



Anti-infective



- Acyclovir
- Albendazole
- Amantadine
- Amoxicillin-clavulanate
- Amphotericin B
- Azithromycin
- Aztreonam
- Caspofungin
- Cefazolin
- Cefepime
- Ceftriaxone
- Ciprofloxacin
- Clindamycin
- Doxycycline
- Efavirenz
- Enfuvirtide
- Erythromycin
- Ethambutol



- Foscarnet
- Fosfomycin
- Ganciclovir
- Gentamicin
- Griseofulvin
- Imipenem-cilastatin
- Isoniazid
- Itraconazole
- Ivermectin
- Levofloxacin
- Linezolid
- Mefloquine
- Metronidazole
- Mupirocin
- Nafcillin
- Nitrofurantoin
- Oseltamivir
- Paromomycin
- Penicillin G



- Pentamidine
- Piperacillin-tazobactam
- Praziquantel
- Primaquine
- Pyrimethamine
- Pyrantel
- Quinine
- Quinpristin-dalfopristin
- Ribavirin
- Rifampin
- Ritonavir-lopinavir
- Streptomycin
- Terbinafine
- Trifluridine
- TMP-SMX
- Vancomycin
- Zidovudine



Acyclovir

- Antiviral
- **Nucleoside analogue**
- **Converted to acyclovir triphosphate by viral & host cell kinases**
- **Incorporated into DNA by viral DNA polymerase causing DNA chain termination**
 - HSV2
 - Herpes zoster
 - Shingles
 - Chickenpox – varicella
 - **↓ viral shedding, pain, & healing time**
- Dizziness
- Diarrhea
- N
- Nephrotoxicity
- Probenecid ↑ serum levels



Albendazole

- Antihelminthic
- **Benzimidazole**
- **Binds & inhibits polymerization of tubulin dimmers to form cytoplasmic microtubules**
 - **Impairs glucose uptake & deplete glycogen stores**
 - Intestinal nematode infections
 - Hookworm
 - Pinworm
 - Whipworm
 - Ascariasis
 - Capillariasis
 - Trichinosis
 - Use w/ corticosteroid
 - Cysticercosis & echinococcus
 - Microsporidiosis
- GI distress
- Constipation or diarrhea
- Hepatitis & hematologic toxicity w/ high doses



Amantadine

- Anti-influenza, antiparkinson
- **Tricyclic amine**
- **Inhibits influenza-A M2 proton channel & acidification of virus particle**
 - **Prevents viral protein-protein dissociation & uncoating of viral particles**
 - **Influenza A**
- Ataxia
- Dizziness
- Insomnia
- **Skin mottling & livedo reticularis**
- Blurred vision
- Dry mouth



Amoxicillin-clavulanate

- **β -lactam ABX**
- **Extended spectrum aminopenicillin & β -lactamase inhibitor**
- **Amoxicillin**
 - **Binds PBP**
 - Inhibits cross-linking of cell wall peptidoglycan
- **Clavulanate**
 - **Inhibits class-A β -lactamase**
 - Protects amoxicillin from destruction
 - **NOT antimicrobial by itself**
 - Respiratory tract infections
 - Otitis, sinusitis, pneumonia
 - Skin or skin structure infections
 - Bite wounds
- Diarrhea
- Superinfection
- **Pseudomembranous colitis**
- Allergic rxn
 - Rash
 - Serum sickness
 - anaphylaxis
- Probenecid inhibits renal tubular excretion
 - \uparrow serum levels



Amphotericin B

- Antifungal
- **Polyene ABX**
- **Binds ergosterol & ↑ membrane permeability**
 - **Leakage of cell contents**
 - Candidiasis
 - Cryptococcal meningitis
 - Aspergillosis
 - Blastomycosis
 - Coccidioidomycosis
 - Histoplasmosis
 - Mucormycosis
- Chills
- Fever
- Diarrhea
- N, V
- Nephrotoxicity
- Hypokalemia
- ↑ toxicity w/ cyclosporine, antineoplastics
- Thiazides, & corticosteroids ↑ hypokalemia



