

# Antibiotic Classes

- A. Beta-lactams (penicillins & cephalosporins)
  - 1. penicillins
    - a. attack bacterial cell wall
    - b. first antibiotic -- discovered in 1929
      - 1) first use 1939
      - 2) excreted unchanged in urine  
(recycle story)
    - c. derived from mold (fungi)
    - d. still extremely useful
    - e. names: amoxicillin, ampicillin, augmentin  
bicillin, penicillin-G
  - 2. cephalosporins
    - a. attack cell wall
    - b. developed in 1940s but not commercially available until 1960s
    - c. derived from fungi
    - d. names: ceftin, claforin, omnicef,  
rocephin, suprax
  - 3. bactericidal, Gram - mostly, some +
  - 4. generally good cellular penetration
  - 5. poor CNS penetration (except rocephin?)
- B. Macrolides
  - 1. have some effect on fungi and parasites
  - 2. bacteriostatic, mostly Gram+
  - 3. earliest (erithomycin) 1952
  - 4. newer macrolides in recent years
  - 5. good to excellent cellular penetration
  - 6. fair CNS penetration
  - 7. names: biaxin, dynabac, zithromax
- C. Tetracyclines
  - 1. 1954 (doxy 1982)
  - 2. bacteriostatic (protein inhibitor)
  - 3. mostly Gram - & rickettsia (ehrlichia & RMSF)
  - 4. cellular penetration good
  - 5. fair CNS penetration
  - 6. names: doxycycline, minocycline, tetracycline
  - 7. most are inexpensive

# Antibiotic Classes

## D. Fluoroquinolones

1. developed in 1960s but not used until 1980s
2. bactericidal, Gram + and -
3. cellular penetration good
4. CNS penetration poor
5. names: cipro, levaquin
6. effective against bartonella

## E. Rifampin

1. bactericidal, mostly Gram +
2. primarily for TB (long-term 6 mos min)
3. most bacteria rapidly develop resistance  
to rifampin so 2nd abx always used with it
4. cellular penetration good
5. CNS penetration good
6. effective against bartonella

## F. Nitroimidazoles

1. flagyl and tinidazole
2. not technically antibiotics -- antiparasitics,  
with antibacterial properties
3. cellular penetration good
4. CNS penetration excellent
5. effective against Bb L-forms (cysts, non-cell-wall forms)

## G. Other antimicrobials

1. atovaquone
  - a. anti-malarial
  - b. 1944
  - c. interacts adversely with many antibiotics
  - d. names: malarone, mepron
  - e. effective against babesia
2. hydroxychloroquine (plaquenil)
  - a. adjunct to improve cellular penetration and pH
  - b. long half-life 30-50 days
  - c. can cause retinal damage (examine every 6 months)
3. anti-fungals
  - a. to counteract yeast buildup
  - b. ketoconazole, diflucan, nystatin