

Pharmacology:

ACE Inhibitors	
Examples	Monopril (Fosinopril), Vasotec (Enalapril), Benazepril (Lotensin), Captopril, Lisinopril (Prinivil, Zestril)
Functions	<ul style="list-style-type: none">Block the conversion of Angiotensin I to Angiotensin II (a vasoconstrictor) resulting in: vasodilation; decreased pulmonary vascular resistance; decreased blood pressure and decreased Aldosterone production which leads to decrease in sodium and water retention.
Uses	Hypertension, high blood pressure, coronary artery disease, heart failure, diabetes, chronic kidney diseases, heart attacks, scleroderma, migraines
Side Effects	Dry cough, increased blood potassium level (hyperkalemia), fatigue, rash, dizziness, headaches, sleep problems, rapid heartbeat
Contras & Cautions	Caution: hypovolemia or dehydration, aortic valve stenosis, impaired renal failure Contra: pregnancy
Interactions:	Salt substitutes, over the counter NSAIDS like Aleve and Motrin, aspirin

Beta Blockers	
Examples	Inderal (propranolol), Sectral (acebutolol), Zebata (bisoprolol), Brevibloc (esmolol), Tenormin (atenolol), Lopressor, Toprol-XL (metoprolol)
Functions	<ul style="list-style-type: none">Target beta receptor cells of the heart muscles (also smooth muscles, airways, arteries, kidneys and other tissues that are part of the sympathetic nervous system)Interfere with the binding of epinephrine and other stress hormones to beta receptor, weakening the effects of stress hormonesSlow the heart rate, decrease the heart's demand for oxygen
Uses	Heart failure, high blood pressure, angina, abnormal heart rhythms, heart attack, social and other anxiety disorders
Side Effects	Dizziness, lightheadedness, fatigue, cold hands and feet, headache, nightmares, difficulty sleeping, heartburn, bronchospasms, dyspnea, bradycardia, hypotension, alopecia, nausea, vomiting, diarrhea
Contras & Cautions	Contra: Asthma; history of cocaine use or cocaine induced tachycardia; pregnancy and lactation
Interactions:	None noted

Calcium Channel Blockers	
Examples	Amlodipine (Norvasc), Azelnidipine (Calblock), Barnidipine (HypoCa), Benidipine (Coniel), Cilnidipine (Atelec, Cinalong, Siscard), Clevidipine (Cleviprex), Isradipine (DynaCirc, Prescal), Efonidipine (Landel), Felodipine (Plendil), Lacidipine (Motens, Lacipil), Lercanidipine (Zanidip) , Manidipine (Calslot, Madipine), Nicardipine (Cardene, Carden SR), Nifedipine (Procardia, Adalat), Nilvadipine (Nivadil)
Functions	<ul style="list-style-type: none"> • Reduce or prevent the opening of calcium channels thereby preventing their functions of excitation-contraction coupling of skeletal, smooth and cardiac muscles, hormone secretion in endocrine cells and conduction of pacemaker signals in the heart • Reduce contraction of the arteries and cause an increase in arterial diameter, a (vasodilation). CCBs do not work on venous smooth muscle • Reduce the force of contraction of the heart by acting on cardiac muscles • Slow the heart beat by slowing the conduction of declined activity within the heart
Uses	High blood pressure, angina, and abnormal heart rhythms (for example, atrial fibrillation, paroxysmal supraventricular tachycardia), after a , pulmonary hypertension, Raynaud's syndrome, cardiomyopathy, subarachnoid hemorrhage and prevention of migraine headaches
Side Effects	Constipation, nausea, headache, rash, edema (legs), low blood pressure, drowsiness, dizziness, liver dysfunction, over growth of gums and sexual dysfunction
Contras & Cautions	Shock, unstable angina, significant aortic stenosis, bradycardia, heart failure
Interactions:	Grapefruit

Anticoagulants:	
Examples	Warfarin (Coumadin), heparin, phenindione
Functions	Prevents coagulation (clotting) of blood
Uses	Atrial fibrillation, pulmonary embolism, deep vein thrombosis, venous thromboembolism, congestive heart failure, stroke, myocardial infarction, genetic or acquired hypercoagulability
Side Effects	Passing blood in your urine, or feces (stools), passing black feces, severe bruising, prolonged nosebleeds (lasting longer than 10 minutes), vomiting blood, coughing blood, unusual headaches, sudden severe back pain, difficulty breathing or chest pain, (in women) heavy or increased menstrual bleeding during your period or any other vaginal bleeding
Contras & Cautions	Pregnancy or in those with bleeding disorders
Interactions:	<p>Warfarin and Heparin: CM: Dan shen, ju hua, dang gui, ren shen, lu cha (green tea)</p> <p>Warfarin: Homeo: Ascorbic acid, Vitamin K, German chamomile, coenzyme Q-10, cranberry, ethanol (alcohol), fish oil, garlic, ginkgo, glucagon, glucosamine, grape seed, menthol, milk thistle, Vit B3 (niacin), quinine, red clover, red yeast, St John's wort, evening primrose oil, flaxseed, feverfew, ginger, horse chestnut seed, willow bark</p> <p>Heparin: Homeo: German chamomile, evening primrose oil, fenugreek, feverfew, fish oil, flaxseed, garlic, ginger, ginkgo, glucosamine, goldenseal, horse chestnut seed, red clover, willow bark</p>

