moxifloxacin (mox-i-**flox**-a-sin)

Avelox

Classification

Therapeutic: anti-infectives
Pharmacologic: fluoroquinolones

Pregnancy Category C

Indications

Treatment of the following bacterial infections: Respiratory tract infections, including acute sinusitis, acute exacerbations of chronic bronchitis, and community-acquired pneumonia (CAP), Uncomplicated and complicated skin and skin structure infections, Intra-abdominal infections.

Action

Inhibits bacterial DNA synthesis by inhibiting DNA gyrase enzyme. **Therapeutic Effects:** Death of susceptible bacteria. **Spectrum:** Active against gram-positive pathogens, including: *Staphylococcus aureus*, *Streptococcus pyogenes*, *Streptococcus pneumoniae* (including multi-drug resistant strains). Gram-negative spectrum notable for activity against: *Escherichia coli*, *Klebsiella pneumoniae*, *Haemophilus influenzae*, *Haemophilus parainfluenzae*, *Moraxella catarrhalis*. Additional spectrum includes: *Chlamydophylia pneumoniae*, *Mycoplasma pneumoniae*.

Pharmacokinetics

Absorption: Well absorbed (90%) following oral administration.
Distribution: Widely distributed; tissue concentrations may exceed plasma concentrations.
Metabolism and Excretion: Mostly metabolized by the liver; 20% excreted unchanged in urine, 25% excreted unchanged in feces.
Half-life: 12 hr.

TIME/ACTION PROFILE (blood levels)

ROUTE	ONSET	PEAK	DURATION
PO	within 1 hr	1–3 hr	24 hr
IV	rapid	end of infusion	24 hr

Contraindications/Precautions

Contraindicated in: Hypersensitivity (cross-sensitivity within class may exist); QTc interval prolongation; Uncorrected hypokalemia or hypomagnesemia; Concurrent use of Class IA antiarrhythmics (disopyramide, quinidine, procainamide) or Class III antiarrhythmics (amiodarone, sotalol) (↑risk of QTc interval prolongation and torsade de pointes); History of myasthenia gravis (may worsen symptoms including muscle weakness and breathing problems).
Use Cautiously in: Known or suspected CNS disorder; Concurrent use of erythromycin, antipsychotics, and tricyclic antidepressants (↑risk of QTc interval prolongation and torsade de pointes); Bradycardia; Acute myocardial ischemia; Concurrent use of corticosteroids (↑ risk of tendinitis/tendon rupture); Hepatic dysfunction; Kidney, heart, or lung transplant patients (↑ risk of tendinitis/tendon rupture); ***Geri:*** ↑ risk of adverse reactions; ***OB, Lactation, Pedi:*** Safety not established.

Adverse Reactions/Side Effects

CNS: ELEVATED INTRACRANIAL PRESSURE (including pseudotumor cerebri), SEIZURES, agitation, anxiety, confusion, depression, dizziness, hallucinations, headache, insomnia, nightmares, paranoia, tremor. **CV:** TORSADE DE POINTES, QT interval prolongation. **GI:** PSEUDOMEMBRANOUS COLITIS, diarrhea, nausea, abdominal pain, dyspepsia, ↑ liver enzymes, vomiting. **Derm:** STEVENS-JOHNSON SYNDROME, photosensitivity. **MS:** tendinitis, tendon rupture. **Neuro:** peripheral neuropathy. **Misc:** HYPERSENSITIVITY REACTIONS including ANAPHYLAXIS.

Interactions

Drug-Drug: Concurrent use ofamiodarone, **disopyramide**, **erythromycin**, **procainamide**, **dofetilide**, **quinidine**, some **antipsychotics**, **sotalol**, or **tricyclic antidepressants** ↑ risk of torsade de pointes in susceptible individuals (avoid concurrent use). May ↑ risk of bleeding with **warfarin**. **Iron** supplements and aluminum-, calcium-, or magnesium-containing **antacids**, **bismuth subsalicylate**, **sucralfate**, multivitamins with **zinc**, or **didanosine** (chewable/buffered tablets of pediatric suspension) ↓ absorption (take at least 2 hr before or 4 hr). Serum levels of fluoroquinolones may be ↓ by **antineoplastics**. **Cimetidine** may interfere with elimination of fluoroquinolones. May ↑ risk of nephrotoxicity from **cyclosporine**. Concurrent **corticosteroid** therapy may ↑ risk of tendon rupture.

Route/Dosage

PO, IV (Adults): *Bacterial sinusitis*— 400 mg once daily for 10 days; *Community-acquired pneumonia*— 400 mg once daily for 7–14 days. *Acute bacterial*

exacerbation of chronic bronchitis—400 mg once daily for 5 days. *Complicated intra-abdominal infection*—400 mg once daily for 5–14 days. *Skin/skin structure infections*—400 mg/day for 7–21 days.

NURSING IMPLICATIONS

Assessment

- Assess for infection (vital signs, appearance of sputum, WBC) at beginning of and during therapy.
- Obtain specimens for culture and sensitivity prior to initiating therapy. First dose may be given before receiving results.
- **Observe patient for signs and symptoms of anaphylaxis (rash, pruritus, laryngeal edema, wheezing). Discontinue drug and notify physician or other health care professional immediately if these problems occur. Keep epinephrine, an antihistamine, and resuscitation equipment close by in case of an anaphylactic reaction.**
- **Monitor bowel function. Diarrhea, abdominal cramping, fever, and bloody stools should be reported to health care professional promptly as a sign of pseudomembranous colitis. May begin up to several weeks following cessation of therapy.**
- **Assess for rash periodically during therapy. May cause Stevens-Johnson syndrome. Discontinue therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, hepatitis and/or eosinophilia.**
- Assess for signs and symptoms of peripheral neuropathy (pain, burning, tingling, numbness, and/or weakness or other alterations of sensation including light touch, pain, temperature, position sense, and vibratory sensation) periodically during therapy. Symptoms may be irreversible; discontinue moxifloxacin if symptoms occur.
- ***Lab Test Considerations:*** Monitor for ↑ serum AST, ALT, LDH, bilirubin, and alkaline phosphatase.
- May cause hyperglycemia, hyperlipidemia, and altered prothrombin time.
- May also cause ↑ or ↓ glucose.

