

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_{1/2}
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: hypoprothrombinemia, disulfiram-like rxns with ethanol

CEFONICID

CEFAMANDOLE AE: hypoprothrombinemia, 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: hypoprothrombinemia, 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

CEFTOB-IPROLE metabolized in plasma, majority excreted in urine

CARBAPENEMS

DORIPENEM

IMIPINEM-CILASTIN Inactivated by dehydropeptidases in renal tubules

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
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VANCO + GENT	Use: enterococcal endocarditis (penicillin allergy)
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VANCO + CEFTRIAXONE	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 t1/2 is 8 hours allowing for daily dosing Teratogenic
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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-Enol-pyruvate transferase Indications: UTI