Statins	
Examples	simvastatin, atorvastatin (Lipitor), fluvastatin (Lescol), lovastatin (Mevacor, Altacor), pitavastatin (Livalo), pravastatin (Pravachol), and rosuvastatin (Crestor)
Functions	Lower cholesterol levels by inhibiting the enzyme HMG-CoA reductase, which plays a central role in the production of cholesterol in the liver; improve endothelial function; modulate inflammatory responses; maintain plaque stability, prevent thrombus formation
Uses	High cholesterol, atherosclerosis
Side Effects	Raised liver enzymes and muscle problems, myalgias, muscle cramps, gastrointestinal symptoms, allergic reaction characterized by itching or hives, swelling in the hand or face, chest tightness and trouble breathing
Contras & Cautions	Pregnancy and lactation, active liver disease, elevated liver enzymes
Interactions:	Niacin, grapefruit juice, bitter oranges, protease inhibitors (used together raise blood level of statins and increase the risk of muscle injury)

Diuretics	
Examples	furosemide (Lasix), metolazone (Zaroxolyn), bumetanide (Bumex), hydrochlorothiazide (Esidrix), torsemide (Demadex), chlorthalidone (Thalitone)
Functions	Promotes the production of urine
Uses	Heart failure, liver cirrhosis, hypertension, certain kidney diseases
Side Effects	Dry mouth, thirst, weakness, lethargy, drowsiness, restlessness, muscle pains or cramps, confusion, seizures, muscular fatigue, hypotension, oliguria, tachycardia, and gastrointestinal disturbances. Also tinnitus and hearing loss (Lasix)
Contras & Cautions	Contra: Pregnancy, electrolyte imbalance Caution: renal dysfunction, diabetes mellitus, liver disease
Interactions:	Fuorosimide: CM: Ma Huang, Ren Shen, Gan Cao Homeo: Quinine

Corticosteroids	
Examples	Prednisone (Deltasone, Aristocort, Medrol, Oraped, Decadron), triamcinolone (Azmacort), flunisolide (AeroBid), fluticasone (Flovent), budesonide (Pulmicort), beclomethasone (QVAR), hydrocortisone
Functions	Suppress most inflammatory responses of an allergic, bacterial, traumatic or anaphylactic origin. Immunosuppressant
Uses	Autoimmune (tablets): Rheumatoid arthritis, lupus, Crohn's, ulcerative colitis, giant cell arteritis, MS, Addison's disease, Cushing's disease, Respiratory (inhalers): Asthma, COPD, allergic rhinitis Topical (creams): Urticaria, atopic eczema
Side Effects	Growth suppression, altered response to physical stress, immune suppression leading to increased risk of infection, GI ulcers or bleeding, osteoporosis, weight gain from increased appetite, insomnia, mood changes, fluid retention and elevated blood pressure, elevated blood sugar, eye problems (cataracts or glaucoma), hirsutism, atherosclerosis, aseptic necrosis

Contras & Cautions	Caution: Osteoporosis, TB, glaucoma or cataracts, viral, fungal, bacterial or amoebic infections, sores in the nose or recent nose surgery, underactive or overactive thyroid, liver disease, stomach or intestinal problems, diabetes, heart disease, high blood pressure, high cholesterol, kidney disease, myasthenia gravis, lupus, emotional problems, skin conditions that cause the skin to be thinner or bruise more easily
Interactions:	Gan Cao (licorice) as it will increase side effects of steroids

Antiplatelets	
Examples	Aspirin, clopidogrel (Plavix), prasugril (Effient), ticagrelor (Brillinta), ticlopidine (Ticlid), tirofiban (Aggrastat) , abciximab (ReoPro)
Functions	Decrease platelet aggregation and inhibit thrombus formation; better for atrial circulation where anticoagulants have little effect
Uses	Arterial thrombosis, CAD, heart attack, angina, stroke, TIAs, peripheral artery disease, prevention of blood clots in people with atrial fibrillation
Side Effects	GI bleeding
Contras & Cautions	Peptic ulcers disease, uncontrolled hypertension, asthma
Interactions:	Ren Shen (ginger root), Bai Guo (gingko nut)

