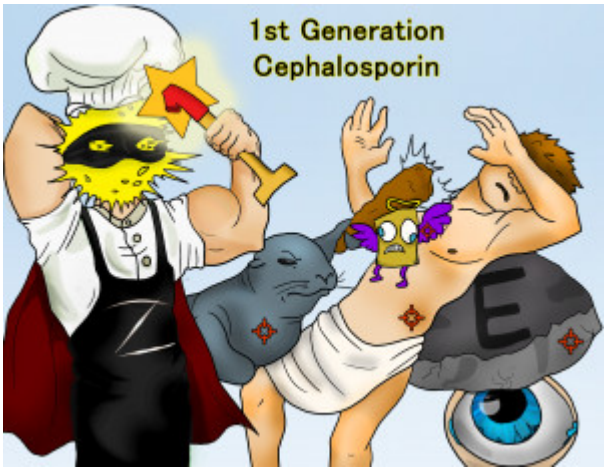
1st Generation Cephalosporin

Cephalosporins are beta-lactam antibiotics that are derived from Acremonium fungus. Like other beta-lactams, these antibiotics work by inhibiting bacterial cell wall synthesis. However, they are not as susceptible to penicillinases. There are traditionally five generations of cephalosporins classified based on their antimicrobial characteristics. Each new generation provides a more extended spectrum and has greater gram negative bactericidal properties than the previous generation. First generation cephalosporins such as cefazolin and cephalexin are effective against proteus mirabilis, E coli, Klebsiella pneumonia and gram-positive cocci.



PLAY PICMONIC

Drug Names

Cefazolin

Chef-Zorro

This first generation cephalosporin antibiotic (Trade names include Ancef and Kefzol) is given via an intramuscular injection or IV infusion. It is commonly used for gram positive bacterial infections of the skin, but can also be used for more severe infections involving bone, lungs, GI and urinary tract. It is frequently used as pre-operative prophylaxis.

Cephalexin

Chef-flexing

This popular first generation cephalosporin antibiotic (Trade name Keflex) is given orally. It has the same antimicrobial coverage as cefazolin. It is one of the most popular antibiotics in the United States. It is commonly used to treat gram positive infections in the middle ear, bone, lungs and skin. It is also used for endocarditis prophylaxis.

Indications (PEcK Mnemonic)

Proteus mirabilis

Prometheus

Proteus mirabilis is a gram negative bacillus and facultative anaerobic with swarming motility, urease presence and an inability to metabolize lactose on MacConkey agar. It is commonly found in nosocomial infections. It can alkalinize urine and lead to struvite crystal formation in the urine with the creation of kidney stones. Additionally, it can cause other infections of the skin and lungs.

E. coli

E-coal-eye

Escherichia coli, commonly abbreviated E. coli, is a gram negative bacillus often found in the normal flora of the intestines. Most E. coli strains are harmless, but pathogenic strains can cause diseases like food poisoning, neonatal pneumonia, neonatal meningitis, septic shock, and UTIs.

Klebsiella

Clubbing-sea-lion

Klebsiella is a gram negative, oxidase negative bacillus with a prominent polysaccharide capsule. Infections include a wide range of diseases including pneumonia and nosocomial urinary tract infections.

Gram-Positive Cocci

Graham-cracker Positive-angel with Cock-eyes

Gram positive cocci are classified by a violet gram stain adhering to high amounts of peptidoglycan in their cell wall, and classification of the coccus or spherical shape. Gram positive cocci include the staphylococcus and streptococcus genus. These bacteria can cause infection of various organs, skin and tissue.