if slow HR, difficulty breathing, wheezing, cold hands & feet, dizziness, light-headedness, confusion, depression, rash, fever, sore throat, unusual bleeding, or bruising occurs.
Considerations	Take apical HR before administering drug. If <50 bpm or if arrhythmia occurs, withhold med & notify PCP. May cause increased BUN, lipoprotein, K, triglyceride & uric acid levels. May cause Increased ANA titers. May cause Increased in blood glucose levels. Monitor pts. receiving beta blockers for signs of OD.

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Atorvastatin (Lipitor)	**lipid-lowering agents**

Mechanism of Action:	Inhibits 3-hydroxy-3-methylglutaryl-coenzyme A (HMG-CoA) reductase, an enzyme which is responsible for catalyzing an early step in the synthesis of cholesterol. ● Lowering of total & LDL cholesterol & triglycerides. Slightly increase HDL cholesterol. Reduction of lipids/cholesterol reduces the risk of MI & CVA sequelae. Slows the progression of coronary atherosclerosis with resultant decrease in CAD–related events.
Indications:	Adjunctive management of primary hypercholesterolemia & mixed dyslipidemia. Primary prevention of CAD in asymptomatic pts. with increase total & low-density lipoprotein (LDL) cholesterol & increase high-density lipoprotein (HDL) cholesterol.
Contraindications:	Active liver disease; unexplained persistent elevations in AST & ALT; OB, Lactation
Adverse Reactions:	**RHABDOMYOLYSIS, ANGIONEUROTIC EDEMA** abdominal cramps, constipation, diarrhea, flatus, heartburn
Routes:	PO
Assessment/Education:	No grapefruit juice. Notify PCP if muscle tenderness occurs.
Considerations:	Monitor liver functions, cholesterol/triglyceride levels before & 2-4 wks. of therapy

Atropine	**anticholinergic**

Mechanism of Action	Inhibits the action of acetylcholine at postganglionic sites located in: Smooth muscle, secretory glands, CNS (antimuscarinic activity). Low doses decrease: Sweating, salivation, respiratory secretions. Intermediate doses result in: Mydriasis (pupillary dilation), cycloplegia (loss of visual accommodation), increased HR. GI & GU tract motility are decreased at larger doses. ● Increased HR. Decreased GI & respiratory secretions. Reversal of muscarinic effects. May have a spasmolytic action on the biliary & genitourinary tracts.
Indications	IM: Given preoperatively to decrease oral & respiratory secretions. IV: Tx of sinus bradycardia & heart block. Reversal of adverse muscarinic effects of anticholinesterase agents (neostigmine, physostigmine, or pyridostigmine). IM, IV: Tx of anticholinesterase (organophosphate pesticide) poisoning. Inhaln: Tx of exercise-induced bronchospasm.
Contraindications	Angle-closure glaucoma. Acute hemorrhage. Tachycardia secondary to cardiac insufficiency or thyrotoxicosis. Obstructive disease of the GI tract.
Adverse Reactions	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy
Routes	IM, IV, SC
Assessment/Education	Assess VS & ECG tracings frequently during IV drug therapy. Report any significant changes in HR or BP or increased ventricular ectopy or angina to PCP promptly. Monitor I&O ratios in elderly or surgical pts. because atropine may cause urinary retention. Assess pts. routinely for abdominal distention & auscultate for bowel sounds. If constipation becomes a problem, increasing fluids & adding bulk to the diet may help alleviate constipation.
Considerations	**ANTIDOTE IS PHYSOSTIGMINE**

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Azithromycin	**Macrolides, agents for atypical mycobacterium, anti-infectives**

Mechanism of Action:	Inhibits protein synthesis at the level of the 50S bacterial ribosome. ● Bacteriostatic action against susceptible bacteria.
Indications:	Tx of the following infections due to susceptible organisms: Upper respiratory tract infections, including streptococcal pharyngitis, acute bacterial exacerbations of chronic bronchitis & tonsillitis. Lower respiratory tract infections, including bronchitis & pneumonia. Acute otitis media. Skin & skin structure infections. Nongonococcal urethritis, cervicitis, gonorrhea, & chancroid. Prevention of disseminated *Mycobacterium avium* complex (MAC) infection in pts. with advanced HIV infection. *Extended-release suspension (ZMax)* Acute bacterial sinusitis & community-acquired pneumonia in adults.
Contraindications:	Hypersensitivity to azithromycin, erythromycin, or other macrolide anti-infectives. Hx of cholestatic jaundice or hepatic dysfunction with prior use of azithromycin. QT interval prolongation, hypokalemia, hypomagnesemia, or bradycardia. Concurrent use of quinidine, procainamide, dofetilide, amiodarone, or sotalol.
Adverse Reactions:	**TORSADES DE POINTES, HEPATOTOXICITY, C-DIFF, ACUTE GENERALIZED EXANTHEMATOUS PUSTULOSIS, DRESS, SJS, TEN, HYPERSENSITIVITY REACTION** abdominal pain, diarrhea, nausea
Routes:	PO, IV
Assessment/Education:	Observe for s/s of anaphylaxis (rash, pruritus, laryngeal edema, wheezing). Notify PCP immediately if these occur. Assess pt. for skin rash frequently during therapy. D/c azithromycin at first sign of rash; may be life-threatening. SJS or TEN may develop. Treat symptomatically; may recur once Tx is stopped.
Considerations:	***Rate:*** Administer the 1-mg/mL solution over 3 hr or the 2-mg/mL solution over 1 hr. May cause increased bilirubin, AST, ALT, LDH, & alkaline phosphatase concentrations. May cause increased creatine phosphokinase, K, prothrombin time, BUN, Cr, & BG concentrations. May occasionally cause decrease WBC & platelet count.

Bacitracin (BACiiM)	**anti-infectives**

Mechanism of Action	Inhibits bacterial cell wall synthesis by preventing transfer of mucopeptides into growing cell wall. ● Bactericidal action
Indications	IM: Tx of infants with pneumonia & empyema caused by susceptible Staphylococci. Topical, Ophth: Tx of localized infections due to susceptible organisms.
Contraindications	Renal impairment.
Adverse Reactions	**PSEUDOMEMBRADNOUS COLITIS**, n/v
Routes	IM, topical
Assessment/Education	Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-Diff-associated diarrhea (CDAD). May begin up to several wk following cessation of therapy.
Considerations	Monitor CBC periodically during therapy. Monitor renal function prior to & daily during IM therapy. Monitor CBC periodically during therapy. Monitor renal function prior to & daily during IM therapy.

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Baclofen (Gablofen)	**antispasticity agents, skeletal muscle relaxants (centrally acting)**

Mechanism of Action	Inhibits reflexes at the spinal level. ● Decreased muscle spasticity; bowel & bladder function may also be improved.
Indications	PO: Tx of reversible spasticity due to multiple sclerosis or spinal cord lesions. IT: Tx of severe spasticity of cerebral or spinal origin (should wait at least one year in pts. with traumatic brain injury before considering therapy).
Contraindications	Hypersensitivity
Adverse Reactions	**SEIZURES (IT),** dizziness, drowsiness, fatigue, weakness
Routes	PO, IT
Assessment/Education	Assess muscle spasticity before & periodically during therapy. Observe pt. for drowsiness, dizziness, or ataxia. May be alleviated by a change in dose. IT: Monitor pt. closely during test dose & titration.
Considerations	**Administer with milk or food to minimize gastric irritation. May cause Increase in glucose, alkaline phosphatase, AST, & ALT levels.**

Benzotropine mesylate (Cogentin)	**Anticholinergic; anti-Parkinson**

Mechanism of Action	Blocks cholinergic activity in the CNS, which is partially responsible for the Sx of Parkinson's disease. ● Restores the natural balance of neurotransmitters in the CNS.
Indications	Adjunctive Tx of all forms of Parkinson's disease, including drug-induced extrapyramidal effects & acute dystonic reactions.
Contraindications	Children <3years; angle-closure glaucoma; tardive dyskinesia
Adverse Reactions	Blurry vision, dry eyes, constipation, dry mouth
Routes	PO, IM, IV
Assessment/Education	Assess parkinsonian & extrapyramidal Sx; I/O
Considerations	Pts. with mental illness are at risk of developing exaggerated Sx of their disorder during early therapy with benztropine

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Bethanechol (Urecholine)	**urinary tract stimulant, cholinergics**

Mechanism of Action	Stimulates cholinergic receptors. Effects include: Contraction of the urinary bladder, Decreased bladder capacity, Increased frequency of ureteral peristaltic waves, Increased tone & peristalsis in the GI tract, Increased pressure in the lower esophageal sphincter, Increased gastric secretions. ● Bladder emptying.
Indications	Postpartum & postoperative nonobstructive urinary retention or urinary retention caused by neurogenic bladder.
Contraindications	Mechanical obstruction of the GI or GU tract.
Adverse Reactions	**HEART BLOCK, SYNCOPE/CARDIAC ARREST,** abdominal discomfort, N/V/D, salivation, urgency, flushing, sweating
Routes	PO, SC
Assessment/Education	Monitor BP, HR, & respirations before administering & for at least 1 hr after subcut administration. Monitor I&O ratios. Palpate abdomen for bladder distention. Notify PCP if drug fails to relieve condition for which it was prescribed. Catheterization may be ordered to assess postvoid residual.
Considerations	May cause an increase in AST, amylase, & lipase concentrations. Observe pt. for drug toxicity (sweating, flushing, abdominal cramps, nausea, salivation). If overdosage occurs, Tx includes atropine sulfate (specific antidote).

Buprenorphine (Buprenex)	**Opioid analgesics, Opioid agonists antagonists**

Mechanism of Action:	Binds to opiate receptors in the CNS. Alters the perception of & response to painful stimuli while producing generalized CNS depression. Has partial antagonist properties that may result in opioid withdrawal in physically dependent pts. when used as an analgesic. ● IM, IV, Transdermal: Decreased severity of pain. SL: Suppression of withdrawal Sx during detoxification & maintenance from heroin or other opioids. Produces a relatively mild withdrawal compared to other agents. Subdermal: Continued cessation of opioid use.
Indications:	IM, IV: Management of moderate to severe acute pain. Buccal, Transdermal: Pain that is severe enough to require daily, around-the-clock long-term opioid Tx & for which alternative Tx options are inadequate. SL: Tx of opioid dependence (preferred for induction only); suppresses withdrawal Sx in opioid detoxification. Subdermal: Maintenance Tx of opioid dependence in pts. who have achieved & sustained prolonged (greater than 3 mo) clinical stability on low-to-moderate doses of a transmucosal buprenorphine-containing product (less than/equal to 8 mg/day)
Contraindications:	Significant respiratory depression. Acute or severe bronchial asthma. Paralytic ileus. Acute, mild, intermittent, or postoperative pain. Long QT syndrome. Concurrent use of class I or III antiarrhythmics. Lactation.
Adverse Reactions:	**RESPIRATORY DEPRESSION, HEPATOTOXICITY, HYPERSENSITIVITY REACTIONS,** confusion, dysphoria, hallucinations, sedation, nausea, sweating
Routes:	IV, IM, transdermal, buccal, SL, subdermal
Assessment/Education:	Monitor for signs & Sx of adrenal insufficiency. Assess level of consciousness, BP, HR, & respirations before & periodically during administration. Assess bowel function routinely. Assess risk for opioid addiction, abuse, or misuse prior to administration. Monitor for respiratory depression, especially during initiation or following dose increase; serious, life-threatening, or fatal respiratory depression may occur.
Considerations:	May cause increase amylase & lipase levels. Monitor liver function tests prior to & periodically during opioid dependence therapy.

Vallaerand, A.H. & Sanoski, C.A. (2019). Davis's Drug Guide for Nurses. Philadelphia, PA. F. A. Davis Company.

Bupropion (Wellbutrin)	**Aminoketone**

Mechanism of Action	Decreases neuronal reuptake of dopamine in the CNS. ● Diminished neuronal uptake of serotonin & norepinephrine (less than tricyclic antidepressants).
Indications	Depression; seasonal affective disorder; smoking cessation
Contraindications	MAO inhibitors; use of ritonavir; seizure disorder; arteriovenous malformation; severe head injury; CNS tumor, CNS infection, severe stroke, anorexia nervosa, bulimia, or abrupt discontinuation of alcohol, benzodiazepines, barbiturates, or antiepileptic drugs; lactation
Adverse Reactions	**HOMICIDAL THOUGHTS/BEHAVIOR, SEIZURES, SI/BEHAVIOR,** agitation, headache, dry mouth, n/v, tremor
Routes	PO
Assessment/Education	Assess for SI/HI; may cause false positive urine drug test for amphetamines
Considerations	Monitor hepatic & renal function closely in pts. with kidney or liver impairment to prevent increased & tissue bupropion concentrations. May cause false-positive urine test for amphetamines.

Buspirone (Buspar)	**antianxiety agents**

Mechanism of Action	Binds to serotonin & dopamine receptors in the brain. Increases norepinephrine metabolism in the brain.
Indications	Anxiety
Contraindications	Severe hepatic or renal impairment. Concurrent use of MAO inhibitors. Ingestion of large amounts of grapefruit juice.
Adverse Reactions	Dizziness, drowsiness, excitement, fatigue, headache, insomnia, nervousness, weakness, blurred vision, nasal congestion, sore throat, tinnitus, chest pain, palpitations, tachycardia, nausea, rashes, myalgia, incoordination, numbness, paresthesia, clamminess, sweating
Routes	PO
Assessment/Education	No alcohol or grapefruit juice
Considerations	Buspirone does not appear to cause physical or psychological dependence or tolerance.

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Captopril (Capoten)	**Antihypertensives, ace inhibitors**

Mechanism of Action	Angiotensin-converting enzyme (ACE) inhibitors block the conversion of angiotensin I to the vasoconstrictor angiotensin II. ACE inhibitors also prevent the degradation of bradykinin & other vasodilatory prostaglandins. ACE inhibitors also Increased plasma renin levels & Decreased aldosterone levels. Net result is systemic vasodilation. ● Lowering of BP in pts. with HTN. Improved survival & reduced Sx in pts. with HF. Improved survival & reduced development of overt HF after myocardial infarction. Decreased progression of diabetic nephropathy with decreased need for transplantation or dialysis.
Indications	Alone or with other agents in the management of HTN. Management of HF. Reduction of risk of death, HF-related hospitalizations, & development of overt HF following myocardial infarction. Tx of diabetic nephropathy in pts. with Type 1DM & retinopathy.
Contraindications	Hx of angioedema with previous use of ACE inhibitors. Concurrent use with aliskiren in pts. with DM or moderate-to-severe renal impairment (CCr <60 mL/min). OB, Lactation
Adverse Reactions	**ANGIOEDEMA, AGRANULOCYTOSIS**, cough, hypotension, taste disturbances.
Routes	PO
Assessment/Education	Assess pt. for signs of angioedema; may occur at any time during therapy.
Considerations	Monitor renal function. May cause Increased BUN & Cr. If Increased BUN or Cr concentrations occur, may require dose reduction or withdrawal. May cause hyperkalemia. May cause Increased AST, ALT, alkaline phosphatase, & bilirubin. Assess urine protein prior to & periodically during therapy for up to 1 yr. in pts. with renal impairment or those receiving > 150 mg/day of captopril. If excessive or increasing proteinuria occurs, re-evaluate ACE inhibitor therapy. May cause positive antinuclear antibody (ANA) titer. Monitor CBC with differential prior to initiation of therapy, every 2 wk for the first 3 mo, & periodically for up to 1 yr. in pts. at risk for neutropenia (pts. with renal impairment, or collagen-vascular disease) or at first sign of infection. D/c therapy if neutrophil count is <1000/mm3. May cause false-positive test results for urine acetone.

Carbamazepine (Tegretol)	**anticonvulsants**

Mechanism of Action	Decreases synaptic transmission in the CNS by affecting Na channels in neurons. ● Prevention of seizures. Relief of pain in trigeminal neuralgia. Decreased mania.
Indications	IV, PO: Tx of tonic-clonic, mixed, & complex-partial seizures. PO: Management of pain in trigeminal neuralgia.
Contraindications	Hypersensitivity to carbamazepine or tricyclic antidepressants. Bone marrow suppression. Concomitant use or use within 14 days of MAO inhibitors. Concurrent use of nefazodone or NNRTIs that are CYP3A4 substrates. Moderate-to-severe renal impairment (IV only). OB. Lactation
Adverse Reactions	**SI, HEPATOTOXICITY, PANCREATITIS, DRESS, SJS, TEN, AGRANULOCYTOSIS, APLASTIC ANEMIA, THROMBOCYTOPENIA**, ataxia, drowsiness,
Routes	PO, IV
Assessment/Education	No grapefruit. Monitor closely for changes in behavior that could indicate the emergence or worsening of SI or behavior or depression. Monitor for S/s of DRESS syndrome. Instruct pt. to report behavioral changes, skin rash, fever, sore throat, mouth ulcers, easy bruising, petechiae, unusual bleeding, abdominal pain, chills, rash, pale stools, dark urine, or jaundice to PCP immediately.
Considerations	IV Rate: Infuse over 30 min. Monitor CBC, including platelet count, reticulocyte count, & iron, at baseline, weekly during the first 2 mo, & yearly thereafter for evidence of potentially fatal blood cell abnormalities. D/c therapy if bone marrow depression occurs. Therapeutic levels range from 4–12 mcg/mL.

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Carbamide peroxide (Debrox)	Ophthalmic Anti-infectives

Mechanism of Action	Otic preparation; source of hydrogen peroxide & nascent oxygen, by releasing oxygen mechanically removes debris from inaccessible regions
Indications	As an aid to soften, loosen & remove excessive earwax
Contraindications	Hypersensitivity to any of the ingredients of the product. Ear drainage or discharge. Irritation or rash in the ear. An injury or perforation (hole) of the eardrum. Recently had ear surgery. Ear pain. Dizziness.
Adverse Reactions	Irritation
Routes	Ears
Assessment/Education	For adults, gently pull the upper ear up & back. For pediatrics, gently pull the lower ear down & back.
Considerations	Instill 5-10 gtt in ear canal bid x 4 days PRN. Max: 4 days. Drops should remain in ear for several minutes

Carbidopa/Levodopa (Sinemet)	antiparkinson agents, dopamine agonists

Mechanism of Action	Levodopa is converted to dopamine in the CNS, where it serves as a neurotransmitter. Carbidopa, a decarboxylase inhibitor, prevents peripheral destruction of levodopa. ● Relief of tremor & rigidity in Parkinson's syndrome.
Indications	Parkinson's disease. Not useful for drug-induced extrapyramidal reactions.
Contraindications	Angle-closure glaucoma. Nonselective MAO inhibitor therapy. Malignant melanoma. Undiagnosed skin lesions. Some products contain tartrazine, phenylalanine, or aspartame & should be avoided in pts. with known hypersensitivity.
Adverse Reactions	**GI HEMORRHAGE, GI ISCHEMIA, GI OBSTRUCTION, GI PERFORATION, HEPATOTOXICITY, INTUSSUSCEPTION, PANCREATITIS, PERITONITIS**, constipation, N/V, dyskinesias, depression, involuntary movements, orthostatic hypotension
Routes	PO, Enteral
Assessment/Education	Monitor for S/s of GI complications during therapy.
Considerations	May cause false-positive test results in Coombs' test. May cause Increase glucose. Dipstick for urine ketones may reveal false-positive results. Monitor hepatic & renal function & CBC. May cause increase AST, ALT, bilirubin, alkaline phosphatase, LDH, & protein-bound iodine concentrations. May cause Decrease BUN, Cr, & uric acid. May cause Decrease hemoglobin, Decrease hematocrit, agranulocytosis, hemolytic & nonhemolytic anemia, thrombocytopenia, leukopenia, & Increase WBC.

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Cefoxitin (Mefoxin)	**anti-infectives, 2nd generation cephalosporins**

Mechanism of Action	Binds to bacterial cell wall membrane, causing cell death. ● Bactericidal action against susceptible bacteria.
Indications	Tx of the following infections caused by susceptible organisms: Lower respiratory tract infections, Skin & skin structure infections, Bone & joint infections, Urinary tract infections, Gynecological infections, Intra-abdominal infections, Septicemia. Perioperative prophylaxis.
Contraindications	Hypersensitivity to cephalosporins. Serious hypersensitivity to PCNs.
Adverse Reactions	**SEIZURES (HIGH DOSES), C-DIFF-ASSOCIATED DIARRHEA (CDAD),** n/v/d, rashes, phlebitis
Routes	IM, IV
Assessment/Education	Observe pt. for S/S of anaphylaxis. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-Diff-associated diarrhea (CDAD).
Considerations	May cause positive results for Coombs' test, especially in pts. with azotemia. May cause Increased AST, ALT, alkaline phosphatase, bilirubin, LDH, BUN, & Cr. May cause falsely Increased test results for & urine Cr; do not obtain samples within 2 hr of administration. May rarely cause leukopenia, neutropenia, agranulocytosis, thrombocytopenia, & eosinophilia.

Ceftriaxone (Rocephin)	**Cephalosporin, third generation cephalosporins**

Mechanism of Action:	Binds to the bacterial cell wall membrane, causing cell death. ● Bactericidal action against susceptible bacteria.
Indications:	Tx of: Skin & skin structure infections. Bone & joint infections. Complicated & uncomplicated urinary tract infections. Uncomplicated gynecological infections including gonorrhea. Lower respiratory tract infections. Intra-abdominal infections. Septicemia. Meningitis. Otitis media. Perioperative prophylaxis.
Contraindications:	Serious hypersensitivity to PCN **Pedi:** Premature neonates up to a postmenstrual age of 41 wk. Hyperbilirubinemic neonates (may lead to bilirubin encephalopathy). Neonates greater/equal to 28 days requiring Ca-containing IV solutions (increased risk of precipitation formation).
Adverse Reactions:	**SEIZURES, C-DIFF, ANAPHYLAXIS**
Routes:	IM, IV
Assessment/Education:	Observe pt. for s/s of anaphylaxis. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-diff associated colitis. May begin up to several wk. following cessation of therapy. Instruct pt. to notify PCP if fever & diarrhea develop, especially if diarrhea contains blood, mucus, or pus. Advise pt. not to treat diarrhea without consulting PCP.
Considerations:	***Rate:*** Infuse over 30 min. May cause positive results for Coombs' test. May cause increase AST, ALT, alkaline phosphatase, bilirubin, LDH, BUN, & Cr. May rarely cause leukopenia, neutropenia, agranulocytosis, thrombocytopenia, eosinophilia, lymphocytosis, & thrombocytosis.

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Celecoxib (Celebrex)	**antirheumatics, nonsteroidal anti-inflammatory agents**

Mechanism of Action:	Inhibits the enzyme COX-2. This enzyme is required for the synthesis of prostaglandins. Has analgesic, anti-inflammatory, & antipyretic properties. ● Decreased pain & inflammation caused by arthritis or spondylitis. Decreased pain.
Indications:	Relief of S/s of osteoarthritis, rheumatoid arthritis, ankylosing spondylitis, & juvenile rheumatoid arthritis. Management of acute pain including primary dysmenorrhea.
Contraindications:	Cross-sensitivity may exist with other NSAIDs, including aspirin. Hx of allergic-type reactions to sulfonamides. Hx of asthma, urticaria, or allergic-type reactions to aspirin or other NSAIDs, including the aspirin triad (asthma, nasal polyps, & severe hypersensitivity reactions to aspirin). Advanced renal disease. Severe hepatic dysfunction. Coronary artery bypass graft (CABG) surgery OB: Should not be used in late pregnancy (may cause premature closure of the ductus arteriosus).
Adverse Reactions:	**HF, MI, STROKE, THROMBOSIS, GI BLEEDING, EXFOLIATIVE DERMATITIS, SJS, TEN**
Routes:	PO
Assessment/Education:	Assess pt. for allergy to sulfonamides, aspirin, or NSAIDs. Pts. with these allergies should not receive celecoxib. Assess pt. for skin rash frequently during therapy. D/c at first sign of rash; may be life-threatening. SJS may develop. Treat symptomatically; may recur once tx is stopped.
Considerations:	May cause increased AST & ALT levels. May cause hypophosphatemia, hyperkalemia, & increased BUN. Advise pt. to notify MD promptly if S/s of GI toxicity skin rash, unexplained weight gain, edema, or chest pain occurs.

Cephalexin (Keflex)	**anti-infectives; first generation cephalosporins**

Mechanism of Action	Binds to bacterial cell wall membrane, causing cell death. ● Bactericidal action against susceptible bacteria.
Indications	Tx for: Skin & skin structure infections, respiratory tract infections, otitis media, urinary tract infections, bone infections.
Contraindications	Hypersensitivity to cephalosporins. Serious hypersensitivity to penicillins.
Adverse Reactions	**SEIZURES; C-DIFF,** Diarrhea
Routes	PO
Assessment/Education	Observe pt. for s/s of anaphylaxis. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP as a sign of C-Diff. May begin up to several wk following cessation of therapy.
Considerations	May cause positive results for Coombs' test. May cause increased AST, ALT, alkaline phosphatase, bilirubin, LDH, BUN, Cr. May rarely cause neutropenia, thrombocytopenia, & eosinophilia.

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Chlordiazepoxide (Librium)	**Benzodiazepine**

Mechanism of Action	Acts at many levels of the CNS to produce anxiolytic effect. ● Depresses the CNS, probably by potentiating GABA, an inhibitory neurotransmitter.
Indications	Anxiety, alcohol withdrawal, preoperative apprehension
Contraindications	Products with tartrazine; cross sensitivity with other benzodiazepines; coma, pre-existing CNS depression; uncontrolled pain, pulmonary disease; angle-closure glaucoma; porphyria; OB, lactation, Pedi
Adverse Reactions	Dizziness, drowsiness
Routes	PO
Assessment/Education	Take with meals or milk; do not d/c abruptly;
Considerations	Pts. on prolonged therapy should have CBC & liver function tests evaluated periodically. May cause increase in bilirubin, AST, & ALT. **Flumazenil (Romazicon) is the antidote, but do not use if pt. has a seizure disorder**

Chlorpromazine (Thorazine)	**Antipsychotic, phenothiazines**

Mechanism of Action	Alters effects of dopamine in CNS; has anticholinergic & alpha-adrenergic blocking activity
Indications	Psychoses (2nd line); N/V; anxiety before surgery; chronic hiccups; acute intermittent porphyria; tetanus.
Contraindications	Hypersensitivity to sulfites; angle-closure glaucoma; bone marrow depression; liver/CV disease; concurrent pimozide use
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME; AGRANULOCYTOSIS** constipation; blurry vision; dry mouth; hypotension; photosensitivity; sedation
Routes	PO; IM; IV
Assessment/Education	No alcohol prior/on; seek help with: jaundice; sore throat w/fever; long term use can cause serious irreversible movement disorders; take with food; assess mental status; BP; HR; RR; No alcohol
Considerations	Keep pt. recumbent for at least 30 min following parenteral administration to minimize hypotensive effects. Monitor CBC, liver function tests, & ocular exams periodically throughout therapy. May cause decrease H&H, leukocytes, granulocytes, platelets.

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Cholestyramine (Questran)	lipid-lowering agents, bile acid sequestrants

Mechanism of Action	Bind bile acids in the GI tract, forming an insoluble complex. Result is increased clearance of cholesterol. ● Decreased plasma cholesterol & low-density lipoproteins (LDLs). Decreased pruritus.
Indications	Management of primary hypercholesterolemia. Pruritus associated with elevated levels of bile acids.
Contraindications	Complete biliary obstruction. Some products contain aspartame & should be avoided in pts. with phenylketonuria.
Adverse Reactions	Abdominal discomfort, constipation, nausea
Routes	PO
Assessment/Education	Action takes place in the GI tract. No absorption occurs.
Considerations	cholesterol & triglyceride levels should be evaluated before initiating, frequently during first few mo & periodically throughout therapy. D/c medication if paradoxical increase in cholesterol level occurs. May cause an increase in AST, ALT, phosphorus, Cl, & alkaline phosphatase & a decrease in calcium, Na, & K levels. May also cause prolonged prothrombin times.

Cimetidine (Tagamet)	antiulcer agents, histamine h2 antagonists

Mechanism of Action	Inhibits the action of histamine at the H2-receptor site located primarily in gastric parietal cells, resulting in inhibition of gastric acid secretion. Healing & prevention of ulcers. ● Decreased Sx of gastroesophageal reflux & secretion of gastric acid.
Indications	Short-term Tx of active duodenal ulcers & benign gastric ulcers. Maintenance therapy for duodenal ulcers after healing of active ulcer(s). Management of GERD. Tx of heartburn, acid indigestion, & sour stomach (OTC use). Management of gastric hypersecretory states (Zollinger-Ellison syndrome).
Contraindications	Oral liquid contains alcohol & should be avoided in pts. with known intolerance.
Adverse Reactions	**AGRANULOCYTOSIS, APLASTIC ANEMIA, ARRHYTHMIAS**, confusion
Routes	PO
Assessment/Education	Assess pt. for epigastric or abdominal pain & frank or occult blood in the stool, emesis, or gastric aspirate. Assess geriatric & debilitated pts. routinely for confusion. Report promptly.
Considerations	Monitor CBC with differential periodically throughout therapy. Antagonize effects of pentagastrin & histamine during gastric acid secretion testing. Avoid administration for 24 hr preceding the test. May cause false-negative results in skin tests using allergenic extracts. Histamine H antagonists should be d/cd 24 hr prior to the test. May cause Increased transaminases & Cr.

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Ciprofloxacin (Cipro)	**Fluroquinolones**

Mechanism of Action:	Inhibits bacterial DNA synthesis by inhibiting DNA gyrase enzyme. ● Death of susceptible bacteria.
Indications:	**PO**, **IV**: Tx of the following infections: Skin & skin structure infections. Bone & joint infections. Complicated intra-abdominal infections (with metronidazole). UTI. Chronic bacterial prostatitis. Lower respiratory tract infections. Acute bacterial sinusitis. Post-exposure prophylaxis of inhalational anthrax. Tx & prophylaxis of plague. **PO**: Tx of the following infections: Infectious diarrhea. Typhoid fever. Uncomplicated cervical & urethral gonorrhea. **IV**: Tx of the following infections: Nosocomial pneumonia. Febrile neutropenia (with piperacillin/tazobactam). *Gram positive/gram negative*
Contraindications:	Hx of myasthenia gravis (may worsen Sx including muscle weakness & breathing problems). Use with tizanidine. OB: Do not use unless potential benefit outweighs potential fetal risk. Pedi: Use only if no alternatives in children 1–17 yrs. due to possible arthropathy.
Adverse Reactions:	**ELEVATED ICP (INCLUDING PSEUDOTUMOR CEREBRI), SEIZURES, SI, HEPATOTOXICITY, C-DIFF, ANAPHYLAXIS** diarrhea, nausea
Routes:	PO, IV
Assessment/Education:	Observe for s/s of anaphylaxis. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-diff. May begin up to several wk. following cessation of therapy. Encourage pt. to maintain a fluid intake of at least 1500–2000 mL/day to prevent crystalluria. Notify PCP if fever & diarrhea develop, especially if stool contains blood, pus, or mucus. Advise pt. not to treat diarrhea without consulting PCP. Instruct pt. to notify PCP immediately if s/s of hepatotoxicity, rash, signs of hypersensitivity, serious CNS effects peripheral neuropathy or tendon pain, swelling, or inflammation occur. If tendon Sx occur, avoid exercise & use of affected area. Increase risk in >65 yrs. old, kidney, heart & lung transplant recipients, & pts. taking corticosteroids concurrently.
Considerations:	Administer over 60 min into a large vein to minimize venous irritation. May cause increased AST, ALT, LDH, bilirubin, & alkaline phosphatase. May also cause increase or decrease in BG.

Citalopram (Celexa)	**SSRI**

Mechanism of Action	Selectively inhibits the reuptake of serotonin in the CNS
Indications	Depression
Contraindications	MAO inhibitors; pimozide; congenital long QT syndrome, bradycardia, hypokalemia, hypomagnesemia, recent myocardial infarction, decompensated heart failure; drugs that prolong QT interval
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME, SI**, **TORSADE DE POINTES, SEROTONIN SYNDROME**, apathy, confusion, drowsiness, insomnia, weakness, abdominal pain, anorexia, diarrhea, dry mouth, dyspepsia, flatulence, saliva, nausea, sweating
Routes	PO
Assessment/Education	Assess for SI, Serotonin syndrome. Wear sunscreen; educate on dry mouth/good oral hygiene.
Considerations	Monitor electrolytes (K & Mg) in pts. at risk for electrolyte imbalances prior to & periodically during therapy.

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Clindamycin (Cleocin)	**Lincosamides, anti-infectives**

Mechanism of Action:	Inhibits protein synthesis in susceptible bacteria at the level of the 50S ribosome. ● Bactericidal or bacteriostatic, depending on susceptibility & concentration.
Indications:	**PO**, **IM**, **IV**: Tx of: Skin & skin structure infections. Respiratory tract infections. Septicemia. Intra-abdominal infections. Gynecologic infections. Osteomyelitis. Endocarditis prophylaxis. **Topical**: Severe acne. **Vag**: Bacterial vaginosis
Contraindications:	Regional enteritis or ulcerative colitis (topical foam). Previous *C-diff.* Severe liver impairment. Diarrhea. Known alcohol intolerance (topical solution, suspension).
Adverse Reactions:	**C-DIFF, DRESS, ERYTHEMA MULTIFORME, SJS, TEN, HYPERSENSITIVITY REACTIONS** Diarrhea
Routes:	PO, IV, IM
Assessment/Education:	Monitor bowel elimination. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-diff. May begin up to several wk. following the cessation of therapy. Assess pt. for hypersensitivity (skin rash, urticaria).
Considerations:	Monitor CBC; may cause transient increase in leukocytes, eosinophils, & platelets. May cause increased alkaline phosphatase, bilirubin, CPK, AST, & ALT concentrations.