Monoamine Oxidase (MAO) Inhibitors	
Examples	Isocarboxazid (Marplan), phenelzine (Nardil), tranylcypromine (Parnate)
Functions	Bind and inactivate, monoamine oxidase – an enzyme found in nerves, the gut and liver that is responsible for inactivating several neurotransmitters (dopamine, norepinephrine, and serotonin). Inhibiting the enzyme leads to more neurotransmitters (dopamine, norepinephrine, and serotonin) available for the cells to use
Uses	Depressed patients who are allergic or unresponsive to tricyclic antidepressants (TCAs and/or SSRI's), depressed patients who experience strong anxiety, atypical depression or phobias
Side Effects	Drowsiness, orthostatic hypotension, hypertension, blurred vision, dry mouth, dysuria, constipation
Contras & Cautions	<p>Contraindication: Hypersensitivity, high tyramine content food (such as cheese, beer, anchovies, chocolate, soy sauce, chicken liver, red wine, etc.), schizophrenia, liver disease, history of severe or frequent headaches, cerebrovascular defect, coadministration of SSRIs, SNRIs, antihypertensives, diuretics, antihistamines, sedatives, sympathomimetics</p> <p>Caution: Worsening of symptoms or suicidal ideation may occur, psychosis (in bipolar disorder) may worsen, patients with diabetes mellitus, glaucoma, hepatic impairment, renal impairment, thyroid dysfunction, history of seizures</p>
Interactions:	

Selective Serotonin Reuptake Inhibitor (SSRI)	
Examples	Fluoxetine (Prozac), sertraline (Zoloft), escitalopram (Lexapro), paroxetine (Paxil), citalopram (Celexa)
Functions	Prevent the reuptake of a specific neurotransmitter, serotonin, in the brain leading to an increase in the concentration of serotonin, which seems to elevate mood in depressed patients
Uses	Moderate to severe depression, obsessive-compulsive disorder, panic disorder, generalized anxiety disorder, post-traumatic stress disorder, social anxiety disorder, premenstrual dysphoric disorder
Side Effects	Sleep disturbances (insomnia or drowsiness), sexual dysfunction, loss of libido, delayed ejaculation, and/or inability to reach orgasm, weight gain, weight loss, diarrhea, nausea, vomiting, headache, dizziness, fatigue, dry mouth, constipation
Contras & Cautions	<p>Contraindications: Breastfeeding, coadministration with serotonergic drugs, coadministration or within 14 days of use of monoamine oxidase (MAO) inhibitors, pimozide or thioridazine, hypersensitivity</p> <p>Caution: Suicidal ideation may occur or worsen in adolescents and young adults, mania may occur or worsen in patients with bipolar disorder, risk of serotonin syndrome when used with other serotonergic drugs, risk of bleeding when combined with NSAIDs, aspirin, and other drugs with anticoagulant effect, increased risk of seizures, increased risk of hyponatremia, pregnancy, pre-existing renal (kidney) impairment, pre-existing hepatic (liver) impairment</p>
Interactions:	

Tricyclic Antidepressants (TCAs)	
Examples	Amitriptyline (Elavil), amoxapine (Asendin), clomipramine (Anafranil), desipramine (Norpramin), doxepin (Sinequan), Tofranil imipramine, maprotiline (Ludiomil), nortriptyline (Palmelor), protriptyline (Vivactil), trimipramine (Surmontil)
Functions	Block the reuptake of norepinephrine and serotonin, thus increasing the available concentrations of the neurotransmitters which seems to help elevate the mood of depressed patients
Uses	Moderate to severe depression, panic disorder, chronic pain
Side Effects	Blurred vision, dry mouth, urinary retention, sinus tachycardia, constipation, aggravation of narrow-angle glaucoma, bone marrow suppression, orthostatic hypotension, worsen mania in patients with bipolar disorder, suicidal ideation, sedation
Contras & Cautions	Hypersensitivity, severe cardiovascular disorder, narrow-angle glaucoma, coadministration of (or within 14 days of taking) MAO inhibitors, coadministration of drugs that prolong the QT interval
Interactions:	

Benzodiazepines	
Examples	Alprazolam (Xanax), clonazepam (Klonopin), diazepam (Valium), lorazepam (Ativan), oxazepam (Serax)
Functions	Increase the affinity of GABA, a neurotransmitter to GABA binding sites, which slows or stops neuronal activity
Uses	Generalized anxiety disorder (GAD), social anxiety disorder, performance anxiety, posttraumatic stress disorder, obsessive-compulsive disorder, skeletal muscle spasms, seizures, sleep disorders
Side Effects	Drowsiness, confusion, ataxia, depression, headache, constipation, diarrhea, dry mouth, memory impairment, fatigue, insomnia, lightheadedness
Contras & Cautions	<p>Contraindications: Hypersensitivity, alcohol intoxication, myasthenia gravis, severe respiratory depression, coma, breastfeeding</p> <p>Cautions: COPD, sleep apnea, renal disease, hepatic disease, depression, open-angle glaucoma, hypotension, history of drug abuse</p>
Interactions:	

