Moxifloxacin

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. meningitides, M. catarrhalis, Stenotrophomonas maltophilia, S. maltophilia*
Mycobacteria*: Mycobacterium tuberculosis, M. fortuitum, M. kansasii, M. intracellulare, M. avium*
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 dependant (peak:MIC), and a combination of concentration and time-dependant killing (AUC:MIC).

Pharmacokinetics:
400mg dose
Cmax: 4.5mg/L
Volume of distribution: 2.7L/kg
Table 2

Adverse Reaction:
Gastrointestinal: nausea, upper GI discomfort
CNS: headache, insomnia, dizziness; hallucinations, depression, psychotic reactions (rare)
Renal: Interstitial nephritis
Cardiovascular: QTC prolongation, torsades de pointes, arrhythmias

Dosage:
Oral: 400mg tablet
Intravenous: 400mg/250ml IV
Opthalmic: 0.5% solution

Adult:
Chronic bronchitis: 400 mg PO/IV every 24 hr x 5 days
Community-acquired pneumonia: 400 mg PO/IV every 24 hr x 7-14 days
Conjunctivitis, bacterial: (0.5% ophthalmic solution) 1 drop to affected eye(s) 3 times a day x 7 days
Sinusitis: 400 mg IV or ORALLY every 24 hr for 10 days
Skin/skin structure infection: 400 mg PO/IV every 24 hr 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: No dosage adjustment recommended
Hepatic failure: No dosing adjustment recommended

Dosing during Continuous Renal Replacement Therapy
CVVH (Continuous venovenous hemofiltration): 400mg q12h
CVVHD (Continuous venovenous hemodialysis): 400mg IV q12h
CVVHDF (Continuous venovenous hemodiafiltration) 400mg IV q12h
Note: CVVH is mainly for fluid removal alone. Many institutions will employ more CVVHD or CVVHDF which combine dialysis with fluid removal.

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)

Pregnancy Risk Factor:
C

Monitoring parameters:
Therapeutic: Culture and sensitivities, signs and symptoms of infection
Toxic: Urinalysis, BUN, SCr, AST and ALT, Physicial examination: encephalopathic changes

Brand names/Manufacturer:

- ACTIRA (Bayer - AUSTRIA, NETHERLANDS, SPAIN)
- AVALOX (Bayer – GERMANY, BRAZIL, SWITZERLAND, ITALY)
- AVELON (Bayer - SOUTH AFRICA)
- AVELOX (Bayer – USA, FINLAND, SWEDEN, IRELAND, AUSTRALIA, MEXICO, AUSTRIA, CANADA, GREECE, CHILE, HUNGARY, DENMARK, CZECH REPUBLIC, NETHERLANDS, HONG KONG, BELGIUM, THAILAND, SINGAPORE, UK, NEW ZEALAND, MALAYSIA, PORTUGAL, CANADA)
- IZILOX (Bayer - FRANCE)
- MEGAXIN (Agis - ISRAEL)
- OCTEGRA (Bayer – AUSTRIA, ITALY, SPAIN, GREECE, CHILE, NETHERLANDS)

- PROFLOX (Therabel – BELGIUM, SPAIN, PORTUGAL)
- VIGAMOX (Alcon - USA)