Clonazepam (Klonopin)	**anticonvulsants** **benzodiazepines**

Mechanism of Action	Anticonvulsant effects may be due to presynaptic inhibition. Produces sedative effects in the CNS, probably by stimulating inhibitory GABA receptors. ● Prevention of seizures. Decreased manifestations of panic disorder.
Indications	Tx of Lennox-Gastaut, akinetic, or myoclonic seizures. Panic disorder with or without agoraphobia.
Contraindications	Hypersensitivity to clonazepam or other benzodiazepines. Severe hepatic impairment. OB. Lactation
Adverse Reactions	**SI,** behavioral changes, drowsiness,
Routes	PO
Assessment/Education	Monitor closely for notable changes in behavior that could indicate the emergence or worsening of SI or behavior or depression.
Considerations	Check CBC & liver function evaluated periodically. May cause an increase in bilirubin, AST, & ALT. Therapeutic concentrations are 20–80 mg/mL. **Flumazenil antagonizes clonazepam toxicity or overdose (may induce seizures in pts. with Hx of seizure disorder or who are on TCAs).**

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Clonidine (Catapres)	**Alpha-agonist hypotensive agent**

Mechanism of Action	Stimulates alpha-adrenergic receptors in the CNS, which results in decreased sympathetic outflow inhibiting cardioacceleration & vasoconstriction centers. ● Prevents pain signal transmission to the CNS by stimulating alpha-adrenergic receptors in the spinal cord.
Indications	PO, Transdermal: Mild to moderate HTN. PO: Attention-deficit hyperactivity disorder (ADHD) Epidural: Management of cancer pain unresponsive to opioids alone.
Contraindications	For epidural: injection site infection, anticoagulant therapy or bleeding problems
Adverse Reactions	Drowsiness, withdrawal phenomenon
Routes	PO, epidural, transdermal
Assessment/Education	Administer last dose of day at bedtime; monitor BP, HR prior to administration/start; monitor for s/s of "opioid" withdrawal; may increase BG levels
Considerations	May cause transient increase in BG levels. May cause decreased urinary catecholamine & vanillylmandelic acid (VMA) concentrations; these may increase on abrupt withdrawal. May cause weakly positive Coombs' test result.

Clopidogrel (Plavix)	**antiplatelet agents, platelet aggregation inhibitors**

Mechanism of Action:	Inhibits platelet aggregation by irreversibly inhibiting the binding of ATP to platelet receptors. ● Reduction in risk of MI & CVA.
Indications:	Acute coronary syndrome (ST-segment elevation MI, non-ST-segment elevation MI, or unstable angina). Pts. with established peripheral arterial disease, recent MI, or recent CVA.
Contraindications	Pathologic bleeding (peptic ulcer, intracranial hemorrhage). Concurrent use of omeprazole or esomeprazole. CYP2C19 poor metabolizers. Lactation.
Adverse Reactions:	**ACUTE GENERALIZED EXANTHEMATOUS PUSTULOSIS, DRESS, SJS, TEN, BLEEDING, NEUTROPENIA, THROMBOTIC THROMBOCYTOPENIC PURPURA, GI BLEEDING**
Routes:	PO
Assessment/Education:	D/c use 5-7 days before planned surgery. Notify PCP if fever, weakness, chills, sore throat, rash, unusual bleeding or bruising, extreme skin paleness, purple skin patches, yellowing of skin or eyes, or neurological changes occur.
Considerations:	Monitor for thrombotic thrombocytic purpura & bleeding time during therapy. Prolonged bleeding time, which is time- & dose-dependent, is expected.

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Clotrimazole (Gyne-Lotrimin-3)	Antifungals

Mechanism of Action	Affects the permeability of the fungal cell wall, allowing leakage of cellular contents. Not active against bacteria. ● Inhibited growth & death of susceptible Candida, with decrease in accompanying Sx of vulvovaginitis (vaginal burning, itching, discharge).
Indications	Tx of vulvovaginal candidiasis.
Contraindications	Hypersensitivity to active ingredients, additives, or preservatives. Lactation
Adverse Reactions	Vaginal itching, soreness, vulvovaginal burning.
Routes	Vag
Assessment/Education	Instruct pt. to apply medication as directed for full course of therapy, even if feeling better. Therapy should be continued during menstrual period.
Considerations	For adults & children older than 12 years.

Clozapine (Clozaril)	Antipsychotic

Mechanism of Action	Binds to dopamine receptors in the CNS; has anticholinergic & alpha-adrenergic blocking activity. Produces fewer extrapyramidal reactions & less tardive dyskinesia than standard antipsychotics but carries high risk of hematologic abnormalities.
Indications	Schizophrenia unresponsive to or intolerant of standard therapy with other antipsychotics; to reduce recurrent SI behavior in schizophrenic pts.
Contraindications	Bone marrow depression; severe CNS depression/coma; uncontrolled epilepsy; clozapine-induced agranulocytosis or severe granulocytopenia
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME; CARDIAC ARREST; DEEP VEIN THROMBOSIS; HF; MITRAL VALVE INCOMPETENCE; MYOCARDITIS; TORSADE DE POINTES; VENTRICULAR ARRHYTHMIAS; HEPATOTOXICITY; AGRANULOCYTOSIS; LEUKOPENIA; PULMONARY EMBOLISM; SEIZURES** Dizziness; sedation; hypotension, tachycardia; constipation
Routes	PO
Assessment/Education	Do not take with caffeine; monitor for signs of: myocarditis; arrhythmias; akathisia; tardive dyskinesia. Lowers seizure threshold. Assess mental status; monitor BP, HR; monitor for extrapyramidal Sx; seek help: sore throat w/fever; teach extrapyramidal Sx.
Considerations	Monitor WBC, absolute neutrophil count (ANC), & differential count before initiation of therapy. ANC must be ge.gif1500/mm3 for the general population & ge.gif1000/mm3 for pts. with documented Benign Ethnic Neutropenia (BEN) for pt. to begin therapy. Monitor ANC weekly for the first 6 mo, then biweekly for the 2nd 6 mo, then, if maintained within acceptable parameters, monthly after 12 mo. Assess fasting BG & cholesterol levels initially & throughout therapy

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Copper T 380A (Paraguard)	**contraceptive hormones**

Mechanism of Action	The contraceptive effectiveness of ParaGard is enhanced by copper continuously released into the uterine cavity. Mechanism(s) by which copper enhances contraceptive efficacy include interference with sperm transport & fertilization of an egg, & possibly prevention of implantation
Indications	Prevention of pregnancy.
Contraindications	Pregnancy or suspicion of pregnancy. Abnormalities of the uterus resulting in distortion of the uterine cavity. Acute pelvic inflammatory disease, or current behavior suggesting a high risk for pelvic inflammatory disease. Postpartum endometritis or postabortal endometritis in the past 3 months. Known or suspected uterine or cervical malignancy. Genital bleeding of unknown etiology. Mucopurulent cervicitis. Wilson's disease. Allergy to any component of ParaGard. A previously placed IUD that has not been removed
Adverse Reactions	Vaginal Bleeding, anemia, vaginitis, pain/cramping
Routes	Intrauterine
Assessment/Education	Can last up to ten years
Considerations	Can exacerbate Wilson's disease

Cyclobenzaprine (Flexeril)	**skeletal muscle relaxants (centrally acting)**

Mechanism of Action	Reduces tonic somatic muscle activity at the level of the brainstem. Structurally similar to tricyclic antidepressants. ● Reduction in muscle spasm & hyperactivity without loss of function.
Indications	Management of acute painful musculoskeletal conditions associated with muscle spasm.
Contraindications	Should not be used within 14 days of MAO inhibitor therapy. Immediate period after MI. Severe or symptomatic cardiovascular disease. Cardiac conduction disturbances. Hyperthyroidism.
Adverse Reactions	Dizziness, drowsiness, dry mouth
Routes	PO
Assessment/Education	Assess for serotonin syndrome, neuromuscular, &/or GI, especially in pts. taking other serotonergic drugs (SSRIs, SNRIs, triptans). Instruct pt. to notify PCP immediately if S/s of serotonin syndrome &/or urinary retention occur.
Considerations	Caution pt. to avoid driving or other activities requiring alertness until response to drug is known. Maximum effects may not be evident for 1–2 wk. Use is usually limited to 2–3 wk; however, has been effective for at least 12 wk in the management of fibromyalgia.

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Dantrolene (Dantrium)	**skeletal muscle relaxants (direct acting)**

Mechanism of Action:	Acts directly on skeletal muscle, causing relaxation by decreasing calcium release from sarcoplasmic reticulum in muscle cells. Prevents intense catabolic process associated with malignant hyperthermia. ● Reduction of muscle spasticity. Tx & prevention of malignant hyperthermia.
Indications:	**PO**: Tx of spasticity associated with: Spinal cord injury, stroke, cerebral palsy, multiple sclerosis. Prophylaxis of malignant hyperthermia. **IV**: Emergency Tx of malignant hyperthermia. Prevention of malignant hyperthermia in pts. at high risk.
Contraindications:	No contraindications to IV form in Tx of malignant hyperthermia. Lactation. Situations in which spasticity is used to maintain posture or balance.
Adverse Reactions:	**HEPATOTOXICITY, ANAPHYLAXIS**, drowsiness, muscle weakness, diarrhea, flushing
Routes:	PO, IV
Assessment/Education:	Assess previous anesthesia Hx of all surgical pts. Also assess for family Hx of reactions to anesthesia. Instruct pt. to notify PCP if rash; itching; yellow eyes or skin; dark urine; or clay-colored, bloody, or black, tarry stools occur or if nausea, weakness, malaise, fatigue, or diarrhea persists.
Considerations:	Monitor liver function frequently during therapy. Liver function abnormalities (Increases AST, ALT, alkaline phosphatase, bilirubin, GGTP) may require discontinuation of therapy. Evaluate renal function & CBC before & periodically during therapy in pts. receiving prolonged therapy.

Delta-9-tetrahydrocannabinol, THC (Dronabinol)	**Antiemetics, cannabinoids**

Mechanism of Action	Active ingredient in marijuana. Has a wide variety of CNS effects, including inhibition of the vomiting control mechanism in the medulla oblongata. Suppression of n/v. Increased appetite in pts. with AIDS.
Indications	Prevention of serious n/v from cancer chemotherapy when other more conventional agents have failed. Management of anorexia associated with weight loss in pts. with AIDS.
Contraindications	Hypersensitivity to dronabinol, marijuana, or sesame oil. Hypersensitivity to alcohol. Received disulfiram- or metronidazole-containing products in previous 14 days (oral solution). N/v due to any other causes. OB. Lactation.
Adverse Reactions	**SEIZURES**, anxiety, concentration difficulty, confusion, dizziness, drowsiness, mood change, dry mouth
Routes	PO
Assessment/Education	No grapefruit. Assess n/v, appetite, bowel sounds, & abdominal pain prior to & following the administration of this drug. Monitor hydration, nutritional status, & intake & output. Pts. with severe n/v may require IV fluids in addition to antiemetics. Monitor BP & HR periodically throughout therapy
Considerations	Dronabinol capsules should be refrigerated. Signs of OD may occur with increased doses

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Dexamethasone (Dexamethasone Intensol)	**Corticosteroid**

Mechanism of Action:	In pharmacologic doses, suppresses inflammation & the normal immune response. Has numerous intense metabolic effects. Suppresses adrenal function at chronic doses of 0.75 mg/day. Has negligible mineralocorticoid activity. ● Suppression of inflammation & modification of the normal immune response.
Indications:	Used systemically & locally in a wide variety of chronic diseases including: inflammatory. Allergic. Hematologic. Endocrine. Neoplastic. Dermatologic. Autoimmune disorders. Management of cerebral edema. Diagnostic agent in adrenal disorders.
Contraindications:	Active untreated infections (may be used in pts. being treated for tuberculous meningitis). Known alcohol or bisulfite hypersensitivity or intolerance (some products contain these & should be avoided in susceptible pts.). Epidural use (may result in serious neurological injury or death).
Adverse Reactions:	**Adverse reactions/side effects are much more common with high-dose/long-term therapy** **PEPTIC ULCERATION, THROMBOEMBOLISM** anorexia, nausea, HTN, acne, decrease wound healing, ecchymoses, hirsutism, petechiae, adrenal suppression, muscle wasting, osteoporosis, cushingoid appearance (moon face, buffalo hump)
Routes:	PO, IM, IV
Assessment/Education:	Assess for signs of adrenal insufficiency (hypotension, weight loss, weakness, N/V, anorexia, lethargy, confusion, restlessness) before & periodically during therapy. Monitor I&O ratios & daily weights. Observe pt. for peripheral edema, steady weight gain, rales/crackles, or dyspnea. Notify PCP should these occur. Children should have periodic evaluations of growth. **Cerebral Edema:** Assess for changes in LOC & headache throughout therapy.
Considerations:	Monitor electrolytes & glucose. May cause hyperglycemia, especially in pts. with DM. Monitor hematologic values, electrolytes, & urine glucose in pts. on prolonged therapy. May cause decrease WBC counts. May cause decreased K & Ca & increased Na concentrations. Guaiac test stools. Promptly report presence of guaiac-positive stools. May cause increased cholesterol & lipid values. Suppresses reactions to allergy skin tests. Periodic adrenal function tests may be ordered to assess degree of hypothalamic-pituitary-adrenal axis suppression in systemic & chronic topical therapy.

Dextromethorphan (Vicks DayQuil, Delsym)	**allergy, cold & cough remedies, antitussives**

Mechanism of Action	Suppresses the cough reflex by a direct effect on the cough center in the medulla. Related to opioids structurally but has no analgesic properties. Relief of irritating nonproductive cough.
Indications	Symptomatic relief of coughs caused by minor viral upper respiratory tract infections or inhaled irritants. Most effective for chronic nonproductive cough. A common ingredient in nonprescription cough & cold preparations.
Contraindications	Pts. taking MAO inhibitors or SSRIs. Should not be used for chronic productive coughs. Some products contain alcohol & should be avoided in pts. with known intolerance.
Adverse Reactions	High dose: dizziness, sedation
Routes	PO
Assessment/Education	Assess frequency & nature of cough, lung sounds, & amount & type of sputum produced. Unless contraindicated, maintain fluid intake of 1500–2000 mL to decrease viscosity of bronchial secretions. Instruct pt. to cough effectively: Sit upright & take several deep breaths before attempting to cough.
Considerations	Caution pt. to avoid taking more than the recommended dose or taking alcohol or other CNS depressants concurrently with this medication; fatalities have occurred.

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Diazepam (Valium)	**Benzodiazepine**

Mechanism of Action:	Depresses the CNS, probably by potentiating GABA, an inhibitory neurotransmitter. ● Produces skeletal muscle relaxation by inhibiting spinal polysynaptic afferent pathways. Has anticonvulsant properties due to enhanced presynaptic inhibition.
Indications:	Anxiety; athetosis; stiffman syndrome; preoperative sedation; conscious sedation; status epilepticus; skeletal muscle relaxant, alcohol withdrawal
Contraindications:	Cross sensitivity with other benzodiazepines; coma; myasthenia gravis; pulmonary impairment; sleep apnea; severe hepatic dysfunction; pre-existing CNS depression; uncontrolled severe pain; angle-closure glaucoma, products that contain alcohol; OB, Pedi, Lactation
Adverse Reactions:	**RESPIRATORY DEPRESSION,** Dizziness, drowsiness, lethargy
Routes:	PO, IV, IM, Rectal
Assessment/Education:	For IV – do not dilute; IM – use deep deltoid; PO – can be taken with food; monitor BP, HR, RR.
Considerations:	**Flumazenil (Romazicon**) is the antidote, but do not use if pt. has a seizure disorder Do not repeat *Diastat* rectal dose more than 5 times/mo or 1 episode every 5 days. Evaluate hepatic & renal function & CBC periodically during prolonged therapy. May cause increase tranaminases & alkaline phosphatase.

Diltiazem (Cardizem)	**CCB, antianginals, antiarrhythmics (class IV), antihypertensives**

Mechanism of Action:	Inhibits transport of Ca into myocardial & vascular smooth muscle cells, resulting in inhibition of excitation-contraction coupling & subsequent contraction. ● Systemic vasodilation resulting in decrease BP. Coronary vasodilation resulting in decrease frequency & severity of attacks of angina. Reduction of ventricular rate in atrial fibrillation or flutter.
Indications:	HTN. Angina pectoris & vasospastic (Prinzmetal's) angina. Supraventricular tachyarrhythmias & rapid ventricular rates in atrial flutter or fibrillation.
Contraindications:	Sick sinus syndrome. 2nd- or 3rd-degree AV block (unless an artificial pacemaker is in place). Systolic BP <90 mm Hg. Recent MI or pulmonary congestion. Concurrent use of rifampin.
Adverse Reactions:	**ARRHYTHMIAS, HF, SJS,** peripheral edema
Routes:	PO, IV
Assessment/Education:	Monitor BP & HR prior to therapy, during dose titration, & periodically during therapy. Monitor ECG periodically during prolonged therapy. May cause prolonged PR interval. Monitor I&O ratios & weight. Assess for signs of HF. Assess for rash periodically during therapy. May cause SJS. D/c therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis &/or eosinophilia. Monitor ECG continuously during administration. Report bradycardia or prolonged hypotension promptly. Emergency equipment & medication should be available. Monitor BP & HR before & frequently during administration.
Considerations:	Total Ca concentrations are not affected by CCBs. Monitor K periodically. Hypokalemia increase the risk of arrhythmias & should be corrected. Monitor renal & hepatic functions periodically during long-term therapy. May cause increase in hepatic enzymes after several days of therapy, which return to normal on discontinuation of therapy.

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Diclofenac (Zorvolex -oral, Voltaren Gel – topical)	**nonopioid analgesics, nonsteroidal anti-inflammatory agents**

Mechanism of Action:	Inhibits prostaglandin synthesis. Suppression of pain & inflammation. Relief of acute migraine attacks. Topical (Solaraze): Clearance of actinic keratosis lesions.
Indications:	PO: Management of inflammatory disorders including: Rheumatoid arthritis, Osteoarthritis, Ankylosing spondylitis. Primary dysmenorrhea. Relief of mild to moderate pain. Acute Tx of migraines (powder for oral solution). Topical: Management of: Actinic keratoses (Solaraze), Osteoarthritis (Voltaren Gel, Pennsaid [for knees]). Transdermal: Acute pain due to minor strains, sprains, & contusions.
Contraindications:	Cross-sensitivity may occur with other NSAIDs including aspirin. Active GI bleeding/ulcer disease. Coronary artery bypass graft (CABG) surgery. Exudative dermatitis, eczema, infectious lesions, burns, or wounds.
Adverse Reactions:	**HF, MYOCARDIAL INFARCTION, STROKE, GI BLEEDING, HEPATOTOXICITY, EXFOLIATIVE DERMATITIS, SJS, TEN, ANAPHYLAXIS**, pruritis, rashes, contact dermatitis, dry skin, exfoliation.
Routes:	PO, topical, rectal
Assessment/Education:	Pts. who have asthma, aspirin-induced allergy, & nasal polyps are at Increased risk for developing hypersensitivity reactions. Monitor BP closely during initiation of Tx & periodically during therapy in pts. with HTN. Assess pt. for skin rash frequently during therapy. D/c at first sign of rash; may be life-threatening. SJS may develop
Considerations:	Diclofenac has minimal effect on bleeding time & platelet aggregation. May cause Decreased in H&H. Monitor CBC & liver function tests within 4–8 wk of initiating diclofenac & periodically during therapy. May cause Increased alkaline phosphatase, LDH, AST, & ALT concentrations. Monitor BUN & Cr periodically during therapy. May cause Increased BUN & Cr.

Digifab (Digibind)	**antidotes**

Mechanism of Action	An antibody produced in sheep that binds antigenically to unbound digoxin in. Binding & subsequent removal of digoxin, preventing toxic effects in overdose.
Indications	Serious life-threatening OD with digoxin.
Contraindications	none
Adverse Reactions	**HYPOKALEMIA**
Routes	IV
Assessment/Education	Monitor ECG, HR, BP, & body temperature before & during Tx. Pts. with atrial fibrillation may develop a rapid ventricular response as a result of decreased digoxin levels. Assess pt. for increase in signs of HF
Considerations	Infuse over 30 min through a 0.22-micron membrane filter. If cardiac arrest is imminent, rapid IV push injection may be used. Monitor digoxin levels before administration. Monitor K levels frequently during Tx. Before Tx, hyperkalemia usually coexists with toxicity. Levels may decrease rapidly; hypokalemia should be treated promptly. Free digoxin levels fall rapidly after administration. Total concentrations rise suddenly after administration but are bound to the Fab molecule & are inactive. Total concentrations will decrease to undetectable levels within several days. digoxin levels are not valid for 5–7 days after administration.

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Digoxin (Lanoxin)	**antiarrhythmics, inotropics, digitalis glycosides**

Mechanism of Action:	Increase the force of myocardial contraction. Prolongs refractory period of the AV node. decrease conduction through the SA & AV nodes. ● Increase cardiac output (positive inotropic effect) & slowing of the HR (negative chronotropic effect).
Indications:	Heart failure. Atrial fibrillation & atrial flutter (slows ventricular rate). Paroxysmal atrial tachycardia.
Contraindications:	Uncontrolled ventricular arrhythmias. AV block (in absence of pacemaker). Idiopathic hypertrophic subaortic stenosis. Constrictive pericarditis. Known alcohol intolerance (elixir only).
Adverse Reactions:	**ARRHYTHMIA** Fatigue, bradycardia, anorexia, N/V
Routes:	IM, IV, PO
Assessment/Education:	Monitor apical HR for 1 full min before administering. Withhold dose & notify PCP if HR rate is <60 bpm in an adult, <70 bpm in a child, or <90 bpm in an infant. Monitor BP periodically in pts. receiving IV digoxin. Monitor ECG throughout IV administration & 6 hr after each dose. Notify PCP if bradycardia or new arrhythmias occur. Administer 1 hour before or 2 hours after meals; high fiber diet decrease high-fiber meal.
Considerations:	Concurrent ingestion of a **high-fiber meal** may decrease absorption. Administer digoxin 1 hour before or 2 hours after such a meal. Digoxin has a narrow therapeutic range. 2nd nurse check off. Evaluate electrolyte levels (especially K, Mg, & Ca) & renal & hepatic functions periodically during therapy. Therapeutic digoxin levels range from 0.5–2 ng/mL. levels may be drawn 6–8 hr after a dose is administered. **ANTIDOTE: Digibind**

Diltiazem (Cardizem)	**CCB, antianginals, antiarrhythmics (class IV), antihypertensives**

Mechanism of Action:	Inhibits transport of Ca into myocardial & vascular smooth muscle cells, resulting in inhibition of excitation-contraction coupling & subsequent contraction. ● Systemic vasodilation resulting in decrease BP. Coronary vasodilation resulting in decrease frequency & severity of attacks of angina. Reduction of ventricular rate in atrial fibrillation or flutter.
Indications:	HTN. Angina pectoris & vasospastic (Prinzmetal's) angina. Supraventricular tachyarrhythmias & rapid ventricular rates in atrial flutter or fibrillation.
Contraindications:	Sick sinus syndrome. 2nd- or 3rd-degree AV block (unless an artificial pacemaker is in place). Systolic BP <90 mm Hg. Recent MI or pulmonary congestion. Concurrent use of rifampin.
Adverse Reactions:	**ARRHYTHMIAS, HF, SJS** peripheral edema
Routes:	PO, IV
Assessment/Education:	Monitor BP & HR prior to therapy, during dose titration, & periodically during therapy. Monitor ECG periodically during prolonged therapy. May cause prolonged PR interval. Monitor I&O ratios & weight. Assess for signs of HF. Assess for rash periodically during therapy. May cause SJS. D/c therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis &/or eosinophilia. Monitor ECG continuously during administration. Report bradycardia or prolonged hypotension promptly. Emergency equipment & medication should be available. Monitor BP & HR before & frequently during administration.
Considerations:	Total Ca concentrations are not affected by CCBs. Monitor K periodically. Hypokalemia increase the risk of arrhythmias & should be corrected. Monitor renal & hepatic functions periodically during long-term therapy. May cause increase in hepatic enzymes after several days of therapy, which return to normal on discontinuation of therapy.

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Diphenhydramine (Benadryl)	**allergy, cold & cough remedies, antihistamines, antitussives**

Mechanism of Action:	Antagonizes the effects of histamine at H_1-receptor sites; does not bind to or inactivate histamine. Significant CNS depressant & anticholinergic properties. ● decrease Sx of histamine excess (sneezing, rhinorrhea, nasal & ocular pruritus, ocular tearing & redness, urticaria). Relief of acute dystonic reactions. Prevention of motion sickness. Suppression of cough.
Indications:	Relief of allergic Sx caused by histamine release including: Anaphylaxis. Seasonal & perennial allergic rhinitis. Allergic dermatoses. Parkinson's disease & dystonic reactions from medications. Mild nighttime sedation. Prevention of motion sickness.
Contraindications:	Acute attacks of asthma Lactation**.** Known alcohol intolerance
Adverse Reactions:	Drowsiness, anorexia, dry mouth
Routes:	PO, IM, IV
Assessment/Education:	Caution parents to avoid OTC cough & cold products while breast feeding or to children <4 yr.
Considerations:	May decrease skin response to allergy tests. D/c 4 days before skin testing

diphenoxylate/atropine (Lomotil)	**Antidiarrheals, anticholinergics**

Mechanism of Action	Inhibits excess GI motility. Structurally related to opioid analgesics but has no analgesic properties. Atropine added to discourage abuse. ● Decreased GI motility with subsequent decrease in diarrhea.
Indications	Adjunctive therapy in the Tx of diarrhea.
Contraindications	Severe liver disease. Infectious diarrhea (due to Escherichia coli, Salmonella, or Shigella). Diarrhea associated with C-Diff-associated diarrhea (CDAD). Dehydrated pts. Angle-closure glaucoma. Children <2 yr. Known alcohol intolerance (some liquid diphenoxylate/atropine products only).
Adverse Reactions	Dizziness, constipation
Routes	PO
Assessment/Education	Assess the frequency & consistency of stools & bowel sounds prior to & throughout therapy.
Considerations	Liver function tests should be evaluated periodically during prolonged therapy. Diphenoxylate/atropine may cause increased amylase concentrations.

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Dobutamine (Dobutrex)	**Inotropics, adrenergics**

Mechanism of Action	Stimulates beta1(myocardial)-adrenergic receptors with relatively minor effect on HR or peripheral blood vessels. ● Increased cardiac output without significantly increased HR.
Indications	Short-term (<48 hr) management of heart failure caused by depressed contractility from organic heart disease or surgical procedures.
Contraindications	Hypersensitivity to dobutamine or bisulfites. Idiopathic hypertrophic subaortic stenosis.
Adverse Reactions	HTN, increased HR, premature ventricular contractions,
Routes	IV
Assessment/Education	Monitor BP, HR, ECG, pulmonary capillary wedge pressure (PCWP), cardiac output, CVP, & urinary output continuously during the administration. Consult physician for parameters for HR, BP, or ECG changes for adjusting dose or discontinuing med. Palpate peripheral pulses & assess appearance of extremities routinely throughout dobutamine administration.
Considerations	Have 2nd practitioner independently check original order, dosage calculations, & infusion pump settings. Do not confuse dobutamine with dopamine. Correct hypovolemia with volume expanders before initiating dobutamine therapy. Administer into a large vein & assess administration site frequently. Titrate to pt. response. Dose should be titrated, so HR does not increase by >10% of baseline. Monitor K concentrations during therapy; may cause hypokalemia. Monitor electrolytes, BUN, Cr, & prothrombin time weekly during prolonged therapy. If OD occurs, reduction or discontinuation of therapy is the only Tx necessary because of the short duration of dobutamine.

Docusate sodium (Senna)	**Laxatives, stimulant laxatives, stool softeners**

Mechanism of Action:	Senna's metabolite acts as a local irritant on the colon stimulating peristalsis. Docusate promotes incorporation of water into stool, resulting in softer fecal mass. ● Softening & passage of stool.
Indications:	Tx of constipation associated with dry, hard stools & decreased intestinal motility. Prevention of opioid-induced constipation.
Contraindications:	Abdominal pain, nausea, or vomiting, especially when associated with fever or other signs of an acute abdomen. Concomitant use of mineral oil.
Adverse Reactions:	Abdominal cramps; n/v/d
Routes:	PO
Assessment/Education:	Assess pt. for abdominal distention, presence of bowel sounds, & usual pattern of bowel function. Assess color, consistency, & amount of stool produced
Considerations:	Advise pts. that laxatives should be used only for short-term therapy. Long-term therapy may cause electrolyte imbalance & dependence. Encourage pts. to use other forms of bowel regulation, such as increasing bulk in the diet, increasing fluid intake

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Donepezil (Aricept)	**anti-Alzheimer's agents, cholinergics (cholinesterase inhibitors)**

Mechanism of Action	Inhibits acetylcholinesterase thus improving cholinergic function by making more acetylcholine available. ● May temporarily lessen some of the dementia associated with Alzheimer's disease. Enhances cognition. Does not cure the disease.
Indications	Mild, moderate, or severe dementia/neurocognitive disorder associated with Alzheimer's disease.
Contraindications	Hypersensitivity to donepezil or piperidine derivatives.
Adverse Reactions	Headache, diarrhea, nausea
Routes	PO
Assessment/Education	Assess cognitive function (memory, attention, reasoning, language, ability to perform simple tasks) periodically during therapy. Monitor HR periodically during therapy. May cause bradycardia.
Considerations	Advise pt. & caregiver to notify PCP if N/V/D, or changes in color of stool occur or if new Sx occur or previously noted Sx increase in severity.

Dopamine	**inotropics, vasopressors, adrenergics**

Mechanism of Action:	Small doses (0.5–3 mcg/kg/min) stimulate dopaminergic receptors, producing renal vasodilation. Larger doses (2–10 mcg/kg/min) stimulate dopaminergic & beta1-adrenergic receptors, producing cardiac stimulation & renal vasodilation. Doses greater than 10 mcg/kg/min stimulate alpha-adrenergic receptors & may cause renal vasoconstriction.
Indications:	Adjunct to standard measures to improve: BP, Cardiac output, Urine output in Tx of shock unresponsive to fluid replacement. Increase renal perfusion (low doses).
Contraindications:	Tachyarrhythmias. Pheochromocytoma. Hypersensitivity to bisulfites (some products)
Adverse Reactions:	Arrhythmias. Hypotension
Routes:	IV
Assessment/Education:	MOAI concurrently could lead to severe HTN. Monitor BP, HR, ECG & urinary output continuously during administration.
Considerations:	2nd nurse verifications; extravasation = severe irritation, necrosis

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Doxycycline (Doxy)	**Tetracyclines, anti-infectives**

Mechanism of Action:	Inhibits bacterial protein synthesis at the level of the 30S bacterial ribosome. Low-dose products used in the management of periodontitis inhibit collagenase. ● Bacteriostatic action against susceptible bacteria.
Indications:	Tx of various infections caused by unusual organisms, including: *Mycoplasma*. *Chlamydia*. *Rickettsia*. *Borellia burgdorferi*. Tx of inhalational anthrax (post exposure) & cutaneous anthrax. Tx of gonorrhea & syphilis in PCN-allergic pts. Prevention of exacerbations of chronic bronchitis. Tx of acne. Tx of inflammatory lesions associated with rosacea (Oracea only). Malaria prophylaxis. Gram positive/gram negative & several other pathogens
Contraindications:	Some products contain alcohol or bisulfites & should be avoided in pts. with known hypersensitivity or intolerance. **OB:** Pregnancy — risk of permanent staining of teeth in infant if used during last half of pregnancy (unless used for anthrax; doxycycline may be used to treat anthrax in pregnant women due to the seriousness of the disease)
Adverse Reactions:	**C-DIFF, PANCREATITIS, DRESS, ERYTHEMA MULTIFORME, SJS, TEN** photosensitivity, N/V/D
Routes:	PO, IV
Assessment/Education:	Ca in foods or dairy products decrease absorption. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-diff. May begin up to several wk. following cessation of therapy. Assess for rash periodically during therapy. May cause SJS or TEN. D/c therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis &/or eosinophilia. Instruct pt. to notify PCP immediately if rash, diarrhea, abdominal cramping, fever, or bloody stools occur & not to treat with antidiarrheals without consulting PCP s.
Considerations:	***Rate:*** Administer over a minimum of 1–4 hr. Avoid rapid administration. Monitor renal & hepatic functions & CBC periodically during long-term therapy. May cause increased AST, ALT, alkaline phosphatase, bilirubin, & amylase concentrations. May cause false increase in urinary catecholamine levels.

Duloxetine (Cymbalta)	**SNRI**

Mechanism of Action	Inhibits serotonin & norepinephrine reuptake in the CNS. Both antidepressant & pain inhibition are centrally mediated.
Indications	Major depressive disorder. Diabetic peripheral neuropathic pain; anxiety. Fibromyalgia. Chronic musculoskeletal pain
Contraindications	MAO inhibitors or MAO-like drugs; severe renal impairment (CCr <30 mL/min). Chronic hepatic impairment or substantial alcohol use. Lactation
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME, SEIZURES, SI, HEPATOTOXICITY, PANCREATITIS, ERYTHEMA MULTIFORME, SJS, SEROTONIN SYNDROME** sweating decreased appetite, constipation, dry mouth, nausea, fatigue, drowsiness, insomnia
Routes	PO
Assessment/Education	Assess for SI; serotonin syndrome, rash; pain
Considerations	May cause increased ALT, AST, bilirubin, CPK, & alkaline phosphatase. May cause hyponatremia. Monitor blood sugar & hemoglobin A1c. May cause slight increase in BG.

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Enalapril (Vasotec)	**Antihypertensives, ace inhibitors**

Mechanism of Action	Angiotensin-converting enzyme (ACE) inhibitors block the conversion of angiotensin I to the vasoconstrictor angiotensin II. ACE inhibitors also prevent the degradation of bradykinin & other vasodilatory prostaglandins. ACE inhibitors also Increase plasma renin levels & Decrease aldosterone levels. Net result is systemic vasodilation. ● Lowering of BP in pts. with HTN. Increased survival & reduction of Sx in pts. with symptomatic HF. Decreased development of overt HF.
Indications	Alone or with other agents in the management of HTN. Management of symptomatic HF. Slowed progression of asymptomatic left ventricular dysfunction to overt HF.
Contraindications	Hx of angioedema (either idiopathic or with previous use of ACE inhibitors) Concurrent use with aliskiren in pts. with DM or moderate-to-severe renal impairment (CCr <60 mL/min) OB. Lactation.
Adverse Reactions	**ANGIOEDEMA**, cough, hypotension, proteinuria
Routes	PO, IV
Assessment/Education	Monitor BP & HR frequently during initial dose adjustment & periodically during therapy. Monitor weight & assess pt. routinely for resolution of fluid overload. Assess pt. for signs of angioedema; may occur at any time during therapy.
Considerations	Monitor renal function. May cause Increased in BUN & Cr. May cause hyperkalemia. Monitor CBC periodically during therapy in pts. with collagen vascular disease &/or renal disease. May rarely cause slight Decreased H&H & agranulocytosis. May cause Increased AST, ALT, alkaline phosphatase, & bilirubin.

Enoxaparin (Lovenox)	**Anticoagulants, antithrombotics, low molecular weight heparins**

Mechanism of Action:	Potentiates the inhibitory effect of antithrombin on factor Xa & thrombin.
Indications:	Prevention of venous thromboembolism (VTE) (deep vein thrombosis (DVT) &/or pulmonary embolism (PE)) in surgical or medical pts. Tx of DVT with/out PE (with warfarin). Prevention of ischemic complications (with aspirin) from unstable angina & non-ST-segment-elevation MI. Tx of acute ST-segment-elevation MI (with thrombolytics or percutaneous coronary intervention). ● Potentiates the inhibitory effect of antithrombin on factor Xa & thrombin.
Contraindications:	Hypersensitivity to benzyl alcohol (multidose vial). Positive in vitro test for antiplatelet antibody in the presence of enoxaparin. Active, major bleeding.
Adverse Reactions:	Bleeding. Anemia
Routes:	SC, IV (STEMI only)
Assessment/Education:	Assess for signs of bleeding & hemorrhage (bleeding gums; nosebleed; unusual bruising; black, tarry stools; hematuria; fall in HCT or BP; guaiac-positive stools); bleeding from surgical site. Monitor pt. for hypersensitivity reactions (chills, fever, urticaria)
Considerations:	Monitor CBC, platelet count, & stools for occult blood periodically during therapy. May cause increase in AST & ALT levels. May cause hyperkalemia. **ANTIDOTE: PROTAMINE SULFATE 1mg for each mg of enoxaparin**

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Epinephrine	**antiasthmatics, bronchodilators, vasopressors, adrenergics**

Mechanism of Action:	Results in the accumulation of cyclic adenosine monophosphate (cAMP) at beta-adrenergic receptors. Affects both beta1(cardiac)-adrenergic receptors & beta2(pulmonary)-adrenergic receptor sites. Produces bronchodilation. Also has alpha-adrenergic agonist properties, which result in vasoconstriction. Inhibits the release of mediators of immediate hypersensitivity reactions from mast cells. ● Bronchodilation. Maintenance of HR & BP. Localization/prolongation of local/spinal anesthetic.
Indications:	Management of severe allergic reactions, cardiac arrest (unlabeled), reversible airway disease due to asthma or COPD (unlabeled). Inhaln: Management of upper airway obstruction & croup (racemic epinephrine). Local/Spinal: Adjunct in the localization/prolongation of anesthesia.
Contraindications:	Hypersensitivity to adrenergic amines. Some products may contain bisulfites & should be avoided in pts. with known hypersensitivity or intolerance.
Adverse Reactions:	**PARADOXICAL BRONCHOSPASM (EXCESSIVE USE OF INHALERS)** Angina. Arrhythmias. HTN. Tachycardia. Nervousness. Restlessness. Tremor
Routes:	SC, IM, IV, Intracardiac, Intratracheal, Intraosseous, Inhalation
Assessment/Education:	Bronchodilator: Assess lung sounds, respiratory pattern, HR, & BP before administration & during peak of medication. Observe for paradoxical bronchospasm Vasopressor: Monitor BP, HR, ECG, & RR frequently during IV administration. Continuous ECG, hemodynamic parameters, & urine output should be monitored continuously during IV administration.
Considerations:	MOAI concurrently could lead to severe HTN. Epinephrine is available in various concentrations, strengths, & percentages & used for different purposes. May cause transient decrease in K concentrations with nebulization or at higher than recommended doses. May cause an increase in BG & lactic acid concentrations.

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Erythromycin (Erythrocin, Akne-Mycin)	**anti-infectives, macrolides**

Mechanism of Action	Suppresses protein synthesis at the level of the 50S bacterial ribosome. ● Bacteriostatic action against susceptible bacteria.
Indications	**IV**, **PO**: Infections caused by susceptible organisms including: Upper & lower respiratory tract infections, Otitis media (with sulfonamides), Skin & skin structure infections, Pertussis, Diphtheria, Erythrasma, Intestinal amebiasis, Pelvic inflammatory disease, Nongonococcal urethritis, Syphilis, Legionnaires' disease, Rheumatic fever. Useful when penicillin is the most appropriate drug but cannot be used because of hypersensitivity, including: Streptococcal infections. Tx of syphilis or gonorrhea. **Topical**: Tx of acne. Active against many gram-positive cocci & bacilli; several gram-negative pathogens & mycoplasma & chlamydia.
Contraindications	Concurrent use of pimozide, ergotamine, dihydroergotamine, procainamide, quinidine, dofetilide, amiodarone, or sotalol. Long QT syndrome. Hypokalemia. Hypomagnesemia. HR <50 bpm. Known alcohol intolerance (most topicals) Tartrazine sensitivity (some products contain tartrazine — FDC yellow dye #5) Products containing benzyl alcohol should be avoided in neonates.
Adverse Reactions	**TORSADE DE POINTES, VENTRICULAR ARRHYTHMIAS, C-DIFF-ASSOCIATED DIARRHEA (CDAD),** n/v/d, phlebitis
Routes	PO, IV, topical
Assessment/Education	Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-Diff-associated diarrhea (CDAD). May begin up to several wk following cessation of therapy.
Considerations	Monitor liver function tests periodically on pts. receiving high-dose, long-term therapy. May cause Increased bilirubin, AST, ALT, & alkaline phosphatase concentrations. May cause false Increased of urinary catecholamines.

Eszopiclone (Lunesta)	**sedative/hypnotics** **cyclopyrrolones**

Mechanism of Action	Interacts with GABA-receptor complexes; not a benzodiazepine. Improved sleep with decreased latency & increased maintenance of sleep.
Indications	Insomnia
Contraindications	Hypersensitivity
Adverse Reactions	Behavior changes, depression, hallucinations, sleep-driving
Routes	PO
Assessment/Education	Dose may need to be decreased gradually to minimize withdrawal Sx. Rebound insomnia &/or anxiety may occur upon discontinuation & usually resolves within 1–2 nights. May cause daytime & next-day drowsiness.
Considerations	Onset is rapid. Administer only on nights when pt. is able to get 8 or more hours of sleep before being active again. Decreased effectiveness if taking after eating large & high-fat meal.

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ethinyl estradiol/etonogestrel (Nuva Ring)	contraceptive hormones

Mechanism of Action	Inhibits ovulation, decreases sperm entry into uterus, decreases likelihood of implantation.
Indications	Prevention of pregnancy. Delivers 0.015 mg ethinyl estradiol & 0.120 mg etonogestrel/day
Contraindications	Pregnancy. Hx of cigarette smoking or age >35 yr. Hx of thromboembolic disease. Protein C, protein S, or antithrombin deficiency or other thrombophilic disorder. Valvular heart disease. Major surgery with extended periods of immobility.DM with vascular involvement. Headache with focal neurological Sx. Uncontrolled HTN. Hx of breast, endometrial, or estrogen-dependent cancer. Abnormal genital bleeding. Liver disease.
Adverse Reactions	**PANCREATITIS, THROMBOEMBOLISM**
Routes	Vag
Assessment/Education	Assess BP before & periodically during therapy. Exclude the possibility of pregnancy on the basis or hx &/or physical exam or a pregnancy test.
Considerations	May cause false interpretations of thyroid function tests. Report s/s of fluid retention, thromboembolic disorders, mental depression, hepatic dysfunction, or abnormal vaginal bleeding. Women with a strong family hx of breast cancer, fibrocystic breast disease, abnormal mammograms, or cervical dysplasia should be monitored for breast cancer at least yearly. Risk of thromboembolism is highest in 1st year of use & increased when a combination hormonal contraceptive is restarted after a break in use of at least 4 wks.

Etomidate	general anesthetics, nonbarbiturates

Mechanism of Action	Hypnotic CNS depressant without analgesic activity. ● Induction/supplementation of general anesthesia.
Indications	Induction of general anesthesia. Supplemental anesthesia with other agents (nitrous oxide) for short procedures.
Contraindications	Prolonged infusion not recommended (suppresses cortisol production) OB: Pregnancy, labor, delivery (including cesarean section); may affect child's brain development when used during 3rd trimester.
Adverse Reactions	**APENA, LARYNGOSPASM** Transient skeletal muscle movements
Routes	IV
Assessment/Education	Onset: <1 min; duration 3-5 mins Assess respiratory status, HR, & BP continuously throughout etomidate therapy. May cause brief periods of apnea. Maintain patent airway & adequate ventilation. Assess level of sedation & level of consciousness throughout & following administration.
Considerations	High Alert: Etomidate should be used only by individuals experienced in endotracheal intubation. Equipment for airway management should be readily available. Dose is titrated to pt. response. Etomidate has no effect on the pain threshold. Adequate analgesia should always be used when etomidate is used as an adjunct to surgical procedures.

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Etonogestrel (Nexplanon)	**contraceptive hormones**

Mechanism of Action	Mechanism not clearly known. May alter cervical mucus & the endometrial environment, preventing penetration by sperm & implantation of the egg. ● Ovulation may also be suppressed.
Indications	Prevention of pregnancy
Contraindications	Pregnancy. Hx of cigarette smoking or age >35 yr. Hx of thromboembolic disease. Protein C, protein S, or antithrombin deficiency or other thrombophilic disorder. Valvular heart disease. Major surgery with extended periods of immobility.DM with vascular involvement. Headache with focal neurological Sx. Uncontrolled HTN. Hx of breast, endometrial, or estrogen-dependent cancer. Abnormal genital bleeding. Liver disease.
Adverse Reactions	**PANCREATITIS, THROMBOEMBOLISM**
Routes	Implant
Assessment/Education	Assess BP before & periodically during therapy. Exclude the possibility of pregnancy on the basis or hx &/or physical exam or a pregnancy test before administering emergency contraceptives.
Considerations	May cause Increased LDL concentrations. May cause Decreased alkaline phosphatase & HDL concentrations. May cause false interpretations of thyroid function tests.

Fentanyl	**opioid analgesics, opioid agonists**

Mechanism of Action:	Binds to opiate receptors in the CNS, altering the response to & perception of pain. Produces CNS depression. ● Supplement in anesthesia. Decrease in pain.
Indications:	Analgesic supplement to general anesthesia; usually with other agents (ultra–short-acting barbiturates, neuromuscular blocking agents, & inhalation anesthetics) to produce balanced anesthesia. Induction/maintenance of anesthesia (with oxygen or oxygen/nitrous oxide & a neuromuscular blocking agent). Neuroleptanalgesia/neuroleptanesthesia (with/out nitrous oxide). Supplement to regional/local anesthesia. Preoperative & postoperative analgesia.
Contraindications:	Known intolerance
Adverse Reactions:	**APNEA, LARYNGOSPASM**
Routes:	IM, IV
Assessment/Education:	Avoid MAOI within 14 days. No grapefruit. Monitor RR & BP frequently throughout therapy. Report significant changes immediately. The respiratory depressant effects of fentanyl may last longer than the analgesic effects
Considerations:	Rapid IV push could result in chest wall rigidity. MEDICATION IS ADMINISTERED IN MICROGRAMS. 150mcg/kg is MAX dose (general anesthesia). Usual dose for >12 yrs. 50-100mcg/DOSE **ANTITODE: Narcan**

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Ferrous Sulfate (Fe50)	**Antianemics, Fe supplements**

Mechanism of Action	An essential mineral found in hemoglobin, myoglobin, & many enzymes. Enters the bloodstream & is transported to the organs of the reticuloendothelial system (liver, spleen, bone marrow) where it becomes part of Fe stores. Resolution or prevention of Fe deficiency anemia.
Indications	Tx & prevention Fe deficiency anemia.
Contraindications	Anemia not due to Fe deficiency. Hemochromatosis. Hemosiderosis. Hypersensitivity to Fe products.
Adverse Reactions	Nausea, constipation, dark stools, epigastric pain,
Routes	PO
Assessment/Education	Assess nutritional status & dietary Hx
Considerations	Monitor H&H & reticulocyte values prior to & every 3 wk during the first 2 mo of therapy & periodically thereafter. ferritin & Fe levels may also be monitored to assess effectiveness of therapy. Occult blood in stools may be obscured by black coloration of Fe in stool. Guaiac test results may occasionally be false-positive. Benzidine test results are not affected by Fe preparations. Early Sx of OD include stomach pain, fever, N/V (may contain blood), & diarrhea. Late Sx include bluish lips, fingernails, & palms; drowsiness; weakness; tachycardia; seizures; metabolic acidosis; hepatic injury; & cardiovascular collapse. Pt. may appear to recover prior to the onset of late Sx. Therefore, hospitalization continues for 24 hr after pt. becomes asymptomatic to monitor for delayed onset of shock or GI bleeding. Late complications of overdose include intestinal obstruction, pyloric stenosis, & gastric scarring. If pt. is comatose or seizing, gastric lavage with Na bicarbonate is performed. Deferoxamine is the antidote. Additional supportive treatments to maintain fluid & electrolyte balance & correction of metabolic acidosis is also indicated.

Finasteride (Proscar)	**hair regrowth stimulants, androgen inhibitors**

Mechanism of Action	Inhibits the enzyme 5-alpha-reductase, which is responsible for converting testosterone to its potent metabolite 5-alpha-dihydrotestosterone in prostate, liver, & skin; 5-alpha-dihydrotestosterone is partially responsible for prostatic hyperplasia & hair loss. Reduced prostate size with associated decrease in urinary Sx. ● Decreases hair loss; promotes hair regrowth.
Indications	Benign prostatic hyperplasia (BPH); can be used with doxazosin. androgenetic alopecia (male pattern baldness) in men only.
Contraindications	Women
Adverse Reactions	**PROSTATE CANCER (HIGH-GRADE), ANGIOEDEMA, BREAST CANCER.**
Routes	PO
Assessment/Education	At least 6–12 mo of therapy may be necessary to determine whether or not an individual will respond to finasteride.
Considerations	Prostate-specific antigen (PSA) concentrations, which are used to screen for prostate cancer, may be evaluated before & periodically during therapy. Finasteride may cause a decreased in PSA levels.

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Fluconazole (Diflucan)	**antifungals**

Mechanism of Action	Inhibits synthesis of fungal sterols, a necessary component of the cell membrane. Fungistatic action against susceptible organisms. May be fungicidal in higher concentrations.
Indications	PO, IV: Fungal infections caused by susceptible organisms, including: Oropharyngeal or esophageal candidiasis, Serious systemic candidal infections, Urinary tract infections, Peritonitis, Cryptococcal meningitis. Prevention of candidiasis in pts. who have undergone bone marrow transplantation. PO: Single-dose oral Tx of vaginal candidiasis.
Contraindications	Hypersensitivity to fluconazole or other azole antifungals. Concurrent use with pimozide, erythromycin, or quinidine.
Adverse Reactions	**HEPATOTOXICITY, SJS**
Routes	PO, IV
Assessment/Education	Assess pt. for rash (mild to moderate rash usually occurs in the 2nd wk of therapy & resolves within 1–2 wk of continued therapy). If rash is severe, accompanied by systemic Sx, or occurs during Tx for a superficial fungal infection, therapy must be d/cd immediately.
Considerations	Monitor BUN & Cr before & periodically during therapy; pts. with renal dysfunction will require dose adjustment. Monitor liver function tests before & periodically during therapy. May cause Increased AST, ALT, alkaline phosphate, & bilirubin concentrations.

Fludrocortisone	**Hormones, corticosteroids**

Mechanism of Action	Causes NA reabsorption, hydrogen & K excretion, & water retention by its effects on the distal renal tubule. ● Maintenance of NA balance & BP in pts. with adrenocortical insufficiency.
Indications	NA loss & hypotension associated with adrenocortical insufficiency (given with hydrocortisone or cortisone). Management of NA loss due to congenital adrenogenital syndrome (congenital adrenal hyperplasia).
Contraindications	Hypersensitivity
Adverse Reactions	**HF**
Routes	PO
Assessment/Education	Monitor BP periodically during therapy. Report significant changes. Hypotension may indicate insufficient dose. Monitor for fluid Monitor pts. with Addison's disease closely & stop Tx if a significant increase in weight or BP, edema, or cardiac enlargement occurs.
Considerations	Large amounts of salt or Na-containing foods may cause excessive Na retention & K loss. Monitor electrolytes periodically during therapy. Fludrocortisone causes Decreased K levels.

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Flumazenil (Romazicon)	**Antidotes**

Mechanism of Action:	Flumazenil is a benzodiazepine derivative that antagonizes the CNS depressant effects of benzodiazepine compounds. It has no effect on CNS depression from other causes, including opioids, alcohol, barbiturates, or general anesthetics.
Indications:	Complete/partial reversal of effects of benzodiazepines used as general anesthetics, or during diagnostic or therapeutic procedures. Management of intentional or accidental overdose of benzodiazepine
Contraindications:	Hypersensitivity to flumazenil or benzodiazepines. Pts. receiving benzodiazepines for life-threatening medical problems, including status epilepticus or ↑ICP. Serious cyclic antidepressant over dosage.
Adverse Reactions:	**SEIZURES** dizziness, N/V
Routes:	IV
Assessment/Education:	Assess LOC & respiratory status before & during therapy. Observe pt. for at least 2 hr. after administration for the appearance of re-sedation. Hypoventilation may occur.
Considerations:	Institute seizure precautions. Seizures are more likely to occur in pts. who are experiencing sedative/hypnotic withdrawal, pts. who have recently received repeated doses of benzodiazepines, or those who have a previous hx of seizure activity. Administer each dose over 15 to 30 seconds. Do not exceed 0.5 mg/min

Fluoxetine (Prozac)	**SSRI**

Mechanism of Action	Selectively inhibits the reuptake of serotonin in the CNS
Indications	Depression, OCD, bulimia nervosa, panic disorder, depressive episodes with bipolar I, premenstrual dysphoric disorder
Contraindications	MAO inhibitors; thioridazine or pimozide use
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME, SI**, **TORSADE DE POINTES, SEROTONIN SYNDROME, SEIZURES,** anxiety, drowsiness, headache, insomnia, nervousness, sexual dysfunction, diarrhea, sweating, pruritus
Routes	PO
Assessment/Education	Assess for SI, serotonin syndrome. Educate on dry mouth/good oral hygiene.
Considerations	Monitor CBC & differential periodically during therapy. Notify PCP if leukopenia, anemia, thrombocytopenia, or increased bleeding time occurs.

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Fluphenazine (Prolixin)	**Antipsychotic, phenothiazines**

Mechanism of Action	Alters effects of dopamine in CNS; has anticholinergic & alpha-adrenergic blocking activity
Indications	Psychoses
Contraindications	Subcortical brain damage; coma; bone marrow depression; liver disease; allergy to sesame oil; drugs that prolong QT interval
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME; AGRANULOCYTOSIS** Extrapyramidal Sx; photosensitivity; constipation
Routes	F. deconoate; IM (glutes) F. hydrochloride; PO; IM (glutes)
Assessment/Education	Do not take with: caffeine; tannics; pectinates Assess mental status; BP; HR; RR; no alcohol prior/on; seek help; jaundice; sore throat w/fever; teach extrapyramidal Sx & about tardive dyskinesia
Considerations	Tardive dyskinesia may be irreversible. Evaluate CBC, liver function tests, & ocular examinations periodically during therapy. May cause decreased H&H, leukocytes, granulocytes, & platelets.

Fluticasone (Flovent)	**Corticosteroids**

Mechanism of Action:	Potent, locally acting anti-inflammatory & immune modifier.
Indications:	Maintenance & prophylactic Tx of asthma.
Contraindications:	Hypersensitivity (aerosol contains propellants; powder contains lactose [avoid in pts. with severe milk protein allergy]). Acute attack of asthma/status asthmaticus
Adverse Reactions:	**ANAPHYLAXIS, LARYNGEAL EDEMA, URTICARIA, BRONCHOSPASM, CHURG-STRAUSS SYNDROME,** Headache
Routes:	Inhalation
Assessment/Education:	Assess pts. changing from systemic corticosteroids to inhalation corticosteroids for signs of adrenal insufficiency (anorexia, nausea, weakness, fatigue, hypotension, hypoglycemia) during initial therapy & periods of stress. If these signs appear, notify PCP immediately; condition may be life-threatening. Monitor for s/s of hypersensitivity reactions (rash, pruritis, swelling of face & neck, dyspnea) periodically during therapy.
Considerations:	After the desired clinical effect has been obtained, attempts. should be made to decrease dose to lowest amount required to control Sx. Gradually decrease dose every 2–4 wk. as long as desired effect is maintained. Periodic adrenal function tests may be ordered to assess degree of hypothalamic-pituitary-adrenal (HPA) axis suppression in chronic therapy. May cause increase & urine glucose concentrations if significant absorption occurs.

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Furosemide (Lasix)	**Diuretics, loop diuretics**

Mechanism of Action:	Inhibits the reabsorption of Na & Cl from the loop of Henle & distal renal tubule. ● Increase renal excretion of water, Na, Cl, Mg, K, & Ca. Effectiveness persists in impaired renal function.
Indications:	Edema due to heart failure, hepatic impairment, or renal disease. HTN.
Contraindications:	Cross-sensitivity with thiazides & sulfonamides may occur. Hepatic coma or anuria. Some liquid products may contain alcohol, avoid in pts. with alcohol intolerance.
Adverse Reactions:	**ERYTHEMA MULTIFORME, SJS, TEN, APLASTIC ANEMIA, AGRANULOCYTOSIS** Dehydration, hypocalcemia, hypochloremia, hypokalemia, hypomagnesemia, hyponatremia, hypovolemia, metabolic alkalosis
Routes:	PO, IM, IV
Assessment/Education:	Assess fluid status. Monitor weight, I&O ratios, amount & location of edema, lung sounds, skin turgor, & mucous membranes. Monitor BP & HR before & during administration. Assess pt. for skin rash frequently during therapy. D/c furosemide at first sign of rash; may be life-threatening. SJS, TEN, or erythema multiforme may develop.
Considerations:	Monitor electrolytes, renal & hepatic function, BG, & uric acid levels before & periodically throughout therapy. Commonly decrease K. May cause decrease Na, Ca, & Mg concentrations. May also cause increase BUN, BG, Cr, & uric acid levels.

Gabapentin (Neurontin)	**analgesic adjuncts, therapeutic, anticonvulsants**

Mechanism of Action	Mechanism of action is not known. May affect transport of amino acids across & stabilize neuronal membranes. ● Decreased incidence of seizures, postherpetic pain &/or leg restlessness.
Indications	Partial seizures (adjunct Tx) (immediate-release only); postherpetic neuralgia. Restless legs syndrome (Horizant only). Unlabeled Use: Neuropathic pain. Prevention of migraine headache. Bipolar disorder. Anxiety. Diabetic peripheral neuropathy.
Contraindications	Hypersensitivity
Adverse Reactions	**SI, RHABDOMYOLYSIS, ANAPHYLAXIS, ANGIOEDEMA, MULTIORGAN HYPERSENSITIVITY REACTIONS** Confusion, depression, dizziness, drowsiness
Routes	PO
Assessment/Education	Monitor closely for notable changes in behavior that could indicate the emergence or worsening of SI or behavior or depression.
Considerations	May cause false-positive readings when testing for urinary protein with Ames N-Multistix SG dipstick test; use sulfosalicylic acid precipitation procedure. May cause leukopenia.

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Ganciclovir (Cytovene)	**antivirals**

Mechanism of Action	CMV converts ganciclovir to its active form (ganciclovir phosphate) inside the host cell, where it inhibits viral DNA polymerase. ● Antiviral effect directed preferentially against CMV-infected cells.
Indications	IV: Tx of cytomegalovirus (CMV) retinitis in immunocompromised pts., including HIV-infected pts. (may be used with foscarnet). Prevention of CMV infection in transplant pts. at risk. Congenital CMV infection in neonates.
Contraindications	Bone marrow depression or immunosuppression or thrombocytopenia (do not administer if ANC <500/mm3 or platelet count <25,000/mm3).
Adverse Reactions	**SEIZURES, GI BLEEDING**, neutropenia, thrombocytopenia
Routes	IV
Assessment/Education	Assess for bleeding (bleeding gums, bruising, petechiae; guaiac stools, urine, & emesis). Avoid IM injections & taking rectal temperatures. Apply pressure to venipuncture sites for 10 min. Advise pt. to notify PCP if fever; chills; sore throat; other signs of infection; bleeding gums; bruising; petechiae; or blood in urine, stool, or emesis occurs. Caution pt. to avoid crowds & persons with known infections. Instruct pt. to use soft toothbrush & electric razor. Pt. should be cautioned not to drink alcoholic beverages or take products containing aspirin or NSAIDs.
Considerations	Obtain a negative pregnancy test prior to starting therapy. Monitor neutrophil & platelet count at least every 2 days during bid therapy & weekly thereafter. Granulocytopenia usually occurs during the first 2 wk of Tx but may occur anytime during therapy. Do not administer if neutrophil count <500/mm^3 or platelet count <25,000/mm^3. Recovery begins within 3–7 days of discontinuation of therapy. Monitor BUN & Cr at least once every 2 wk throughout therapy. Monitor liver function tests (AST, ALT, bilirubin, alkaline phosphatase) periodically during therapy. May cause increase levels. May cause decrease blood glucose.

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Gentamicin	**Aminoglycosides, anti-infectives**

Mechanism of Action:	Inhibits protein synthesis in bacteria at level of 30S ribosome. ● Bactericidal action.
Indications:	Tx of serious gram-negative bacterial infections & infections caused by staphylococci when PCN or other fewer toxic drugs are contraindicated. In combination with other agents in the management of serious enterococcal infections. Prevention of infective endocarditis. **Topical**, **Ophth**: Tx of localized infections due to susceptible organisms.
Contraindications:	Most parenteral products contain bisulfites & should be avoided in pts. with known intolerance **Pedi:** Products containing benzyl alcohol should be avoided in neonates
Adverse Reactions:	ataxia, vertigo, ototoxicity (vestibular & cochlear), nephrotoxicity
Routes:	IM, IV, IT, Topical
Assessment/Education:	Keep pt. well hydrated (1500–2000 mL/day) during therapy. ***Concentration:*** Not to exceed 10 mg/mL. Evaluate eighth cranial nerve function by audiometry before & throughout therapy. Hearing loss is usually in high-frequency range. Prompt recognition & intervention are essential in preventing permanent damage. Monitor for vestibular dysfunction (vertigo, ataxia, N/V). Eighth cranial nerve dysfunction is associated with persistently elevated peak aminoglycoside levels. Aminoglycosides should be d/cd if tinnitus or subjective hearing loss occurs. Monitor I&O & weight to assess hydration status & renal function.
Considerations:	***Rate:*** Infuse slowly over 30 min–2 hr. Monitor renal function by urinalysis, specific gravity, BUN, Cr, & CCr before & throughout therapy. May cause increased BUN, AST, ALT, alkaline phosphatase, bilirubin, Cr, & LDH concentrations. Monitor blood levels periodically during therapy. Draw blood for peak levels 1 hr after IM injection & 30 min after a 30-min IV infusion is completed. Trough levels should be drawn just before next dose. Peak level range 4–6 mcg/mL for adults & 5–12 mcg/mL for children; trough level range not >2 mcg/mL for adults & 0.5–1 mcg/mL for children. Once daily peaks are 2–3 times greater than multiple dosing.

Glargine (Lantus)	**antidiabetics**

Mechanism of Action:	Lowers BG by: stimulating glucose uptake in skeletal muscle & fat, inhibiting hepatic glucose production. Other actions of insulin: inhibition of lipolysis & proteolysis, enhanced protein synthesis.
Indications:	Control of hyperglycemia in pts. with type 1 & type 2 DM
Contraindications:	Hypoglycemia. Allergy or hypersensitivity to insulin glargine.
Adverse Reactions:	**HYPOGLYCEMIA, ANAPHYLAXIS**
Routes:	SC
Assessment/Education:	Do not use order with just "U", needs to say Units. Only use insulin syringes. Onset: 3-4 hours SC. When mixing insulin draw up regular insulin/lispro into syringe first Assess for Sx of hypoglycemia (anxiety; restlessness; tingling in hands, feet, lips, or tongue; chills; cold sweats; confusion; cool, pale skin; difficulty in concentration; drowsiness; nightmares or trouble sleeping; excessive hunger; headache; irritability; nausea; nervousness; tachycardia; tremor; weakness; unsteady gait)& hyperglycemia (confusion, drowsiness; flushed, dry skin; fruit-like breath odor; rapid, deep breathing, polyuria; loss of appetite; unusual thirst) periodically during therapy.
Considerations:	Monitor BG every 6 hr during therapy, more frequently in ketoacidosis & times of stress. A1C may be monitored every 3–6 mo to determine effectiveness. Monitor K in pts. at risk for hypokalemia (those using K-lowering agents, those receiving IV insulin) periodically during therapy.

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Glipizide (Glucotrol)	Antidiabetics, sulfonylureas

Mechanism of Action	Lowers blood sugar by stimulating the release of insulin from the pancreas & increasing the sensitivity to insulin at receptor sites. May also decrease hepatic glucose production. ● Lowering of blood sugar in diabetic pts.
Indications	Controls of blood sugar in type 2DM when diet therapy fails. Requires some pancreatic function.
Contraindications	Hypersensitivity to sulfonamides (cross-sensitivity may occur). Insulin-dependent diabetics. Diabetic coma or ketoacidosis.
Adverse Reactions	**APLASTIC ANEMIA,** photosensitivity, hypoglycemia
Routes	PO
Assessment/Education	Observe for s/s of hypoglycemic reactions. Pts. on concurrent beta-blocker therapy may have very subtle signs & Sx of hypoglycemia. Assess pt. for allergy to sulfonamides.
Considerations	Accidental administration of oral hypoglycemic agents to non-diabetic adults & children has resulted in serious harm or death. Monitor glucose & glycosylated hemoglobin (HbA1C) periodically during therapy to evaluate effectiveness of Tx. Monitor CBC periodically during therapy. Report Decrease in blood counts promptly. May cause an increase in AST, LDH, BUN, & Cr.

Guaifenesin (Mucinex, Robitussin)	allergy, cold & cough remedies, expectorant

Mechanism of Action	Reduces viscosity of tenacious secretions by increasing respiratory tract fluid. ● Mobilization & subsequent expectoration of mucus.
Indications	Coughs associated with viral upper respiratory tract infections.
Contraindications	Some products contain alcohol; Avoid in pts. with known intolerance Some products contain aspartame & should be avoided in pts. with phenylketonuria.
Adverse Reactions	Dizziness, N/V
Routes	PO
Assessment/Education	Do not administer OTC cough & cold products while breast feeding or administer to children less than 4 yrs. old.
Considerations	Administer each dose of guaifenesin followed by a full glass of water to decrease viscosity of secretions.

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Haloperidol (Haldol)	Antipsychotic

Mechanism of Action	Alters the effects of dopamine in the CNS; has anticholinergic & alpha-adrenergic blocking activity
Indications	Psychotic disorders; schizophrenia; manic states; drug-induced psychoses; n/v
Contraindications	Bone marrow depression; CNS depression; Parkinsonism; liver/CV disease; angle-closure glaucoma
Adverse Reactions	**SEIZURES; AGRONULOCYTOSIS; NEUROLEPTIC MALIGNANT SYNDROME** Blurry vision; dry eyes; photosensitivity; constipation; dry mouth; extrapyramidal reactions
Routes	PO; IM; IV
Assessment/Education	Assess mental status; BP; HR; RR; monitor for extrapyramidal Sx; no alcohol. Monitor for development of neuroleptic malignant syndrome
Considerations	Monitor CBC with differential & liver function tests periodically during therapy.