Antihistamines	
Examples	Diphenhydramine (Benadryl), doxepin (Sinequan), fexofenadine (Allegra), loratadine (Claritin), dimenhydrinate (Dramamine), levoxetirizine (Xyzal), promethazine (Phenergan)
Functions	<ul style="list-style-type: none"> Block H1 receptors in the target tissue of histamins;. H1-receptor blockers do not affect the production or release of histamine; they are also more effective in preventing rather than reversing symptom First generation antihistamines affect the central nervous system and produce sedation in the patient Second generation antihistamines are less sedating than first generation antihistamines
Uses	Allergy (allergic rhinitis, hives, etc.), motion sickness, nausea
Side Effects	Sedation, tinnitus, fatigue, dizziness, incoordination, blurred vision, tremors, dry mouth
Contras & Cautions	<p>Contraindications: Coadministration with MAO inhibitors, asthma and other lower respiratory tract disease, breastfeeding</p> <p>Caution: Driving or operating heavy machinery, sedatives, narrow-angle glaucoma, prostatic hypertrophy, bladder neck obstruction, stenosing peptic ulcer, hepatic impairment, renal impairment</p>
Interactions:	

Antivirals	
Examples	Acyclovir (Zovirax), amantadine (Symmetrel), oseltamivir (Tamiflu), ribavirin (Copegus, Rebetol, Ribapak, Ribasphere, Virazole), Interferon (Intron A, Avonex), lamivudine (Epivir), zidovudine (Retrovir), nevirapine (Viramune),atazanavir (Reyataz)
Functions	Inhibit various enzymes necessary for reproduction. Block the viral membrane matrix protein M2 required for fusion with the host's cell membrane. Interfere with viral mRNA (messenger RNA) and viral protein synthesis
Uses	Influenza A and B, RSV (respiratory syncytial virus), hepatitis B and C, HIV, HIV post-exposure prophylaxis, herpes virus infections, Epstein-Barr virus-mediated infections, chicken pox, CMV retinitis, Lassa fever, genital warts, HSV (herpes simplex virus) encephalitis, CMV prophylaxis in transplant patients
Side Effects	Dizziness, headache, diarrhea, nausea, vomiting, anorexia, nose bleed, confusion, depression, fatigue, insomnia, alopecia, weight loss, dry skin, leukopenia, thrombocytopenia, arthralgia, myalgia, chills, fever, flu like symptoms, anemia
Contras & Cautions	Hemophilia, diabetes mellitus, renal impairment, psychiatric problems, cerebral atherosclerosis, epilepsy, pregnancy, lactation, severe reactive asthma, COPD
Interactions:	

Anticancer / Antineoplastics	
Examples	Methotrexate (Rheumatrex, Trexall), 5-Fluorouracil (Carac, Efudex, Fluoroplex, 5-FU), doxorubicin (Adriamycin PFS/RDF, Rubex), ifosfamide (Ifex), vincristine (Vincasar PFS), prednisone (Sterapred)

Functions	Interfere with cell replication by affecting DNA synthesis or function; alter immune function or hormonal status of sensitive tumors.
Uses	Various carcinomas, lymphomas, leukemias, rheumatoid arthritis, severe psoriasis, Crohn's disease, sarcomas
Side Effects	
Contras & Cautions	Hypersensitivity, bone marrow depression, pregnancy, lactation, active infections, radiation therapy, debilitating illnesses, childbearing potential
Interactions:	Severe vomiting, stomatitis, bone marrow depression, alopecia, bleeding, anemia, fatigue, dyspnea, orthostatic hypotension, gout, bladder and cardiac toxicity, infections, ulcers, pancreatitis, weight loss

Peptic Ulcers and GERD	
Examples	Metronidazole (Flagyl), cimetidine (Tagamet), famotidine (Pepcid), ranitidine (Zantac), pantoprazole (Protonix), misoprostol (Cytotec), dicyclomine (Bentyl), calcium carbonate (Tums), bismuth subsalicylate (Pepto-Bismol), sucralfate (Carafate)
Functions	Eradicates the H. pylori infection, reduce secretion of gastric acid, protects the gastric mucosa, neutralize gastric acid, decrease GI motility
Uses	Peptic (gastric and duodenal) ulcer disease, gastro-esophageal reflux disease, heartburn, acid indigestion, pancreatic insufficiency, erosive esophagitis, pathologic hypersecretory conditions, irritable bowel syndrome
Side Effects	Dizziness, headache, abdominal pain, anorexia, nausea, vomiting, diarrhea, fatigue, constipation, increased risk of hip fracture in the elderly, miscarriage, seizures, confusion, drowsiness, hallucinations
Contras & Cautions	Hypersensitivity, pregnancy, lactation, child bearing potential, alcohol intolerance, phenylketonuria, renal impairment, hepatic impairment, elderly patient
Interactions:	

