Minocycline

Antibiotic Class:
Tetracyclines

Antimicrobial Spectrum:
Staphylococcus aureus, Streptococcus pneumonia, Streptococcus pyogenes, Streptooccus agalacticae, Campylobacter jejuni, Haemophilus influenzae, Neisseria gonorrhoeae, Neisseria meningitides,Clostridium spp., Peptostreptococcus spp., Peptococcus spp. Bacteroides melaninogenicus, Bacteroides fragilis

Mechanism of Action:
Inhibits bacterial protein synthesis by binding with the 30S ribosomal subunit.

Pharmacodynamics:
Tetracyclines produce a combination of concentration and time-dependent killing (AUC:MIC ratio).

Pharmacokinetics:
Dose of 200mg PO: Cmax: 2-3.5 mcg/mL; Tmax: 1-4 hours; Half-life: 11-26 hours; Volume of distribution: 60 L/kg; Table 3

Adverse Effects:
GI: epigastric burning, abdominal discomfort, nausea, vomiting, anorexia, diarrhea, esophagitis, esophageal ulcers, dysphagia, candidal superinfections
Teeth and bone: (dose/duration related) yellow discoloration of teeth, which turns into a gray-brown permanent discoloration, hypoplasia of enamel, teeth demineralization, skeletal growth retardation
Hepatotoxicity: rare, but fatal; intrahepatic cholestasis, jaundice, azotemia, acidosis, irreversible shock
Renal Toxicity: hyperphosphatemia, acidosis, polyuria, polydipsia
Photosensitivity and hyperpigmentation: red rash to blistering on sun-exposed areas; photoallergic reactions manifested by paresthesias of hands, feet, nose, photo-onycholysis
Auditory: tinnitus, hearing loss
Vision: visual disturbances
CNS: lightheadedness, dizziness, ataxia, drowsiness, headache

Dosage:
Oral: 50mg, 75mg, 100mg capsules
50mg/5mL suspension
50mg, 75mg, 100mg tablets

Dosing in adults (common indications):
Acne vulgaris: 200 mg IV or PO x 1, then 100 mg IV or PO q12h
Bartonellosis: 200 mg IV or PO x 1, then 100 mg IV or PO q12h
Brucellosis: 200 mg IV or PO x 1, then 100 mg IV or PO q12h

Chlamydial infection: 100 mg PO q12h x minimum 7 days
Cholera: 200 mg IV or PO x 1, then 100 mg IV or PO q12h
Rickettsial disease: 200 mg IV or PO x 1, then 100 mg IV or PO q12h
Psittacosis: 200 mg IV or PO x 1, then 100 mg IV or PO q12h

Dosing in pediatrics:
2-4 mg/kg divided q12h

Disease state based dosing:
Renal failure: No dosing change necessary
Hepatic failure: No dosing changes recommended at this time.

Contraindications/Warnings/Precautions:
Precautions: Usage in newborns, infants, and children less than 8 years of age; risk for tooth discoloration; Renal or liver impairment; Phototoxicity; Avoid in patients with systemic lupus erythematosus (SLE);

Drug Interactions:
Food: Decreased absorption of minocycline
Milk: Decreased absorption of minocycline
Oral contraceptives: Decreased contraceptive effectiveness
Warfarin: Increased warfarin effect
Table 6

Pregnancy:
Category D: Risk established, but benefits may outweigh risk.

Monitoring Requirements:
Therapeutic: Culture and sensitivities, serum levels, signs and symptoms of infection, white blood cell count
Toxic: Hypersensitivity syndrome reaction, serum sickness like reaction or single organ dysfunction – Monitor: CBC, LFTs, urinalysis, urea, creatinine, chest radiograph; Drug-induced lupus: monitor antinuclear antibody and hepatic transaminases; General long-term therapy: Liver and renal function tests, Hematopoietic studies

Brand names/Manufacturer:
Dynacin®/Medicis; Minocin®/Lederle; Minocycline®/Generva; Vectrin®/Warner Chilcott