Heparin	Anticoagulants, Antithrombotics

Mechanism of Action:	Potentiates the inhibitory effect of antithrombin on factor Xa & thrombin. In low doses, prevents the conversion of prothrombin to thrombin by its effects on factor Xa. Higher doses neutralize thrombin, preventing the conversion of fibrinogen to fibrin. ● Prevention of thrombus formation. Prevention of extension of existing thrombi (full dose).
Indications:	Prophylaxis & Tx of various thromboembolic disorders including: Venous thromboembolism, Pulmonary emboli, Atrial fibrillation with embolization, Acute & chronic consumptive coagulopathies, Peripheral arterial thromboembolism. Used in very low doses (10–100 units) to maintain patency of IV catheters (heparin flush).
Contraindications:	Uncontrolled bleeding. Severe thrombocytopenia. Open wounds (full dose)
Adverse Reactions:	**BLEEDING, HEPARIN-INDUCED THROMBOCYTOPENIA (HIT) (WITH/OUT THROMBOSIS)** anemia.
Routes:	IV, SC, IA
Assessment/Education:	Assess for signs of bleeding & hemorrhage (bleeding gums; nosebleed; unusual bruising; black, tarry stools; hematuria; fall in HCT or BP; guaiac-positive stools
Considerations:	Carefully examine all heparin injection vials to confirm the correct vial choice prior to administration. 2-nurse verification. Monitor aPTT & HCT prior to & periodically during therapy. Monitor platelet count every 2–3 days throughout therapy. May cause mild thrombocytopenia, which appears on 4th day & resolves despite continued heparin therapy. May cause hyperkalemia & increase AST & ALT levels. **ANTIDOTE: PROTAMINE SULFATE**

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Hydralazine (Apresoline)	**Antihypertensives, vasodilators**

Mechanism of Action	Direct-acting peripheral arteriolar vasodilator. Lowering of BP in hypertensive pts. & decreased afterload in pts. with HF
Indications	Moderate to severe HTN (with a diuretic).
Contraindications	Some products contain tartrazine & should be avoided in pts. with known intolerance.
Adverse Reactions	Tachycardia, drug-induced lupus syndrome
Routes	PO, IM, IV
Assessment/Education	Monitor BP & HR frequently during initial dose adjustment & periodically during therapy. About 50–65% of Caucasians, Black, South Indians, & Mexicans are slow acetylators at risk for toxicity, while 80–90% of Eskimos, Japanese, & Chinese are rapid acetylators at risk for decreased levels & Tx failure.
Considerations	Monitor CBC, electrolytes, LE cell prep, & ANA titer prior to & periodically during prolonged therapy. May cause a positive direct Coombs' test result.

Hydrochlorothiazide (Microzide)	**Diuretic**

Mechanism of Action:	Increased excretion of Na & water by inhibiting Na reabsorption in the distal tubule. Promotes excretion of Cl, K, H, Mg, PHOS, Ca & HCO3. May produce arteriolar dilation. Lowering of BP in hypertensive pts. & diuresis with mobilization of edema.
Indications:	Management of mild to moderate HTN. Tx of edema associated with: HF, Renal dysfunction, Cirrhosis, Glucocorticoid therapy, Estrogen therapy.
Contraindications:	Hypersensitivity (cross-sensitivity with other thiazides or sulfonamides may exist). Some products contain tartrazine & should be avoided in pts. with known intolerance. Anuria. Lactation.
Adverse Reactions:	**SJS**
Routes:	PO
Assessment/Education:	Administer in the morning to avoid disruption of sleep cycle. Monitor BP, I&O, & weight & assess feet, legs, & sacral area for edema daily. Assess pt. for skin rash frequently during therapy. D/c diuretic at first sign of rash; may be life-threatening. SJS may develop.
Considerations:	Monitor electrolytes (especially K), BG, BUN, Cr, & uric acid levels before & periodically during therapy. May cause increase & urine glucose in diabetic pts. May cause increase bilirubin, Ca, Cr, & uric acid, & decrease Mg, K, Na, & urinary Ca concentrations. May cause increase cholesterol, low-density lipoprotein, & triglyceride concentrations.

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Hydrocodone (Norco)	**opioid agonists**

Mechanism of Action:	Bind to opiate receptors in the CNS. Alter the perception of & response to painful stimuli while producing generalized CNS depression. ● Decrease in severity of moderate pain. Suppression of the cough reflex.
Indications:	Management of pain that is severe enough to warrant daily, around-the-clock, long-term opioid Tx where alternative Tx options are inadequate.
Contraindications:	Significant respiratory depression. Paralytic ileus. Acute or severe bronchial asthma or hypercarbia. Congenital long QT syndrome (Hysingla only). Hypersensitivity to acetaminophen/ibuprofen (for combination products). Ibuprofen-containing products should be avoided in pts. with bleeding disorders or thrombocytopenia. Acetaminophen-containing products should be avoided in pts. with severe hepatic or renal disease. Ibuprofen-containing products should be avoided in pts. undergoing coronary artery bypass graft surgery **OB/Lactation:** Avoid chronic use Products containing alcohol, aspartame, saccharin, sugar, or tartrazine (FDC yellow dye #5) should be avoided in pts. who have hypersensitivity or intolerance to these compounds.
Adverse Reactions:	Constipation, dyspepsia, nausea, constipation, dyspepsia, nausea, hypotension
Routes:	PO
Assessment/Education:	Avoid MAOI within 14 days. No grapefruit. Monitor RR & BP before & periodically throughout therapy. Initial drowsiness will diminish with continued use. Assess bowel function. Can cause constipation.
Considerations:	May cause increase plasma amylase & lipase concentrations. **ANTITODE: Narcan**

Hydromorphone (Dilaudid)	**opioid agonists**

Mechanism of Action:	Binds to opiate receptors in the CNS. Alters the perception of & response to painful stimuli while producing generalized CNS depression. Suppresses the cough reflex via a direct central action.
Indications:	Moderate to severe pain (alone & in combination with nonopioid analgesics). Moderate to severe chronic pain in opioid-tolerant pts. requiring use of daily, around-the-clock long-term opioid Tx & for which alternative Tx options are inadequate (extended-release). Antitussive (lower doses).
Contraindications:	Some products contain bisulfites & should be avoided in pts. with known hypersensitivity. Severe respiratory depression (in absence of resuscitative equipment) (extended-release only). Acute or severe bronchial asthma (extended-release only). Paralytic ileus (extended-release only). Acute, mild, intermittent, or postoperative pain (extended-release only). Prior GI surgery or narrowing of GI tract (extended-release only). Opioid non-tolerant pts. (extended-release only). Severe hepatic impairment (extended-release only)
Adverse Reactions:	**RESPIRATORY DEPRESSION** confusion, sedation, hypotension, constipation
Routes:	PO, IV, Rectal
Assessment/Education:	Avoid MAOI within 14 days. Monitor RR & BP frequently throughout therapy. Report significant changes immediately. The respiratory depressant effects of hydromorphone may last longer than the analgesic effects.
Considerations:	Administer slowly: 2mg/3-5 mins Rapid administration may lead to increase respiratory depression, hypotension, & circulatory collapse. May increase plasma amylase & lipase levels. **ANTITODE: Narcan**

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Ibuprofen (Motrin, Advil)	**antipyretics, antirheumatics, nonopioid analgesics, nonsteroidal anti-inflammatory agents, nonopioid analgesics**

Mechanism of Action:	Inhibits prostaglandin synthesis. ● Decreased pain & inflammation. Reduction of fever.
Indications:	PO, IV: Tx of: Mild to moderate pain, Fever. PO: Tx of: Inflammatory disorders including rheumatoid arthritis (including juvenile) & osteoarthritis. Dysmenorrhea. IV: Moderate to severe pain with opioid analgesics. Closure of a clinically significant PDA in neonates weighing 500–1500 g & less than/equal to 32 wk gestational age (ibuprofen lysine only)
Contraindications:	Active GI bleeding or ulcer disease. Chewable tablets contain aspartame & should not be used in pts. with phenylketonuria. CABG surgery. Hx of recent MI. Severe HF OB: Avoid after 30 wk gestation (may cause premature closure of fetal ductus arteriosus) Pedi: Ibuprofen lysine: Preterm neonates with untreated infection, congenital heart disease where patency of PDA is necessary for pulmonary or systemic blood flow, bleeding, thrombocytopenia, coagulation defects, necrotizing enterocolitis, significant renal dysfunction.
Adverse Reactions:	**HF, MYOCARDIAL INFARCTION, CVA, GI BLEEDING, HEPATITIS, EXFOLIATIVE DERMATITIS, SJS, TEN, ANAPHYLAXIS** constipation, dyspepsia, N/V, headache
Routes:	PO, IV
Assessment/Education:	Assess pt. for skin rash frequently during therapy. D/c ibuprofen at first sign of rash; may be life-threatening. SJS or TEN may develop.
Considerations:	Infuse over at least 30 min for adults & at least 15 min for children. Pts. who have asthma, aspirin-induced allergy, & nasal polyps are at increased risk for developing hypersensitivity reactions. Assess for rhinitis, asthma, & urticaria. BUN, Cr, CBC, & liver function tests should be evaluated periodically in pts. receiving prolonged therapy. K, BUN, Cr, alkaline phosphatase, LDH, AST, & ALT may show increase levels. BG, HGB, & HCT concentrations, leukocyte & platelet counts, & CCr may be decrease. May cause prolonged bleeding time; may persist for <1 day following discontinuation.

Iloperidone (Fanapt)	**Antipsychotic**

Mechanism of Action	May act by antagonizing dopamine & serotonin in the CNS
Indications	Schizophrenia
Contraindications	Concurrent use of drugs known to prolong QT interval. Bradycardia, recent MI or uncompensated heart failure. Congenital long QT syndrome. Electrolyte abnormalities, especially hypomagnesemia or hypokalemia. Severe hepatic impairment
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME; SI; ANAPHYLAXIS, ANGIOEDEMA** Dizziness; drowsiness; fatigue; weight gain
Routes	PO
Assessment/Education	Assess mental status; monitor BP, HR; monitor for extrapyramidal Sx; seek help: sore throat w/fever; teach extrapyramidal Sx; monitor SI
Considerations	Monitor fasting BG before & periodically during therapy in diabetic pts. Monitor CBC frequently during initial mo of therapy in pts. with pre-existing or Hx of low WBC. May cause leukopenia, neutropenia, or agranulocytosis. D/c therapy if this occurs. Monitor K & Mg levels in pts. at risk for electrolyte disturbances. Monitor prolactin prior to & periodically during therapy. May cause Increased prolactin levels.

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Indomethacin (Indocin)	**antirheumatics, ductus arteriosus patency adjuncts (IV only), nonsteroidal anti-inflammatory agents**

Mechanism of Action:	Inhibits prostaglandin synthesis. In the Tx of PDA, decreased prostaglandin production allows the ductus to close. PO: Suppression of pain & inflammation. IV: Closure of PDA.
Indications:	PO: Inflammatory disorders including: Rheumatoid arthritis, Gouty arthritis, Osteoarthritis, Ankylosing spondylitis. Mild-to-moderate acute pain IV: Alternative to surgery in the management of patent ductus arteriosus (PDA) in premature neonates.
Contraindications:	Known alcohol intolerance (suspension). Cross-sensitivity may exist with other NSAIDs, including aspirin. Active GI bleeding. Ulcer disease. Proctitis or recent Hx of rectal bleeding. Intraventricular hemorrhage. Thrombocytopenia. Coronary artery bypass graft (CABG) surgery. Pedi: ↑risk of necrotizing enterocolitis & bowel perforation in premature infants with PDA.
Adverse Reactions:	**HF, MI, STROKE, DRUG-INDUCED HEPATITIS, GI BLEEDING, ANAPHYLAXIS**, constipation, dyspepsia, n/v, dizziness, drowsiness, headache, psychic disturbances.
Routes:	PO, IV
Assessment/Education:	Pts. who have asthma, aspirin-induced allergy, & nasal polyps are at increased risk for developing hypersensitivity reactions. Monitor for rhinitis, asthma, & urticaria. Assess pt. for skin rash frequently during therapy. D/c ibuprofen at first sign of rash; may be life-threatening. SJS or TEN may develop. Treat symptomatically; may recur once Tx is stopped. PDA: Monitor respiratory status, HR, BP, echocardiogram, & heart sounds routinely throughout therapy. Monitor intake & output. Fluid restriction is usually instituted throughout therapy. Instruct pt. to notify PCP if signs & Sx of hepatotoxicity occur or if rash, itching, chills, fever, muscle aches, visual disturbances, weight gain, edema, abdominal pain, black stools, or persistent headache occurs.
Considerations:	IV: Administer over 20–30 min. Evaluate BUN, Cr, CBC, K levels, & liver function tests periodically in pts. receiving prolonged therapy. K, BUN, Cr, AST, & ALT tests may show Increased levels. Blood glucose concentrations may be altered. H&H concentrations, leukocyte & platelet counts, & CCr may be Decreased. Urine glucose & urine protein concentrations may be Increased. Leukocyte & platelet count may be Decreased. Bleeding time may be prolonged for several days after discontinuation.

Ipratropium (Atrovent)	**allergy, cold & cough remedies, bronchodilators, anticholinergics**

Mechanism of Action:	Inhaln: Inhibits cholinergic receptors in bronchial smooth muscle, resulting in decrease concentrations of cyclic guanosine monophosphate (cGMP). Decrease levels of cGMP produce local bronchodilation. Intranasal: Local application inhibits secretions from glands lining the nasal mucosal
Indications:	Inhaln: Maintenance therapy of reversible airway obstruction due to COPD, including chronic bronchitis & emphysema. Intranasal: Rhinorrhea associated with allergic & nonallergic perennial rhinitis (0.03% solution) or the common cold (0.06% solution).
Contraindications:	Hypersensitivity to ipratropium, atropine, belladonna alkaloids, or bromide. Avoid use during acute bronchospasm. **Combivent (ipratropium/albuterol combination) PCP I do contain soya lecithin & is contraindicated in pts. with a hx of hypersensitivity to soy & peanuts**.
Adverse Reactions:	Palpitations, dizziness, nervousness
Routes:	Inhalation
Assessment/Education:	Caution pt. not to exceed 12 doses within 24 hr. Pt. should notify PCP if Sx do not improve within 30 min after administration of medication or if condition worsens.
Considerations:	When ipratropium is administered concurrently with other inhalation medications, administer adrenergic bronchodilators first, followed by ipratropium, then corticosteroids. Wait 5 min between medications.

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Isoniazid (INH)	**antituberculars**

Mechanism of Action	Inhibits mycobacterial cell wall synthesis & interferes with metabolism. Bacteriostatic or bactericidal action against susceptible mycobacteria.
Indications	First-line therapy of active tuberculosis, in combination with other agents. Prevention of tuberculosis in pts. exposed to active disease (alone).
Contraindications	Acute liver disease. Hx of hepatitis from previous use.
Adverse Reactions	**DRUG-INDUCED HEPATITIS, DRESS, TEN, PANCREATITIS**, peripheral neuropathy
Routes	PO, IM
Assessment/Education	Monitor for S/s of DRESS. Eosinophilia is often present. Assess for rash periodically during therapy. May cause SJS.
Considerations	Hepatic function should be evaluated prior to & monthly throughout therapy. Increased AST, ALT, & bilirubin may indicate drug-induced hepatitis. Black & Hispanic women, postpartal women, & pts. >50 yr. are at highest risk. Risk is lower in children; therefore, liver function tests are usually ordered less frequently for children. If isoniazid OD occurs, Tx with pyridoxine (vitamin B) is instituted.

Ketamine (Ketalar)	**general anesthetics**

Mechanism of Action	Blocks afferent impulses of pain perception. Suppresses spinal cord activity. Affects CNS transmitter systems. ● Anesthesia with profound analgesia, minimal respiratory depression, & minimal skeletal muscle relaxation
Indications	Anesthesia for short-term diagnostic & surgical procedures. As induction before the use of other anesthetics. As a supplement to other anesthetics.
Contraindications	Psychiatric disturbances. HTN. Increased ICP OB: May affect child's brain development when used during 3rd trimester. Lactation
Adverse Reactions	Emergence reactions, HTN, tachycardia, salivation, unpleasant dreams
Routes	IV, IM, PO
Assessment/Education	IV onset: 30 seconds; duration 5-10 mins IM onset: 3-4 mins; duration 12-25 mins Assess level of consciousness frequently throughout therapy. Ketamine produces a dissociative state. The pt. does not appear to be asleep & experiences a feeling of dissociation from the environment. Monitor BP, ECG, & respiratory status frequently throughout therapy. May cause HTN & tachycardia. May cause increased CSF pressure & increased intraocular pressure.
Considerations	Respiratory depression or apnea may be treated with mechanical ventilation or analeptics.

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Ketorolac (Toradol)	**NSAID, nonopioid analgesics, pyrroziline carboxylic acid**

Mechanism of Action:	Inhibits prostaglandin synthesis, producing peripherally mediated analgesia. Also has antipyretic & anti-inflammatory properties. ● decrease pain.
Indications:	Short-term management of pain (not to exceed 5 days total for all routes combined).
Contraindications:	Cross-sensitivity with other NSAIDs may exist. Preoperative use. Active or hx of peptic ulcer disease or GI bleeding. Known alcohol intolerance (injection only). Coronary artery bypass graft (CABG) surgery. CV bleeding. Advanced renal impairment or at risk for renal failure due to volume depletion. Concurrent use of pentoxifylline or probenecid. **OB:** Chronic use in 3rd trimester may cause constriction of ductus arteriosus. May inhibit labor & maternal bleeding at delivery.
Adverse Reactions:	**HF, MI, CVA, GI BLEEDING, EXFOLIATIVE DERMATITIS, SJS, TEN** Drowsiness
Routes:	PO, IV, IM, Intranasal
Assessment/Education:	Pts. who have asthma, aspirin-induced allergy, & nasal polyps are at increased risk for developing hypersensitivity reactions. Assess for rhinitis, asthma, & urticaria. Assess for rash periodically during therapy. May cause SJS or TEN. D/c therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis &/or eosinophilia. Monitor BP during initiation & periodically during therapy. May cause fluid retention & edema leading to new onset or worsening HTN.
Considerations:	Probenecid increase levels & the risk of adverse reactions; concurrent use is contraindicated. Increased risk of bleeding when used with pentoxifylline; concurrent use is contraindicated. Evaluate liver function tests, especially AST & ALT, periodically in pts. receiving prolonged therapy. May cause increase levels. May cause prolonged bleeding time that may persist for 24–48 hr following discontinuation of therapy. May cause increase BUN, Cr, or K concentrations.

Lactulose (Cholac)	**Laxatives, osmotics**

Mechanism of Action	Increases water content & softens the stool. Lowers the pH of the colon, which inhibits the diffusion of ammonia from the colon into the blood, thereby reducing blood ammonia levels. Relief of constipation. Decreased blood ammonia levels with improved mental status in PSE.
Indications	Tx of chronic constipation. Adjunct in the management of portal-systemic (hepatic) encephalopathy (PSE).
Contraindications	Pts. on low-galactose diets.
Adverse Reactions	Belching, cramps, distention, flatulence
Routes	PO, Rect
Assessment/Education	Assess pt. for abdominal distention, presence of bowel sounds, & normal pattern of bowel function.
Considerations	Decreased blood ammonia concentrations by 25–50%. May cause Increased blood glucose levels in diabetic pts. Monitor electrolytes periodically when used chronically. May cause diarrhea with resulting hypokalemia & hypernatremia.

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Lamotrigine (Lamictal)	**anticonvulsants**

Mechanism of Action	Stabilizes neuronal membranes by inhibiting Na transport. Decreased incidence of seizures. ● Delayed time to recurrence of mood episodes in bipolar disorder.
Indications	Adjunct Tx of partial seizures in adults & children with epilepsy. Lennox-Gastaut syndrome. Adjunct Tx of primary generalized tonic-clonic seizures in adults & children. Conversion to monotherapy in adults with partial seizures receiving carbamazepine, phenytoin, phenobarbital, primidone, or valproate as the single antiepileptic drug. Maintenance Tx of bipolar disorder.
Contraindications	Acute manic or mixed episodes.
Adverse Reactions	**ASEPTIC MENINGITIS, SI, HEPATIC FAILURE, MULTI-ORGAN HYPERSENSITIVITY REACTIONS, SJS,** N/V, ataxia, dizziness, headache, photosensitivity, rash
Routes	PO
Assessment/Education	Monitor/educate for SI/depression. Assess pt. for skin rash: SJS or TEN may develop. Monitor for s/s of DRESS.
Considerations	Monitor lamotrigine plasma concentrations. Therapeutic plasma concentration range has not been established, proposed therapeutic range: 1–5 mcg/mL. May cause false-positive results for phencyclidine (PCP) in some rapid urine drug screens

Levofloxacin (Levaquin)	**anti-infectives, Fluoroquinolones**

Mechanism of Action	Inhibits bacterial DNA synthesis by inhibiting DNA gyrase enzyme. ● Death of susceptible bacteria.
Indications	PO, IV: Tx of: Urinary tract infections, chronic bacterial prostatitis, nosocomial pneumonia, community-acquired pneumonia, acute bacterial exacerbations of chronic bronchitis, acute bacterial sinusitis, uncomplicated & complicated skin & skin structure infections. Post-exposure tx of inhalational anthrax, tx & prophylaxis of plague.
Contraindications	Hypersensitivity (cross-sensitivity within class may exist). QTc interval prolongation. Uncorrected hypokalemia or hypomagnesemia. Concurrent use of Class IA antiarrhythmics or Class III antiarrhythmics (increased risk of QTc interval prolongation & torsade de pointes). Hx of myasthenia gravis. Pregnancy. Lactation.
Adverse Reactions	**ELEVATED ICP, SIEUZRES, SI, TORSADES DE POINTES, HEPATOTOXICITY, C-DIFF, SJS, ANAPHYLAXIS,** Nausea
Routes	PO, IV
Assessment/Education	Observe pt. for s/s of anaphylaxis. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP as a sign of C-Diff. May begin up to several wk following cessation of therapy. Assess for s/s of rash. May cause SJS. Assess for s/s of peripheral neuropathy (Sx may be irreversible). Assess for s/s of SI.
Considerations	May cause Increased AST, ALT, LDH, bilirubin, & alkaline phosphatase. May also cause Increased or Decreased glucose.

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Levothyroxine (Synthroid)	**Hormones, thyroid preparations**

Mechanism of Action:	Replacement of or supplementation to endogenous thyroid hormones. Principal effect is increasing metabolic rate of body tissues: Promote gluconeogenesis. Increase utilization & mobilization of glycogen stores. Stimulate protein synthesis. Promote cell growth & differentiation. Aid in the development of the brain & CNS.
Indications:	Thyroid supplementation in hypothyroidism. Tx or suppression of euthyroid goiters. Adjunctive Tx for thyrotropin-dependent thyroid cancer.
Contraindications:	Hypersensitivity. Recent MI. Hyperthyroidism.
Adverse Reactions:	Sx are usually only seen when excessive doses cause iatrogenic hyperthyroidism.
Routes:	PO, IV, IM
Assessment/Education:	Assess apical HR & BP prior to & periodically during therapy. Assess for tachyarrhythmias & chest pain. Overdose is manifested as hyperthyroidism (tachycardia, chest pain, nervousness, insomnia, diaphoresis, tremors, weight loss). Usual Tx is to withhold dose for 2–6 days then resume at a lower dose.
Considerations:	Foods or supplements containing Ca, Fe, Mg, or Zn may bind levothyroxine & prevent complete absorption. **PO**: Administer with a full glass of water, on an empty stomach, 30–60 min before breakfast, to prevent insomnia. Monitor thyroid function studies prior to & during therapy. Monitor thyroid-stimulating hormone levels in adults 8–12 wks. after changing from one brand to another. Monitor blood & urine glucose in diabetic pts. Insulin or oral hypoglycemic dose may need to be increase.

Lidocaine	**Anesthetics, antiarrhythmics**

Mechanism of Action:	**IV**, **IM**: Suppresses automaticity & spontaneous depolarization of the ventricles during diastole by altering the flux of Na ions across cell membranes with little or no effect on HR. **Local:** Produces local anesthesia by inhibiting transport of ions across neuronal membranes, thereby preventing initiation & conduction of normal nerve impulses. ● Control of ventricular arrhythmias. Local anesthesia
Indications:	**IV**: Ventricular arrhythmias. **IM**: Self-injected or when IV unavailable **Transdermal**: Pain due to post-herpetic neuralgia.
Contraindications:	Hypersensitivity; cross-sensitivity may occur. Third-degree heart block. Wolff-Parkinson-White syndrome. Pedi less than 3 yrs.
Adverse Reactions:	**SEIZURES, ANAPHYLAXIS, CARDIAC ARREST,** confusion, drowsiness, stinging (local)
Routes:	IV, Endotracheal, IM, local (topical, mucosal, patch)
Assessment/Education:	Antiarrhythmic: Monitor ECG continuously & BP & respiratory status frequently during administration. Monitor lidocaine levels periodically during prolonged or high-dose IV therapy. Therapeutic lidocaine levels range from 1.5 to 5 mcg/mL. Electrolyte levels should be monitored
Considerations:	Lidocaine is readily absorbed through mucous membranes. Inadvertent overdose of lidocaine jelly & spray has resulted in pt. harm or death from neurologic &/or cardiac toxicity. Throat Spray: Ensure that gag reflex is intact before allowing pt. to drink or eat. IM injections are recommended only when ECG monitoring is not available & benefits outweigh risks. Administer IM injections only into deltoid muscle while frequently aspirating to prevent IV injection. IV Push: Only 1% & 2% solutions are used for IV push injection. Lidocaine with epinephrine may be used to minimize systemic absorption & prolong local anesthesia. periodically during prolonged therapy. IM administration may cause increase CPK levels.

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Linezolid (Zyvox)	**anti-infectives, oxazolidinones**

Mechanism of Action	Inhibits bacterial protein synthesis at the level of the 23S ribosome of the 50S subunit. ● Bactericidal action against streptococci; bacteriostatic action against enterococci & staphylococci.
Indications	Tx of: Infections caused by vancomycin-resistant Enterococcus faecium, Nosocomial pneumonia caused by Staphylococcus aureus. Complicated skin/skin structure infections caused by Staphylococcus aureus, Streptococcus pyogenes or Streptococcus agalactiae. Uncomplicated skin/skin structure infections caused by Staphylococcus aureus, Streptococcus pyogenes. Community-acquired pneumonia caused by Streptococcus pneumoniae or Staphylococcus aureus.
Contraindications	Phenylketonuria (suspension contains aspartame). Uncontrolled HTN, pheochromocytoma, thyrotoxicosis, or concurrent use of sympathomimetic agents, vasopressors, or dopaminergic agents (Increased risk of hypertensive response). Concurrent or recent (<2 wk) use of monoamine oxidase (MAO) inhibitors (Increased risk of hypertensive response). Carcinoid syndrome or concurrent use of SSRIs, TCAs, triptans, meperidine, or buspirone (Increased risk of serotonin syndrome).
Adverse Reactions	**C-DIFF-ASSOCIATED DIARRHEA (CDAD), SEROTONIN SYNDROME**, n/v
Routes	PO, IV
Assessment/Education	May cause lactic acidosis. Notify PCP if recurrent n/v, unexplained acidosis or low bicarbonate levels occur. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-Diff-associated diarrhea (CDAD). May begin up to several wk following cessation of therapy. Monitor pt. taking serotonergic drugs for signs of serotonin syndrome
Considerations	May cause bone marrow suppression, anemia, leukopenia, pancytopenia. Monitor CBC & platelet count weekly, especially in pts. at risk for increased bleeding, having pre-existing bone marrow suppression, receiving concurrent medications that may cause myelosuppression, or requiring >2 wk of therapy. D/C therapy if bone marrow suppression occurs or worsens. May cause Increased AST, ALT, LDH, alkaline phosphatase & BUN. May cause hypoglycemia requiring decrease in dose of antidiabetic agent or discontinuation of linezolid.

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Lipsro (Humalog)	**antidiabetics, hormones, pancreatics**

Mechanism of Action:	Lowers BG by: stimulating glucose uptake in skeletal muscle & fat, inhibiting hepatic glucose production. Other actions of insulin: inhibition of lipolysis & proteolysis, enhanced protein synthesis. ● A rapid-acting insulin with more rapid onset & shorter duration than human regular insulin; should be used with an intermediate- or long-acting insulin.
Indications:	Control of hyperglycemia in pts. with type 1 & type 2 DM.
Contraindications:	Hypoglycemia. Allergy or hypersensitivity to insulin lispro
Adverse Reactions:	**HYPOGLYCEMIA, ANAPHYLAXIS**
Routes:	SC
Assessment/Education:	Onset: within 15 mins. Assess for Sx of hypoglycemia (anxiety; restlessness; tingling in hands, feet, lips, or tongue; chills; cold sweats; confusion; cool, pale skin; difficulty in concentration; drowsiness; nightmares or trouble sleeping; excessive hunger; headache; irritability; nausea; nervousness; tachycardia; tremor; weakness; unsteady gait)& hyperglycemia (confusion, drowsiness; flushed, dry skin; fruit-like breath odor; rapid, deep breathing, polyuria; loss of appetite; unusual thirst) periodically during therapy.
Considerations:	Do not use order with just "U", needs to say Units. When mixing meds, draw up lispro first to avoid contamination of regular insulin. Administer 15 mins prior to meals. Only use insulin syringes. Monitor BG every 6 hr during therapy, more frequently in ketoacidosis & times of stress. A1C may be monitored every 3–6 mo to determine effectiveness. Monitor K in pts. at risk for hypokalemia (those using K-lowering agents, those receiving IV insulin) periodically during therapy.

Lisinopril (Zestril)	**ACE Inhibitor, Antihypertensives**

Mechanism of Action:	Angiotensin-converting enzyme (ACE) inhibitors block the conversion of angiotensin I to the vasoconstrictor angiotensin II. ACE inhibitors also prevent the degradation of bradykinin & other vasodilatory prostaglandins. ACE inhibitors also increase plasma renin levels & decrease aldosterone levels. Net result is systemic vasodilation. ● Lowering of BP in hypertensive pts. Increase survival & decrease Sx in pts. with heart failure. Increase survival after MI.
Indications:	Alone or with other agents in the management of HTN. Management of heart failure. Reduction of risk of death or development of heart failure after MI
Contraindications:	Hx of angioedema with previous use of ACE inhibitors. Concurrent use with aliskiren in pts. with DM or moderate-to-severe renal impairment (CCr <60 mL/min). OB: Can cause injury or death of fetus — if pregnancy occurs, d/c immediately. Lactation: D/c drug or use formula.
Adverse Reactions:	**ANGIOEDEMA,** Dizziness, cough, hypotension
Routes:	PO
Assessment/Education:	Monitor BP & HR frequently during initial dose adjustment & periodically during therapy. Assess pt. for signs of angioedema (swelling of face, extremities, eyes, lips, tongue, difficulty in swallowing or breathing). Instruct pt. to notify PCP immediately, if rash; mouth sores; sore throat; fever; swelling of hands or feet; irregular heart beat; chest pain; dry cough; hoarseness; swelling of face, eyes, lips, or tongue; or if difficulty swallowing or breathing occurs.
Considerations:	Monitor BUN, Cr, & electrolyte levels periodically. K, BUN & Cr may be increase, whereas Na levels may be decrease. May cause hyperkalemia. Monitor CBC periodically during therapy in pts. with collagen vascular disease &/or renal disease. May rarely cause slight decrease in HGB & HCT & agranulocytosis. May cause increase AST, ALT, alkaline phosphatase, & bilirubin.

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Lithium (Litobid)	Alkali Metal, Mood Stabilizing

Mechanism of Action	Alters cation transport in nerve & muscle. May also influence reuptake of neurotransmitters. ● Prevents/decreases incidence of acute manic episodes.
Indications	Manic episodes of bipolar I disorder
Contraindications	Severe cardiovascular or renal disease. Dehydrated or debilitated pts. Na depletion. Brugada syndrome. Should be used only where therapy, including blood levels, may be closely monitored. Some products contain alcohol or tartrazine & should be avoided in pts. with known hypersensitivity or intolerance. Lactation
Adverse Reactions	**SEIZURES**, fatigue, headache, impaired memory, ECG changes, abdominal pain, anorexia, bloating, diarrhea, nausea, polyuria, acneiform eruption, folliculitis, hypothyroidism, leukocytosis, muscle weakness, tremors
Routes	PO
Assessment/Education	Assess mental status for SI. Monitor I&O ratios. Unless contraindicated, fluid intake of at least 2000–3000 mL/day should be maintained. Weight should also be monitored at least every 3 mo. Monitor lithium levels twice weekly during initiation of therapy & every 2 mo during chronic therapy. Draw blood samples in the morning immediately before next dose. Therapeutic levels range from 0.5 to 1.5 mEq/L for acute mania & 0.6–1.2 mEq/L for long term control. Concentrations should not exceed 2.0 mEq/L. Assess pt. for S/s of lithium toxicity).
Considerations	Large changes in Na intake may alter the renal elimination of lithium. Increase Na intake will increase renal excretion. Evaluate renal & thyroid function, WBC with differential, electrolytes, & glucose periodically during therapy.

Loratadine (Claritin)	antihistamines

Mechanism of Action	Blocks peripheral effects of histamine released during allergic reactions. Decreased Sx of allergic reactions.
Indications	Relief of Sx of seasonal allergies. Management of chronic idiopathic urticaria. Management of hives.
Contraindications	Hypersensitivity
Adverse Reactions	Dry Mouth, GI upset.
Routes	PO
Assessment/Education	Assess lung sounds & character of bronchial secretions. Maintain fluid intake of 1500–2000 mL/day to decrease viscosity of secretions.
Considerations	May cause false-negative result on allergy skin testing.

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Lorazepam (Ativan)	**Benzodiazepines**

Mechanism of Action:	Depresses the CNS, probably by potentiating GABA, an inhibitory neurotransmitter
Indications:	Anxiety; IM/IV: status epilepticus, preanesthetic
Contraindications:	Other benzodiazepines; coma or pre-existing CNS depression. Uncontrolled severe pain. Angle-closure glaucoma. Severe hypotension. Sleep apnea. Lactation
Adverse Reactions:	**APNEA, CARDIAC ARREST (Rapid IV only)** Dizziness, drowsiness, lethargy
Routes:	PO, IM, IV
Assessment/Education:	Assess for prolonged CNS depression; may lead to dependence. No smoking.
Considerations:	Pts. on high-dose therapy should receive routine evaluation of renal, hepatic, & hematologic function. **Flumazenil (Romazicon**) is the antidote, but do not use if pt. has a seizure disorder.