ANTIDIARRHEALS	
Examples	Metronidazole (Flagyl), cimetidine (Tagamet), famotidine (Pepcid), ranitidine (Zantac), Diphenoxylate + atropine (Lomotil), loperamide (Imodium A-D), aluminum hydroxide (Alternagel), Methylcellulose (Citrucel), bismuth subsalicylate (Pepto-Bismol)
Functions	decreases peristalsis, prolongs transit time, reduce fecal volume, increase fecal viscosity and bulk, absorbs intestinal toxins or microorganisms, coats and/or protects intestinal mucosa
Uses	Acute and chronic diarrhea. Inflammatory bowel disease
Side Effects	Dizziness, headache, abdominal pain, anorexia, nausea, vomiting, diarrhea, fatigue, constipation, increased risk of hip fracture in the elderly, miscarriage, seizures, confusion, drowsiness, hallucinations

Contras & Cautions	Hypersensitivity, young children, severe colitis, abdominal pain of unknown cause, alcohol intolerance, hepatic dysfunction, infectious diarrhea, dehydration, pregnancy and lactation
Interactions:	Drowsiness, abdominal cramps, dizziness, constipation, allergic reactions, headaches, black tongue and stools

ANTI-EMETICS	
Examples	Prochlorperazine (Compazine), ondansetron (Zofran), metoclopramide (Reglan), haloperidol (Haldol), lorazepam (Ativan), dexamethasone (Decadron), aprepitant (Emend)
Functions	Primarily block dopamine, 5-HT ₃ , substance P/neurokinin-1 receptors and probably prostaglandins
Uses	Nausea, vomiting, anticipatory vomiting
Side Effects	Hypotension, restlessness, extrapyramidal reactions, constipation, dry mouth, blurred vision, dry eyes, headache, sedation, diarrhea, insomnia, hyperglycemia in diabetics, fatigue
Contras & Cautions	Hepatic insufficiency, cardiac conduction impairment
Interactions:	

ANTIDIARRHEALS	
Examples	Senna (Ex-Lax, senokot), bisacodyl (Dulcolax), psyllium (Metamucil, Fiberall), magnesium hydroxide (milk of magnesia), polyethylene glycol (Golytely), docusate (Colace), mineral oil, lubiprostone (Amitiza)
Functions	Stimulate nerve fibers in the mucosa of the colon, retains water in colon, distend the intestines, facilitate the passage of hard stools
Uses	Constipation, colonic lavage in preparation for radiologic, endoscopic or surgical procedures
Side Effects	
Contras & Cautions	Pregnancy, immobility
Interactions:	Abdominal pain, atonic colon with prolonged use, gas, nausea

Antipsychotics	
Examples	Chlorpromazine (Thorazine), haloperidol (Haldol), aripiprazole (Abilify), risperidone

	(risperdal).
Functions	Blocks D2 dopamine receptors and serotonin receptors, particularly 5-HT _{2A} , cholinergic, adrenergic, and histaminergic receptors
Uses	Schizophrenia, manic states with psychotic symptoms (grandiosity, paranoia, hallucinations), delirium
Side Effects	Extrapyramidal symptoms (dystonias, Parkinson-like symptoms, akathisia, tardive dyskinesia), diabetes, hypercholesterolemia, bone marrow suppression, seizures, arrhythmias, dry mouth, suicidal ideation
Contras & Cautions	Epilepsy, elderly, pregnancy and lactation, cardiac disease, severe illness or debilitation, diabetes, respiratory insufficiency, prostatic hypertrophy, intestinal obstruction
Interactions:	

Antipsychotics	
Examples	Chlorpromazine (Thorazine), haloperidol (Haldol), aripiprazole (Abilify), risperidone (risperdal).
Functions	Blocks D2 dopamine receptors and serotonin receptors, particularly 5-HT _{2A} , cholinergic, adrenergic, and histaminergic receptors
Uses	Schizophrenia, manic states with psychotic symptoms (grandiosity, paranoia, hallucinations), delirium
Side Effects	Extrapyramidal symptoms (dystonias, Parkinson-like symptoms, akathisia, tardive dyskinesia), diabetes, hypercholesterolemia, bone marrow suppression, seizures, arrhythmias, dry mouth, suicidal ideation
Contras & Cautions	Epilepsy, elderly, pregnancy and lactation, cardiac disease, severe illness or debilitation, diabetes, respiratory insufficiency, prostatic hypertrophy, intestinal obstruction
Interactions:	

Anesthesia Local	
Examples	bupivacaine (Marcaine), lidocaine (Xylocaine), procaine (Novocaine), spinal anesthesia, epidural block
Functions	Reduces or eliminates the sensation (and motor activities with high concentration) in a limited area of the body by blocking sodium ion channels which stops the action potential and nerve conduction of sensory impulses
Uses	Dental surgery, childbirth, surgery of arm and hand, suturing of wounds, IM injections, cataract surgery, colonoscopy, IV potassium

Side Effects	Allergic reactions (urticaria, edema, bronchospasm), psychogenic reactions, hepatic and systemic toxicity
Contras & Cautions	Hypersensitivity, hepatic impairment, cardiovascular compromise, age
Interactions:	