Azithromycin

- **Macrolide**
- **Protein synthesis inhibitor**

- **Binds 50s ribosome**
- **Prevents peptide elongation & translocation from acceptor site to peptidyl site**
 - Respiratory infections d/t strep, pneumo, H. influenzae, Legionella
 - Otitis media, sinusitis
 - *Single-dose Tx for chlamydial urethritis, chancroid, MAI infections*



Aztreonam

- **β -lactam ABX**
- **Monobactam**
- **Binds PBP including transpeptidase**
- **Inhibits cross-linking of cell wall peptidoglycan**
 - Drug resistant gram (-) infections including Pseudomonas aeruginosa & Enterobacteriaceae
- Thrombophlebitis
- Allergic rxn



Caspofungin

- Antifungal
- **Echinocandin**
- **Inhibits synthesis of cell wall component**
 - **β -1,3-D-glucan**
 - Candida albicans
 - Invasive aspergillosis
- IV admin
 - Not absorbed well by gut
- HA
- Fever
- Phlebitis
- Abnormal LFTs



Cefazolin

- **β -lactam ABX**
 - **2nd generation cephalosporin**

 - **Binds PBP including transpeptidase**
 - **Inhibits cross-linking of cell wall peptidoglycan**
 - Surgical wound infections
 - Infections d/t
 - Staph, strep, E. coli, Klebsiella pneumoniae, Proteus mirabilis
 - **NOT active against MRSA**
- Rash
 - Diarrhea
 - **Pseudomembranous colitis**
 - Superinfection

 - Probenecid inhibits excretion & \uparrow serum levels



Cefepime

- **β -lactam ABX**
- **4th generation cephalosporin**
- **Binds multiple PBP**
- **Inhibits cross-linking of cell wall peptidoglycan**
- **Resistant to many β -lactamases**
 - Drug-resistant gram (-) bacteria
 - Citrobacter
 - Enterobacter
- Rash
- Diarrhea
- **Pseudomembranous colitis**
- Superinfection
- Probenecid inhibits excretion & \uparrow serum levels



Ceftazidime

- **β -lactam ABX**
 - **3rd generation cephalosporin**

 - **Binds PBP including transpeptidase**
 - **Inhibits cross-linking of cell wall peptidoglycan**
 - Gram (+), gram (-), & anaerobics – Pseudomonas aeruginosa
 - Pneumonia, meningitis, UTI, skin structures, bones, jts
- Rash
 - Diarrhea
 - **Pseudomembranous colitis**
 - Superinfection

 - Probenecid inhibits excretion & \uparrow serum levels



Cetriaxone

- **β -lactam ABX**
 - **3rd generation cephalosporin**

 - **Binds PBP including transpeptidase**
 - **Inhibits cross-linking of cell wall peptidoglycan**
 - Infection d/t
 - Pneumococci, **gonococci**, meningococci, H. influenzae, Moraxella catarrhalis, **Borrelia burgdorferi**
 - **Single IM injection Tx acute otitis media or gonorrhoea**
- Rash
 - Diarrhea
 - **Pseudomembranous colitis**
 - Superinfection

 - Probenecid inhibits excretion & \uparrow serum levels



Ciprofloxacin

- Antibacterial
- **Fluoroquinolone**
- **Inhibits bacterial DNA topoisomerase type II (DNA gyrase) & type IV**
- **Prevents DNA replication & separation of chromosomes**
 - Urinary tract, prostate, intraabdominal w/ metronidazole, bone or jt, skin
 - Inhalational anthrax
 - Gonorrhea
 - Infectious diarrhea
 - Gram (+), gram (-), Pseudomonas aeruginosa
- Insomnia
- Diarrhea
- N
- **Absorption ↓ by cations**
 - Antacids
 - Iron
 - Zinc
 - bismuth



Clindamycin

- **Aminosugar ABX**
- **Protein synthesis inhibitor**
- **Binds 50s ribosome**
- **Prevents translocation of nascent peptide from acceptor site to peptidyl site**
 - Strep, staph, gram (+)
 - **Acne vulgaris**
 - Anaerobes including Bacteroides
- **C. difficile superinfection**
- Diarrhea
- Pseudomembranous colitis



