

Fluoroquinolones Toxicities

Fluoroquinolones are a family of broad spectrum antibiotic drugs that commonly end with suffix floxacin like ciprofloxacin and moxifloxacin. These drugs are bactericidal and eradicate bacteria by interfering with DNA replication. Fluoroquinolones inhibit topoisomerase II enzymes including bacterial DNA gyrase. These enzymes cut both strands of the DNA helix in order to unwind DNA tangles and supercoils which is necessary for proper DNA replication. These drugs are broad spectrum antibiotics that play an important role in the treatment of serious bacterial infections, especially against gram negative rod infections. Fluoroquinolones, especially ciprofloxacin, is commonly used in the treatment of urinary tract infections and also used in the treatment of *Pseudomonas* and *Neisseria* infections. Products containing multivalent cations, like aluminum or magnesium containing antacids, result in drastic reduction of oral absorption and should not be taken together. In general, adverse effects to fluoroquinolones are generally mild to moderate and include diarrhea, skin rashes, and headaches. On occasion, more serious adverse effects can occur. Fluoroquinolones can damage cartilage and ligaments and can cause spontaneous tendon rupture. They are also associated with fibromyalgia like symptoms including leg cramps and myalgias in children. Because they can damage cartilage and ligaments, they are not recommended for use in pregnant women or children and are considered a teratogen.



PLAY PICMONIC

Diarrhea

Toilet

GI disturbances are the most common side effect of fluoroquinolones and include nausea, vomiting, diarrhea, and abdominal pain. These adverse effects occur in about 2-20% of individuals taking fluoroquinolones.

Skin Rash

Dermatologist Examining Rash

A wide range of skin rashes have been reported with fluoroquinolone use including photosensitivity reactions to life threatening reactions like Stevens Johnson syndrome.

Headache

Head-egg Lump

CNS side effects have been reported with fluoroquinolone use including headache and a wide range of adverse psychiatric effects including anxiety, panic attacks, and depression.

Tendon Rupture in Adults

Achilles tendon rupture

A rare but serious adverse reaction with fluoroquinolones is spontaneous tendon rupture in adults. The Achilles tendon is the most common tendon affected and individuals taking concurrent corticosteroid therapy are at highest risk.

Myalgias in Kids

Child with Mayo-algae

Fluoroquinolones can cause fibromyalgia-like symptoms, especially in children. Common complaints include arthralgia, myalgia and leg cramps for all drugs within the class.

Damage to Cartilage

Cartilage-cart

Fluoroquinolones can damage cartilage and ligaments and therefore are not recommended for use in pregnant women or children.

Teratogen

Tarantula-gem

Teratogens are agents that cause a defect or malformation in the development of the embryo or fetus. Fluoroquinolones are considered teratogens because they can damage cartilage and ligaments. Therefore, they are not recommended for use in pregnant women or children.

QT Prolongation

QT-heart Prolonged

Fluoroquinolones prolong the heart's QT interval by blocking voltage-gated potassium channels. Prolongation of the QT interval can lead to torsades de pointes, a life-threatening arrhythmia, but in practice this appears relatively uncommon in part because the most widely prescribed fluoroquinolones (ciprofloxacin and levofloxacin) only minimally prolong the QT interval.