Anesthesia General	
Examples	Nitrous oxide, sevoflurane (Ultane), propofol (Diprivan), ketamine (Ketalar)
Functions	Sedation, reduction of anxiety, lack of awareness, amnesia, skeletal muscle relaxation, suppression of undesirable reflexes, analgesia
Uses	Major surgeries, diagnostic procedures
Side Effects	Allergic reactions (urticaria, edema, bronchospasm), psychogenic reactions, hepatic and systemic toxicity
Contras & Cautions	Pregnancy, cardiac disease, pulmonary compromise, liver and kidney impairment, epilepsy, myasthenia gravis, neuromuscular disease, compromised cerebral circulation, genetic sensitivity to malignant hyperthermia
Interactions:	Arrhythmias, decreased cardiac output, hypotension, inhibition of respiratory reflexes

ANTIDIABETICS	
Examples	Insulin (Novolog, Humalog, Humulin, Lantus); sulfonylureas (glyburide [DiaBeta], glipizide [Glucotrol], glimepiride [Amaryl]); Glinides (repaglinide [Prandin], nateglinide [Starlix]); biguanides (metformin [Glucophage]); thiazolidinediones (pioglitazone [Actos], rosiglitazone [Avandia]); alpha-glucosidase inhibitors (acarbose [Precose], miglitol [Glyset]); incretin mimetic (exenatide [Byetta], liraglutide [Victoza])
Functions	Insulin: Stimulate glucose uptake in skeletal muscle and fat. Sulfonylureas & Glinides: promote insulin release from beta cells of the pancreas, reduce hepatic glucose production, increase peripheral insulin sensitivity. Biguanides and Thiazolidinediones: decrease insulin resistance. Alpha-glucosidase inhibitors: lower postprandial glucose levels.
Uses	Diabetes type I and II, gestational diabetes and hyperglycemia secondary to genetic defects or medications. Polycystic ovary disease (metformin).
Side Effects	Hypoglycemia (headache, anxiety, tachycardia, confusion, vertigo, diaphoresis); lipodystrophy; hypersensitivity; coma; seizures; weight gain, hyperinsulinemia; flatulence, diarrhea, abdominal cramping

Contras & Cautions	Hypoglycemia, allergy or hypersensitivity to a particular type of insulin, preservatives or additives; stress; infection; renal/hepatic impairment; pregnancy; children and the elderly; lactation; inflammatory bowel disease, colonic ulceration, intestinal obstruction
Interactions:	

Antibiotics – Cell Wall Inhibitors	
Examples	<ul style="list-style-type: none"> a. Penicillins: amoxicillin (Amoxil), Ampicillin (Omnipen), piperacillin (Pipracil). b. Cephalosporins: cefotetan (Cefotan), Ceftriaxone (Rocephin), cephalexin (Keflex). c. Carbapenems: ertapenem (Invanz), imipenem/cilastatin (Primaxin), meropenem (Merrem IV). d. Monobactams: aztreonam (Azactam) e. Vancomycin: Vancocin f. Daptomycin: Cubicin g. Telavancin: Vibativ
Functions	Inhibit the synthesis of a new microorganism's cell wall (a structure that mammalian cells do not possess) and induce the destruction of the existing one by the microbe's own autolysins
Uses	Infections with gram positive bacteria (Streptococcus pneumoniae, Bacillus anthracis, Enterococci, Listeria monocytogenes), gram negative bacteria (Neisseria gonorrhoeae, Escherichia coli, Haemophilus influenzae, Salmonella typhi, Pseudomonas aeruginosa) anaerobic organisms (Clostridium perfringens), spirochetes (Treponema pallidum for syphilis), Treponema pertenue (yaws), prophylaxis in patients with abnormal heart valves before extensive dental surgery, Vancomycin, daptomycin and telavancin are mainly used for life-threatening infections with resistant gram-positive microorganisms (MRSA, VRE, MRSE, ENTEROCOCCUS FAECALIS).
Side Effects	Hypersensitivity (maculopapular rash, angioedema, anaphylaxis), diarrhea, nausea, vomiting, pseudomembranous colitis, interstitial nephritis, neurotoxicity (seizures), hematologic toxicity (hypocoagulation, cytopenias, eosinophilia), cation toxicity (hypokalemia, hypernatremia)
Contras & Cautions	Hypersensitivity, epilepsy, renal dysfunction, uremia, anticoagulation therapy, the elderly, children, pregnancy, and lactation
Interactions:	

Antibiotics – Protein Synthesis Inhibitors	
Examples	<ul style="list-style-type: none"> a. Tetracyclines: doxycycline (Vibramycin) b. Glycylcyclines: tigecycline (Tygacil) c. Aminoglycosides: gentamicin (Garamycin), Streptomycin (Streptomycin) d. Macrolides/ketolides: azithromycin (Zithromax), Erythromycin (E-Mycin) e. Others: Chloramphenicol (Chloromycetin), clindamycin (Cleocin), linezolid (Zyvox), quinupristin/dalfopristin (Synercid)
Functions	Inhibit bacterial protein synthesis
Uses	a. Tetracyclines: broad-spectrum antibiotics: gram-positive, gram negative (including