Doxycycline

- **Tetracycline ABX**
 - **Protein synthesis inhibitor**

 - **Binds 30s ribosome**
 - **Reversibly inhibits binding of transfer RNA to acceptor site**
 - Rickettsia, Chlamydia, Mycoplasma, Borrelia
 - Acne
 - Cholera
 - **Gonorrhea & syphilis in PCN allergic pts**
 - Brucellosis & ehrlichiosis
- **AVOID**
 - Pregnancy & children > 8 y/o
 - **Outdated preparations are nephrotoxic**

 - **Permanent teeth discoloration**
 - **Photosensitivity**
 - Diarrhea
 - N, V



Efavirenz

- Antiretroviral
 - **Non-nucleoside reverse transcriptase inhibitor**
 - **Binds reverse transcriptase & disrupts catalytic site**
 - HIV in combo w/ nucleoside reverse transcriptase inhibitor – synergistic
 - High fat meal ↑ absorption
- N
 - Rash
 - Drowsiness
 - Depression



Enfuvirtide

- Antiretroviral
- **HIV fusion inhibitor**

- **Binds HIV virus gp41 & blocks fusion of HIV w/ host cells CD4 T helper lymphocytes**
 - Drug-resistant HIV

- Injection site rxn
 - Rotate sites daily



Erythromycin

- Macrolide ABX
- Protein synthesis inhibitor
- Binds 50s ribosome
- Prevents peptide elongation & translocation from acceptor site to peptidyl site
- Pharyngitis, otitis media, sinusitis, pneumonia d/t
 - Strep, pneumococci, Mycoplasma, Chlamydia, Legionella, MAI
- Activates motilin receptors causing uncoordinated peristalsis
 - Anorexia
 - N, V



Ethambutol

- Antitubercular
 - **Synthetic butanol derivative**

 - **Bacteriostatic against mycobacteria**
 - **Inhibits RNA synthesis**
 - M. tuberculosis
 - MAI
- **Dose-related retrobulbar optic neuritis**
 - **Impaired red-green color discrimination**
 - **Monitor pts color discrimination regularly**
 - Gouty arthritis



Foscarnet

- Antiviral
- **Pyrophosphate**
- **Blocks pyrophosphate-binding site on viral DNA polymerase**
 - Prevents attachment of nucleotide precursors to DNA
 - CMV retinitis in HIV pts
 - Acyclovir-resistant HSV in immunocompromised
- HA
- Diarrhea
- V
- Renal failure
- Hypocalcemia
- Hypokalemia
- Hypomagnesemia
- Anemia
- Arthralgia
- Myalgia
- **Pentamidine causes life-threatening hypocalcemia**



Fosfomicin

- ABX
- **Cell wall synthesis inhibitor**
- **Inhibits enopyruvyl transferase & addition of phosphoenolpyruvate to N-acetylglucosamine to form N-acetylmuramic acid**
 - Cystitis d/t E. coli or Enterococcus faecalis
 - Single dose Tx for UTI



Ganciclovir

- Antiviral
- **Nucleoside analogue**
- **Converted to ganciclovir triphosphate**
 - **Inhibits viral DNA polymerase**
 - CMV infection in immunocompromised & transplants
- ↓ **visual acuity**
- Neutropenia
- Thrombocytopenia
- Anemia



Gentamicin

- **Aminoglycoside ABX**
- **Protein synthesis inhibitor**

- **Binds 30s ribosome**
- **Prevents initiation of protein synthesis**
 - Misreading of genetic code

 - Gram (-) bacilli including Enterobacteriaceae & P. aeruginosa
 - Strep, enterococcal, & staph infections

 - Monitor serum levels

- Nephrotoxicity
- **Ototoxicity**
 - Vestibular & cochlear
 - ↑ w/ loop diuretics



Griseofulvin

- Antifungal
- **Fungistatic ABX**
- **Deposits in keratin precursor cells of skin, hair, & nails**
- **Disrupts microtubules & mitosis of dermatophytes**
 - Dermatophyte infections
 - NOT Candida
- HA
- **Induces CYP450**
 - **Reduces plasma levels warfarin & OCP**



Imipenem-cilastatin

- **β-lactam ABX**
- **Carbapenem ABX & dehydropeptidase inhibitor**
- **Imipenem**
 - **Binds PBP & inhibits cross-linking cell wall peptidoglycan**
- **Cilastatin**
 - **Inhibits renal dehydropeptidase & degradation of imipenem**
 - Endocarditis, pneumonia, UTI, pelvic, abdominal d/t aerobic & anaerobic
- Allergic rxns
- Diarrhea
- V
- **Seizures**
 - ↑ risk w/ ganciclovir or cyclosporine
- Probenecid inhibits secretion & ↑ serum levels