Losartan (Cozaar)	**ARB**

Mechanism of Action:	Blocks the vasoconstrictor & aldosterone-secreting effects of angiotensin II at various receptor sites, including vascular smooth muscle & the adrenal glands. ● Lowering of BP in hypertensive pts. decrease progression of diabetic nephropathy. decrease incidence of CVA in pts. with HTN & left ventricular hypertrophy (effect may be less in black pts.).
Indications:	Alone or with other agents in the management of HTN. Tx of diabetic nephropathy in pts. with type 2 DM. Prevention of CVA in pts. with HTN & left ventricular hypertrophy.
Contraindications:	Bilateral renal artery stenosis OB**:** Can cause injury or death of fetus – if pregnancy occurs, d/c immediately. **Lactation:** D/c drug or use formula.
Adverse Reactions:	**ANGIOEDEMA**
Routes:	PO
Assessment/Education:	Assess BP (lying, sitting, standing) & HR frequently during initial dose adjustment & periodically during therapy. Assess pt. for signs of angioedema (dyspnea, facial swelling).
Considerations:	Monitor renal function. May cause increase BUN & Cr. May cause increase AST, ALT, & bilirubin. May cause hyperkalemia. May cause slight decrease HGB & HCT.

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Loxapine (Adasuve)	**Typical antipsychotic**

Mechanism of Action	Blocks dopamine & serotonin at postsynaptic receptor sites in CNS
Indications	Schizophrenia (2nd line)
Contraindications	Hypersensitivity to -pine drugs; coma; CNS depression; asthma; COPD; Hx of loxapine induced bronchospasm
Adverse Reactions	**AGRONULOCYTOSIS; NEUROLEPTIC MALIGNANT SYNDROME; SEIZURES; BRONCHOSPAM** Confusion; dizziness; drowsiness; blurred vision; hypotension; galactorrhea
Routes	PO; IM; Inhalation
Assessment/Education	Take with food; assess mental status; monitor BP, HR; monitor for extrapyramidal Sx; seek help: sore throat w/fever; teach extrapyramidal Sx & about tardive dyskinesia
Considerations	Monitor CBC & differential before & periodically throughout therapy. Obtain fasting BG & cholesterol levels initially & periodically during therapy. Monitor liver function studies & urine bilirubin & bile concentrations if pt. develops jaundice.

Lurasidone (Latuda)	**Antipsychotic**

Mechanism of Action	Effect may be mediated on central dopamine Type 2 (D_2) & serotonin Type 2 ($5HT_{2A}$) receptor antagonism.
Indications	Schizophrenia. Depressive episodes associated with bipolar I disorder
Contraindications	Concurrent use of strong CYP3A4 inhibitors or inducers.
Adverse Reactions	**AGRANULOCYTOSIS** Akathisia, drowsiness, parkinsonism, nausea
Routes	PO
Assessment/Education	Assess mental status; monitor BP, HR; monitor for extrapyramidal Sx; seek help: sore throat w/fever; teach extrapyramidal Sx; monitor SI
Considerations	May cause Increased prolactin levels. May cause Increased CPK. Obtain fasting BG & cholesterol levels initially & periodically during therapy. Monitor CBC frequently during initial mo of therapy in pts. with pre-existing or Hx of low WBC. May cause leukopenia, neutropenia, or agranulocytosis. D/c therapy if this occurs.

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Mannitol (Osmitrol)	**Diuretics, osmotic diuretics**

Mechanism of Action	Increases the osmotic pressure of the glomerular filtrate, thereby inhibiting reabsorption of water & electrolytes. Causes excretion of: Water, Na, K, Cl, Ca, Phosphorus, Mg, Urea, Uric acid. Mobilization of excess fluid in oliguric renal failure or edema. Reduction of intraocular or intracranial pressure. Increased urinary excretion of toxic materials. Decreased hemolysis when used as an irritant after transurethral prostatic resection.
Indications	Adjunct in the Tx of: Acute oliguric renal failure, Edema. Increased intracranial or intraocular pressure, Toxic OD.
Contraindications	Anuria. Dehydration. Active intracranial bleeding. Severe pulmonary edema or congestion.
Adverse Reactions	transient volume expansion
Routes	IV
Assessment/Education	Administer over 3–5 min to produce a urine output of 30–50 mL/hr. If urine flow does not increase, administer 2nd test dose. If urine output is not at least 30–50 mL/hr for 2–3 hr after 2nd test dose, pt. should be re-evaluated.
Considerations	If solution contains crystals, warm bottle in hot water & shake vigorously. Do not administer solution in which crystals remain undissolved.

Meclizine (Dramamine Less Drowsy Formula)	**antiemetics, antihistamines**

Mechanism of Action	Has central anticholinergic, CNS depressant, & antihistaminic properties. Decreases excitability of the middle ear labyrinth & depresses conduction in middle ear vestibular-cerebellar pathways. Decreased motion sickness. Decreased vertigo from vestibular pathology.
Indications	Management/prevention of: Motion sickness. Vertigo.
Contraindications	**OB**
Adverse Reactions	Drowsiness
Routes	PO
Assessment/Education	Assess pt. for level of sedation after administration. Motion Sickness: Assess pt. for n/v before & 60 min after administration. Vertigo: Assess degree of vertigo periodically in pts. receiving meclizine for labyrinthitis.
Considerations	May cause false-negative results in skin tests using allergen extracts. D/C meclizine 72 hr before testing.

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Medroxyprogesterone (Depoprovera)	**contraceptive hormones**

Mechanism of Action	Mechanism not clearly known. May alter cervical mucus & the endometrial environment, preventing penetration by sperm & implantation of the egg. Ovulation may also be suppressed.
Indications	Prevention of pregnancy.
Contraindications	Pregnancy. Hx of cigarette smoking or age >35 yr. Hx of thromboembolic disease. Protein C, protein S, or antithrombin deficiency or other thrombophilic disorder. Valvular heart disease. Major surgery with extended periods of immobility.DM with vascular involvement. Headache with focal neurological Sx. Uncontrolled HTN. Hx of breast, endometrial, or estrogen-dependent cancer. Abnormal genital bleeding. Liver disease.
Adverse Reactions	**PANCREATITIS, THROMBOEMBOLISM**
Routes	IM
Assessment/Education	Assess BP before & periodically during therapy. Exclude the possibility of pregnancy on the basis or hx &/or physical exam or a pregnancy test.
Considerations	Administer deep IM into gluteal or deltoid muscle. If period between injections is >14 wk, determine that pt. is not pregnant before administering the drug. Injectable medroxyprogesterone may lead to bone loss, especially in women younger than 21 yr. Injectable medroxyprogesterone should be used for >2 yr. only if other methods of contraception are inadequate. If used long term, women should use supplemental Ca & vitamin D, & monitor bone mineral density. Report s/s of fluid retention, thromboembolic disorders, mental depression, hepatic dysfunction, or abnormal vaginal bleeding. Women with a strong family hx of breast cancer, fibrocystic breast disease, abnormal mammograms, or cervical dysplasia should be monitored for breast cancer at least yearly. Risk of thromboembolism is highest in 1st year of use & increased when a combination hormonal contraceptive is restarted after a break in use of at least 4 wks.

Memantine (Namenda)	**anti-Alzheimer's agents, n methyl d aspartate antagonist**

Mechanism of Action	Moderate to severe dementia/neurocognitive disorder associated with Alzheimer's disease.
Indications	Binds to CNS N-methyl-D-aspartate (NMDA) receptor sites, preventing binding of glutamate, an excitatory neurotransmitter. ● Decreased Sx of dementia/cognitive decline. Does not slow progression. Cognitive enhancement. Does not cure disease.
Contraindications	Hypersensitivity
Adverse Reactions	Dizziness, weight gain
Routes	PO
Assessment/Education	Assess cognitive function periodically during therapy.
Considerations	May cause anemia.

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Meperidine (Demerol)	**Opioid analgesics, Opioid agonists**

Mechanism of Action:	Binds to opiate receptors in the CNS. Alters the perception of & response to painful stimuli, while producing generalized CNS depression. ● Decrease in severity of pain.
Indications:	Moderate or severe pain. Anesthesia adjunct. Analgesic during labor. Preoperative sedation.
Contraindications:	Hypersensitivity to bisulfites (some injectable products). Recent (within 14 days) MAO inhibitor therapy. Severe respiratory insufficiency. **OB & Lactation**
Adverse Reactions:	**SEIZURES, ANAPHYLAXIS,** confusion, sedation, hypotension, constipation, n/v
Routes:	PO, IM, SC
Assessment/Education:	Monitor pts. on chronic or high-dose therapy for CNS stimulation, due to accumulation of normeperidine metabolite. Risk of toxicity increases with doses greater than 600 m g/24 hr, chronic administration (greater than 2 days), & renal impairment. Assess risk for opioid addiction, abuse, or misuse prior to administration.
Considerations:	PO: Doses may be administered with food or milk to minimize GI irritation. Syrup should be diluted in half-full glass of water. Administer slowly over at least 5 min. Rapid administration may lead to increased respiratory depression, hypotension, & circulatory collapse. In pts. receiving meperidine chronically, naloxone may precipitate seizures by eliminating the CNS depressant effects of meperidine, allowing the convulsant activity of normeperidine to predominate. Monitor pt. closely.

Metformin (Glucophage)	**Antidiabetics**

Mechanism of Action:	decrease hepatic glucose production. decrease intestinal glucose absorption. Increase sensitivity to insulin. ● Maintenance of BG.
Indications:	Management of type 2 DM; may be used with diet, insulin, or sulfonylurea oral hypoglycemics.
Contraindications:	Metabolic acidosis (including diabetic ketoacidosis). Severe renal impairment (CCr <30 mL/min) Iodinated contrast imaging procedure in pts. with CCr 30–60 mL/min, a hx of liver disease, alcoholism or heart failure, or in those who will be administered intra-arterial iodinated contrast. Hepatic impairment.
Adverse Reactions:	**LACTIC ACIDOSIS,** Abdominal bloating, n/v/d
Routes:	PO
Assessment/Education:	Pts. who have been well controlled on metformin who develop illness or laboratory abnormalities should be assessed for ketoacidosis or lactic acidosis. Assess electrolytes, ketones, BG, &, if indicated, blood pH, lactate, pyruvate, & metformin levels. If either form of acidosis is present, d/c metformin immediately & treat acidosis. Pts. with severe renal impairment are at greatest risk for lactic acidosis.
Considerations:	Monitor BG & glycosylated hemoglobin periodically during therapy to evaluate effectiveness of therapy. May cause false-positive results for urine ketones. Assess renal function before initiating & at least annually during therapy. Monitor pts. at risk for renal impairment (e.g. elderly) more frequently. D/c metformin if renal impairment occurs. Monitor folic acid & vitamin B12 every 1–2 yr. in long-term therapy. Metformin may interfere with absorption.

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Methylphenidate (Concerta, Ritalin)	**central nervous system stimulants**

Mechanism of Action	Produces CNS & respiratory stimulation with weak sympathomimetic activity. Increased attention span in ADHD. Increased motor activity, mental alertness, & diminished fatigue in narcoleptic pts.
Indications	Tx of ADHD (adjunct). Symptomatic Tx of narcolepsy.
Contraindications	Hyperexcitable states. Hyperthyroidism. Pts. with psychotic personalities or suicidal or homicidal tendencies. Personal or family Hx of Tourette's syndrome. Glaucoma. Motor tics. Concurrent use or use within 14 days of MAO inhibitors or MAO-like drugs (linezolid or methylene blue). Fructose intolerance, glucose-galactose malabsorption, or sucrose-isomaltase. insufficiency. Surgery.
Adverse Reactions	**SUDDEN DEATH, RHABDOMYOLYSIS, ANAPHYLAXIS, ANGIOEDEMA**, HTN, palpitations, tachycardia, anorexia, hyperactivity, insomnia, restlessness, tremor
Routes	PO, transdermal
Assessment/Education	Monitor BP, HR, & respiration before administering & periodically during therapy. Obtain a Hx, physical exam to assess for cardiac disease, & further evaluation, if indicated. If exertional chest pain, unexplained syncope, or other cardiac Sx occur, evaluate promptly.
Considerations	Administer immediate & sustained-release tablets on an empty stomach (30–45 min before a meal). Monitor CBC, differential, & platelet count periodically in pts. receiving prolonged therapy.

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Methylprednisolone (Medrol)	**Corticosteroid, Immunosuppressant agents**

Mechanism of Action:	Suppresses inflammation & the normal immune response. Has numerous intense metabolic effects (see Adverse Reactions & Side Effects). Suppresses adrenal function at chronic doses of 4 mg/day. Has negligible mineralocorticoid activity. ● Suppression of inflammation & modification of the normal immune response. Replacement therapy in adrenal insufficiency.
Indications:	Used systemically & locally in a wide variety of chronic diseases including: Inflammatory. Allergic. Hematologic. Neoplastic. Autoimmune disorders. Immunosuppressant. May be suitable for alternate-day dosing in the management of chronic illness. Replacement therapy in adrenal insufficiency.
Contraindications:	Active untreated infections (may be used in pts. being treated for tuberculous meningitis). Epidural use (may result in serious neurological injury or death), Known alcohol, bisulfite, or tartrazine hypersensitivity or intolerance (some products contain these & should be avoided in susceptible pts.). Administration of live virus vaccines. **Lactation:** Avoid chronic use.
Adverse Reactions:	**Adverse reactions/side effects are much more common with high-dose/long-term therapy** **PEPTIC ULCERATION, THROMBOEMBOLISM,** anorexia, nausea, depression, euphoria, acne, decrease wound healing, ecchymoses, fragility, hirsutism, petechiae, muscle wasting, osteoporosis, cushingoid appearance (moon face, buffalo hump), increase susceptibility to infection.
Routes:	PO, IV, IM, IV
Assessment/Education:	Assess pt. for signs of adrenal insufficiency before & periodically during therapy. Monitor I&O ratios & daily weights. Observe pt. for peripheral edema, steady weight gain, rales/crackles, or dyspnea. Notify PCP if these occur.
Considerations:	Monitor electrolytes & glucose. May cause hyperglycemia, especially in persons with DM. May cause hypokalemia. Pts. on prolonged therapy should routinely have hematologic values, electrolytes, & urine glucose evaluated. May decrease WBC counts. May decrease K & Ca & increase Na concentrations. Guaiac test stools. Promptly report presence of guaiac-positive stools. May increase cholesterol & lipid values. Suppresses reactions to allergy skin tests. Periodic adrenal function tests may be ordered to assess degree of hypothalamic-pituitary-adrenal axis suppression in systemic & chronic topical therapy.

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Metoclopramide (Reglan)	**antiemetics**

Mechanism of Action	Blocks dopamine receptors in chemoreceptor trigger zone of the CNS. Stimulates motility of the upper GI tract & accelerates gastric emptying. ● Decreased nausea & vomiting &/or Sx of gastric stasis. Easier passage of nasogastric tube into small bowel.
Indications	Prevention of chemotherapy-induced emesis. Tx of postsurgical & diabetic gastric stasis. Facilitation of small bowel intubation in radiographic procedures. Management of gastroesophageal reflux. Tx & prevention of postoperative nausea & vomiting when nasogastric suctioning is undesirable.
Contraindications	Possible GI obstruction or hemorrhage. Hx of seizure disorders. Pheochromocytoma. Parkinson's disease.
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME** Drowsiness, extrapyramidal reactions, restlessness
Routes	PO, IV, IM
Assessment/Education	Monitor for neuroleptic malignant syndrome. Monitor for tardive dyskinesia. Usually occurs after a yr. or more of continued therapy; risk of tardive dyskinesia increases with total cumulative dose. Report immediately & d/c metoclopramide; may be irreversible. Assess for extrapyramidal side effects. May occur wk to mo after initiation of therapy & are reversible on discontinuation. Dystonic reactions may occur within mins of IV infusion & stop within 24 hr of discontinuation of metoclopramide. May be treated with 50 mg of IM diphenhydramine or diphenhydramine 1 mg/kg IV may be administered prophylactically 15 min before metoclopramide IV infusion.
Considerations	May alter hepatic function test results. May cause Increased prolactin & aldosterone concentrations.

Vallaerand, A.H. & Sanoski, C.A. (2019). Davis's Drug Guide for Nurses. Philadelphia, PA. F. A. Davis Company.

Metoprolol (Toprol)	**Beta Blocker, antianginals, antihypertensives**

Mechanism of Action:	Blocks stimulation of $beta_1$(myocardial)-adrenergic receptors. Does not usually affect $beta_2$(pulmonary, vascular, uterine)-adrenergic receptor sites. ● decrease BP & HR. decrease frequency of attacks of angina pectoris. decrease rate of CV mortality & hospitalization in pts. with heart failure
Indications:	HTN. Angina pectoris. Prevention of MI & decrease mortality in pts. with recent MI. Management of stable, symptomatic (class II or III) heart failure due to ischemic, hypertensive or cardiomyopathic origin (may be used with ACE inhibitors, diuretics &/or digoxin; Toprol XL only).
Contraindications:	Uncompensated HF. Pulmonary edema. Cardiogenic shock. Bradycardia, heart block, or sick sinus syndrome (in absence of a pacemaker).
Adverse Reactions:	**BRADYCARDIA, HF, PULMONARY EDEMA** Erectile dysfunction, fatigue, weakness
Routes:	PO, IV
Assessment/Education:	Use cautiously within 14 days of MAOIs. Take apical HR before administering. If <50 bpm or if arrhythmia occurs, withhold medication & notify PCP. Monitor BP, ECG, & HR frequently during dose adjustment & periodically during therapy. Monitor VS & ECG every 5–15 min during & for several hours after parenteral administration. If HR <40 bpm, especially if cardiac output is also decrease, administer atropine 0.25–0.5 mg IV. Monitor I&O ratios & weights. Assess routinely for s/s of HF (dyspnea, rales/crackles, weight gain, peripheral edema, jugular venous distention). Abrupt withdrawal may precipitate life-threatening arrhythmias, HTN, or myocardial ischemia.
Considerations:	2nd nurse verification. May cause increase BUN, lipoprotein, K, triglyceride, & uric acid levels. May cause increase ANA titers. May cause increase in BG levels. May cause increase alkaline phosphatase, LDH, AST, & ALT levels.

Metronidazole (Flagyl)	**anti-infectives, antiprotozoals, antiulcer agents**

Mechanism of Action	Disrupts. DNA & protein synthesis in susceptible organisms. Bactericidal, trichomonacidal, or amoebicidal action.
Indications	PO, IV: Intra-abdominal infections. Gynecologic infections. Skin & skin structure infections. Lower respiratory tract infections. Bone & joint infections. CNS infections. Septicemia. Endocarditis. IV: Perioperative prophylactic agent in colorectal surgery. PO: Amebicide in the management of amebic dysentery, amebic liver abscess, & trichomoniasis: Tx of peptic ulcer disease caused by Helicobacter pylori. Topical: Tx of acne rosacea. Vag: Management of bacterial vaginosis.
Contraindications	Hypersensitivity to parabens (topical only). OB: First trimester of pregnancy.
Adverse Reactions	**SEIZURES, SJS** dizziness, headache, aseptic meningitis (IV), encephalopathy (IV)
Routes	PO, IV, topical, Vag
Assessment/Education	Assess for infection at beginning of & throughout therapy. Obtain specimens for culture & sensitivity before initiating therapy. First dose may be given before receiving results. Monitor neurologic status during & after IV infusions. Inform PCP if numbness, paresthesia, weakness, ataxia, or seizures occur. Monitor I&O & daily weight, especially for pts. on NA restriction. Assess for rash periodically during therapy. May cause SJS. D/c therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis &/or eosinophilia. Giardiasis: Monitor three stool samples taken several days apart, beginning 3–4 wk after Tx.
Considerations	May alter results of AST, ALT, & LDH tests.

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Midazolam (Versed)	**antianxiety agents, sedative/hypnotics, benzodiazepines**

Mechanism of Action	Acts at many levels of the CNS to produce generalized CNS depression. Effects may be mediated by GABA, an inhibitory neurotransmitter. ● Short-term sedation. Postoperative amnesia.
Indications	PO: Preprocedural sedation & anxiolysis in pediatric pts. IM, IV: Preoperative sedation/anxiolysis/amnesia. IV: Provides sedation/anxiolysis/amnesia during therapeutic, diagnostic, or radiographic procedures (conscious sedation): Aids in the induction of anesthesia & as part of balanced anesthesia. As a continuous infusion, provides sedation of mechanically ventilated pts. during anesthesia or in a critical care setting, Status epilepticus.
Contraindications	Cross-sensitivity with other benzodiazepines may occur. Shock. Comatose pts. or those with pre-existing CNS depression. Uncontrolled severe pain. Acute angle-closure glaucoma. OB: Benzodiazepine drugs may Increase risk of congenital malformations; use in the last wk of pregnancy has caused CNS depression in the neonate; may affect child's brain development when used during 3rd trimester. Lactation Pedi: Products containing benzyl alcohol should not be used in neonates.
Adverse Reactions	**APNEA, LARYNGOSPASM, RESPIRATORY DEPRESSION, CARDIAC ARREST,** hlebitis at IV site
Routes	PO, IM, IV, IN
Assessment/Education	IN: Onset 5 mins; duration 30-60 mins IM: Onset 15 mins; duration 2-6 hr IV: Onset 1-5 mins; duration 2-6 hr No grapefruit juice. Administer IV push over 2-5 mins. Assess level of sedation & level of consciousness throughout & for 2–6 hr following administration. Monitor BP, HR, & respiration continuously during IV administration
Considerations	**ANTITODE: FLUMAZENIL**

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Mirena	**contraceptive hormones**

Mechanism of Action	Mechanism not clearly known. May alter cervical mucus & the endometrial environment, preventing penetration by sperm & implantation of the egg. Ovulation may also be suppressed.
Indications	Prevention of pregnancy.
Contraindications	Pregnancy. Hx of cigarette smoking or age >35 yr. Hx of thromboembolic disease. Protein C, protein S, or antithrombin deficiency or other thrombophilic disorder. Valvular heart disease. Major surgery with extended periods of immobility.DM with vascular involvement. Headache with focal neurological Sx. Uncontrolled HTN. Hx of breast, endometrial, or estrogen-dependent cancer. Abnormal genital bleeding. Liver disease.
Adverse Reactions	**PANCREATITIS, THROMBOEMBOLISM**
Routes	Intrauterine
Assessment/Education	Assess BP before & periodically during therapy. Exclude the possibility of pregnancy on the basis or hx &/or physical exam or a pregnancy test.
Considerations	Report s/s of fluid retention, thromboembolic disorders, mental depression, hepatic dysfunction, or abnormal vaginal bleeding. Women with a strong family hx of breast cancer, fibrocystic breast disease, abnormal mammograms, or cervical dysplasia should be monitored for breast cancer at least yearly. Risk of thromboembolism is highest in 1st year of use & increased when a combination hormonal contraceptive is restarted after a break in use of at least 4 wks. Advise pt. to notify PCP if pelvic pain or pain during sex, unusual vaginal discharge or genital sores, unexplained fever, exposure to sexually transmitted infections, very severe or migraine headaches, yellowing of skin or whites of the eyes, very severe vaginal bleeding or bleeding that lasts a long time occurs, if a menstrual period is missed, or if Mirena's threads cannot be felt.

Misoprostol (Cytotec)	**antiulcer agents, cytoprotective agents, prostaglandins**

Mechanism of Action:	Acts as a prostaglandin analogue, decreasing gastric acid secretion (antisecretory effect) & increasing the production of protective mucus (cytoprotective effect). Causes uterine contractions. ● Prevention of gastric ulceration from NSAIDs. With mifepristone terminates pregnancy of less than 49 days.
Indications:	Prevention of gastric mucosal injury from NSAIDs, including aspirin, in high-risk pts. (geriatric pts., debilitated pts., or those with a Hx of ulcers). With mifepristone for termination of pregnancy.
Contraindications:	Hypersensitivity to prostaglandins. OB: Should not be used to prevent NSAID-induced gastric injury due to potential for fetal harm or death. Lactation: May cause severe diarrhea in the nursing infant.
Adverse Reactions:	Abdominal pain, diarrhea, miscarriage
Routes:	PO
Assessment/Education:	Assess pt. routinely for epigastric or abdominal pain & for frank or occult blood in the stool, emesis, or gastric aspirate. Assess women of childbearing age for pregnancy. Misoprostol is usually begun on 2nd or 3rd day of menstrual period following a negative pregnancy test result. Termination of pregnancy: Monitor uterine cramping & bleeding during therapy. Cervical Ripening: Assess dilation of cervix periodically during therapy. Inform pt. that misoprostol will cause spontaneous abortion. Women of childbearing age must be informed of this effect through verbal & written information & must use contraception throughout therapy. If pregnancy is suspected, the woman should stop taking misoprostol & immediately notify her PCP. Inform pt. that diarrhea may occur. PCP should be notified if diarrhea persists for more than 1 wk.
Considerations:	Administer medication with meals & at bedtime to reduce severity of diarrhea.

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Montelukast (Singulair)	**allergy, cold & cough remedies, bronchodilators, leukotriene antagonists**

Mechanism of Action	Antagonizes the effects of leukotrienes, which mediate the following: Airway edema, smooth muscle constriction, altered cellular activity. Result is decreased inflammatory process, which is part of asthma & allergic rhinitis. ● Decreased frequency & severity of acute asthma attacks, severity of allergic rhinitis &/or attacks of exercise-induced bronchoconstriction.
Indications	Prevention & chronic tx of asthma. Management of seasonal allergic rhinitis. Prevention of exercise-induced bronchoconstriction in pts. 6 yr. & older.
Contraindications	Hypersensitivity
Adverse Reactions	**SI BEHAVIORS/THOUGHT, SJS, TEN, EOSINOPHILIC CONDITIONS (INCLUDING CHURG-STRAUSS SYNDROME**
Routes	PO
Assessment/Education	Assess lung sounds & respiratory function prior to & periodically during therapy. Assess allergy Sx (rhinitis, conjunctivitis, hives) before & periodically during therapy. Monitor closely for changes in behavior that could indicate the emergence or worsening of depression or SI. Assess for rash periodically during therapy
Considerations	May cause increased AST & ALT concentrations. Instruct pt. to take medication daily in the evening or at least 2 hr before exercise, even if not experiencing Sx of asthma.

Morphine	**opioid analgesics, opioid agonists**

Mechanism of Action:	Binds to opiate receptors in the CNS. Alters the perception of & response to painful stimuli while producing generalized CNS depression.
Indications:	Severe pain (the 20 mg/mL oral solution concentration should only be used in opioid-tolerant pts.). Pain severe enough to require daily, around-the-clock long-term opioid Tx & for which alternative Tx options are inadequate (extended-release). Pulmonary edema. Pain associated with MI.
Contraindications:	Hypersensitivity. Some products contain tartrazine, bisulfites, or alcohol & should be avoided in pts. with known hypersensitivity. Acute, mild, intermittent, or postoperative pain (extended/sustained-release). Significant respiratory depression (extended-release). Acute or severe bronchial asthma (extended-release). Paralytic ileus (extended-release).
Adverse Reactions:	**RESPIRATORY DEPRESSION,** confusion, sedation, hypotension, constipation
Routes:	PO, IV, IM, SC, Rectal, Epidural, IT
Assessment/Education:	Avoid MAOI within 14 days. Monitor RR & BP frequently throughout therapy. Report significant changes immediately. The respiratory depressant effects of morphine may last longer than the analgesic effects. If giving PO, take with food.
Considerations:	Administer 2.5–15 mg over 5 min. Rapid administration may lead to increase respiratory depression, hypotension, & circulatory collapse. May increase plasma amylase & lipase levels. **ANTITODE: Narcan**

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Naloxone (Narcan)	**Antidotes, opioid antagonists**

Mechanism of Action:	Competitively blocks the effects of opioids, including CNS & respiratory depression, without producing any agonist (opioid-like) effects.
Indications:	Reversal of CNS depression & respiratory depression because of suspected opioid overdose.
Contraindications:	Hypersensitivity
Adverse Reactions:	**VENTRICULAR ARRHYTHMIAS**
Routes:	IV, IM, SC
Assessment/Education:	Monitor RR, rhythm, & depth; HR, ECG, BP; & LOC frequently for 3–4 hr. after the expected peak of blood concentration.
Considerations:	For overdose of opioids in pts. not suspected of being opioid dependent: 0.4mg/dose, repeat every 2-3 min. Pt. with suspected opioid dependency: 0.1-0.2 mg/dose every 2-3 min.

Naproxen (Aleve)	**nonopioid analgesics, nonsteroidal anti-inflammatory agents, antipyretics**

Mechanism of Action:	Inhibits prostaglandin synthesis. ● Decreased pain. Reduction of fever. Suppression of inflammation.
Indications:	Mild to moderate pain. Dysmenorrhea. Fever. Inflammatory disorders, including: Rheumatoid arthritis (adults & children), Osteoarthritis.
Contraindications:	Cross-sensitivity may occur with other NSAIDs, including aspirin. Active GI bleeding. Ulcer disease. Coronary artery bypass graft (CABG) surgery. Lactation
Adverse Reactions:	**HF, MI, STROKE, DRUG-INDUCED HEPATITIS, GI BLEEDING, SJS, ANAPHYLAXIS,** dizziness, drowsiness, headache
Routes:	PO
Assessment/Education:	For rapid initial effect, administer 30 min before or 2 hr after meals. May be administered with food, milk, or antacids to decrease GI irritation. Food slows but does not reduce the extent of absorption.
Considerations:	Concurrent use with aspirin decreases levels & may decrease effectiveness.

Niacin (Nicobid)	**lipid-lowering agents, vitamins, water soluble vitamins**

Mechanism of Action	Required as coenzymes (for lipid metabolism, glycogenolysis, & tissue respiration). Large doses decrease lipoprotein & triglyceride synthesis by inhibiting the release of free fatty acids from adipose tissue & decreasing hepatic lipoprotein synthesis. Cause peripheral vasodilation in large doses. Decreased blood lipids. Supplementation in deficiency states.
Indications	Adjunctive therapy in certain hyperlipidemias
Contraindications	Some products may contain tartrazine & should be avoided in pts. with known hypersensitivity
Adverse Reactions	**HEPATOTOXICITY**, GI upset, flushing of the face & neck, pruritus,
Routes	PO
Assessment/Education	Obtain a diet Hx, especially with regard to fat consumption.
Considerations	Monitor glucose & uric acid levels & hepatic function tests periodically during prolonged high-dose therapy. Notify PCP if AST, ALT, or LDH becomes elevated. May Increased prothrombin times & Decreased albumin. High-dose therapy may cause Increased glucose & uric acid levels. When niacin is used as a lipid-lowering agent, cholesterol & triglyceride levels should be monitored prior to & periodically during therapy.

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Nitrofurantoin (Macrobid)	anti-infectives

Mechanism of Action	Interferes with bacterial enzymes. Bactericidal or bacteriostatic action against susceptible organisms.
Indications	Prevention & Tx of urinary tract infections caused by susceptible organisms; not effective in systemic bacterial infections. Many gram-negative & some gram-positive organisms.
Contraindications	Hypersensitivity to parabens (suspension) Oliguria, anuria, or significant renal impairment (CCr <60 mL/min) Hx of cholestatic jaundice or hepatic impairment with previous use of nitrofurantoin Pregnancy near term & infants <1 mo (Increased risk of hemolytic anemia).
Adverse Reactions	**PNEUMONITIS, PULMONARY FIBRO, HEPATOTOXICITY, C-DIFF-ASSOCIATED DIARRHEA (CDAD),** anorexia, n/v/d, hypersensitivity reactions
Routes	PO
Assessment/Education	Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-Diff-associated diarrhea (CDAD). May begin up to several wk following cessation of therapy. Assess for S/S of pulmonary reactions periodically during therapy. Acute reactions (fever, chills, cough, chest pain, dyspnea, pulmonary infiltration with consolidation or pleural effusion on x-ray, eosinophilia) usually occur within first wk of Tx & resolve when therapy is D/Cd. Chronic reactions (malaise, dyspnea on exertion, cough, altered pulmonary function) may indicate pneumonitis or pulmonary fibrosis & are more common in pts. taking nitrofurantoin for 6 mo or longer.
Considerations	Monitor CBC routinely with pts. on prolonged therapy. Monitor liver function tests periodically during therapy. May cause Increased glucose, bilirubin, alkaline phosphatase, BUN, & Cr. If hepatotoxicity occurs, D/C therapy. Monitor renal function periodically during therapy.

Nitroglycerin (Nitro-Bid)	Antianginals, nitrates

Mechanism of Action:	Increase coronary blood flow by dilating coronary arteries & improving collateral flow to ischemic regions. Produces vasodilation (venous greater than arterial). decrease left ventricular end-diastolic pressure & left ventricular end-diastolic volume (preload). Reduces myocardial oxygen consumption. ● Relief or prevention of anginal attacks. Increase cardiac output. Reduction of BP.
Indications:	Acute (**translingual, SL, ointment**) & long-term prophylactic (**oral, transdermal**) management of angina pectoris. **PO**: Adjunct Tx of HF. **IV**: Adjunct Tx of acute MI. Production of controlled hypotension during surgical procedures. Tx of HF.
Contraindications:	ICP. Severe anemia. Pericardial tamponade. Constrictive pericarditis. Uncorrected hypovolemia. Alcohol intolerance (large IV doses only). Concurrent use of PDE-5 inhibitor (avanafil, sildenafil, tadalafil, vardenafil) or riociguat.
Adverse Reactions:	Dizziness; headache; hypotension, tachycardia
Routes:	SL, IV, translingual spray; transdermal, PO
Assessment/Education:	Assess location, duration, intensity, & precipitating factors of pt's anginal pain. Monitor BP & HR before & after administration. Pts. receiving IV nitroglycerin require continuous ECG & BP monitoring.
Considerations:	May cause abnormal urine specimen results; falsely increase cholesterol levels

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NPH (Humulin-N)	antidiabetics, hormones, pancreatics

Mechanism of Action:	Lowers BG by: stimulating glucose uptake in skeletal muscle & fat, inhibiting hepatic glucose production. Other actions of insulin: inhibition of lipolysis & proteolysis, enhanced protein synthesis.
Indications:	Control of hyperglycemia in pts. with DM.
Contraindications:	Hypoglycemia. Allergy or hypersensitivity to a particular type of insulin, preservatives, or other additives.
Adverse Reactions:	**HYPOGLYCEMIA, ANAPHYLAXIS**
Routes:	SC
Assessment/Education:	Do not use order with just "U", needs to say Units. Only use insulin syringes. Administer 30-60 mins before a meal Onset: 2-4 hours SC; 70% NPH/30% regular insulin: 30 mins When mixing insulin draw up regular insulin/lispro into syringe first Assess for Sx of hypoglycemia (anxiety; restlessness; tingling in hands, feet, lips, or tongue; chills; cold sweats; confusion; cool, pale skin; difficulty in concentration; drowsiness; nightmares or trouble sleeping; excessive hunger; headache; irritability; nausea; nervousness; tachycardia; tremor; weakness; unsteady gait)& hyperglycemia (confusion, drowsiness; flushed, dry skin; fruit-like breath odor; rapid, deep breathing, polyuria; loss of appetite; unusual thirst) periodically during therapy.
Considerations:	Monitor BG every 6 hr during therapy, more frequently in ketoacidosis & times of stress. A1C may be monitored every 3–6 mo to determine effectiveness. Monitor K in pts. at risk for hypokalemia (those using K-lowering agents, those receiving IV insulin) periodically during therapy.

Olanzapine (Zyprexa)	Antipsychotic

Mechanism of Action	Antagonizes dopamine & serotonin type 2 in the CNS; also has anticholinergic, antihistaminic, & anti–alpha1-adrenergic effects.
Indications	Schizophrenia. Acute therapy of manic or mixed episodes associated with bipolar I disorder; maintenance therapy of bipolar I disorder; acute agitation due to schizophrenia or bipolar I mania (IM); depressive episodes associated with bipolar I disorder; Tx-resistant depression
Contraindications	Lactation: d/c drug or bottle feed; phenylketonuria
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME, SEIZURES, SI, AGRANULOCYTOSIS, DRUG REACTION WITH EOSINOPHILIA** agitation, delirium, dizziness, headache, restlessness, sedation, weakness, amblyopia, rhinitis, orthostatic hypotension, constipation, dry mouth, increased liver enzymes, weight loss or gain, tremor
Routes	PO, IM
Assessment/Education	Monitor for DRESS, neuroleptic malignant syndrome, extrapyramidal side effects, tardive dyskinesia & post-injection delirium/sedation for at least 3 hours. Seek help: sore throat w/fever; teach extrapyramidal Sx; monitor SI. No smoking.
Considerations	Monitor CBC frequently during initial mo of therapy in pts. with pre-existing or hx of low WBC. May cause leukopenia, neutropenia, or agranulocytosis.

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Omeprazole (Prilosec)	**antiulcer agents; proton pump inhibitors**

Mechanism of Action	Binds to an enzyme on gastric parietal cells in the presence of acidic gastric pH, preventing the final transport of hydrogen ions into the gastric lumen. Diminished accumulation of acid in the gastric lumen with lessened gastroesophageal reflux ● Healing of duodenal ulcers.
Indications	GERD/maintenance of healing in erosive esophagitis. Duodenal ulcers (with or without anti-infectives for Helicobacter pylori). Short-term Tx of active benign gastric ulcer. Pathologic hypersecretory conditions, including Zollinger-Ellison syndrome. Reduction of risk of GI bleeding in critically ill pts.
Contraindications	Concurrent use of rilpivirine.
Adverse Reactions	**C-DIFF,** Abdominal pain
Routes	PO
Assessment/Education	Assess pt. routinely for epigastric or abdominal pain & frank or occult blood in the stool, emesis, or gastric aspirate. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-Diff. May begin up to several wk following cessation of therapy.
Considerations	Monitor CBC with differential periodically during therapy. May cause Increased AST, ALT, alkaline phosphatase, & bilirubin. May cause gastrin concentrations to Increase during first 1–2 wk of therapy. Levels return to normal after discontinuation of omeprazole. Monitor INR & prothrombin time in pts. taking warfarin. May cause hypomagnesemia. Monitor Mg prior to & periodically during therapy. May cause false positive results in diagnostic investigations for neuroendocrine tumors due to Increased chromogranin A (CgA) levels secondary to drug-induced decreased gastric acidity.

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Onabotulinumtoxina (Botox)	**cosmetic agents, neurotoxins**

Mechanism of Action	Produces partial chemical denervation by inhibiting the release of acetylcholine. Result is local decrease in muscle activity. Decreased brow furrow & crow's feet with improved appearance. Decreased muscle tone in upper & lower limbs. Decreased severity of abnormal head position & neck pain. Decreased sweating. Decreased blepharospasm. Decreased strabismus. Decreased frequency & duration of headaches.
Indications	Temporary improvement in the appearance of moderate to severe glabellar lines associated with corrugator &/or procerus muscle activity in adults. Temporary improvement in the appearance of moderate to severe lateral canthal lines associated with orbicularis oculi activity in adults. Upper or lower limb spasticity. Cervical dystonia. Severe axillary hyperhidrosis that is refractory to topical agents. Blepharospasm associated with dystonia. Strabismus. Prevention of migraines in pts. with chronic migraines. Tx of urinary incontinence due to detrusor overactivity associated with a neurologic condition in adults who have an inadequate response to or are intolerant of an anticholinergic medication. Tx of overactive bladder with Sx of urge urinary incontinence, urgency, & frequency in adults who have an inadequate response to or are intolerant of an anticholinergic medication.
Contraindications	Presence of infection at planned injection sites. Acute urinary tract infection &/or acute urinary retention (for urinary incontinence indication). OB
Adverse Reactions	**ANAPHYLAXIS**
Routes	IM
Assessment/Education	Assess for signs of anaphylactic reaction following administration. Monitor for asthenia, generalized muscle weakness, diplopia, blurred vision, ptosis, dysphagia, dysphonia, dysarthria, urinary incontinence, & breathing difficulties. Medication may spread from the injection site to distant parts of the body. May occur within hrs. or several wks. after injection. Advise pt. to notify PCP immediately if swallowing, speech, or respiratory disorders arise.
Considerations	Children under 12 safety has not been established. Cosmetic results last from 3-4 months.

Ondansetron (Zofran)	**Antiemetics, five ht3 antagonists**

Mechanism of Action:	Blocks the effects of serotonin at 5-HT_3–receptor sites (selective antagonist) located in vagal nerve terminals & the chemoreceptor trigger zone in the CNS. ● decrease incidence & severity of N/V following chemotherapy or surgery
Indications:	Prevention of N/V associated with highly or moderately emetogenic chemotherapy. **PO**: Prevention of N/V associated with radiation therapy. Prevention & Tx of postoperative N/V.
Contraindications:	Orally disintegrating tablets contain aspartame & should not be used in pts. with phenylketonuria. Congenital long QT syndrome. Concurrent use of apomorphine.
Adverse Reactions:	**SEROTONIN SYNDROME, TORSADE DE POINTES, SJS, TEN.** Headache, constipation , diarrhea
Routes:	PO, IM, IV
Assessment/Education:	Monitor ECG in pts. with hypokalemia, hypomagnesemia, HF, bradyarrhythmias, or pts. taking concomitant medications that prolong the QT interval. Monitor for s/s of serotonin syndrome, autonomic instability, neuromuscular Sx, seizures, gastrointestinal Sx. If Sx occur, d/c therapy. Assess for rash periodically during therapy. May cause SJS or TEN. D/c therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis, &/or eosinophilia.
Considerations:	***Rate:*** Administer over at least 30 sec & preferably over 2–5 min. May cause transient increase in bilirubin, AST, & ALT levels.

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Oseltamivir (Tamiflu)	**Antivirals, neuraminidase inhibitors**

Mechanism of Action	Inhibits the enzyme neuraminidase, which may alter virus particle aggregation & release. Reduced duration or prevention of flu-related Sx.
Indications	Tx of uncomplicated acute illness due to influenza infection in adults & children greater than 2 wk who have had Sx for less than 2 days. Prevention of influenza in pts. greater than 1 yr.
Contraindications	End stage renal disease & not receiving dialysis.
Adverse Reactions	**SEIZURES**
Routes	PO
Assessment/Education	Advise pts. to report behavioral changes (hallucinations, delirium, & abnormal behavior) to PCP immediately.
Considerations	Use correct oral dosing device for measuring oral solution. Dosing errors have occurred due to oseltamivir dosing in mg & solution in mL. Make sure units of measure on prescription instructions match dosing device provided with the drug.

Oxycodone (Oxycontin)	**opioid analgesics, opioid agonists, opioid agonists nonopioid, analgesic combinations**

Mechanism of Action	Binds to opiate receptors in the CNS. Alters the perception of & response to painful stimuli, while producing generalized CNS depression. ● Decreased pain
Indications	Moderate to severe pain.
Contraindications	Some products contain alcohol or bisulfites & should be avoided in pts. with known intolerance or hypersensitivity. Significant respiratory depression. Paralytic ileus. Acute or severe bronchial asthma. Acute, mild, intermittent, or postoperative pain (extended-release).
Adverse Reactions	**RESPIRATORY DEPRESSION** Confusion, sedation, constipation
Routes	PO, Rect
Assessment/Education	Assess BP, HR, & respirations before & periodically during administration. If RR is <10/min, assess level of sedation. Physical stimulation may be sufficient to prevent significant hypoventilation. Dose may need to be decreased by 25–50%. Initial drowsiness will diminish with continued use. Prolonged use may lead to physical & psychological dependence & tolerance.
Considerations	May Increased plasma amylase & lipase levels. **ANTIDOTE: NARCAN**

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Paliperidone (Invega)	**Antipsychotic**

Mechanism of Action	May act by antagonizing dopamine & serotonin in the CNS. Paliperidone is the active metabolite of risperidone.
Indications	Schizophrenia, schizoaffective disorder
Contraindications	QT prolongation drugs or congenital QT prolongation or other cardiac arrhythmias. Bradycardia, hypokalemia, hypomagnesemia; pre-existing severe GI narrowing. CCr <50 mL/min; lactation
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME, SEIZURES, SI, QT INTERVAL PROLONGATION, AGRANULOCYTOSIS, ANAPHYLAXIS, ANGIOEDEMA** Palpitations, tachycardia, drowsiness, extrapyramidal disorders (dose related), headache, insomnia, dyspnea, abdominal pain,
Routes	PO, IM
Assessment/Education	Monitor for neuroleptic malignant syndrome, extrapyramidal side effects, tardive dyskinesia. Seek help: sore throat w/fever; teach extrapyramidal Sx; monitor SI.
Considerations	Monitor fasting BG & cholesterol levels before & periodically during therapy. Monitor prolactin prior to & periodically during therapy. May cause Increased prolactin levels. Monitor CBC frequently during initial mo of therapy in pts. with pre-existing or Hx of low WBC. May cause leukopenia, neutropenia, or agranulocytosis. D/c therapy if this occurs.

Pantoprazole (Protonix)	**antiulcer agents, proton pump inhibitors**

Mechanism of Action:	Binds to an enzyme in the presence of acidic gastric pH, preventing the final transport of hydrogen ions into the gastric lumen. ● Diminished accumulation of acid in the gastric lumen, with lessened acid reflux. Healing of duodenal ulcers & esophagitis. Decreased acid secretion in hypersecretory conditions.
Indications:	Erosive esophagitis associated with GERD. Maintenance of healing of erosive esophagitis Pathologic gastric hypersecretory conditions.
Contraindications:	Hypersensitivity to rabeprazole or related drugs (benzimidazoles) OB: Should be used during pregnancy only if clearly needed. Lactation: D/c breast feeding due to potential for serious adverse reactions in infants.
Adverse Reactions:	**C-DIFF**
Routes:	PO, IV
Assessment/Education:	Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-Diff. May begin up to several wk following cessation of therapy.
Considerations:	May cause abnormal liver function tests, including increase AST, ALT, alkaline phosphatase, & bilirubin. May cause hypomagnesemia. Monitor Mg prior to & periodically during therapy.

Vallaerand, A.H. & Sanoski, C.A. (2019). Davis's Drug Guide for Nurses. Philadelphia, PA. F. A. Davis Company.

Paroxetine hydrochloride (Paxil)	**SSRI**

Mechanism of Action	Inhibits neuronal reuptake of serotonin in the CNS, thus potentiating the activity of serotonin; has little effect on norepinephrine or dopamine; mechanism for benefit in treating vasomotor Sx unknown.
Indications	Depression, OCD; anxiety; PTS.D; Premenstrual dysphoric disorder; vasomotor Sx associated with menopause
Contraindications	MAO inhibitors; thioridazine or pimozide use
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME, SI, STEVEN-JOHNSON SYNDROME, SEROTONIN SYNDROME** anxiety, dizziness, drowsiness, headache, insomnia, weakness, constipation, diarrhea, dry mouth, nausea, sweating
Routes	PO
Assessment/Education	Assess for SI, serotonin syndrome; rash. Educate on dry mouth/good oral hygiene.
Considerations	Monitor CBC & differential periodically during therapy. Report leukopenia or anemia

Penicillin G (Bicillin L-A) **Penicillin benzathine**	**anti-infectives, PCNs**

Mechanism of Action	Bind to bacterial cell wall, resulting in cell death. ● Bactericidal action against susceptible bacteria.
Indications	Tx of a wide variety of infections including: Pneumococcal pneumonia, Streptococcal pharyngitis, Syphilis, Gonorrhea strains. Tx of enterococcal infections (requires the addition of an aminoglycoside). Prevention of rheumatic fever. Should not be used as a single agent to treat anthrax. Active against most gram-positive & some gram-negative organisms & anaerobic bacteria
Contraindications	Hypersensitivity to procaine or benzathine (procaine & benzathine preparations only). Some products may contain tartrazine & should be avoided in pts. with known hypersensitivity.
Adverse Reactions	**SEIZURES, ANAPHYLAXIS, SICKNESS,** diarrhea, epigastric distress, n/v, rash, phlebitis
Routes	IM, IV
Assessment/Education	Observe pt. for S/S of anaphylaxis
Considerations	Inject penicillin deep into a well-developed muscle mass at a slow, consistent rate to prevent blockage of the needle. Massage well. Accidental injury near or into a nerve can result in severe pain & dysfunction. May cause positive direct Coombs' test results. Hyperkalemia may develop after large doses of penicillin G potassium. Monitor Na concentrations in pt. with HTN or HF. Hypernatremia may develop after large doses of penicillin Na. May cause Increased AST, ALT, LDH, & alkaline phosphatase concentrations. May cause leukopenia & neutropenia, especially with prolonged therapy or hepatic impairment.

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Penicillin VK	**anti-infectives, polymerase inhibitors**

Mechanism of Action	Bind to bacterial cell wall, resulting in cell death. ● Bactericidal action against susceptible bacteria.
Indications	Tx of mild-to-moderate infections. Streptococcal infections without bacteremia: Mild-to moderate infections of the upper respiratory tract, scarlet fever, & mild erysipelas. Pneumococcal infections: Mild to moderately severe infections of the respiratory tract. Staphylococcal infections (penicillin G-sensitive): Mild infections of the skin & soft tissues. Fusospirochetosis: Mild-to-moderate severe infections of the oropharynx (Vincent's gingivitis & pharyngitis). Prophylaxis against bacterial endocarditis in pts. w/ congenital heart disease or rheumatic or other acquired valvular heart disease undergoing dental procedures & surgical procedures of the upper respiratory tract. Prevention of recurrence following rheumatic fever &/or chorea.
Contraindications	Hypersensitivity to any of the ingredients of the product. Anaphylactic reaction to beta-lactams
Adverse Reactions	**ANAPHYLAXIS**, C-Diff associated diarrhea, n/v/d, eosinophilia, hemolytic anemia, leukopenia, thrombocytopenia
Routes	PO
Assessment/Education	Monitor for S/S of hepatitis B reactivation during therapy.
Considerations	Dosage should be determined based on sensitivity of causative microorganisms & severity of infection, & adjusted to therapeutic response of the pt.

Perphenazine (Trilafon)	**Antipsychotic**

Mechanism of Action	Alters the effects of dopamine in the CNS. Possesses significant anticholinergic & alpha-adrenergic blocking activity. Blocks dopamine in the chemoreceptor trigger zone
Indications	Schizophrenia. N/V
Contraindications	Angle-closure glaucoma; bone marrow depression or blood dyscrasias; liver or CV disease
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME; AGRANULOCYTOSIS** Extrapyramidal Sx; sedation; blurred vision; dry eyes; constipation; dry mouth
Routes	PO
Assessment/Education	Assess mental status; monitor BP, HR; monitor for extrapyramidal Sx; seek help: sore throat w/fever; teach extrapyramidal Sx & about tardive dyskinesia
Considerations	Evaluate CBC, liver function tests, & ocular examinations periodically during therapy. May cause Decreased H&H, leukocytes, granulocytes, or platelets. May cause Increased bilirubin, AST, ALT, & alkaline phosphatase. Agranulocytosis occurs after 4–10 wk of therapy, with recovery 1–2 wk following discontinuation. May recur if medication is restarted. Liver function abnormalities may require discontinuation of therapy. May cause false-positive or false-negative pregnancy test results & false-positive urine bilirubin test results.

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Phenelzine (Nardil)	**Monamine oxidase inhibitor**

Mechanism of Action	Inhibits the enzyme monoamine oxidase, resulting in an accumulation of various neurotransmitters (dopamine, epinephrine, norepinephrine, & serotonin) in the body.
Indications	Tx of neurotic or atypical depression (if everything else does not work)
Contraindications	Liver disease; renal disease; Pheochromocytoma. Heart failure. Pts. undergoing elective surgery requiring general anesthesia
Adverse Reactions	**SEIZURES, HYPERTENSIVE CRISIS** dizziness, drowsiness, fatigue, headache, hyperreflexia, insomnia, tremor, twitching, weakness, edema, orthostatic hypotension, constipation, dry mouth
Routes	PO
Assessment/Education	Should be d/cd at least 10 days before surgery; monitor BP, glucose; do not ingest tyramine-rich foods
Considerations	Assess hepatic function periodically during prolonged or high-dose therapy. Monitor glucose closely in diabetic pts.; hypoglycemia may occur.

Phenobarbital (Luminal)	**anticonvulsants, sedative/hypnotics, barbiturates**

Mechanism of Action	Produces all levels of CNS depression. Depresses the sensory cortex, decreases motor activity, & alters cerebellar function. Inhibits transmission in the nervous system & raises the seizure threshold. Capable of inducing enzymes in the liver that metabolize drugs, bilirubin, & other compounds. ● Anticonvulsant activity. Sedation.
Indications	Anticonvulsant in tonic-clonic (grand mal), partial, & febrile seizures in children. Preoperative sedative & in other situations in which sedation may be required. Hypnotic (short-term)
Contraindications	Comatose pts. or those with pre-existing CNS depression. Severe respiratory disease with dyspnea or obstruction. Uncontrolled severe pain. Known alcohol intolerance (elixir only). Lactation
Adverse Reactions	**LARYNGOSPASM, HYPERSENSITIVITY REACTIONS INCLUDING ANGIOEDEMA & SICKNESS**
Routes	IV, PO, IM, SC
Assessment/Education	Monitor respiratory status, HR, & BP, & S/s of angioedema frequently in pts. receiving phenobarbital IV. Respiratory depression is dose-dependent.
Considerations	Doses may require 15–30 min to reach peak concentrations in the brain. Administer minimal dose & wait for effectiveness before administering 2nd dose to prevent cumulative barbiturate-induced depression. Monitor hepatic & renal function, folate concentrations & CBC evaluated periodically. May cause decrease bilirubin concentrations in neonates, in pts. with congenital nonhemolytic unconjugated hyperbilirubinemia, & in epileptics. Therapeutic blood levels are 10–40 mcg/mL. Sx of toxicity include confusion, drowsiness, dyspnea, slurred speech, & staggering.

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Phentermine (Lomaira)	**weight control agents, appetite suppressants**

Mechanism of Action	Decreases hunger by altering the chemical control of nerve impulse transmission in the appetite control center of the hypothalamus. Appetite suppression with resultant weight loss.
Indications	Short-term Tx of obesity in conjunction with other interventions; used to produce & maintain weight loss in pts. with a BMI greater than 30 kg/m2 or greater than 27 kg/m2 in the presence of other risk factors.
Contraindications	Known intolerance to sympathomimetic amines or tartrazine. Cardiovascular disease. Hyperthyroidism. Uncontrolled HTN. Hx of drug abuse. Agitation. Glaucoma. Concurrent or recent (within 14 days) MAO inhibitor therapy. Concurrent SSRI antidepressants. OB. Lactation
Adverse Reactions	**VALVULAR ABNORMALITIES, PULMONARY HTN**, HTN, palpitations, CNS stimulation
Routes	PO
Assessment/Education	Advise pt. to notify PCP immediately if chest pain, decreased exercise tolerance, fainting, or swelling of the feet or lower legs occurs.
Considerations	PO: Administer 30 min before meals or as a single dose before breakfast or 10–14 hr before retiring. ODT: May be administered without regard to food

Phentolamine (Oraverse)	**agents for pheochromocytoma, alpha adrenergic blockers**

Mechanism of Action	Produces incomplete & short-lived blockade of alpha-adrenergic receptors located primarily in smooth muscle & exocrine glands. Induces hypotension by direct relaxation of vascular smooth muscle & by alpha blockage. Increases blood flow to submucosal tissue through blockade of alpha receptors. ● Reduction of BP in situations in which HTN is due to adrenergic (sympathetic) excess. When infiltrated locally, reverses vasoconstriction caused by norepinephrine or dopamine. Reverses local anesthetic effects (restores normal lip & tongue sensation).
Indications	IV: Control of BP during surgical removal of a pheochromocytoma. IV, Infiltration: Prevention & Tx of dermal necrosis & sloughing following extravasation of norepinephrine, phenylephrine, or dopamine. Local: Reversal of soft-tissue anesthesia (of lip & tongue) resulting from an intraoral submucosal injection of a local anesthetic containing a vasoconstrictor.
Contraindications	Coronary or cerebral arteriosclerosis. Renal impairment.
Adverse Reactions	**CEREBROVASCULAR SPASM, MI,** angina, arrhythmias, tachycardia, abdominal pain, N/V/D
Routes	IV, IM
Assessment/Education	Monitor BP, HR, & ECG every 2 min until stable during IV administration. If hypotensive crisis occurs, epinephrine is contraindicated & may cause paradoxic further decrease in BP; norepinephrine may be used.
Considerations	May cause orthostatic hypotension

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Physostigmine (Antilirium)	**Antidotes, cholinergics, anticholinesterases**

Mechanism of Action	Inhibits the breakdown of acetylcholine so that it accumulates & has a prolonged effect. Result is generalized cholinergic response, including: Miosis, increased tone of intestinal & skeletal musculature, bronchial & ureteral constriction, bradycardia, increased salivation, lacrimation, sweating, CNS stimulation. ● Reversal of anticholinergic excess.
Indications	Reversal of CNS effects due to overdose of drugs capable of causing the anticholinergic syndrome, including: belladonna or other plant alkaloids, phenothiazines, tricyclic antidepressants, antihistamines (reverses delirium, hallucinations, coma, & some arrhythmias, but not completely effective in reversing cardiac conduction defects or tachycardia).
Contraindications	Hypersensitivity to bisulfites. Gangrene. Asthma. DM. CV disease. Mechanical obstruction of the GI or GU tract. Any vagotonic state. Concurrent use of choline esters or depolarizing neuromuscular blocking agents (decamethonium, succinylcholine). Lactation. Pedi: Preparations containing benzyl alcohol should be avoided in newborns to prevent potentially fatal gasping syndrome.
Adverse Reactions	**SEIZURES** Restlessness, bronchospasm, bradycardia, abdominal cramps, n/v/d
Routes	IM, IV
Assessment/Education	IM/IV onset: 3-8 mins; duration 45-60 mins Monitor HR, RR, & BP frequently throughout parenteral administration. Monitor ECG during IV administration. Anticholinergic Excess: Monitor neurologic status frequently. Institute seizure precautions Protect pt. from self-injury that may be caused by CNS effects of overdose.
Considerations	Overdose is manifested by bradycardia, respiratory distress, seizures, weakness, n/v, stomach cramps, diarrhea, diaphoresis, & increased salivation & tearing. **ANTITODE: ATROPINE**

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Pimozide (Orap)	**Antipsychotic**

Mechanism of Action	Blocks dopamine receptors in the CNS. Increases brain turnover of dopamine, blocks Ca channels, & may antagonize opiate receptors.
Indications	Suppression of motor & vocal tics in Tourette's Disorder with severe, compromising Sx in pts. with an unfavorable response to haloperidol. 2nd line Tx after failure with atypical antipsychotics
Contraindications	Congenital long QT syndrome; recent MI/heart failure; agents that prolong QT interval; concurrent use of CYP3A4 or CYP2D6 enzyme inhibitors; CNS depression; coma; hypokalemia; hypomagnesemia
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME; AGRANULOCYTOSIS, ARRHYTHMIAS** Drowsiness; skin discoloration; galactorrhea; parkinsonism; akinesia
Routes	PO
Assessment/Education	Assess mental status; monitor BP, HR; monitor for extrapyramidal Sx; seek help: sore throat w/fever; teach extrapyramidal Sx & about tardive dyskinesia
Considerations	May cause false-positive pregnancy tests with immunologic urine. Obtain K levels initially & throughout therapy. Obtain fasting BG & cholesterol levels initially & throughout therapy. Monitor CBC frequently during initial mo of therapy in pts. with pre-existing or Hx of low WBC. May cause leukopenia, neutropenia, or agranulocytosis.

Piperacillin/tazobactam (Zosyn)	**anti-infectives, extended spectrum penicillins**

Mechanism of Action:	Piperacillin: Binds to bacterial cell wall membrane, causing cell death. Spectrum is extended compared with other penicillins. Tazobactam: Inhibits beta-lactamase, an enzyme that can destroy penicillins. ● Death of susceptible bacteria
Indications:	Appendicitis & peritonitis. Skin & skin structure infections. Gynecologic infections. Community-acquired & nosocomial pneumonia caused by piperacillin-resistant, beta-lactamase–producing bacteria.
Contraindications:	Hypersensitivity to penicillins, beta-lactams, cephalosporins, or tazobactam (cross-sensitivity may occur).
Adverse Reactions:	**ACUTE GENERALIZED EXANTHEMATOUS PUSTULOSIS), DRESS, SJS, TEN, ANAPHYLAXIS & SICKNESS, C-DIFF, SEIZURES,** rashes
Routes:	IV
Assessment/Education:	Observe pt. for s/s of anaphylaxis. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-diff. May begin up to several wks. following cessation of therapy. Assess for skin reactions. Monitor pt. with mild to moderate rash for progression. If rash becomes severe or systemic Sx occur, d/c piperacillin/tazobactam. Monitor for s/s of DRESS during therapy. May resemble an acute viral infection. Eosinophilia is often present.
Considerations:	Rate: Infuse over 30 min. Evaluate renal & hepatic function, CBC, K, & bleeding times prior to & routinely during therapy. May cause positive direct Coombs' test result. May cause increase BUN, Cr, AST, ALT, bilirubin, alkaline phosphatase, & LDH. May cause leukopenia & neutropenia, especially with prolonged therapy or hepatic impairment. May cause prolonged prothrombin & partial thromboplastin time. May cause decrease HGB & HCT & thrombocytopenia, eosinophilia, leukopenia, & neutropenia. It also may cause proteinuria; hematuria; pyuria; hyperglycemia; decrease total protein or albumin; & abnormalities in Na, K, & Ca levels.

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Polyethylene glycol (Miralax)	**Laxatives, osmotics**

Mechanism of Action:	Polyethylene glycol (PEG) in solution acts as an osmotic agent, drawing water into the lumen of the GI tract. ● Evacuation of the GI tract without water or electrolyte imbalance.
Indications:	Tx of occasional constipation.
Contraindications:	GI obstruction; gastric retention; toxic colitis; megacolon; bowel perforation.
Adverse Reactions:	Bloating; nausea
Routes:	PO
Assessment/Education:	Assess pt. for abdominal distention, presence of bowel sounds, & usual pattern of bowel function. Assess color, consistency, & amount of stool produced
Considerations:	Inform pt. that 2–4 days may be required to produce a bowel movement. Prolonged, frequent, or excessive use may result in electrolyte imbalance & laxative dependence.

Potassium Chloride <oral>	**mineral & electrolyte replacements/supplements**

Mechanism of Action	Maintain acid-base balance, isotonicity, & electrophysiologic balance of the cell. Activator in many enzymatic reactions; essential to transmission of nerve impulses; contraction of cardiac, skeletal, & smooth muscle; gastric secretion; renal function; tissue synthesis; & carbohydrate metabolism. Replacement ● Prevention of deficiency
Indications	Tx/prevention of K depletion
Contraindications	Hyperkalemia. Severe renal impairment. Untreated Addison's disease. Some products may contain tartrazine (FDC yellow dye #5) or alcohol; avoid using in pts. with known hypersensitivity or intolerance. Hyperkalemic familial periodic paralysis.
Adverse Reactions	**ARRHYTHMIAS** Abdominal pain, diarrhea, flatulence, N/V.
Routes	PO
Assessment/Education	Administer with or after meals to decrease GI irritation. Assess for s/s of hypokalemia & hyperkalemia.
Considerations	Monitor renal function, bicarbonate, & pH. Determine Mg level if pt. has refractory hypokalemia; hypomagnesemia should be corrected to facilitate effectiveness of K replacement. Monitor Cl because hypochloremia may occur if replacing K without concurrent Cl.

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Prednisone (Sterapred)	**corticosteroids (intermediate acting), immune modifiers**

Mechanism of Action	In pharmacologic doses, suppresses inflammation & the normal immune response. Has numerous intense metabolic effects (see Adverse Reactions & Side Effects). Suppresses adrenal function at chronic doses of 5 mg/day. Replaces endogenous cortisol in deficiency states. Has minimal mineralocorticoid activity. ● Suppression of inflammation & modification of the normal immune response.
Indications	Used systemically & locally in a wide variety of chronic diseases including: Inflammatory, allergic, hematologic, neoplastic, autoimmune disorders. Suitable for alternate-day dosing in the management of chronic illness.
Contraindications	Active untreated infections (may be used in pts. being treated for tuberculous meningitis) Some products contain alcohol & should be avoided in pts. with known intolerance Lactation
Adverse Reactions	**PEPTIC ULCERATION, THROMBOEMBOLISM** Depression, euphoria, HTN, Anorexia, nausea, acne, decreased wound healing, ecchymosis, fragility, hirsutism, petechiae, adrenal suppression, muscle wasting, osteoporosis, cushingoid appearance
Routes	PO
Assessment/Education	Indicated for many conditions. Assess involved systems before & periodically during therapy. Assess pt. for signs of adrenal insufficiency. Monitor intake & output ratios & daily weights. Observe pt. for peripheral edema, steady weight gain, rales/crackles, or dyspnea.
Considerations	Monitor electrolytes & glucose. May cause hyperglycemia, especially in persons with DM. May cause hypokalemia. Pts. on prolonged courses of therapy should routinely have hematologic values, electrolytes, & & urine glucose evaluated. May decrease WBC counts. May Decrease K & Ca & Increase Na concentrations. Guaiac-test stools. Promptly report presence of guaiac-positive stools. May Increased cholesterol & lipid values. May Decreased uptake of thyroid 123I or 131I. Suppress reactions to allergy skin tests. Periodic adrenal function tests may be ordered to assess degree of hypothalamic-pituitary-adrenal axis suppression in systemic & chronic topical therapy.

Prochlorperazine (Compazine)	**Antipsychotic, Phenothiazine**

Mechanism of Action:	Alters the effects of dopamine in the CNS. Possesses significant anticholinergic & alpha-adrenergic blocking activity. Depresses the chemoreceptor trigger zone in the CNS. ● Diminished N/V. Diminished s/s of psychoses or anxiety
Indications:	Management of N/V; psychoses; anxiety.
Contraindications:	Cross-sensitivity with other phenothiazines; angle-closure glaucoma; bone marrow depression; liver or CV disease
Adverse Reactions:	**NEUROLEPTIC MALIGNANT SYNDROME; AGRANULOCYTOSIS;** Extrapyramidal Sx; blurry vision; dry eyes; constipation; dry mouth
Routes:	PO, IM, IV
Assessment/Education:	Assess mental status; monitor BP, HR; monitor for extrapyramidal Sx; seek help: sore throat w/fever; teach extrapyramidal Sx & about tardive dyskinesia
Considerations:	CBC & liver function tests should be evaluated periodically during therapy. May cause blood dyscrasias, especially between wk. 4 & 10 of therapy. Hepatotoxicity is more likely to occur between wk. 2 & 4 of therapy. May cause false-positive or false-negative pregnancy test results & false-positive urine bilirubin test results. May cause increase prolactin levels.