	<p>Chlamydiae and Rickettsias) microbes, spirochetes, mycoplasma; typically indicates Cholera, Chlamydial infections, Rocky Mountain Spotted Fever, Lyme disease, Mycoplasma Pneumoniae</p> <p>b. Glycylcyclines: broad spectrum against multidrug-resistant gram-positive pathogens (MRSA, MDRS, VRE), some gram negative (ESBL) and anaerobic organisms; typically Indicates skin, soft tissue and intra-abdominal infections</p> <p>c. Aminoglycosides: Serious infections with aerobic gram-negative bacteria including Pseudomonas aeruginosa, Klebsiella and Brucella species, Francisella tularensis and some gram-positive cocci (Enterococcus species and Streptococcus agalactiae), tuberculosis; may be used as monotherapy for UTIs</p> <p>d. Macrolides/Ketolides: Allergies to the penicillins; Haemophilus influenzae, Moraxella, Ureaplasma species and Helicobacter pylori infections; ketolides are used against many macrolide-resistant gram-positive strains; typically Indicates urogenital chlamydial infections, corynebacterium diphtheriae, Legionnaires' disease, syphilis, mycoplasmal pneumonia, tuberculosis.</p> <p>e. Chloramphenicol: Wide range of gram-positive and negative organisms, and many anaerobic bacteria; due to high toxicity it is used in life threatening infections for which no alternatives exist, typically Indicates Meningitis by Streptococcus pneumoniae, Neisseria meningitidis or haemophilus influenza, brain abscesses, rickettsial infections and acute typhoid fever</p> <p>f. Clindamycin: anaerobic bacteria, such as Bacteroides fragilis (abdominal infections associated with trauma), MRSA</p> <p>g. Quinupristin/dalfopristin: Gram-positive cocci including MRSA; typically used for: VRE infections (Enterococcus faecium only)</p> <p>h. Linezolid: MRSA, VRSA, VRE and penicillin resistant streptococci</p>
Side Effects	Epigastric distress, discoloration and hypoplasia of teeth, fatal hepatotoxicity, phototoxicity, vestibular problems (dizziness, nausea, vomiting), superinfections, nephrotoxicity, ototoxicity, anemia, gray baby syndrome, skin rashes, diarrhea, pseudomembranous colitis caused by C.difficile, headache
Contras & Cautions	Pregnancy, lactation, renal, hepatic and cardiac impairment, children younger than 8-years-old, the elderly, myasthenia gravis
Interactions:	

Antibiotics – Fluoroquinolones	
Examples	Ciprofloxacin (Cipro), levofloxacin (levaquin)
Functions	Inhibit the replication of bacterial DNA
Uses	Gram-negative organisms: Pseudomonas, Haemophilus influenza, Moraxella catarrhalis, Enterobacteriaceae, Legionellaceae, chlamydia, mycoplasma, some mycobacteria; gram-positive organisms: streptococcus pneumoniae; many anaerobes; typically Indicates Pneumonia, GI tract infections, UTI's, Anthrax, Gonorrhea, tuberculosis, prophylaxis for transurethral surgery, prostatitis, STD's except syphilis

Side Effects	Nausea, vomiting, diarrhea, headache, dizziness, phototoxicity, arthropathy (articular cartilage erosion), tendinitis and tendon rupture (Achilles).
Contras & Cautions	Epilepsy, pregnancy, lactation, children under 18-year-olds, cystic fibrosis, elderly, cardiac arrhythmias
Interactions:	

Antibiotics – Folate Synthesis Inhibitors	
Examples	Sulfonamides: Mafenide (Sulfamylon), silver sulfadiazine (Silvadene), sulfasalazine (Azulfidine), sulfisoxazole (Gantrisin) Trimethoprim (Proloprim), pyrimethamine (Daraprim) Cotrimoxazole = trimethoprim + sulfamethoxazole: (Bactrim)
Functions	Inhibit enzymes necessary for the production of folate-derived cofactors, which are essential for the synthesis of RNA and DNA precursors
Uses	Sulfonamides: Active in bacteria that synthesize folate de novo; infections with Nocardia, UTIs by selected Enterobacteria, toxoplasmosis (sulfadiazine + pyrimethamine), Crohn's disease, ulcerative colitis, severe burns Trimethoprim: UTIs, bacterial prostatitis, vaginitis. Cotrimoxazole: UTIs; respiratory tract infections including Pneumocystis jiroveci pneumonia, Legionella pneumophila, Haemophilis influenzae; ampicillin or chloramphenicol-resistant systemic salmonella infections; MRSA; MRSA skin and soft tissue infections; Nocardia infections and Stenotrophomonas Maltophilia; listeriosis; GI infections (shigellosis, nontyphoid salmonella, Salmonella typhi); prophylaxis for HIV patients with less than 200 CD4+ cells/mL
Side Effects	Crystalluria, nephrotoxicity, hypersensitivity reactions (rashes, angioedema, Stevens-Johnson syndrome), hemolytic and megaloblastic anemia, leukopenia, granulocytopenia and thrombocytopenia, kernicterus, nausea, vomiting, glossitis, stomatitis
Contras & Cautions	Concomitant warfarin, methotrexate, and methenamine; pregnancy; infants less than 2 months
Interactions:	