Isoniazid

- Antitubercular
- **Nicotinic acid derivative**
- **Reduces catalase-peroxidase**
 - **Inhibits synthesis of mycolic acid component of cell wall**
 - TB
 - **Bimodal distribution d/t fast & slow acetylation**
 - **Inactivates vit. B6**
- **Hepatitis**
 - **Toxic metabolite acetylhydrazine**
- **Peripheral neuropathy**
 - **Vit. B6 deficiency**



Itraconazole

- Antifungal
- **Synthetic triazole**
- **Inhibits 14- α -demethylase**
 - **CYP450 enzyme that converts lanosterol \rightarrow ergosterol**
 - Blastomycosis, candidiasis, coccidioidomycosis, histoplasmosis
 - **Onychomycosis – nail beds**
- GI distress
- Rash
- Hepatitis



Ivermectin

- Antiparasitic
- **Antihelmintic ABX**
- **Activates glutamate-gated Cl ion channel**
 - **Pharyngeal m. hyperpolarization & paralysis**
 - Strongyloidiasis
 - **Cutaneous larva migrans**
 - **Onchocerciasis filariasis**
 - **W. bancrofti**
- Vertigo
- Sedation



Levofloxacin

- Antibacterial
- **Fluoroquinolone**

- **Inhibits bacterial DNA topoisomerase type II (DNA gyrase) & type IV**
- **Prevents DNA replication & separation of chromosomes**
 - Community-acquired pneumonia
 - UTI
 - Gynecologic & skin infections

 - Gram (+), gram (-), P. aeruginosa, Mycoplasma, Mycobacterium



Linezolid

- Antibacterial
- **Oxazolidinone protein synthesis inhibitor**
- **Binds 23s ribosomal RNA of 50S subunit**
 - **Prevents formation of 70s initiation complex**
 - VRE, MS/MRSA, PCN-sensitive pneumococci
- **Inhibits MAO**



Mefloquine

- Antimalarial
- **4-quinolone methanol derivative**
- **Inhibits erythrocytic schizogony**
- **Inhibit nucleic acid synthesis**
 - Malaria
 - **Chloroquine-susceptible/resistant strains of *P. falciparum* & *P. vivax***
 - **Perform CBC during chronic prophylactic Tx**
- **Neuropsychiatric syn**
 - Hallucination
 - Anxiety
 - Confusion
 - Seizure
 - Coma



Metronidazole

- Antiprotozoal
- **Nitroimidazole**
- **Reduced by pyruvate:ferredoxin to form nitro-free radicals that attack DNA & proteins**
 - Amebiasis, giardiasis, trichomoniasis
 - Balantidium coli, C. difficile, B. fragilis
- GI pain
- Anorexia
- N
- Dizziness
- **Alcohol causes disulfiram-like effect**



Mupirocin

- ABX
- **Protein synthesis inhibitor**

- **Competes w/ isoleucine for binding bacterial isoleucyl tRNA synthetase**
- **Prevents addition of isoleucine during protein synthesis**
 - Impetigo by staph or strep
 - Eradicate nasal colonization of MRSA
 - Infected traumatic skin lesions



Nafcillin

- **β -lactam ABX**
- **Antistaphylococcal, penicillinase-resistant penicillin**
- **Binds PBP**
 - **Inhibits cross-linking of cell wall peptidoglycan**
 - **Methicillin-sensitive penicillinase producing staph**
 - Bone, jt, UTI, respiratory, skin, endocarditis, meningitis
- Diarrhea
- Superinfection
- **Pseudomembranous colitis**
- Allergic rxn
 - Rash
 - Serum sickness
 - Anaphylaxis
- Probenecid inhibits renal tubular secretion & \uparrow serum levels



Nitrofurantoin

- Urinary tract antibacterial
- **Nitrofuran**
- **Inhibits bacterial enzymes**
 - **UTI**
 - **E. coli, S. saprophyticus**
- Anorexia
- N, V
- Neurotoxicity
- Pneumonitis
- Probenecid inhibits urinary excretion



