

### CEPHALOSPORINS

**Indications** Respiratory, UTI, skin/bone infections, septicemia, gonorrhea, bacterial meningitis

**AE** Hypersensitivity, NVD, pain at IM injection site

### 1st GENERATION CEPHALOSPORINS

#### CEPHALEXIN

**CEFAZOLIN** Only 1st gen parenteral still used  
Long T<sub>1/2</sub>  
Surgical prophylaxis, UTI, SSTI

Act as penicillin G substitutes and have activity against *Proteus mirabilis*, *E. coli*, and *Klebsiella pneumoniae* (PEcK)

### 2ND GENERATION CEPHALOSPORINS

#### CEFUROXIME

#### CEFOXITIN

**CEFOTETAN** AE: hypoprothrominemia, disulfiram-like rxns with ethanol

#### CEFONICID

**CEFAMANDOLE** AE: hypoprothrominemia, disulfiram-like rxns with ethanol

**Indication:** community-acquired infections of the respiratory tract (*H. influenzae*, *Moraxella catarrhalis*, *S. pneumoniae*) and UTI (*Escherichia coli*)

### 3RD GENERATION CEPHALOSPORINI

**CEFIXIME** Useful activity against *B. fragilis*

**CEFDINIR** Useful activity against *B. fragilis*

#### CEFTAZIDIME

#### CEFOXATIME

**CEFTRIAZONE** Penetrate CNS and used to treat meningitis caused by gram-negative rods except *L. monocytogenes*

**Indication:** Useful activity genital, anal, and pharyngeal penicillin-resistant *N. gonorrhoeae*

**CEFOTAXIME** Penetrate CNS and used to treat meningitis caused by gram-negative rods except *L. monocytogenes*

**CEFOPERAZONE** AE: hypoprothrominemia, disulfiram-like rxns with ethanol

**Indications:** Hospital-acquired gram-negative bacteremia

### 4TH GENERATION CEPHALOSPORIN

**CEFIPIME** Only one in the US, penetrates CNS

### 5TH GENERATION CEPHALOSPORIN

#### CEFTAROLINE

**CEFTOBIPROLE** metabolized in plasma, majority excreted in urine

### CARBAPENEMS

#### DORIPENEM

**IMIPINEM-CILASTIN** Inactivated by dehydropeptidases in renal tubes

**MEROPENEM** Greater activity against gram negative aerobes and less activity against gram positives compared to imipenem

#### ERTAPENEM

**Indications :** infections resistant to other drugs, enterobacter infections, extended spectrum B lactam producing gram negatives

**PK:** penetrates CNS, cleared by kidney

### MONOBACTAMS

**AZTREONAM** **Indications:** pts allergic to penicillins and/or cephalosporins to treat pneumonia, meningitis, and sepsis, penetrates CNS

No activity against gram-positive organisms

### BACITRACIN (topical)

**MOA** Inhibits cell wall formation by interference with the dephosphorylation of the C55-isoprenyl pyrophosphate, a molecule that carries the building-blocks of the peptidoglycan bacterial cell wall

**Indications** Highly nephrotoxic when administered systemically and is thus used topically for gram positive cocci and bacilli skin infections

### CYCLOSERINE

**MOA** Structural analog of D-alanine and inhibits the incorporation of D-alanine into peptidoglycan pentapeptide chain

**Indications** Treats tuberculosis

**Toxicity** Serious dose-related CNS toxicity



### GLYCOPEPTIDES

**VANCOMYCIN** Resistance in enterococci develops due to modification in binding site (D-ala-D-ala D-lactate) and increased numbers of D-ala-D-ala residues (*S. aureus*)

Effective against gram positive producing lactamases and those resistant to nafcillin and methacillin (MRSA, MRSE) or allergic to penicillin or cephalosporin

**Indications:** infections caused by MRSA (sepsis, endocarditis), penicillin-resistant enterococci, individuals with prosthetic heart valve, oral administration of antibiotic induced colitis due to *C. diff*

SE: fever, chills, phlebitis

**VANCO + GENT** Use: enterococcal endocarditis (penicillin allergy)

**VANCO + CEFTRIAZONE** Use: meningitis (penicillin-resistant strain of pneumococcus)

**VANCO + CEFOTAXIME**

**VANCO + RIFAMPIN**

**TELAVANCIN** Two mechanisms of action; first is the same as vancomycin and the second is it disrupts the bacterial cell membrane potential and increases membrane permeability

t<sub>1/2</sub> is 8 hours allowing for daily dosing

Teratogenic

### GLYCOPEPTIDES (cont)

**DAPTOMYCIN** Long half life of 6-11 days allows for weekly dosing

Methicillin-susceptible and methicillin-resistant *Streptococcus pneumoniae*, *Streptococcus pyogenes*, *Corynebacterium jeikeium*, *E. faecalis* and *E. faecium* (including VRE)

**Indications:** skin infections and bacteremia caused by *S. aureus*

**AE:** constipation, nausea, HA, insomnia

**FOSFOMYCIN** MOA: inhibits UDP-N acetylglucosamine 3-Enolpyruvate transferase

Indications: UTI

