Gatifloxacin

Antibiotic Class:
Quinolone

Antimicrobial Spectrum:
Gram-positive: methicillin-susceptible *Staphylococcus aureus* (MSSA), methicillin-resistant *Staphylococcus aureus* (MRSA), *Streptococcus pneumoniae, Listeria monocytogenes*
Gram-negative: *Enterobacteriaceae, H. influenzae, other Haemophilus spp., N. gonorrhoeae, N. meningitides, M. catarrhalis, Stenotrophomonas maltophilia, S. maltophilia*
Mycobacteria: *Mycobacterium tuberculosis, M. fortuitum*
Atypicals: *Legionella pneumophilia, Chlamydia pneumonia, Mycoplasma pneumoniae*

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:
400mg dose; Cmax: 3.4mg/L; Volume of distribution: 1.7 L/kg; Table 2 & Table 3

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

Dosage:
Tablets: 200mg, 400mg tablets
IV: 2mg/ml for IV administration
Opthalmic: 0.3% solution

Adult:
Community acquired pneumonia: 400mg IV/PO x 7-14 days
Acute sinusitis: 400mg IV/PO x 10 days
Conjunctivitis: 1 drop into affected eye q2h while awake up to 8 times per day x 2 days, then 1 drop up to 4 times/day for 4 more days.
Acute exacerbation of chronic bronchitis: 400mg IV/PO x 5 days
Uncomplicated UTI: 400mg IV/PO x 1 dose / 200mg IV/PO q24h x 3 days
Complicated UTI/Pyelonephritis: 400mg IV/PO x 7-10 days
Uncomplicated gonococcal infections: 400mg IV/PO x 1 dose
Uncomplicated skin/skin structure: 400mg IV/PO x 7-10 days

Pediatric:
Conjunctivitis: 1 drop into affected eye q2h while awake up to 8 times per day x 2 days, then 1 drop up to 4 times/day for 4 more days.

Table 4

Disease state based dosing:
Renal failure: CrCl < 40 mL/min: 400mg x 1, then 200mg q 24 hours
Hemodialysis: 400mg x 1, then 200mg q 24 hours after dialysis
Peritoneal dialysis: 400mg x 1, then 200mg q 24 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)
- Central nervous system disorders (eg, epilepsy and cerebrovascular disease)
- 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:
Anticoagulants: Warfarin (prolonged warfarin half-life)
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, Physicial examination: encephalopathic changes

Brand names/Manufacturer:

- BONOQ (Grunenthal - GERMANY)
- GATIFLO (Kyorin - JAPAN)
- STAROX (Grunenthal - CHILE)
- TEQUIN (Bristol-Myers, USA, AUSTRALIA, MEXICO, BRAZIL, CANADA, THAILAND, SINGAPORE, SOUTH AFRICA, MALAYSIA, CANADA)
- ZYMAR (Opthalmic solution - Allergan - USA)