Table 33. Antibiotics

Class and Drugs	Coverage	Mechanism of Action	Adverse Effects	Indications	Contraindications
TOPOISOMERASE INHIBITORS					
Fluoroquinolones (FQs)					
ciprofloxacin (Cipro®) norfloxacin (Apo-Norflox®) ofloxacin (Floxin®) Respiratory FQs: levofloxacin (Levaquin®) moxifloxacin (Avelox®)	Variable GP activity GN (includes *Pseudomonas*) "Atypicals" levofloxacin and moxifloxacin cover *S. pneumoniae* moxifloxacin also has additional anaerobic coverage	Inhibits DNA gyrase	Headache, dizziness Allergy Seizures Prolonged QT Dysglycemia (levofloxacin, moxifloxacin) Tendonitis Tendon rupture	Upper and lower RTI (not ciprofloxacin unless susceptible organism isolated), UTI, prostatitis (not moxifloxacin), bone and joint infections for susceptible organisms, skin and soft tissue infections (levofloxacin, moxifloxacin), infectious diarrhea, meningococcal prophylaxis, intra-abdominal infections (moxifloxacin, ciprofloxacin in combination with metronidazole or clindamycin), febrile neutropenia prophylaxis (ciprofloxacin, levofloxacin) or management of "low-risk" febrile neutropenia (ciprofloxacin in combination with amoxicillin-clavulanate)	Pregnancy or lactation Children under 18 yr Concomitant use of medications that prolong QT interval
OTHER					
rifampin	GP cocci *N. meningitidis* *H. influenzae* Mycobacteria	Inhibits RNA polymerase	Hepatic dysfunction, P450 enzyme induction Orange tears/saliva/urine	Part of multidrug treatment for active TB, alone for treatment of latent TB, part of multidrug treatment for other mycobacterial infections, endocarditis involving prosthetic valve or other prosthetic device infections in combination with other antibiotic agents, prophylaxis for those exposed to people with *N. meningitidis* or HiB meningitis	Jaundice Not to be used as monotherapy (except for prophylaxis)
metronidazole (Flagyl®)	Anaerobes, protozoa	Forms toxic metabolites in bacterial cell which damage microbial DNA	Disulfiram-type reaction with EtOH Seizures Peripheral neuropathy	Protozoal infections (trichomoniasis, amebiasis, giardiasis), bacterial vaginosis, anaerobic bacterial infections	Pregnancy with trichomoniasis Disulfiram within 2 wk, alcohol within 3 d Active neurological disorders Hypothyroidism Hypoadrenalism
daptomycin	GP, including MRSA and VRE	Binds to cell wall and forms channels leading to intracellular K^+ depletion	Skeletal muscle injury at high doses (elevated creatine phosphokinase) Peripheral neuropathy	Bacteremia, endocarditis, skin and soft tissue, and other infections due to resistant GP infections including MRSA and VRE	Known hypersensitivity Inactivated by surfactant, therefore not used in MRSA pneumonia Tx
colistin	GN	Disrupts bacterial cell membranes	Renal toxicity	Bacteremia, pneumoniae	Hypersensitivity, renal failure
ANTI-METABOLITE					
trimethoprim-sulfamethoxazole (TMP/SMX) (Septra®, Bactrim®)	GP, especially *S. aureus* (including most MRSA) GN: enteric *Nocardia* Other: *Pneumocystis, Toxoplasma*	Inhibits folic acid pathway (TMP inhibits dihydrofolate reductase (DHFR) and SMX competes with (para-aminobenzoic acid) PABA)	Hepatitis Stevens-Johnson syndrome Bone marrow suppression Hyperkalemia Drug toxicity (increases free levels of many drugs, including glyburide, warfarin)	Susceptible UTI, RTI, GI infections, skin and soft tissue infections caused by staphylococcal species, treatment and prophylaxis of *P. jirovecii* pneumonia	Hypersensitivity to TMP-SMX, sulfa drugs Infants <4 wk Hepatic or renal dysfunction Pregnancy and lactation
nitrofurantoin (MacroBID®, (Macrodantin®)	*Enterococcus*, *S. saprophyticus* GN (coliforms)	Reactive metabolites inhibit ribosomal protein synthesis	Cholestasis, hepatitis Hemolysis if G6PD deficiency Interstitial lung disease with chronic use	Lower UTI; not pyelonephritis or bacteremia	Anuria, oliguria, or significant renal impairment During or imminent labour Infants <1 mo of age
ANTI-MYCOBACTERIALS					
isoniazid (INH)	Mycobacteria	Inhibits mycolic acid synthesis	Hepatotoxicity Hepatitis Drug-induced SLE Peripheral neuropathy	Part of multidrug treatment for active TB, alone for treatment of latent TB	Drug-induced hepatitis or acute liver disease
rifampin (RIF)	Mycobacteria	Inhibits RNA polymerase	Hepatotoxicity P450 enzyme inducer Orange tears, saliva, urine	Part of multidrug treatment for active TB, alone for treatment of latent TB, part of multidrug treatment for other mycobacterial infections, adjunct for treating prosthetic device infection (bacterial biofilm), always use in combination with other antimicrobials to reduce emergence of resistance	Jaundice Not to be used as monotherapy (except for prophylaxis)
ethambutol	Mycobacteria	Inhibits mycolic acid synthesis	Loss of central and colour vision Neuropathy	Part of multidrug treatment for active TB and other mycobacterial infections	Renal failure
pyrazinamide (PZA)	Mycobacteria	Unknown	Hepatotoxicity Gout Gastric irritation	Part of multidrug treatment for active TB	Severe hepatic damage or acute liver disease Patients with acute gout
SULFONES					
dapsone sulfoxone	M. leprae, P. jirovecii, Toxoplasma	Inhibit folic acid synthesis by competition with PABA	Rash Drug fever Agranulocytosis	Part of multidrug treatment for *M. leprae*, part of treatment for *P. jirovecii* pneumonia (with TMP), *P. jirovecii* pneumonia prophylaxis, toxoplasmosis prophylaxis with pyrimethamine	G6PD Deficiency

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