norfloxacin (nor-**flox**-a-sin)

Noroxin

Classification

Therapeutic: anti-infectives

Pharmacologic: fluoroquinolones

Pregnancy Category C

Indications

Treatment of the following bacterial infections: Urinary tract and gynecologic infections including cystitis, gonorrhea, and prostatitis.

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*, *Staphylococcus epidermidis*, *Streptococcus agalactiae*, *Enterococcus faecalis*. Gram-negative spectrum notable for activity against: *Escherichia coli*, *Klebsiella pneumoniae*, *Enterobacter aerogenes*, *Proteus mirabilis*, *Proteus vulgaris*.

Pharmacokinetics

Absorption: Well absorbed (30–40%) following oral administration.

Distribution: Widely distributed. High concentrations are achieved in the urine and tissues of the urinary tract. Appears to cross the placenta.

Metabolism and Excretion: 10% metabolized by the liver, 30% excreted unchanged by the kidneys, 30% excreted unchanged in feces.

Half-life: 6.5 hr.

TIME/ACTION PROFILE (blood levels)

ROUTE	ONSET	PEAK	DURATION
PO	rapid	2–3 hr	12 hr

Contraindications/Precautions

Contraindicated in: Hypersensitivity (cross-sensitivity within class may exist); History of myasthenia gravis (may worsen symptoms including muscle weakness and breathing problems); ***Pedi:*** Children ; ***OB:*** Pregnancy.

Use Cautiously in: Known or suspected CNS disorder; Renal impairment (dose ↓ recommended if CCr ≤30 mL/min); Cirrhosis; 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); Underlying conduction abnormalities (may rarely cause QTc prolongation); Concurrent use of corticosteroids (↑ risk of tendinitis/tendon rupture); Kidney, heart, or lung transplant patients (↑ risk of tendinitis/tendon rupture); Dialysis patients (↑ risk of adverse reactions); ***Geri:*** ↑ risk of adverse reactions; ***Lactation:*** Safety not established.

Adverse Reactions/Side Effects

CNS: ELEVATED INTRACRANIAL PRESSURE (including pseudotumor cerebri), SEIZURES, headache, agitation, anxiety, confusion, depression, dizziness, drowsiness, hallucinations, insomnia, nightmares, paranoia, tremor. **CV:** TORSADE DE POINTES, QT interval prolongation. **GI:** HEPATOTOXICITY, PSEUDOMEMBRANOUS COLITIS, diarrhea, nausea, abdominal pain. **GU:** vaginitis. **Derm:** DRUG RASH WITH EOSINOPHILIA AND SYSTEMIC SYMPTOMS SYNDROME, STEVENS-JOHNSON SYNDROME, photosensitivity, rash. **Endo:** hyperglycemia, hypoglycemia. **MS:** muscle spasm, tendinitis, tendon rupture. **Neuro:** peripheral neuropathy. **Misc:** hypersensitivity reactions including ANAPHYLAXIS.

Interactions

Drug-Drug: Concurrent use of amiodarone, **disopyramide**, **procainamide**, **quinidine**, **dofetilide**, or **sotalol** ↑ risk of torsade de pointes in susceptible individuals. ↑ serum **theophylline** levels and may lead to toxicity. Administration with **antacids**, **iron salts**, **bismuth subsalicylate**, **sucralfate**, and **zinc salts** ↓ absorption. May ↑ effects of **warfarin**. Serum levels may be ↓ by **antineoplastic agents**. **Cimetidine** may interfere with elimination. **Probenecid** ↓ renal elimination. May ↑ risk of nephrotoxicity from **cyclosporine**. Concurrent **corticosteroid** therapy may ↑ risk of tendon rupture. May ↑ effects of some **oral antidiabetic agents**.

Drug-Food: Absorption is ↓ by **concurrent enteral feeding** (because of metal cations). Absorption ↓ by **food** and/or **dairy products** (take 1 hr before or 2 hr after).

Route/Dosage

PO (Adults): *Urinary tract infections*—400 mg q 12 hr (for 3–21 days, depending on severity of infection). *Gonorrhea*—800 mg single dose. *Prostatitis*-400 mg q 12 hr (for 28 days).

Renal Impairment

PO (Adults): *CCr ≤30 mL/min* — 400 mg once daily.

NURSING IMPLICATIONS

Assessment

- Assess for infection (vital signs; appearance of wound, sputum, urine, and stool; WBC; urinalysis; frequency and urgency of urination; cloudy or foul-smelling urine) 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 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 norfloxacin if symptoms occur.
- ***Lab Test Considerations:*** **May cause ↑ serum AST, ALT, LDH, bilirubin, and alkaline phosphatase.**
- May also cause ↑ or ↓ serum glucose.
- Monitor prothrombin time closely in patients receiving norfloxacin and warfarin; may enhance the anticoagulant effects of warfarin.

Potential Nursing Diagnoses

Risk for infection (Indications)

Implementation

- **Do not confuse Noroxin with Neurontin (gabapentin).**
- **PO:** Administer on an empty stomach 1 hr before or 2 hr after meals, with a full glass of water. Products or foods containing calcium, magnesium, aluminum, iron, or zinc should not be ingested for 2 hr before and 2 hr after administration.

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.
- Advise patients to notify health care professional immediately if they are taking theophylline.
- 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 2 hr before or 2 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 norfloxacin.**
- Advise patient to stop taking norfloxacin and notify health care professional immediately if signs and symptoms of peripheral neuropathy occur.
- 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 that frequent mouth rinses, good oral hygiene, and sugarless gum or candy may minimize dry mouth.
- Instruct patients being treated for gonorrhea that partners also must be treated.
- Advise patient to report signs of superinfection (furry overgrowth on the tongue, vaginal itching or discharge, loose or foul-smelling stools).
- 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.

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- **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, signs of hypersensitivity, or tendon (shoulder, hand, Achilles, and other) pain, swelling, or inflammation occur. If tendon symptoms occur, avoid exercise and use of the affected area. Increased risk in >65 yrs 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?