

Penicillin Antibiotics Overview

- **Penicillin G**

- Coverage

- Gram + cocci (except Penicillinase producing Staph and MRSA)
 - Gram + rods - e.g. Listeria
 - Gram - cocci - Neisseria spp
 - Most anaerobes

- Parenteral penicillin is the treatment of choice for Treponema pallidum (syphilis)

- **Penicillinase resistant Penicillins (Nafcillin, Oxacillin, Dicloxacillin, Cloxacillin)**

- coverage

- Inhibit penicillinase-producing Staph
 - ineffective against MRSA
 - ineffective for enterococci, Listeria, and Neisseria spp

- **Broad spectrum Penicillins (increased coverage against Gram-bacteria)**

- None of the broad-spectrum penicillins are effective against penicillinase-producing staphylococci

- **2nd generation (Ampicillin, Amoxicillin)**

- able to penetrate the porin channel of gram-negative bacteria but are not stable to beta-lactamases
 - active against the majority of strains of Escherichia coli, Proteus mirabilis, Salmonella, Shigella, and Haemophilus influenza

- **3rd generation (Carbenicillin, Ticarcillin)**

- coverage

- more resistant to the chromosomal beta-lactamases of certain organisms, such as Proteus species, Enterobacter species, and Pseudomonas aeruginosa

- Ticarcillin - avoid in patients with hypertension

- **4th generation (Piperacillin)**

- similar coverage as 3rd generation penicillins
 - some activity against strains of Klebsiella, although cephalosporins remain the preferred agents