

Gemifloxacin

Antibiotic Class:

Quinolone

Antimicrobial Spectrum:

Gram-positive: methicillin-susceptible *Staphylococcus aureus* (MSSA) (highest quinolone activity vs. MSSA), methicillin-resistant *Staphylococcus aureus* (MRSA), *Streptococcus pneumoniae*, *Enterococcus faecalis*, *Listeria monocytogenes*

Gram-negative: *Enterobacteriaceae*, *H. influenzae*, other *Haemophilus spp.*, *N. gonorrhoeae*, *N. meningitidis*, *M. catarrhalis*, *Stenotrophomonas maltophilia*

Atypicals: *Legionella pneumophila*, *Chlamydia pneumoniae*, *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:

320mg dose; C_{max}: 1.6mg/ml; Volume of distribution: 4.18; Table 2

Adverse Effects:

Gastrointestinal: nausea, upper GI discomfort

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

Renal: interstitial nephritis

Cardiovascular: QTC prolongation, torsades de pointes, arrhythmias

Skin: Rash (10% of patients with rash develop severe rash which may require discontinuation of therapy)

Dosage:

Tablet: 320mg

Adult:

Chronic bronchitis: 320mg PO q24h x 5 days

Community-acquired pneumonia: 320mg PO q24h x 7 days

Pediatric:

Efficacy and safety not established in patients less than 18 years of age

Table 4

Disease state based dosing:

Renal failure: CrCl < 40mL/min: 160mg PO q24 hours

Hemodialysis: 160mg PO q24 hours
Peritoneal dialysis: 160mg PO q24 hours

Contraindications/Warnings/Precautions:

Contraindications: Hypersensitivity to gemifloxacin, other fluoroquinolones, or to any of its components

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)
- Renal insufficiency
- Patients with glucose 6-phosphate dehydrogenase deficiency
- Excessive exposure to sunlight should be avoided
- 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)

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

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