1. Sulfonamides
MOA: Structural analog of PABA → Inhibit dihydropteroate synthase → inhibit DNA synthesis
Sulfamethoxazole - crystalluria
Sulfisoxazole
Sulfasalazine – poorly absorbed – used for GI/IBD
Silver Sulfadiazine – Topical TX for burns
PK: Acetylation and Glucuronidation by the liver – renal elimination
Spectrum:
- **G(+) –** Strep, Staph, Listeria, **Norcardia**
- **G(-) –** Enterobacteriaceae, H. Influ, Moraxella
- **Mycobacteria**
- **Parasites**
- **Fungi –** Pneumocystis – *Pentadine* for allergic Pts

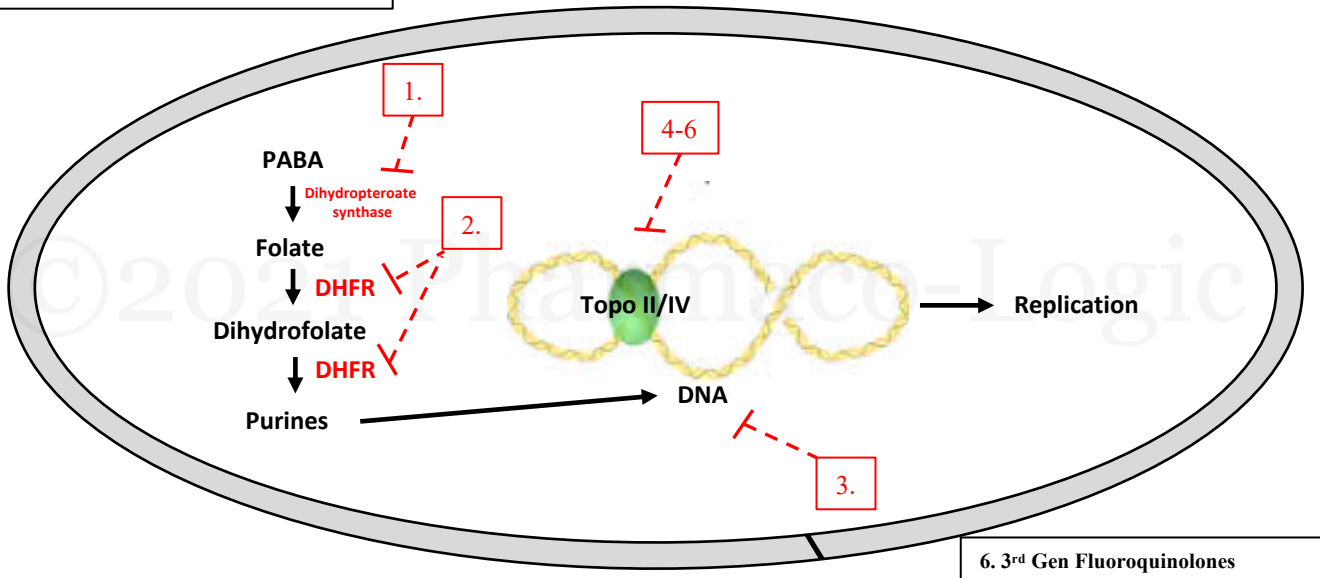
Resistance – Alterantive metabolic pathway
SE: Crystalluria, Hypersensitivity, Hemolytic anemia (G6PD), aplastic anemia, Jaundice, kernicterus, hyperkalemia

2. Dihydrofolate reductase inhibitors
MOA: inhibit conversion of folate to tetrahydrofolate → Inhibit DNA synthesis
Trimethoprim + sulfonamide
PK: Well distributed, crosses BBB/prostate, accumulates in acidic fluid (vaginal) – Renal elimination
Spectrum:
- **G(+) –** Strep, Staph, Listeria, **Norcardia**
- **G(-) –** Enterobacteriaceae, H. Influ, Moraxella
- **Fungi –** Pneumocystis

Resistance – Altered drug target
SE: N/V/D, folate deficiency,

3. Metronidazole
MOA: Activated by anaerobic organisms → causes DNA fragmentation
PK: Crosses the BBB, Renal – elimination
Spectrum:
- **Obligate anaerobes –** C. Difficile, B. fragilis
- Microaerophilic organisms – H. Pylori

Resistance: Obligate anaerobe - H. Pylori
SE: CNS effects, peripheral neuropathy, **Disulfiram effects**



4. 1st Gen Fluoroquinolones
MOA: Inhibition of DNA gyrase (topoisomerase II/IV) → causes DNA breakage
Norfloxacin
PK: renal excretion
Spectrum –
- Enterobacteriaceae
- Atypicals

5. 2nd Gen Fluoroquinolones
MOA: Inhibition of DNA gyrase (topoisomerase II/IV) → causes DNA breakage
Ciprofloxacin – CYP1A2 inhibitor
Ofloxacin
PK: Absorption decreased with cations, penetrates BBB and prostate – renal elimination
Spectrum
- **G(+) –** Bacillus anthracis, PRSP, CA-MRSA, enterococcus
- **G(-) –** Pseudomonas, Moraxella, enterobacteriacaea, H. influ., N. Meningitis, salmonella
- **Atypicals**
- **Mycobacteria – MAC, TB, leprosy**

Resistance – Decreased drug entry, Alterations in target enzymes
SE: Superinfections, CNS Effects, Photosensitivity, **cartilage deterioration** (quinolones in dem bones), Prolong QT, Hepatotoxicity

6. 3rd Gen Fluoroquinolones
MOA: Inhibition of DNA gyrase (topoisomerase II/IV) → causes DNA breakage
Levofloxacin
Moxifloxacin – Biliary Excretion
Gemifloxacin - **Rash**
PK: Absorption decreased with cations, penetrates BBB and prostate
Spectrum:
- **G(+) –** PRSP, S. aureus, enterococcus
- **G(-) –** Pseudomonas, Moraxella, enterobacteriacaea, H. influ., N. Meningitis
- **Atypicals**
- **Anaerobes**
- **Mycobacteria – MDR-TB**

Resistance – Drug target mutation
SE: Superinfections, CNS Effects, Photosensitivity, **cartilage deterioration** (quinolones in dem bones), Prolong QT, Hepatotoxicity