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Promethazine (Phenergan)	**antiemetics, antihistamines, sedative/hypnotics, phenothiazines**

Mechanism of Action:	Blocks the effects of histamine. Has inhibitory effect on the chemoreceptor trigger zone in the medulla, resulting in antiemetic properties. Alters the effects of dopamine in the CNS. Possesses significant anticholinergic activity. Produces CNS depression by indirectly decrease stimulation of the CNS reticular system. ● Relief of Sx of histamine excess usually seen in allergic conditions. Diminished nausea or vomiting. Sedation.
Indications:	Tx of various allergic conditions & motion sickness. Preoperative sedation. Tx & prevention of N/V. Adjunct to anesthesia & analgesia.
Contraindications:	Comatose pts. Prostatic hypertrophy. Bladder neck obstruction. Some products contain alcohol or bisulfites & should be avoided in pts. with known intolerance. Angle-closure glaucoma. **Pedi:** May cause fatal respiratory depression in children <2 yr.
Adverse Reactions:	**NEUROLEPTIC MALIGNANT SYNDROME** confusion, disorientation, sedation
Routes:	PO, IV, IM, Rectal
Assessment/Education:	***High Alert:*** If administered IV, assess for burning & pain at IV site; may cause severe tissue injury. Avoid IV administration, if possible. If pain occurs, d/c administration immediately. Monitor for development of neuroleptic malignant syndrome (fever, respiratory distress, tachycardia, seizures, diaphoresis, HTN or hypotension, pallor, tiredness, severe muscle stiffness, loss of bladder control). Notify PCP immediately if these Sx occur.
Considerations:	***Rate:*** Administer each 25 mg slowly, over at least 10–15 min (maximum rate = 25 mg/min). Rapid administration may produce a transient fall in BP. May cause false-positive or false-negative pregnancy test results. Evaluate CBC periodically during chronic therapy; blood dyscrasias may occur. May cause increase BG. May cause false-negative results in skin tests using allergen extracts. Promethazine should be d/cd 72 hr before the test.

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Propofol (Diprivan)	**general anesthetics**

Mechanism of Action	Short-acting hypnotic. Mechanism of action is unknown. Produces amnesia. Has no analgesic properties. ● Induction & maintenance of anesthesia.
Indications	Induction of general anesthesia in children >3 yr. & adults. Maintenance of balanced anesthesia when used with other agents in children >2 mo & adults. Initiation & maintenance of monitored anesthesia care. Sedation of intubated, mechanically ventilated pts. in intensive care units (ICUs)
Contraindications	Hypersensitivity to Propofol, soybean oil, egg lecithin, or glycerol OB: Crosses placenta; may cause neonatal depression; may affect child's brain development when used during 3rd trimester Lactation: Enters breast milk; effects on newborn unknown.
Adverse Reactions	**PROPOFOL INFUSION SYNDROME** Bradycardia, hypotension
Routes	IV
Assessment/Education	Onset: 40 seconds; duration 3-5 mins Monitor for Propofol infusion syndrome (severe metabolic acidosis, hyperkalemia, lipemia, rhabdomyolysis, hepatomegaly, cardiac & renal failure). Most frequent with prolonged, high-dose infusions (>5 mg/kg/hr for >48 hr) but has also been reported following large-dose, short-term infusions during surgical anesthesia. If prolonged sedation or increasing dose is required, or metabolic acidosis occurs, consider alternative means of sedation.
Considerations	Dose is titrated to pt. response. Propofol has no effect on the pain threshold. Adequate analgesia should always be used when Propofol is used as an adjunct to surgical procedures. Assess respiratory status, HR, & BP continuously throughout Propofol therapy. Frequently causes apnea lasting ge.gif60 sec. Maintain patent airway & adequate ventilation. Propofol should be used only by individuals experienced in endotracheal intubation, & equipment for this procedure should be readily available.

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Propranolol (Inderal)	**antianginals, antiarrhythmics (Class II), antihypertensives, vascular headache suppressants, beta blockers**

Mechanism of Action	Blocks stimulation of beta1(myocardial) & beta2 (pulmonary, vascular, & uterine)-adrenergic receptor sites; its mechanism for the Tx of infantile hemangiomas is unknown. Decreased HR & BP. Suppression of arrhythmias. Prevention of MI. Hemangioma resolution
Indications	Management of HTN, angina, arrhythmias, hypertrophic cardiomyopathy, thyrotoxicosis, essential tremors, pheochromocytoma. Also used in the prevention & management of MI, & the prevention of vascular headaches. Proliferating infantile hemangioma requiring systemic therapy.
Contraindications	Uncompensated HF. Pulmonary edema. Cardiogenic shock. Bradycardia, sick sinus syndrome, or heart block (unless pacemaker present). Hemangeol only: Premature infants with corrected age <5 wk., Infants <2 kg, Asthma or Hx of bronchospasm, BP <50/30 mmHg, Pheochromocytoma.
Adverse Reactions	**ARRHYTHMIAS, BRADYCARDIA, HF, PULMONARY EDEMA, ERYTHEMA MULTIFORME, EXFOLIATIVE DERMATITIS, SJS, TEN, ANAPHYLAXIS,** fatigue, weakness, erectile dysfunction
Routes	PO, IV
Assessment/Education	Take apical HR prior to administering. If <50 bpm or if arrhythmia occurs, withhold med & notify PCP. Monitor BP & HR frequently during dose adjustment period & periodically during therapy. Abrupt withdrawal of propranolol may precipitate life-threatening arrhythmias, HTN, or myocardial ischemia. Pts. receiving propranolol IV must have continuous ECG monitoring & may have pulmonary capillary wedge pressure (PCWP) or central venous pressure (CVP) monitoring during & for several hrs. after administration. Monitor I&O ratios & daily weight. Assess pt. routinely for evidence of fluid overload. Assess for rash periodically during therapy. May cause SJS.
Considerations	IV vasoactive meds are inherently dangerous. Before administering intravenously, have 2nd practitioner independently check the original order, dose calculations, & infusion pump settings. Also, pt. harm or fatalities have occurred when switching from PO to IV propranolol; PO & parenteral doses are not interchangeable. IV dose is 1/10 of the PO dose. Change to PO therapy as soon as possible. May cause Increased BUN, lipoprotein, K, triglyceride, & uric acid levels. May cause Increased ANA titers. May cause Decreased or Increased in blood glucose levels. In labile diabetic pts., hypoglycemia may be accompanied by precipitous Increased of BP. Monitor pts. receiving beta blockers for signs of OD (bradycardia, severe dizziness or fainting, severe drowsiness, dyspnea, bluish fingernails or palms, seizures). Notify PCP immediately if these signs occur. Hypotension may be treated with modified Trendelenburg position & IV fluids unless contraindicated. Vasopressors (epinephrine, norepinephrine, dopamine, dobutamine) may also be used. Hypotension does not respond to beta agonists. Glucagon has been used to treat bradycardia & hypotension.

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Propylthiouracil	**antihyroid agents**

Mechanism of Action	Inhibits the synthesis of thyroid hormones. Decreased s/s of hyperthyroidism.
Indications	Pts. with Graves' disease with hyperthyroidism or toxic multinodular goiter who are intolerant to methimazole & for whom surgery or radioactive iodine therapy is not appropriate. Adjunct in the control of hyperthyroidism in preparation for thyroidectomy or radioactive iodine therapy in pts. who are intolerant to methimazole.
Contraindications	Hypersensitivity
Adverse Reactions	**HEPATOTOXICITY, SJS, TEN, AGRANULOCYTOSIS, APLASTIC ANEMIA, BLEEDING** rash, n/v
Routes	PO
Assessment/Education	Monitor response of Sx of hyperthyroidism or thyrotoxicosis. Assess pt. for development of hypothyroidism (intolerance to cold, constipation, dry skin, headache, listlessness, tiredness, or weakness). Dose adjustment may be required.
Considerations	Thyroid function studies should be monitored prior to therapy, monthly during initial therapy, & every 2–3 mo throughout therapy. WBC & differential counts should be monitored periodically throughout therapy. Agranulocytosis may develop rapidly & usually occurs during first 2 mo. This necessitates discontinuation of therapy. May cause increased AST, ALT, LDH, alkaline phosphatase, bilirubin, & prothrombin time.

Protamine sulfate	**Antidotes; anti-heparins**

Mechanism of Action	A strong base that forms a complex with heparin (an acid). ● Inactivation of heparin.
Indications	Acute management of severe heparin over-dosage. Used to neutralize heparin received during dialysis, cardiopulmonary bypass, & other procedures.
Contraindications	Hypersensitivity to protamine or fish.
Adverse Reactions	**HYPERSENSITIVITY REACTIONS, INCLUDING ANAPHYLAXIS, ANGIOEDEMA, & PULMONARY EDEMA.**
Routes	IV
Assessment/Education	Assess for bleeding & hemorrhage throughout therapy. Hemorrhage may recur 8–9 hr after therapy because of rebound effects of heparin. Rebound may occur as late as 18 hr after therapy in pts. heparinized for cardiopulmonary bypass. Assess for allergy to fish (salmon). Vasectomized & infertile men also have higher risk of hypersensitivity reaction. Observe pt. for s/s of hypersensitivity reaction. Assess for hypovolemia before initiation of therapy. Failure to correct hypovolemia may result in CV collapse from peripheral vasodilating effects of protamine sulfate.
Considerations	Monitor clotting factors, activated clotting time (ACT), activated partial thromboplastin time (aPTT), & thrombin time (TT) 5–15 min after therapy & again as necessary.

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Pseudoephedrine (Sudafed)	**allergy, cold & cough remedies, nasal drying agents/decongestants, adrenergics**

Mechanism of Action	Stimulates alpha- & beta-adrenergic receptors. Produces vasoconstriction in the respiratory tract mucosa (alpha-adrenergic stimulation) & possibly bronchodilation (beta2-adrenergic stimulation). Reduction of nasal congestion, hyperemia, & swelling in nasal passages.
Indications	Symptomatic management of nasal congestion associated with acute viral upper respiratory tract infections. Used in combination with antihistamines in the management of allergic conditions. Used to open obstructed eustachian tubes in chronic otic inflammation or infection.
Contraindications	Hypersensitivity to sympathomimetic amines. HTN, severe CAD. Concurrent MAO inhibitor therapy. Known alcohol intolerance (some liquid products).
Adverse Reactions	**SEIZURES**, anxiety, nervousness anxiety, nervousness, anorexia
Routes	PO
Assessment/Education	Instruct pt. to notify PCP if nervousness, slow or fast HR, breathing difficulties, hallucinations, or seizures occur, because these Sx may indicate OD
Considerations	Assess lung sounds & character of bronchial secretions. Maintain fluid intake of 1500–2000 mL/day to decrease viscosity of secretions.

Psyllium (Metamucil)	**Laxatives, bulk forming agents**

Mechanism of Action	Combines with water in the intestinal contents to form an emollient gel or viscous solution that promotes peristalsis & reduces transit time. Relief & prevention of constipation.
Indications	Management of simple or chronic constipation, particularly if associated with a low-fiber diet. Useful in situations in which straining should be avoided (after MI, rectal surgery, prolonged bed rest). Used in the management of chronic watery diarrhea.
Contraindications	Abdominal pain, n/v (especially when associated with fever). Serious adhesions. Dysphagia.
Adverse Reactions	Bronchospasm, n/v
Routes	PO
Assessment/Education	Assess pt. for abdominal distention, presence of bowel sounds, & usual pattern of bowel function.
Considerations	May cause elevated blood glucose levels with prolonged use of preparations containing sugar.

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Pyridostigmine (Mestinon)	**Antimyasthenics, cholinergics**

Mechanism of Action	Inhibits the breakdown of acetylcholine & prolongs its effects (anticholinesterase). Effects include: Miosis, increased intestinal & skeletal muscle tone, bronchial & ureteral constriction, bradycardia, increased salivation, lacrimation, sweating. ● Improved muscular function in pts. with myasthenia gravis. Reversal of paralysis from nondepolarizing neuromuscular blocking agents. Prevention of Soman nerve gas toxicity.
Indications	Used to increase muscle strength in the symptomatic Tx of myasthenia gravis. Reversal of nondepolarizing neuromuscular blocking agents. Prophylaxis of lethal effects of poisoning with the nerve agent soman.
Contraindications	Hypersensitivity to pyridostigmine or bromides. Mechanical obstruction of the GI or GU tract. Known alcohol intolerance (syrup only).
Adverse Reactions	**SEIZURES,** bronchospasm, excessive secretions, bradycardia, abdominal cramps, excessive salivation, N/V/D, sweating
Routes	PO, IV, IM
Assessment/Education	Assess pt. for overdose, underdose, or resistance. Both have similar Sx (muscle weakness, dyspnea, dysphagia), but Sx of OD usually occur within 1 hr of administration, whereas Sx of underdose occur after 3 hr after administration.
Considerations	Atropine is the antidote.

Quetiapine (Seroquel)	**Antipsychotic**

Mechanism of Action	Probably acts by serving as an antagonist of dopamine & serotonin. Also antagonizes histamine H1 receptors & alpha1-adrenergic receptors.
Indications	Schizophrenia; depressive episodes with bipolar disorder; acute manic episodes associated with bipolar I disorder; maintenance Tx of bipolar I disorder; depression.
Contraindications	Agents that prolong the QT interval; hx of arrhythmias, including bradycardia; hypokalemia or hypomagnesemia. Congenital long QT syndrome
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME, SEIZURES, PANCREATITIS, DRESS, SJS** Dizziness, weight gain
Routes	PO
Assessment/Education	Monitor for neuroleptic malignant syndrome, extrapyramidal side effects, tardive dyskinesia. Seek help: sore throat w/fever; teach extrapyramidal Sx; monitor SI. Assess for rash, fever, malaise, fatigue, muscle/joint pain, blisters, lesions, conjunctivitis, hepatitis; & for s/s of pancreatitis; monitor for s/s of DRESS
Considerations	May cause asymptomatic increase in AST & ALT. May also cause anemia, thrombocytopenia, leukocytosis, & leukopenia.

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Ranitidine (Zantac)	**histamine h2 antagonists, antiulcer agents**

Mechanism of Action:	Inhibits the action of histamine at the H_2-receptor site located primarily in gastric parietal cells, resulting in inhibition of gastric acid secretion. ● Healing & prevention of ulcers. decrease Sx of gastroesophageal reflux. decrease secretion of gastric acid.
Indications:	Short-term Tx of active duodenal ulcers & benign gastric ulcers. Maintenance therapy for duodenal & gastric ulcers after healing of active ulcer(s). Management of gastric hypersecretory states (Zollinger-Ellison syndrome). Tx of & maintenance therapy for erosive esophagitis. Tx of gastroesophageal reflux disease (GERD). Heartburn, acid indigestion, & sour stomach (OTC use).
Contraindications:	Syrup contains alcohol & should be avoided in pts. with known intolerance.
Adverse Reactions:	**ARRHYTHMIAS AGRANULOCYTOSIS, APLASTIC ANEMIA,** Confusion
Routes:	PO, IV, IM
Assessment/Education:	Assess pt. for epigastric or abdominal pain & frank or occult blood in the stool, emesis, or gastric aspirate.
Considerations:	IV: Administer over at least 5 min at a maximum of 10 mg/min. Rapid administration may cause hypotension & arrhythmias. CBC with differential should be monitored periodically during therapy. May cause an increase in transaminases & Cr. May cause false-positive results for urine protein.

Regular (Humulin-R)	**antidiabetics**

Mechanism of Action:	Lowers BG by: stimulating glucose uptake in skeletal muscle & fat, inhibiting hepatic glucose production. Other actions of insulin: inhibition of lipolysis & proteolysis, enhanced protein synthesis.
Indications:	Control of hyperglycemia in pts. with DM.
Contraindications:	Hypoglycemia. Allergy or hypersensitivity to a particular type of insulin, preservatives, or other additives.
Adverse Reactions:	**HYPOGLYCEMIA, ANAPHYLAXIS**
Routes:	SC, IV
Assessment/Education:	Do not use order with just "U", needs to say Units. Only use insulin syringes. Onset: 10-30 mins IV; 30-60 SC Assess for Sx of hypoglycemia (anxiety; restlessness; tingling in hands, feet, lips, or tongue; chills; cold sweats; confusion; cool, pale skin; difficulty in concentration; drowsiness; nightmares or trouble sleeping; excessive hunger; headache; irritability; nausea; nervousness; tachycardia; tremor; weakness; unsteady gait)& hyperglycemia (confusion, drowsiness; flushed, dry skin; fruit-like breath odor; rapid, deep breathing, polyuria; loss of appetite; unusual thirst) periodically during therapy.
Considerations:	Monitor BG every 6 hr during therapy, more frequently in ketoacidosis & times of stress. A1C may be monitored every 3–6 mo to determine effectiveness. Monitor K in pts. at risk for hypokalemia (those using K-lowering agents, those receiving IV insulin) periodically during therapy.

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Ribavirin (Ribasphere)	**Antivirals, nucleoside analogues**

Mechanism of Action	Inhibits viral DNA & RNA synthesis & subsequent replication. Must be phosphorylated intracellularly to be active. Inhaln: Virustatic action. PO: Decreased progression & sequelae of chronic hepatitis C.
Indications	Inhaln: Tx of severe lower respiratory tract infections caused by the respiratory syncytial virus (RSV) in infants & young children. PO: Copegus & Ribasphere — with peginterferon alfa-2a (Pegasys) in the Tx of chronic hepatitis C in pts. with compensated liver disease who have not previously been treated with interferon alfa.
Contraindications	Pts. receiving mechanically assisted ventilation. OB. Lactation. Male partners of pregnant pts. CCr <50 mL/min. Significant/unstable cardiovascular disease Hemoglobinopathies. Autoimmune hepatitis or hepatic decompensation before/during Tx (for combined therapy with interferon alfa-2b or peginterferon alfa-2a). Concurrent use of didanosine, stavudine, or zidovudine.
Adverse Reactions	**CARDIAC ARREST, HOMICIDAL IDEATION, SUICIDAL IDEATION/ATTEMPTS., SJS** depression, hemolytic anemia (with interferon alpha 2b), hemolytic anemia.
Routes	PO, inhal
Assessment/Education	Assess for signs of neuropsychiatric disorders (irritability, anxiety, depression, suicidal ideation, aggressive behavior). May require discontinuation of ribavirin. Obtain ECG prior to therapy in pts. with pre-existing cardiac disease. Assess pt. for cardiovascular disorders (HR, BP, chest pain). Reduce dose or D/C therapy if cardiac disorders occur. May cause myocardial infarction. Assess for signs of colitis (abdominal pain, bloody diarrhea, fever) & pancreatitis (n/v, abdominal pain) during therapy. D/C therapy if these occur; may be fatal.
Considerations	Chronic Hepatitis C: Monitor CBC with differential & platelet count prior to initiation, at wk 2, & wk 4, & regularly during therapy. Monitor liver function tests & thyroid stimulating hormone prior to & periodically during therapy. Monitor pregnancy tests prior to, monthly during, & for 6 mo following discontinuation of therapy in women of childbearing age. Ribavarin should be started following a negative pregnancy test. May cause Increased bilirubin & uric acid levels.

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Rifampin (Rifadin)	**Antituberculars, rifamycins**

Mechanism of Action	Inhibits RNA synthesis by blocking RNA transcription in susceptible organisms. Bactericidal action against susceptible organisms.
Indications	Active tuberculosis (with other agents). Elimination of meningococcal carriers.
Contraindications	Concurrent use of atazanavir, darunavir, fosamprenavir, saquinavir, tipranavir, or ritonavir-boosted saquinavir.
Adverse Reactions	**DRESS, HYPERSENSITIVITY REACTIONS,** red discoloration of tears, abdominal pain, diarrhea, flatulence, heartburn, N/V, red discoloration of urine
Routes	PO, IV
Assessment/Education	Monitor for S/s of DRESS. Eosinophilia is often present.
Considerations	Administer medication on an empty stomach at least 1 hr before or 2 hr after meals with a full glass (240 mL) of water. Evaluate renal function, CBC, & urinalysis periodically & during therapy. Monitor hepatic function at least monthly during therapy. May cause Increased BUN, AST, ALT, & alkaline phosphatase, bilirubin, & uric acid concentrations. May cause false-positive direct Coombs' test results. May interfere with folic acid & vitamin B assays. May interfere with dexamethasone suppression test results; d/c rifampin 15 days prior to test. May interfere with methods for determining folate & vitamin B levels & with urine tests based on color reaction. May delay hepatic uptake & excretion of sulfobromophthalein (SBP) during SBP uptake & excretion tests; perform test prior to daily dose of rifampin.

Risperidone (Risperdal)	**Antipsychotic**

Mechanism of Action	May act by antagonizing dopamine & serotonin in the CNS.
Indications	Schizophrenia. Short-term Tx of acute manic or mixed episodes associated with Bipolar I Disorder. Irritability associated with autistic disorder
Contraindications	Lactation
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME, SI, AGRANULOCYTOSIS, ANAPHYLAXIS, ANGIOEDEMA** aggressive behavior, dizziness, extrapyramidal reactions, headache, ↑sleep duration, dreams, insomnia, sedation, pharyngitis , rhinitis, visual disturbances, constipation , diarrhea, dry mouth, nausea, weight gain, decreased libido , dysmenorrhea/menorrhagia, itching/skin rash
Routes	PO, IM
Assessment/Education	Monitor for neuroleptic malignant syndrome, extrapyramidal side effects, tardive dyskinesia. Seek help: fever, respiratory distress, tachycardia, diaphoresis, hyper/hypotension; teach extrapyramidal Sx; monitor SI.
Considerations	May cause increase prolactin levels. May cause increased AST & ALT. May also cause anemia, thrombocytopenia, leukocytosis, & leukopenia. Obtain fasting BG & cholesterol levels initially & periodically during therapy.

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Rivaroxaban (Xarelto)	**Anticoagulants; antithrombotics**

Mechanism of Action	Acts as selective factor X inhibitor that blocks the active site of factor Xa, inactivating the cascade of coagulation. ● Prevention of thromboembolic events
Indications	Prevention of deep vein thrombosis that may lead to pulmonary embolism following knee or hip replacement surgery. Reduction in risk of stroke/systemic embolism in pts. with nonvalvular atrial fibrillation. Tx of & reduction in risk of recurrence of deep vein thrombosis or pulmonary embolism
Contraindications	Active major bleeding. Severe renal impairment [CCr <30 mL/min (deep vein thrombosis/pulmonary embolism Tx or prevention); CCr <15 mL/min (atrial fibrillation)] Prosthetic heart valves. Moderate to severe hepatic impairment (Child-Pugh B or C) or any liver pathology resulting in altered coagulation. Pulmonary embolism with hemodynamic instability or requiring thrombolysis or pulmonary embolectomy. Concurrent use of drugs that are combined P-gp inducers/CYP3A4 inducers or combined P-gp inhibitors/CYP3A4 inhibitors Lactation
Adverse Reactions	**BLEEDING**
Routes	PO
Assessment/Education	Assess for signs of bleeding & hemorrhage; bleeding from surgical site. Notify PCP if these occur.
Considerations	May cause Increased AST, ALT, total bilirubin, & GGT levels. Monitor renal function periodically during therapy. **ANTITODE: Prothrombin**

Salmeterol (Serevent Diskus)	**Bronchodilators, adrenergics**

Mechanism of Action	Produces accumulation of cyclic adenosine monophosphate (cAMP) at beta2-adrenergic receptors. Relatively specific for beta (pulmonary) receptors. Bronchodilation.
Indications	As concomitant therapy for the Tx of asthma & the prevention of bronchospasm in pts. who are currently taking but are inadequately controlled on a long-term asthma-control medication (e.g., inhaled corticosteroid). Prevention of exercise-induced bronchospasm. Maintenance Tx to prevent bronchospasm in COPD including chronic bronchitis & emphysema.
Contraindications	Acute attack of asthma (onset of action is delayed). Pts. not receiving a long-term asthma-control medication. Pts. whose asthma is currently controlled on low- or medium-dose inhaled corticosteroid therapy.
Adverse Reactions	**ASTHMA-RELATED DEATH**, headache
Routes	Inhaln
Assessment/Education	Observe for paradoxical bronchospasm. Salmeterol should be used along with an inhaled corticosteroid, not as monotherapy.
Considerations	May cause Increased glucose concentrations; occurs rarely with recommended doses & is more pronounced with frequent use of high doses. May cause Decrease K concentrations, which are usually transient & dose related; rarely occurs at recommended doses & is more pronounced with frequent use of high doses.

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Scopolamine (Hyoscine)	Antiemetics, anticholinergics

Mechanism of Action	Inhibits the muscarinic activity of acetylcholine. Corrects the imbalance of acetylcholine & norepinephrine in the CNS, which may be responsible for motion sickness. ● Reduction of postoperative nausea & vomiting. Reduction of spasms.
Indications	Transdermal: Prevention of motion sickness. Prevention of postoperative nausea & vomiting. PO: Symptomatic Tx of postencephalitis parkinsonism & paralysis agitans. Tx of spasticity. Inhibits excessive motility & hypertonus of GI tract in irritable colon syndrome, mild dysentery, diverticulitis & pylorospasm. Prevention of motion sickness.
Contraindications	**Angle-closure glaucoma. Acute hemorrhage. Prostatic hyperplasia (PO only). Pyloric obstruction (PO only). Tachycardia secondary to cardiac insufficiency or thyrotoxicosis.**
Adverse Reactions	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy
Routes	Transdermal, PO
Assessment/Education	Assess pt. for signs of urinary retention periodically during therapy. Monitor HR
Considerations	May cause drowsiness or blurred vision. Caution pt. to avoid driving or other activities requiring alertness until response to med is known. Pt. should use caution when exercising & in hot weather; overheating may result in heatstroke. Apply at least 4 hr before exposure to travel to prevent motion sickness.

Sertraline (Zoloft)	SSRI

Mechanism of Action:	Inhibits neuronal uptake of serotonin in the CNS, thus potentiating the activity of serotonin. Has little effect on norepinephrine or dopamine.
Indications:	Depression, OCD; anxiety; PTS.D; Premenstrual dysphoric disorder;
Contraindications:	MAO inhibitors; pimozide use; anything with alcohol
Adverse Reactions:	**SI, SEROTONIN SYNDROME,** Dizziness, drowsiness, fatigue, headache, insomnia, dry mouth, nausea, sweating, tremor
Routes:	PO
Assessment/Education:	Assess for SI, serotonin syndrome. Educate on dry mouth/good oral hygiene.
Considerations:	May cause false-positive urine screening tests for benzodiazepines. May cause hyperglycemia & ititus; monitor glucose if clinical Sx occur

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Sildenafil (Viagra)	**erectile dysfunction agents, vasodilators, phosphodiesterase type 5 inhibitors**

Mechanism of Action	Viagra: Enhances effects of nitric oxide released during sexual stimulation. Nitric oxide activates guanylate cyclase, which produces increased levels of cyclic guanosine monophosphate (cGMP). cGMP produces smooth muscle relaxation of the corpus cavernosum, which promotes increased blood flow & subsequent erection. cGMP also leads to vasodilation of the pulmonary vasculature. Sildenafil inhibits the enzyme phosphodiesterase type 5 (PDE5), PDE5 inactivates cGMP. Revatio: ● Produces vasodilation of the pulmonary vascular bed.
Indications	Viagra: Erectile dysfunction. Revatio: Pulmonary arterial HTN (WHO Group I).
Contraindications	Concurrent use of nitrates or riociguat. Pulmonary veno-occlusive disease OB. Pedi. *Revatio:* Chronic use not recommended for pulmonary HTN due to lack of efficacy & increased risk of death.
Adverse Reactions	**MI, SUDDEN DEATH**, headache, dyspepsia, flushing
Routes	PO, IV
Assessment/Education	Determine erectile dysfunction before administration. Sildenafil has no effect in the absence of sexual stimulation. For erectile dysfunction, take approximately 1 hr before sexual activity & not more than once per day.
Considerations	Concurrent use of nitrates may cause serious, life-threatening hypotension & is contraindicated. Concurrent use of riociguat may result in severe hypotension; concurrent use contraindicated.

Simvastatin (Zocor)	**lipid-lowering agents; hmg coa reductase inhibitors (statin)**

Mechanism of Action	Inhibits 3-hydroxy-3-methylglutaryl-coenzyme A (HMG-CoA) reductase, an enzyme which is responsible for catalyzing an early step in the synthesis of cholesterol. Lowering of total & LDL cholesterol & triglycerides. Slightly increases HDL cholesterol. ● Slows the progression of coronary atherosclerosis with resultant decrease in CAD-related events.
Indications	Adjunctive management of primary hypercholesterolemia & mixed dyslipidemias. Secondary prevention of myocardial infarction, coronary revascularization, stroke, & CV mortality in pts. with clinically evident CAD.
Contraindications	Concurrent use of strong CYP3A4 inhibitors, gemfibrozil, cyclosporine or danazol (Increased risk of myopathy/rhabdomyolysis). Active liver disease or unexplained persistent elevations in AST/ALT. Lactation
Adverse Reactions	**RHABDOMYOLYSIS** Abdominal cramps, constipation, diarrhea, flatus, heartburn
Routes	PO
Assessment/Education	Administer once daily in the evening. May be administered without regard to food. Avoid grapefruit & grapefruit juice during therapy; may increase risk of toxicity.
Considerations	Evaluate cholesterol & triglyceride levels before initiating, after 4–6 wk of therapy, & periodically thereafter. Monitor liver function tests prior to initiation of therapy & as clinically indicated. If Sx of serious liver injury, hyperbilirubinemia, or jaundice occur, d/c simvastatin & do not restart. May also cause Increased alkaline phosphatase & bilirubin levels. If pt. develops muscle tenderness during therapy, CPK levels should be monitored. If CPK levels are markedly Increased or myopathy occurs, therapy should be d/c'd.

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Sodium Bicarbonate	**antiulcer agents, alkalinizing agents**

Mechanism of Action:	Acts as an alkalinizing agent by releasing HCO3 ions. Following oral administration, releases HCO3, which is capable of neutralizing gastric acid. ● Alkalinization. Neutralization of gastric acid
Indications:	**PO**, **IV**: Management of metabolic acidosis. Used to alkalinize urine & promote excretion of certain drugs in over dosage situations (phenobarbital, aspirin). **PO**: Antacid. **Unlabeled Use:** Stabilization of acid-base status in cardiac arrest & Tx of life-threatening hyperkalemia.
Contraindications:	Metabolic or respiratory alkalosis. Hypocalcemia. Hypernatremia. Excessive Cl loss. As an antidote following ingestion of strong mineral acids. Pts. on Na-restricted diets (oral use as an antacid only). Renal failure (oral use as an antacid only). Severe abdominal pain of unknown cause, especially if associated with fever (oral use as an antacid only).
Adverse Reactions:	Metabolic alkalosis
Routes:	PO, IV
Assessment/Education:	**IV**: Assess fluid balance (I&O, weight, edema, lung sounds) throughout therapy. Report Sx of fluid overload (HTN, edema, dyspnea, rales/crackles, frothy sputum) if they occur. Assess pt. for signs of acidosis (disorientation, headache, weakness, dyspnea, hyperventilation), alkalosis (confusion, irritability, paresthesia, tetany, altered breathing pattern), hypernatremia (edema, weight gain, HTN, tachycardia, fever, flushed skin, mental irritability), or hypokalemia (weakness, fatigue, U wave on ECG, arrhythmias, polyuria, polydipsia) throughout therapy.
Considerations:	Monitor Na, K, Ca, HCO3 concentrations, osmolarity, acid-base balance, & renal function prior to & periodically throughout therapy. Obtain arterial blood gases (ABGs) frequently in emergency situations & during parenteral therapy.

Sodium polystyrene sulfonate (Kayexalate)	**Minerals & Electrolytes**

Mechanism of Action	K-removing resin; binds excess K mainly in the large intestine to form indigestible K polystyrene sulfonate complex which is eliminated in feces, thus preventing the absorption of K into the blood stream & thereby decreasing K level. Not absorbed following oral administration. Eliminated in feces
Indications	Tx of hyperkalemia
Contraindications	Hypersensitivity to any of the ingredients of the product. Hypokalemia. Obstructive bowel disease. Neonates with reduced gut motility (postoperatively or drug induced). Oral use in neonates. Risk of developing constipation. Chronic constipation. Risk of fecal impaction. Inflammatory bowel disease. Ischemic colitis. Vascular intestinal atherosclerosis. Post-operative pts. until normal bowel function resumes. Hx of bowel resection. Hx of bowel obstruction
Adverse Reactions	Seizures, GI irritation, severe hypokalemia, hypocalcemia, hypomagnesemia
Routes	PO, PR
Assessment/Education	Risk for developing serious K deficiency may be associated with this therapy; monitor K levels frequently within each 24-hr period. ECG changes of severe hypokalemia include a lengthened Q-T interval, widening, flattening, or inversion of the T wave, & prominent U waves.
Considerations	Intestinal necrosis, which may be fatal, & other serious gastrointestinal adverse events have been reported with this drug. However, majority of these cases were associated with concomitant sorbitol use.

