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, Apothecon, Marsam - USA)
  - OXAPEN (Biolab Sanus - BRAZIL)
  - PENSTAPHO (Bristol-Myers - ITALY)
  - PROSTAPHLIN (Bristol Myers – CZECH REPUBLIC)
  - PROSTAPHLIN (Apothecon - USA)
  - ROXACILIN (Royton - BRAZIL)
  - STAFICILIN N (Bristol-Myers - BRAZIL)
  - STAPENOR (Bayer – AUSTRIA, GERMANY)
  - SUMMOPENIL (Grunenthal - GERMANY)
  - TEUTOCILIN (Teuto - BRAZIL)
  - TOTOCILLIN (Bayer - GERMANY)