Oseltamivir

- Antiviral
- **Neuraminidase inhibitor**
- **Inhibits influenza A & B neuraminidase**
 - **Prevents release & spreading of viral particles**
 - Influenza A & B



Paromomycin

- Antiprotozoal
- **Aminoglycoside ABX**
- **Inhibits protein synthesis**
 - Intestinal amebiasis
 - Cryptosporidiosis in immunocompromised pts
- **Nephrotoxic & ototoxic if given IV**



Penicillin G

- **β -lactam ABX**
- **Narrow-spectrum penicillin**
- **Binds PBP**
 - **Inhibits cross-linking of cell wall peptidoglycan**
 - Strep, pneumococcal, meningococcal
 - Syphilis
- Diarrhea
- Superinfection
- Pseudomembranous colitis
- Allergic rxn
 - Rash
 - Serum sickness
 - Anaphylaxis
- **Probenecid inhibits renal tubular secretion**



Pentamidine

- Antiprotozoal
- **Amidino-pentane derivative**
- **Disrupts nucleic acid synthesis in protozoa**
 - P. carinii
 - Early stage African trypanosimiasis – sleeping sickness
- Nephrotoxic
- Hematologic toxicity
- Hypoglycemia
- Allergic rxn
 - Anaphylaxis
- **Erythromycin ↑ fatal arrhythmias**



Piperacillin-tazobactam

- **β -lactam ABX**
- **Antipseudomonal penicillin & β -lactamase inhibitor**
- **Piperacillin**
 - **Binds PBP**
 - Inhibits cross-linking of cell wall peptidoglycan
- **Tazobactam**
 - **Inhibits class A β -lactamases**
 - Gram (-) bacilli, *P. aeruginosa*
- Diarrhea
- Superinfection
- Pseudomembranous colitis
- Allergic rxn
 - Rash
 - Serum sickness
 - Anaphylaxis
- Probenecid inhibits renal tubular secretion



Praziquantel

- Antihelminthic
- **Isoquinoline derivative**
- **↑ Ca permeability of schistosome tegument**
 - **Contraction & exposing antigens to host immunity**
 - Schistosomiasis
 - Chinese liver fluke
 - Lung fluke
 - Cestodes – tapeworms
- Malaise
- Anorexia
- Drowsiness
- dizziness



Primaquine

- Antimalarial
- **8-aminoquinoline**
- **Converted to oxidizing quinoline-quinone intermediates**
 - Eradicate exo-erythrocytic forms of **P. vivax & P. ovale**
- **Hemolytic anemia in G6PD deficiency**
- methemoglobinemia



Pyrimethamine

- Antiprotozoal
 - **Folate reductase inhibitor**

 - **Inhibits folate reductase**
 - **Folate deficiency in protozoa**
 - Malaria in combo w/ sulfadoxine
 - Toxoplasmosis in combo w/ sulfadoxine

 - **NOT effective against P. vivax**
- N
 - Anorexia
 - Hypersensitivity rxn



Pyrantel

- Antihelminthic
- **Pyrimidine analogue**
- **Activates cholinergic nicotinic receptors in somatic m. of nematodes**
- **Produces depolarizing NM blockade**
 - Ascariasis
 - Hookworm & pinworm
- Abdominal cramps
- Anorexia
- Diarrhea
- V



Quinine

- Antimalarial
- **4-aminoquinoline**
- **Binds plasmodial DNA & prevents replication & transcription during erythrocytic schizogony**
 - Chloroquine-resistant malaria
 - Admin w/ doxycycline or pyrimethamine-sulfadoxine
- Abdominal cramps
- Diarrhea
- V
- **Cinchonism**
 - Tinnitus
 - Blurred vision
- **Metabolism**
 - Cimetidine inhibits
 - Rifampin induce



Quinupristin-dalfopristin

- **Streptogramin ABX**
- **Protein synthesis inhibitor**
- **Binds 50s ribosomal subunit**
- **Quinupristin**
 - **Inhibits aminoacyl tRNA synthesis & addition of AA**
- **Dalfopristin**
 - **Inhibits peptidyl transferase**
 - **VRE, MS/MRSA**
- **Infusion site rxn**