Antibiotics – Urinary Tract Antiseptics	
Examples	Methenamine (Mandelamine, Hiprex), nitrofurantoin (Macrobid), nalidixic acid = fluoroquinolone: (Neggram)
Functions	Do not achieve antibacterial levels in the circulation but concentrate in the urine; methenamine decomposes into formaldehyde, which is toxic to most bacteria; nitrofurantoin inhibits various enzymes and damages bacterial DNA
Uses	Acute cystitis, pyelonephritis due to Escherichia coli (80%), Staphylococcus

	saprophyticus, Klebsiella pneumoniae and Proteus mirabilis
Side Effects	Indwelling catheter, non-prescription antacids, hepatic and renal insufficiency, concomitant use of sulfonamides, anuria, oliguria, pregnancy
Contras & Cautions	GI distress, albuminuria, hematuria, rashes, acute pneumonitis, neurologic problems
Interactions:	

Antimycobacterials - anti-tuberculosis	
Examples	Ethambutol (Myambutol), isoniazid (INH), pyrazinamide, Rifampin (Rifadin); note: A multidrug therapy (minimum of 2) is always used to treat TB
Functions	INH inhibits essential enzymes for the synthesis of mycolic acid, a component of the bacterial cell wall, rifampin inhibits mRNA synthesis
Uses	Mycobacterium tuberculosis, Mycobacterium kansasii, many gram-positive and negative bacterial infections, post-exposure prophylaxis to meningococcal or Haemophilus influenzae meningitis, leprosy, Mycobacterium avium-intracellulare
Side Effects	Hypersensitivity (rashes and fever), nausea, vomiting, rash, peripheral neuritis (paresthesias of the hands and feet), hepatitis and idiosyncratic hepatotoxicity, flu-like syndrome (fever, chills, myalgias, acute renal failure, hemolytic anemia, shock)
Contras & Cautions	Aluminum-containing antacid therapy, hypersensitivity, ETOH, phenytoin therapy, the elderly, chronic liver disease
Interactions:	

Anti-leprosy or anti-Hansen's disease (US)	
Examples	Dapsone (Dapsone), clofazimine (Lamprene) and rifampin (Rifadin) are used together
Functions	Dapsone inhibits folate synthesis; clofazimine prevents DNA replication; rifampin inhibits mRNA synthesis
Uses	Mycobacterium leprae, Pneumocystis jiroveci and Pneumocystis carinii pneumonias (HIV patients), Mycobacterium avium-intracellulare, systemic lupus erythematosus
Side Effects	Hemolytic anemia, methemoglobinemia, peripheral neuropathy, erythema nodosum leprosum, red-brown discoloration of skin, anorexia, diarrhea, nausea, vomiting, colicky/burning abdominal pain, aplastic anemia, hepatitis, agranulocytosis, acute tubular necrosis
Contras & Cautions	Hypersensitivity, GI disease and hepatic impairment, sulfonamide hypersensitivity, severe anemia, concurrent folic acid antagonists
Interactions:	

IMMUNOSUPPRESSANTS	
Examples	Cyclosporine (Neoral, Sandimmune), Tacrolimus (Prograf), mycophenolate mofetil (Cellcept), antithymocyte globulins (Atgam, Thymoglobulin), methylprednisolone (Medrol), prednisone (Deltasone)
Functions	Inhibit rejections of transplanted tissues by interfering with cytokine production or action, disrupting cell metabolism, preventing lymphocyte proliferation and mono and polyclonal antibodies and blocking T-cell surface molecules; note: usually taken in 2-4 multidrug therapy
Uses	Organ and tissue transplants (kidney, heart, bone, intestines, etc), autoimmune diseases, acute glomerulonephritis, rheumatoid arthritis, psoriasis, xerophthalmia, atopic dermatitis
Side Effects	Nephrotoxicity, hepatotoxicity, neurotoxicity (tremors, seizures, hallucinations, encephalopathy, cerebral edema, aseptic meningitis), diarrhea, nausea, vomiting, abdominal pain, herpes and CMV infections, lymphoma, anaphylaxis, hypertension, hyperlipidemia, hyperkalemia, tremors, hirsutism, glucose intolerance, gum hyperplasia
Contras & Cautions	Hypersensitivity to polyoxyethylated castor oil, psoralen UVA range or UVB light therapy, pregnancy, lactation, epilepsy, heart failure
Interactions:	