Potential Nursing Diagnoses

Risk for infection (Patient/Family Teaching)

Implementation

- **PO:** May be administered without regard to meals. Products or foods containing calcium, magnesium, aluminum, iron, or zinc should not be ingested for 4 hr before and 8 hr after administration.

IV Administration

- **Intermittent Infusion:** ***Diluent:*** Premixed bags are diluted in sodium chloride 0.8% and should not be further diluted. Use transfer set whose piercing pin does not require excessive force; insert with a gentle twisting motion until pin is firmly seated. ***Concentration:*** 1.6 mg/mL. ***Rate:*** Administer over 60 min. Avoid rapid or bolus infusion.
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- **Y-Site Compatibility:** alemtuzumab, amifostine, anidulafungin, argatroban, bivalirudin, bleomycin, bumetanide, busulfan, calcium acetate, caclium chloride, calcium gluconate, carboplatin, carmustine, caspofungin, ceftaroline, chlorpromazine, cisatracurium, cisplatin, cyclophosphamide, cyclosporine, cytarabine, dacarbacine, dactinomycin, daptomycin, daunorubicin, dexmedetonidine, dexrazoxane, digoxin, diltiazem, diphenhydramine, dobutamine, doripenem, ertapenem, mycophenolate, docetaxel, dolasetron, dopamine, doripenem, doxacurium, doxorubicin , doxorubicin liposome, droperidol, enalaprilat, epinephrine, epirubicin, ertapenem, esmolol, etoposide, etoposide phosphate, famotidine, fenoldopam, fludarabine, gallium nitrate, gemcitabine, glycopyrrolate, granisetron, haloperidol, heparin, hetastarch, hydralazine, hydrocortisone sodium succinate, idarubicin, insulin, irinotecan, isoproterenol, ketorolac, labetalol, leucovorin, lidocaine, magnesium sulfate, mannitol, mechlorethamine, melphalan, mesna, methotrexate, methyldopate, methylprednisolone, metoclopramide, metoprolol, minrinone, mitomycin, mitoxantrone, mivacuroum, mycophenolate, naloxone, nesiritide, nicardipine, nitroglycerin, norepinephrine, octreotide, ondansetron, oxaliplatin, oxytocin, paclitaxel, palonosetron, pamidronate, pancuronium, pemetrexed, phentolamine, phenylephrine, potassium acetate, potassium chloride, potassium phosphates, procainamide, prochlorperazine, promethazine, propranolol, ranitidine, rocuronium, sodium acetate, sodium bicarbonate, sodium phosphate, streptozocin, succinylcholine, tacrolimus,

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moxifloxacin

teniposide, theophylline, thiotepa, tigecycline, tirofiban, topotecan, vasopressin, vecuronium, verapamil, vinblastine, vincristine, vinorelbine, zoledronic acid.

- **Y-Site Incompatibility:** allopurinol, aminophylline, amphotericin B lipid complex, dantrolene, fluorouracil, fosphenytoin, furosemide, nitroprusside, pantoprazole, phenytoin, vancomycin, voriconazole.

Patient/Family Teaching

- Instruct patient to take medication as directed at evenly spaced times and to finish drug completely, even if feeling better. Take missed doses as soon as possible, unless almost time for next dose. Do not double doses. Advise patient that sharing of this medication may be dangerous.
- Encourage patient to maintain a fluid intake of at least 1500–2000 mL/day to prevent crystalluria.
- Advise patient that antacids or medications containing calcium, magnesium, aluminum, iron, or zinc will decrease absorption and should not be taken within 4 hr before or 8 hr after taking this medication.
- May cause dizziness and drowsiness. Caution patient to avoid driving or other activities requiring alertness until response to medication is known.
- **Advise patient to notify health care professional of any personal or family history of QTc prolongation or proarrhythmic conditions such as recent hypokalemia, significant bradycardia, or recent myocardial ischemia or if fainting spells or palpitations occur. Patients with this history should not receive moxifloxacin.**
- Caution patient to use sunscreen and protective clothing to prevent phototoxicity reactions during and for 5 days after therapy. Notify health care professional if a sunburn-like reaction or skin eruption occurs.
- Advise patient to notify health care professional of all Rx or OTC medications, vitamins, or herbal products being taken and to consult with health care professional before taking other medications.
- Advise patient to report signs of superinfection (furry overgrowth on the tongue, vaginal itching or discharge, loose or foul-smelling stools).
- **Instruct patient to notify health care professional if fever and diarrhea develop, especially if stool contains blood, pus, or mucus. Advise patient not to treat diarrhea without consulting health care professional.**
- **Instruct patient to notify health care professional immediately if rash, jaundice, sign of hypersensitivity, or tendon (shoulder, hand, Achilles, and other) pain, swelling, or inflammation occurs. If tendon symptoms occur, avoid exercise and use of the affected area. Increased risk in >65 yr old, kidney, heart and lung transplant recipients, and patients taking corticosteroids concurrently. Therapy should be discontinued**.

Evaluation/Desired Outcomes

- Resolution of the signs and symptoms of bacterial infection. Time for complete resolution depends on organism and site of infection.

Why was this drug prescribed for your patient?