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Sofosbuvir	**Antivirals, polymerase inhibitors**

Mechanism of Action	Inhibits RNA-dependent RNA polymerase, resulting in inhibition of viral replication. Decreased HCV RNA levels with decreased severity & sequelae of HCV.
Indications	Tx of chronic hepatitis C (CHC) infection (genotypes 1, 2, 3 & 4) in combination with ribavirin or ribavirin plus peginterferon alfa, including pts. with hepatocellular carcinoma awaiting transplantation & those with HCV/HIV co-infection.
Contraindications	Severe renal impairment/end-stage renal disease. Concurrent use of P-gp inducers, including rifampin & St. John's wort OB or men whose partners are pregnant. Lactation
Adverse Reactions	Fatigue, headache, insomnia, pruritus. In combination with ribavirin & peginterferon alfa: fatigue, headache, insomnia, irritability, weakness, diarrhea, nausea, rash, pruritus, anemia, myalgia, chills, fever,
Routes	PO
Assessment/Education	Monitor for S/S of hepatitis B reactivation (jaundice, dark urine, light colored stools, fatigue, weakness, loss of appetite, n/v, stomach pain) during therapy.
Considerations	A negative pregnancy test must be obtained immediately before beginning therapy & monthly thereafter. Determine current or prior HBV infection by measuring hepatitis B surface antigen (HBsAg) & hepatitis B core antibody (anti-HBc) before initiating HCV therapy. In pts. with HBV infection, monitor for clinical & laboratory signs of hepatitis flare or HBV reactivation during HCV therapy & during post-therapy follow-up. Monitor CBC periodically during therapy. May cause pancytopenia & thrombocytopenia. May cause increased bilirubin, creatine kinase, & lipase levels.

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Somatropin (Genotropin)	**Hormones, growth hormones**

Mechanism of Action	Produce growth (skeletal & cellular). Metabolic actions include: Increased protein synthesis, carbohydrate metabolism, Lipid mobilization, retention of Na, phosphorus, & K. Somatropin has the same amino acid sequence as naturally occurring growth hormone & is produced by recombinant DNA techniques. Growth hormone enhances GI tract mucosal transport of water, electrolytes & nutrients. Increased skeletal growth in children with growth hormone deficiency. Replacement of somatropin in deficient adults. Increased bone density in adult growth hormone–deficient pts.
Indications	Growth failure in children due to Prader-Willi syndrome. Growth failure in children due to deficiency of growth hormone. Growth failure in children born small for gestational age (SGA) who fail to manifest catch-up growth by age 2. Short stature associated with Turner syndrome. Idiopathic short stature in children. Growth hormone deficiency in adults as a result of pituitary disease, hypothalamic disease, surgery, radiation or trauma.
Contraindications	Hypersensitivity to growth hormone or m-cresol preservative. Closure of epiphyses. Active neoplasia. Acute critical illness secondary to complications of open-heart surgery, abdominal surgery or trauma or those with acute respiratory failure. Diabetic retinopathy. Prader-Willi syndrome with obesity & respiratory impairment (risk of fatal complications; can be used only if growth hormone deficiency is documented).
Adverse Reactions	**PANCREATITIS, HYPERSENSITIVITY REACTIONS**
Routes	SC
Assessment/Education	Monitor bone age annually & growth rate determinations, height, & weight every 3–6 mo during therapy.
Considerations	Monitor thyroid function prior to & during therapy. May decrease T4, radioactive iodine uptake, & thyroxine-binding capacity. Hypothyroidism necessitates concurrent thyroid replacement for growth hormone to be effective. Inorganic phosphorus, alkaline phosphatase, & parathyroid hormone may increase with somatropin therapy. Monitor blood glucose periodically during therapy. Diabetic pts. may require Increased insulin dose. Monitor for development of neutralizing antibodies if growth rate does not exceed 2.5 cm/6 mo. Monitor alkaline phosphatase closely in pts. with adult growth hormone deficiency.

Spironolactone (Aldactone)	**diuretics, potassium-sparing diuretics**

Mechanism of Action	Causes loss of sodium bicarbonate and calcium while saving potassium and hydrogen ions by antagonizing aldosterone. Directly inhibits testosterone secretion and androgen binding to the androgen receptor.
Indications	New York Heart Association (NYHA) class III-IV HF. HTN. Edema associated with cirrhosis and nephrotic syndrome. Primary hyperaldosteronism (tablets only).
Contraindications	Hypersensitivity. Anuria. Acute renal insufficiency. Significant renal impairment (CCr <30 mL/min); SCr >2.5 mg/dL (for patients with HF). Hyperkalemia. Addison's disease. Concurrent use of eplerenone.
Adverse Reactions	**DRESS, SJS, TEN**. Alopecia, pruritus. Arrhythmias. Hyperkalemia. Hyponatremia. Agranulocytosis. Thrombocytopenia. Dizziness. Headache. Anaphylaxis.
Routes	PO
Assessment/Education	ACE inhibitors, NSAIDS, K supplements, ARBs, K-sparing diuretics increase risk for hyperkalemia. Monitor I/O/weight. Assess K; ECG periodically. Assess skin frequently.
Considerations	Administer in AM w/food or milk. No salt substitutes. Prevent falls (dizziness).

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Succinylcholine (Anectine)	**neuromuscular blocking agents-depolarizing**

Mechanism of Action	Prevents neuromuscular transmission by blocking the effect of acetylcholine at the myoneural junction. Has agonist activity initially, producing fasciculation. Causes the release of histamine. Has no analgesic or anxiolytic effects. ● Skeletal muscle paralysis.
Indications	Used during surgical procedures to produce skeletal muscle paralysis after induction of anesthesia & provision of opioid analgesics.
Contraindications	Hypersensitivity to succinylcholine or parabens. Plasma pseudocholinesterase deficiency Pedi: Children & neonates (continuous infusions). Personal hx of malignant hyperthermia.
Adverse Reactions	**APENEA, HYPERKALEMIA; RHABDOMYOLYSIS, ANAPHYLAXIS, MALIGNANT HYPERTHERMIA**
Routes	IV, IM
Assessment/Education	IM onset: up to 3 mins; duration 10-30 mins. IV onset: 0.5-1 mins; duration 4-10 mins Assess respiratory status continuously throughout use of succinylcholine. Succinylcholine should be used only by individuals experienced in endotracheal intubation, & equipment for this procedure should be immediately available. Monitor neuromuscular response to succinylcholine with a peripheral nerve stimulator intraoperatively. Paralysis is initially selective & usually occurring consecutively in the following muscles: levator muscles of eyelids, muscles of mastication, limb muscles, abdominal muscles, muscles of the glottis, intercostal muscles, & the diaphragm. Assess pt. for hx of malignant hyperthermia (tx for malignant hyperthermia includes dantrolene).
Considerations	Succinylcholine has no effect on consciousness or the pain threshold. Adequate anesthesia should always be used when succinylcholine is used as an adjunct to surgical procedures or when painful procedures are performed. A small dose of a nondepolarizing agent may be used before succinylcholine to decrease the severity of muscle fasciculations. May cause hyperkalemia, especially in pts. with severe trauma, burns, or neurologic disorders.

Sucralfate (Carafate)	**antiulcer agents, gi protectants**

Mechanism of Action	Aluminum salt of sulfated sucrose reacts with gastric acid to form a thick paste, which selectively adheres to the ulcer surface. Protection of ulcers, with subsequent healing.
Indications	Short-term management of duodenal ulcers. Maintenance (preventive) therapy of duodenal ulcers.
Contraindications	Hypersensitivity
Adverse Reactions	**ANAPHYLAXIS**, constipation
Routes	PO, Rect
Assessment/Education	Assess pt. routinely for abdominal pain & frank or occult blood in the stool.
Considerations	Administer on an empty stomach, 1 hr before meals & at bedtime.

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Sulfamethoxazole/Trimethoprim (Bactrim)	**Sulfonamides, folate antagonists, anti-infectives, antiprotozoals**

Mechanism of Action:	Combination inhibits the metabolism of folic acid in bacteria at two different points. ● Bactericidal action against susceptible bacteria.
Indications:	Tx of: Bronchitis. *Shigella* enteritis. Otitis media. *Pneumocystis jirovecii* pneumonia (PCP). Urinary tract infections. Traveler's diarrhea. Prevention of PCP in HIV-positive pts.
Contraindications:	Hx of drug-induced immune thrombocytopenia due to sulfonamides or trimethoprim. Megaloblastic anemia secondary to folate deficiency. Severe hepatic or renal impairment **OB: Lactation: Pedi:** Pregnancy, lactation, or children <2 mo (can cause kernicterus in neonates). Exception: neonates born to HIV-infected mothers (prophylaxis should be initiated at 4–6 wk. of age).
Adverse Reactions:	**ERYTHEMA MULTIFORME, SJS, TEN, ERYTHEMA MULTIFORME, SJS, TEN, AGRANULOCYTOSIS, APLASTIC ANEMIA** rash
Routes:	PO, IV
Assessment/Education:	Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of C-diff. May begin up to several wk. following cessation of therapy. Assess for rash periodically during therapy. May cause SJS. D/c therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis &/or eosinophilia. Monitor I&O ratios. Fluid intake should be sufficient to maintain a urine output of at least 1200–1500 mL daily to prevent crystalluria & stone formation.
Considerations:	***Rate:*** Infuse over 60–90 min. Monitor CBC & urinalysis periodically during therapy. May produce increased bilirubin, increased K, Cr, & alkaline phosphatase. May cause hypoglycemia

Sumatriptan (Imitrex)	**vascular headache suppressants five ht1 agonists**

Mechanism of Action	Acts as a selective agonist of 5-HT1 at specific vascular serotonin receptor sites, causing vasoconstriction in large intracranial arteries. Relief of acute attacks of migraine.
Indications	SC, PO, Intranasal: Acute Tx of migraine attacks. SC: Acute Tx of cluster headache episodes.
Contraindications	Ischemic heart disease or S/s of ischemic heart disease, Prinzmetal's angina, or uncontrolled HTN. Stroke or transient ischemic attack. Peripheral vascular disease (including, but not limited to, ischemic bowel disease). Concurrent MAO inhibitor therapy. Hemiplegic or basilar migraine. Concurrent use of (within 24 hr) ergotamine-containing or ergot-type drugs or other 5HT1 agonists. Severe hepatic impairment. Geri
Adverse Reactions	**MI, ANAPHYLAXIS**, dizziness, vertigo, tingling, warm sensation, injection site reaction.
Routes	PO, SC, Intranasal
Assessment/Education	Give initial subcut dose under obs. to pts. with potential for CAD. Monitor BP before & for 1 hr after initial injection. If angina occurs, monitor ECG for ischemic changes. Monitor for serotonin syndrome in pts. taking SSRIs or SNRIs concurrently with sumatriptan. Advise pt. to notify PCP before next dose of sumatriptan if pain or tightness in chest occurs during use. Pts. concurrently taking SSRI or SNRI antidepressants should notify PCP promptly if signs of serotonin syndrome occur.
Considerations	Intranasal: 10-mg dose may be administered as 2 sprays of 5 mg in 1 nostril or 1 spray in each nostril.

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Tamsulosin (Flomax)	**peripherally acting antiadrenergics**

Mechanism of Action	Decreases contractions in smooth muscle of the prostatic capsule by preferentially binding to alpha1-adrenergic receptors. Decreased Sx of prostatic hyperplasia.
Indications	Management of signs/Sx of benign prostatic hyperplasia (BPH).
Contraindications	Hypersensitivity
Adverse Reactions	Dizziness, headache.
Routes	PO
Assessment/Education	Monitor I&O ratios & daily weight & assess for edema daily. Rectal exams prior to & periodically throughout therapy to assess prostate size are recommended.
Considerations	May cause orthostatic hypotension

Theophylline (Theo-24)	**Bronchodilators, xanthines**

Mechanism of Action	Inhibit phosphodiesterase, producing increased tissue concentrations of cyclic adenosine monophosphate (cAMP). Increased levels of cAMP result in: Bronchodilation, CNS stimulation, Positive inotropic & chronotropic effects, Diuresis. Gastric acid secretion. Bronchodilation.
Indications	Long-term control of reversible airway obstruction caused by asthma or COPD.
Contraindications	Hypersensitivity to aminophylline or theophylline.
Adverse Reactions	**SEIZURES, ARRHYTHMIAS**, tachycardia, anxiety, N/V
Routes	PO, IV
Assessment/Education	Pts. with a Hx of cardiovascular problems should be monitored for chest pain & ECG changes (PACs, supraventricular tachycardia, PVCs, ventricular tachycardia). Resuscitative equipment should be readily available. Monitor drug levels routinely, especially in pts. requiring high doses or during prolonged intensive therapy
Considerations	Administer around the clock to maintain therapeutic plasma levels. Administer once-a-day doses in the morning. Loading Dose: Administer over 20–30 min. If pt. has had another form of theophylline before loading dose, obtain theophylline level & reduce loading dose proportionately. Monitor ABGs, acid-base, & fluid & electrolyte balance in pts. receiving parenteral therapy or whenever required by pt. 's condition. Caffeine ingestion may falsely elevate drug concentration levels.

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Timolol *(Blocadren)*	**antihypertensives, vascular headache suppressants, beta blockers**

Mechanism of Action	Blocks stimulation of $beta_1$ (myocardial)- & $beta_2$ (pulmonary, vascular, & uterine)-adrenergic receptor sites. ● Decreased HR & BP. Prevention of MI. Decreased frequency of migraine headache.
Indications	HTN (alone or with other agents). Prevention of MI. Prevention of migraine headaches
Contraindications	Uncompensated HF. Pulmonary edema. Cardiogenic shock. Bradycardia or heart block.
Adverse Reactions	**ARRHYTHMIAS, BRADYCARDIA, HF, PULMONARY EDEMA, ANAPHYLAXIS**, fatigue, weakness, erectile dysfunction
Routes	PO
Assessment/Education	Monitor I&O ratios & daily weight. Assess pt. routinely for evidence of fluid overload (peripheral edema, dyspnea, rales/crackles, fatigue, weight gain, jugular venous distention).
Considerations	May cause Increased BUN, lipoprotein, K, triglyceride, & uric acid levels. May cause Increased ANA titers &/or blood glucose levels. Monitor pts. receiving beta blockers for signs of OD (bradycardia, severe dizziness or fainting, severe drowsiness, dyspnea, bluish fingernails or palms, seizures). Notify health care provider immediately if these signs occur. Glucagon has been used to treat bradycardia & hypotension.

Tolterodine (Detrol)	**urinary tract antispasmodics, anticholinergics**

Mechanism of Action	Acts as a competitive muscarinic receptor antagonist resulting in inhibition of cholinergically mediated bladder contraction. ● Decreased urinary frequency, urgency, & urge incontinence.
Indications	Tx of overactive bladder function that results in urinary frequency, urgency, or urge incontinence.
Contraindications	Hypersensitivty to tolterodine or fesoterodine. Urinary retention. Gastric retention. Uncontrolled angle-closure glaucoma. Lactation:
Adverse Reactions	**SJS, ANAPHYLAXIS, ANGIOEDEMA,** headache, dizziness, dry mouth,
Routes	PO
Assessment/Education	Monitor for S/s of anaphylaxis & angioedema. Assess for rash periodically during therapy. May cause SJS or TEN. D/c therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis &/or eosinophilia.
Considerations	May cause dizziness & blurred vision. Caution pt. to avoid driving or other activities requiring alertness until response to med is known.

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Tramadol (Ultram)	**analgesics**

Mechanism of Action	Binds to -opioid receptors. Inhibits reuptake of serotonin & norepinephrine in the CNS. ● Decreased pain.
Indications	Moderate to moderately severe pain
Contraindications	Cross-sensitivity with opioids may occur. Pts. who are acutely intoxicated with alcohol, sedatives/hypnotics, centrally acting analgesics, opioid analgesics, or psychotropic agents Pts. who are physically dependent on opioid analgesics (may precipitate withdrawal). ER only — CCr <30 mL/min or hepatic impairment. Lactation. Pedi: Children <12 yr. & children <18 yr. following tonsillectomy &/or adenoidectomy
Adverse Reactions	**SEIZURES, SEROTONIN SYNDROME** Dizziness, headache, somnolence, constipation, nausea
Routes	PO
Assessment/Education	Monitor pt. for seizures. May occur within recommended dose range. Risk is increased with higher doses & in pts. taking antidepressants. Also monitor for serotonin syndrome. Assess risk for opioid addiction, abuse, or misuse prior to administration.
Considerations	May cause Increased Cr, Increased liver enzymes, Decreased hemoglobin, & proteinuria. ANTIDOTE: NARCAN (but does not reverse all s/s of overdose). Seizures may be managed with barbiturates or benzodiazepines; naloxone increases risk of seizures.

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Tretinoin (Retin A)	**Antineoplastics, retinoids**

Mechanism of Action	Causes maturation of promyelocytes derived from the leukemic clone. Repopulation with normal hematopoietic cells in pts. who achieve remission.
Indications	Induction of remission in acute promyelocytic leukemia in pts. who cannot receive anthracyclines due to lack of response, intolerance, or the presence of a contraindication.
Contraindications	Hypersensitivity to tretinoin or parabens. OB. Lactation
Adverse Reactions	**SEIZURES, CARDIAC FAILURE, MI, STROKE, GI BLEEDING**, arrhythmias, chest discomfort, edema, HTN, hypotension, peripheral edema, phlebitis, anxiety, confusion, depression, dizziness, fatigue, headache, insomnia, malaise, pseudotumor cerebri, weakness, renal insufficiency, disseminated intravascular coagulation, hemorrhage, leukocytosis. weight gain, weight loss, paresthesias, fever, infections, pain
Routes	PO, Topical
Assessment/Education	Monitor pt. for retinoic acid–acute promyelocytic leukemia (RA-APL) syndrome (bone pain, discomfort or pain in chest, dyspnea, chest tightness, wheezing, weight gain, pulmonary infiltrates, pleural &/or pericardial effusions). May result in impaired myocardial contractility, hypotension, hypoxemia, & death due to multiorgan failure. Risk is increased if leukocytosis occurs during therapy Tx with high-dose corticosteroids should be started at first sign of RA-APL syndrome. Discontinuation of tretinoin therapy is usually not necessary.
Considerations	Fatalities have occurred with chemotherapeutic agents. Before administering, clarify all ambiguous orders; double check single, daily, & course-of-therapy dose limits; have 2nd practitioner independently double check original order & dose calculations. Tretinoin should be administered only under the supervision of a physician experienced in management of pts. with acute leukemia, with monitoring facilities & supportive services available. Monitor WBC frequently during therapy; may cause rapidly progressing leukocytosis. Monitor hepatic function tests frequently during therapy. Temporarily D/C tretinoin therapy if levels are greater than 5 times normal. Monitor cholesterol & triglyceride concentrations frequently during therapy. May cause elevated levels.

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Trifluoperazine (*Stelazine)*	**Antipsychotic**

Mechanism of Action	Alters the effect of dopamine in the CNS. Possesses significant anticholinergic & alpha-adrenergic blocking activity.
Indications	Schizophrenia. Considered 2nd-line Tx after failure with atypical antipsychotics.
Contraindications	Hypersensitivity to phenothiazines & bisulfites. Angle-closure glaucoma. Bone marrow depression; liver or CV disease
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME; AGRANULOCYTOSIS;** sedation; extrapyramidal Sx; constipation; photosensitivity
Routes	PO
Assessment/Education	Assess mental status; monitor BP, HR; monitor for extrapyramidal Sx; seek help: sore throat w/fever; teach extrapyramidal Sx & about tardive dyskinesia
Considerations	CBC, liver function tests, & ocular examinations should be evaluated periodically during therapy. Obtain fasting BG & cholesterol levels initially & throughout therapy. May cause Decreased H&H, leukocytes, granulocytes, platelets. May cause Increased bilirubin, AST, ALT, & alkaline phosphatase. Agranulocytosis occurs at 4–10 wk of therapy, with recovery 1–2 wk following discontinuation. May recur if medication is restarted. Liver function abnormalities may require discontinuation of therapy. May cause false-positive or false-negative pregnancy test results & false-positive urine bilirubin test results. Monitor prolactin prior to & periodically during therapy. May cause Increased prolactin levels.

Trimethoprim/sulfamethoxazole (Bactrim)	**anti-infectives, antiprotozoals, folate antagonists, sulfonamides**

Mechanism of Action	Combination inhibits the metabolism of folic acid in bacteria at two different points. Bactericidal action against susceptible bacteria.
Indications	Tx of: Bronchitis, Shigella enteritis, Otitis media, Pneumocystis jirovecii pneumonia (PCP), Urinary tract infections, Traveler's diarrhea. Prevention of PCP in HIV-positive patients. Active against many strains of gram-positive aerobic pathogens, & many aerobic gram-negative pathogens.
Contraindications	Hypersensitivity to sulfonamides or trimethoprim, Hx of drug-induced immune thrombocytopenia due to sulfonamides or trimethoprim, Megaloblastic anemia secondary to folate deficiency, Severe hepatic or renal impairment, OB: Lactation: Pedi less than 2 months.
Adverse Reactions	**CLOSTRIDIUM DIFFICILE-ASSOCIATED DIARRHEA (CDAD), HEPATIC NECROSIS, ERYTHEMA MULTIFORME, SJS, TEN, AGRANULOCYTOSIS, APLASTIC ANEMIA**, n/v/d
Routes	PO, IV
Assessment/Education	Assess patient for allergy to sulfonamides. Monitor I&O ratios. Fluid intake should be sufficient to maintain a urine output of at least 1200–1500 mL daily to prevent crystalluria & stone formation. Monitor bowel function. Diarrhea, abdominal cramping, fever, & bloody stools should be reported to PCP promptly as a sign of Clostridium difficile-associated diarrhea (CDAD). May begin up to several wk following cessation of therapy. Assess for rash periodically during therapy. May cause SJS. D/C therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis &/or eosinophilia.
Considerations	Monitor CBC & urinalysis periodically during therapy. May produce Increased bilirubin, Increased K, Cr, & alkaline phosphatase. May cause hypoglycemia.

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Valproate (Depakote)	**anticonvulsants, vascular headache suppressants**

Mechanism of Action	Increase levels of GABA, an inhibitory neurotransmitter in the CNS. Suppression of seizure activity. Decreased manic episodes. Decreased frequency of migraine headaches.
Indications	Monotherapy & adjunctive therapy for simple & complex absence seizures. & complex partial seizures. Adjunctive therapy for pts. with multiple seizure types, including absence seizures.
Contraindications	Hepatic impairment. Known/suspected urea cycle disorders. Mitochondrial disorders caused by mutations in mitochondrial DNA polymerase gamma Pedi: Children <2 yr. with suspected mitochondrial disorder caused by mutations in mitochondrial DNA polymerase gamma. OB.
Adverse Reactions	**SI, HEPATOTOXICITY, PANCREATITIS, DRESS, HYPERAMMONEMIA, HYPOTHERMIA**, tremor, abdominal pain, anorexia, diarrhea, indigestion, N/V, agitation, dizziness, headache, insomnia, sedation, thrombocytopenia
Routes	PO, rectal, IV
Assessment/Education	Assess/educate about SI. Restrict amount of drug available to pt. Monitor for S/s of pancreatitis. Monitor for S/s of DRESS. Therapeutic levels range from 50–100 mcg/mL (50–125 mcg/mL for mania). Monitor pts. receiving near the maximum recommended 60 mg/kg/day for toxicity.
Considerations	Monitor CBC, platelet count, & bleeding time. May cause leukopenia & thrombocytopenia. Monitor hepatic function & ammonia concentrations. May cause hepatotoxicity; monitor closely, especially during initial 6 mo of therapy; fatalities have occurred. May interfere with accuracy of thyroid function tests. May cause false-positive results in urine ketone tests.

Vancomycin	**anti-infectives**

Mechanism of Action:	Binds to bacterial cell wall, resulting in cell death. ● Bactericidal action against susceptible organisms.
Indications:	IV: Tx of potentially life-threatening infections when less toxic anti-infectives are contraindicated. Particularly useful in staphylococcal infections, including: Endocarditis. Meningitis. Osteomyelitis. Pneumonia. Septicemia, Soft-tissue infections in pts. who have allergies to PCN or its derivatives or when sensitivity testing demonstrates resistance to methicillin. Part of endocarditis prophylaxis in high-risk pts. who are allergic to PCN. PO: Tx of staphylococcal enterocolitis or diarrhea due to C-Diff.
Contraindications:	Hypersensitivity
Adverse Reactions:	**ANAPHYLAXIS,** Nephrotoxicity, phlebitis
Routes:	IV, IT, PO
Assessment/Education:	Monitor BP throughout IV infusion. Evaluate eighth cranial nerve function by audiometry & vancomycin levels prior to & throughout therapy in pts. with borderline renal function or those >60 yr. of age. Monitor I&O ratios & daily weight. Cloudy or pink urine may be a sign of nephrotoxicity. Assess pt. for signs of superinfection. Observe pt. for s/s of anaphylaxis.
Considerations:	Rate: Infuse over at least 60 min (90 min for doses >1 g). Do not administer rapidly or as a bolus, to minimize risk of thrombophlebitis, hypotension, & "red-man (neck)" syndrome. Monitor for casts, albumin, or cells in the urine or decrease specific gravity, CBC, & renal function periodically during therapy. May cause increase BUN levels. Trough concentrations should not exceed 10 mcg/mL (mild-moderate infections) or 15–20 mcg/mL (for severe infections).

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Vasopressin (Vasostrict)	Hormones, antidiuretic hormones, vasopressors

Mechanism of Action	Alters the permeability of the renal collecting ducts, allowing reabsorption of water. Directly stimulates musculature of GI tract. In high doses acts as a nonadrenergic peripheral vasoconstrictor. Decreased urine output & increased urine osmolality in DM insipidus. Increased BP.
Indications	Central DM insipidus due to deficient antidiuretic hormone. Vasodilatory shock.
Contraindications	Chronic renal failure with Increased BUN. Hypersensitivity to 8-L arginine vasopressin or chlorobutanol.
Adverse Reactions	**MI**
Routes	IM, IV, SC
Assessment/Education	Monitor BP, HR, & ECG periodically throughout therapy & continuously throughout cardiopulmonary resuscitation.DM Insipidus: Monitor urine osmolality & urine volume frequently to determine effects of medication. Assess pt. for Sx of dehydration
Considerations	Monitor urine specific gravity throughout therapy. Monitor electrolyte concentrations periodically during therapy. S/s of water intoxication include confusion, drowsiness, headache, weight gain, difficulty urinating, seizures, & coma. Tx of OD includes water restriction & temporary discontinuation of vasopressin until polyuria occurs. If Sx are severe, administration of mannitol, hypertonic dextrose, urea, &/or furosemide may be used.

Vecuronium	neuromuscular blocking agents-nondepolarizing

Mechanism of Action	Prevents neuromuscular transmission by blocking the effect of acetylcholine at the myoneural junction. Has no analgesic or anxiolytic properties ● Skeletal muscle paralysis.
Indications	Induction of skeletal muscle paralysis & facilitation of intubation after induction of anesthesia in surgical procedures. Facilitation of compliance during mechanical ventilation.
Contraindications	Hypersensitivity to bromides
Adverse Reactions	Vecuronium has no effect on consciousness or pain threshold. Adequate anesthesia/analgesia should always be used when vecuronium is used as an adjunct to surgical procedures or when painful procedures are performed.
Routes	IV
Assessment/Education	Onset: 1-3 mins; duration 30-40 mins Assess respiratory status continuously throughout therapy with vecuronium. Should be used only to facilitate intubation or in pts. already intubated. Neuromuscular response should be monitored with a peripheral nerve stimulator intraoperatively. Paralysis is initially selective & usually occurring sequentially in the following muscles: levator muscles of eyelids, muscles of mastication, limb muscles, abdominal muscles, muscles of the glottis, intercostal muscles, & the diaphragm. Recovery of muscle function usually occurs in reverse order.
Considerations	Administration of anticholinesterase agents (neostigmine, pyridostigmine) may be used to antagonize the action of neuromuscular blocking agents once the pt. has demonstrated some spontaneous recovery from neuromuscular block. Atropine is usually administered prior to or concurrently with anticholinesterase agents to counteract the muscarinic effects.

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Warfarin (Coumadin)	**Anticoagulants, coumarins**

Mechanism of Action:	Interferes with hepatic synthesis of vitamin K-dependent clotting factors (II, VII, IX, & X).
Indications:	Prophylaxis & Tx of: Venous thrombosis, Pulmonary embolism, Atrial fibrillation with embolization. Management of MI: decrease risk of death, decrease risk of subsequent MI, decrease risk of future thromboembolic events. Prevention of thrombus formation & embolization after prosthetic valve placement. ● Prevention of thromboembolic events.
Contraindications:	Uncontrolled bleeding. Open wounds. Active ulcer disease. Recent brain, eye, or spinal cord injury or surgery. Severe liver or kidney disease. Uncontrolled HTN **OB:** Crosses placenta & may cause fatal hemorrhage in the fetus. May also cause congenital malformation.
Adverse Reactions:	**CALCIPHYLAXIS; BLEEDING**
Routes:	PO
Assessment/Education:	Ingestion of large quantities of foods high in vitamin K content may antagonize the anticoagulant effect of warfarin. Assess for signs of bleeding & hemorrhage (bleeding gums; nosebleed; unusual bruising; tarry, black stools; hematuria; fall in HCT or BP; guaiac-positive stools, urine, or nasogastric aspirate). No alcohol
Considerations:	Monitor PT., INR & other clotting factors frequently during therapy; normal INR 0.8-1.2 (INR 2.5-3.5 is recommended for pts. with very high risk of embolization). Asian pts. usually need more frequent monitoring & lower doses. Withholding one dose is sufficient if INR is excessively elevated/minor bleeding occurs. **ANTITODE: Vitamin K; severe bleeding: administer whole blood/plasma**

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Zidovudine (Retrovir)	Antiretrovirals, nucleoside reverse transcriptase

Mechanism of Action	Following intracellular conversion to its active form, inhibits viral RNA synthesis by inhibiting the enzyme DNA polymerase (reverse transcriptase). Prevents viral replication. Virustatic action against selected retroviruses. Slowed progression & decreased sequelae of HIV infection. Decreased viral load & improved CD4 cell counts. Decreased transmission of HIV to infants born to HIV-infected mothers.
Indications	HIV infection (with other antiretrovirals). Reduction of maternal/fetal transmission of HIV.
Contraindications	Lactation
Adverse Reactions	**SEIZURES, HEPATOMEGALY (WITH STEATOSIS), PANCREATITIS, LACTIC ACIDOSIS**, abdominal pain, diarrhea, nausea headache, weakness, anemia, granulocytopenia
Routes	PO, IV
Assessment/Education	Assess pt. for change in severity of Sx of HIV & for Sx of opportunistic infections during therapy. Pt. should also notify PCP immediately if shortness of breath, muscle weakness, muscle aches, Sx of hepatitis or pancreatitis, or other unexpected reactions occur.
Considerations	Monitor viral load & CD4 counts prior to & periodically during therapy. Monitor CBC every 2 wk during the first 8 wk of therapy in pts. with advanced HIV disease & decrease to every 4 wk after the first 2 mo if zidovudine is well tolerated or monthly during the first 3 mo & every 3 mo thereafter unless indicated in pts. who are asymptomatic or have early Sx. Commonly causes granulocytopenia & anemia. Anemia may occur 2–4 wk after initiation of therapy. Anemia may respond to epoetin administration (see epoetin monograph). Granulocytopenia usually occurs after 6–8 wk of therapy. Consider dose reduction, discontinuation of therapy, or blood transfusions if hemoglobin is <7.5 g/dL or reduction of >25% from baseline &/or granulocyte count is <750/mm3 or reduction of >50% from baseline. Therapy may be gradually resumed when bone marrow recovery is evident. May cause Increase AST, ALT, & alkaline phosphatase levels. Lactic acidosis may occur with hepatic toxicity, causing hepatic steatosis; may be fatal, especially in women. Monitor amylase, lipase, & triglycerides periodically during therapy. Elevated levels may indicate pancreatitis & require discontinuation.

Ziprasidone (Geodon)	Antipsychotic

Mechanism of Action	Effects probably mediated by antagonism of dopamine type 2 & serotonin type 2 (5-HT_2). Also antagonizes alpha 2 adrenergic receptors.
Indications	Schizophrenia. Tx of acute manic or mixed episodes associated with Bipolar I Disorder
Contraindications	Hx of QT prolongation; arrhythmias, recent MI or uncompensated heart failure; other drugs known to prolong the QT interval. Hypokalemia or hypomagnesemia. Lactation.
Adverse Reactions	**NEUROLEPTIC MALIGNANT SYNDROME, DRESS, SJS, QT INTERVAL PROLONGATION, AGRANULOCYTOSIS** dizziness, drowsiness, restlessness, constipation, diarrhea, nausea
Routes	PO, IM
Assessment/Education	Monitor for neuroleptic malignant syndrome, extrapyramidal side effects, tardive dyskinesia. Seek help: fever, respiratory distress, tachycardia, diaphoresis, hyper/hypotension; teach extrapyramidal Sx; monitor SI.
Considerations	Monitor K & Mg prior to & periodically during therapy. Pts. with low K or Mg should have levels treated & checked prior to resuming therapy. Obtain fasting BG & cholesterol levels initially & periodically during therapy.

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Zolpidem (Ambien)	**sedative/hypnotics**

Mechanism of Action	Produces CNS depression by binding to GABA receptors. Has no analgesic properties. Sedation & induction of sleep.
Indications	Insomnia with difficulties in sleep initiation (Intermezzo is indicated for insomnia when a middle-of-the-night awakening is followed by difficulty returning to sleep).
Contraindications	Sleep apnea. Severe hepatic impairment (Increased risk of hepatic encephalopathy)
Adverse Reactions	**ANAPHYLAXIS** Daytime drowsiness, dizziness
Routes	PO, SL
Assessment/Education	Assess mental status, sleep patterns, & potential for abuse prior to administration. Prolonged use of >7–10 days may lead to physical & psychological dependence. Limit amount of drug available to the pt. Assess alertness at time of peak effect. Notify PCP if desired sedation does not occur. Assess pt. for pain. Medicate as needed. Untreated pain decreases sedative effects.
Considerations	Do not take more than the amount prescribed because of the habit-forming potential. Not recommended for use longer than 7–10 days.

Eight rights of medication administration

- **Right Medication**
- **Right Patient**
- **Right Dosage**
- **Right Route**
- **Right Time**
- **Right Indication**
- **Right Documentation**
- **Right to refuse**

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