Ribavirin

- Broad-spectrum antiviral
- **Guanosine analogue**
- **Converted to ribavirin triphosphate**
- **Depletes guanosine triphosphate**
- **Inhibits viral RNA & protein synthesis**
 - RSV in infants or children
 - Chronic hepatitis C
 - Viral hemorrhagic fever –
Lassa fever
- Anemia
- Hypotension
- Cardiac arrest



Rifampin

- Antitubercular
- **Rifampin derivative**
- **Inhibits DNA-dependent RNA polymerase**
 - TB
 - Leprosy
 - Prophylaxis meningococcal meningitis & H. flu B infections
- **Red discoloration of tears, urine, saliva, sweat**
- Abdominal pain
- V
- Diarrhea
- Hepatitis
- **Induces CYP450**
- ↓ levels
 - Warfarin
 - Theophylline
 - Itraconazole
 - Steroids
 - Opioids
 - Phenytoin
 - Verapamil



Ritonavir-lopinavir

- Antiretroviral
- **HIV protease inhibitor**
- **Inhibits HIV protease & conversion of gag-pol polyprotein to functional proteins**
- **Ritonavir**
 - **↑ lopinavir levels**
 - HIV in combo w/ nucleoside reverse transcriptase inhibitor
- Anorexia
- V
- **Altered taste**
- Abnormal thinking
- Hyperlipidemia
- Hyperglycemia



Streptomycin

- **Aminoglycoside**
- **Protein synthesis inhibitor**
- **Binds 30s ribosome**
- **Prevents initiation of protein synthesis**
 - **Misreading of genetic code**
 - Drug-resistant TB
 - Plague
 - Tularemia
- **IV admin**
- **Nephrotoxic**
- **Ototoxic**
 - ↑ w/ loop diuretics



Terbinafine

- Antifungal
 - **Allylamine**

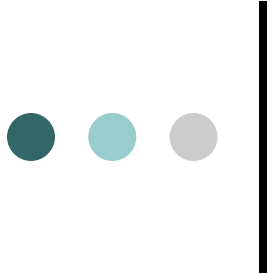
 - **Inhibits squalene oxygenase & formation of squalene epoxide during fungal membrane ergosterol synthesis**
 - Topical
 - Tinea corporis, cruris, pedis, versicolor
 - Oral
 - Onychomycosis – fungal nail infection
- **Itching**
 - **Rash**
 - Diarrhea
 - Anorexia

 - **Metabolism**
 - Cimetidine inhibits
 - Rifampin induce



Trifluridine

- Antiviral
- **Thymidine analogue**
- **Inhibits HSV DNA polymerase**
 - Herpetic keratitis
 - Keratoconjunctivitis
 - Topical ocular admin
- Ocular irritation
 - Redness
 - Itching



Trimethoprim- sulfamethoxazole

- Antibacterial
 - **Folate antagonist**

 - **Sulfamethoxazole**
 - **Inhibits folate synthesis**
 - **Trimethoprim**
 - **Inhibits folate reduction**

 - UTI, traveler's diarrhea
 - Shigella enteritis
 - P. carinii & Nocardia pneumonia
- N, V
 - Rash
 - **Stevens-Johnson syn**
 - Allergic rxn
 - Anemia
 - Hemolytic anemia
 - Megaloblastic anemia
 - Leukopenia
 - Thrombocytopenia
 - Crystalluria

 - Added folate deficiency w/ phenytoin or MTX



Vancomycin

- Glycopeptide ABX
 - **Cell wall synthesis inhibitor**

 - **Binds D-alanyl-D-alanine portion of peptidoglycan**
 - **Prevents cross-linking of D-alanine & pentaglycine chain**
 - MRSA, penicillin-resistant enterococci, C. difficile
- **Red man syn**
 - Extensive rate of infusion
 - Erythematous rash on face & upper body
 - **Ototoxicity**
 - Vestibular & cochlear



Zidovudine

- Antiretroviral
- **Nucleoside reverse transcriptase inhibitor**
- **Activated nucleotide triphosphate incorporated into DNA causing chain termination**
 - HIV
 - **Prevent maternal-fetal HIV transmission**
 - **1st line Tx for HIV infections**
 - **Zidovudine w/ lamivudine or emtricitabine & efavirenz or lapinavir-ritonavir**
- Anemia