Amoxicillin

Antibiotic Class:
Penicillin (aminopenicillin)

Antimicrobial Spectrum:
Gram-positive: *Streptococcus spp.*, *Enterococcus spp.*, *Listeria monocytogenes*
Gram-negative: *H. influenzae*, *E. coli*, *Proteus mirabilis*, *Salmonella spp.*, *Shigella 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-dependent killing

Pharmacokinetics:
Cmax: 7.5mcg/ml; Oral bioavailability: 80%; Half-life: 1-1.3h; Table 6

Adverse Effects:
Hematologic: anemia, thrombocytopenia, neutropenia, agranulocytosis
CNS: seizures
Renal: nephrotoxicity, interstitial nephritis
Hepatic: transient increases in transaminases
Other: Jarisch-Herxheimer Reaction (fever, chills, sweating, tachycardia, hyperventilation, flushing, and myalgia)

Dosage:
Adult: 500mg po q12h or 250-500mg po q8h or 875mg po q12h
Pediatric: > 1 month and < 20 kg: 20-40 mg/kg/day in 3 divided doses
> 20 kg: usual adult dose

Disease state based dosing:
Renal failure: CrCL 10-50 mL/min: Consider extending dosing interval to q12h
CrCL < 10 mL/min: Extend dosing interval to q12-24h.

Contraindications/Warnings/Precautions:
Contraindications: Anaphylaxis amoxicillin or other penicillins
Precautions:
- Cephalosporin hypersensitivity
- Patients with mononucleosis are more likely to develop a skin rash

Drug Interactions:
Acenocoumarin – increased risk of bleeding; Allopurinol – higher probability of amoxicillin rash; Contraceptives - decreased contraceptive effectiveness; Live Typhoid Vaccine - decreased
immunological response to the typhoid vaccine; Methotrexate – methotrexate toxicity; Probenecid - increased amoxicillin levels; Warfarin – increased risk of bleeding

**Pregnancy:**
Category B: No evidence of risk in humans but studies inadequate.

**Monitoring Requirements:**
Therapeutic: Culture and sensitivities, signs and symptoms of infection
Toxic: Periodic CBC, urinalysis, BUN, Creatinine, AST and ALT, diarrhea, skin rash

**Brand names/Manufacturer:**
Available by many names and manufacturers