

Levofloxacin

Antibiotic Class:

Quinolone

Antimicrobial Spectrum:

Gram positive bacteria: methicillin-susceptible *Staphylococcus aureus* (MSSA), methicillin-resistant *Staphylococcus aureus* (MRSA), *Streptococcus pneumoniae*, *Listeria monocytogenes*

Gram negative bacteria: *Enterobacteriaceae*, *H. influenzae*, other *Haemophilus spp.*, *N. gonorrhoeae*, *N. meningitidis*, *M. catarrhalis*, *P. aeruginosa*, *Stenotrophomonas maltophilia*, *S. maltophilia*

Atypicals: *Legionella pneumophila*

Mechanism of Action:

Inhibition of topoisomerase (DNA gyrase) enzymes, which inhibits relaxation of supercoiled DNA and promotes breakage of double stranded DNA.

Pharmacodynamics:

Fluoroquinolones produce both concentration dependent (peak:MIC), and a combination of concentration and time-dependent killing (AUC:MIC).

Pharmacokinetics:

500mg dose; Cmax: 6mg/ml; Volume of distribution: 1.45 L/kg; Table 2

Adverse Effects:

CNS: headache, insomnia, dizziness; hallucinations, depression, psychotic reactions (rare)

Connective tissue: tendon injury

Renal: interstitial nephritis

Cardiovascular: QTC prolongation, torsades de pointes, arrhythmias

Dosage:

Oral: 250mg, 500mg, 750mg tablet

Intravenous: 25mg/ml solution

Ophthalmic: 0.5% solution

Adults:

Inhalational anthrax, postexposure prophylaxis: 500 mg PO/IV every 24 hr for 60 days

Chronic bronchitis: 500 mg PO/IV every 24 hr for 7 days

Chronic prostatitis: 500 mg PO/IV every 24 hr for 28 days

Community-acquired pneumonia: 500 mg PO/IV every 24 hr for 7-14 days or 750 mg PO/IV or every 24 hr for 5 days

Nosocomial pneumonia: 750 mg PO/IV every 24 hr for 7-14 days

Pyelonephritis: 250 mg PO/IV every 24 hr for 10 days

Sinusitis: 500 mg PO/IV every 24 hr for 10-14 days

Skin/skin structure infection: uncomplicated, 500 mg PO/IV every 24 hr for 7-10 days; complicated, 750 mg PO/IV every 24 hr for 7-14 days

Urinary tract infection: uncomplicated, 250 mg PO/IV every 24 hr for 3 days; complicated, 250 mg IV or ORALLY every 24 hr for 10 days

Conjunctivitis, bacterial: (0.5% ophthalmic solution) day 1-2, 1-2 drops every 2 hr while awake (MAX 8 times/day); day 3-7, 1-2 drops every 4 hr while awake (MAX 4 times/day)

Corneal ulcer: (1.5% ophthalmic solution) day 1-3, 1-2 drops every 30 min to 2 hr while awake and 4 hr and 6 hr after retiring; day 4 through treatment end, 1-2 drops every 1 to 4 hr while awake

Pediatric:

Conjunctivitis, bacterial: (0.5% ophthalmic solution) ages 1 year and older; day 1-2, 1-2 drops every 2 hr while awake (MAX 8 times/day); day 3-7, 1-2 drops every 4 hr while awake (MAX 4 times/day)

Corneal ulcer: (1.5% ophthalmic solution) ages 6 year and older; day 1-3, 1-2 drops every 30 min to 2 hr while awake and 4 hr and 6 hr after retiring; day 4 through treatment end, 1-2 drops every 1 to 4 hr while awake

Table 4

Disease state based dosing:

Renal failure:

Respiratory indications: CrCl 20 – 49ml/min: 500mg x 1, then 250mg q 24 hours

CrCl 10 – 19ml/min: 500mg x 1, then 250mg q 48 hours

Hemodialysis/peritoneal dialysis: 500mg x 1, then 250mg q 48 hours

Hepatic failure: No dosing changes recommended at this time.

Contraindications/Warnings/Precautions:

Precautions:

- Prolongation of QT interval; avoid concurrent use with other drugs that prolong QT interval and in patients with risk factors for torsades de pointes (hypokalemia, significant bradycardia, cardiomyopathy)
- Patients with glucose 6-phosphate dehydrogenase deficiency
- Diabetes mellitus; disturbances of blood glucose have been reported, usually in diabetic patients receiving concomitant treatment with an oral hypoglycemic agent or with insulin

Drug Interactions:

Divalent cations: aluminum, magnesium zinc, iron, calcium, antacids, sucralfate – reduced bioavailability of quinolones (can cause therapeutic failure)

Theophylline, caffeine, xanthines: clearance of these is inhibited with fluoroquinolones

Pregnancy:

Category C: Risk unknown. Human studies inadequate.

Monitoring Requirements:

Therapeutic: Culture and sensitivities, signs and symptoms of infection

Toxic: Urinalysis, BUN, SCr, AST and ALT, Physical examination: encephalopathic changes

Brand names/Manufacturer: