

Oxacillin

Antibiotic Class:

Penicillin (penicillinase-resistant penicillin)

Antimicrobial Spectrum:

Staphylococcus spp., *Streptococcal spp.*

Mechanism of Action:

Exerts bactericidal activity via inhibition of bacterial cell wall synthesis by binding one or more of the penicillin binding proteins (PBPs). Exerts bacterial autolytic effect by inhibition of certain PBPs related to the activation of a bacterial autolytic process.

Pharmacodynamics:

Penicillins produce time-dependant killing

Pharmacokinetics:

Cmax: 52-63 mcg/ml

Half-life: 0.5-0.7 hours

Table 6

Adverse Reactions:

Hematologic: neutropenia, inhibition of platelet aggregation, eosinophilia, thrombocytopenia,

Renal: acute interstitial nephritis, hematuria

Hepatic: transient increases in transaminases

Other: thrombophlebitis, Jarisch-Herxheimer Reaction (fever, chills, sweating, tachycardia, hyperventilation, flushing, and myalgia)

Dosage:

Table 7

Disease state based dosing:

Renal failure: Table 7

Hepatic failure: Table 7

Dosing during Continuous Renal Replacement Therapy

CVVH (Continuous venovenous hemofiltration): 2g IV q4-6h

CVVHD (Continuous venovenous hemodialysis): 2g IV q4-6h

CVVHDF (Continuous venovenous hemodiafiltration) 2g IV q4-6h

Note: CVVH is mainly for fluid removal alone. Many institutions will employ more CVVHD or CVVHDF which combine dialysis with fluid removal.

Contraindications/Warnings/Precautions:

Contraindications: Anaphylaxis to penicillin or other penicillins

Precautions:

- Cephalosporin hypersensitivity
- Gastrointestinal disease (oral dose forms) which would alter absorption

Drug Interactions:

Contraceptives - decreased contraceptive effectiveness

Live Typhoid Vaccine - decreased immunological response to the typhoid vaccine

Probenecid - increased oxacillin levels

Warfarin - decreased anticoagulant effectiveness

Pregnancy Risk Factor:

B

Monitoring parameters:

Therapeutic: Culture and sensitivities, signs and symptoms of infection

Toxic: Periodic CBC, urinalysis, BUN, SCr, AST and ALT

Brand names/Manufacturer:

- BACTOCILL (GlaxoSmithKline - USA)
- BRISTOPEN (Bristol-Myers - FRANCE)
- CRYPTOCILLIN (Hoechst - GERMANY)
- OPTOCILLIN (Bayer - AUSTRIA)
- OXACIL (Biochimico - BRAZIL)
- OXACILLIN SODIUM (Teva, Apoticon, Marsam - USA)
- OXAPEN (Biolab Sanus - BRAZIL)
- PENSTAPHO (Bristol-Myers - ITALY)
- PROSTAPHLIN (Bristol Myers – CZECH REPUBLIC)
- PROSTAPHLIN (Apoticon - USA)
- ROXACILIN (Royton - BRAZIL)
- STAFICILIN N (Bristol-Myers - BRAZIL)
- STAPENOR (Bayer – AUSTRIA, GERMANY)
- SUMMOPENIL (Grunenthal - GERMANY)
- TEUTOCILIN (Teuto - BRAZIL)
- TOTOCILLIN (Bayer - GERMANY)