3.10: Fluoroquinolones

**Indications:** Fluoroquinolones may be used to treat pneumonia or complicated skin or urinary tract infections.

**Mechanism of Action:** Fluoroquinolones are a synthetic antibacterial medication that work by inhibiting the bacterial DNA replication. They are bacteriocidal due to the action they take against the DNA of the bacterial cell wall. Many fluoroquinolones are broad spectrum and effective against a wide variety of both gram-positive and gram-negative bacteria.

**Specific Administration Considerations:** Patients taking oral fluoroquinolones should avoid the use of antacid medication as antacids significantly impede absorption. Patients should also be instructed to take oral fluoroquinolones with a full glass of water two hours before or after meals to enhance absorption and prevent crystalluria. Fluoroquinolone therapy is contraindicated in children except for complicated UTIs, pyelonephritis, plague, or post Anthrax exposure and should be used cautiously in pregnancy.[1]

**Black Box Warning:** Black Box Warnings are the strongest warnings issued by the Federal Drug Association (FDA) and signify that the medical studies have indicated that the drug carries a significant risk of serious or life-threatening adverse effects.

Fluoroquinolones, including levofloxacin, have been associated with disabling and potentially irreversible serious adverse reactions, including:

- Tendinitis and tendon rupture
- Peripheral neuropathy
- Central nervous system effects
- Exacerbation of muscle weakness in patients with myasthenia gravis
In patients who experience any of these serious adverse reactions, discontinue the medication immediately, and avoid the use of fluoroquinolones.

**Patient Teaching & Education:** All patients on fluoroquinolone therapy should be instructed to avoid direct and indirect sunlight due to the photosensitivity that can be experienced while on these medications. The patient should take measures to ensure that dosages are spaced evenly throughout the day and that fluid balance is maintained. It is important to maintain an intake of 1500mL-2000mL per day while taking the medication. The patient should be advised that medications containing calcium, aluminum, iron, or zinc may impair absorption and should be avoided. Other side effects of fluoroquinolones increase drowsiness. Additionally, the patient should be cautioned to monitor for episodes of fainting or decreased heart rate and report any history of prolonged QT syndrome. If a patient notices peripheral neuropathy occurring, this should be reported to the healthcare provider. Additional side effects to monitor include increased tendon pain, jaundice, rash, or mood changes. 

Now let's take a closer look at the medication grid for levofloxacin in Table 3.10. 

<table>
<thead>
<tr>
<th>Class/Subclass</th>
<th>Prototype/Generic</th>
<th>Administration Considerations</th>
<th>Therapeutic Effects</th>
<th>Side/Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluoroquinolones</td>
<td>levofloxacin</td>
<td>Check for allergies</td>
<td>Monitor for systemic signs of infection:</td>
<td>Discontinue immediately if tendonitis, tendon rupture, peripheral neuropathy, CNS effects, or muscle weakness in patients with Myasthenia Gravis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Give with plenty of fluids</td>
<td>-WBCs</td>
<td>Monitor for:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oral: Administer 2 hours before or after meals, antacid, or iron</td>
<td>-Fever</td>
<td>-GI upset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IV: Infuse 500 mg or less over 60 minutes and doses of 750 mg over 90 minutes</td>
<td>Monitor actual site of infection</td>
<td>-Hypersensitivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dosage adjustment if renal or hepatic impairment</td>
<td>Monitor culture results, if obtained</td>
<td>-Photosensitivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use cautiously if history of seizures</td>
<td></td>
<td>-Hypoglycemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-C-diff</td>
</tr>
</tbody>
</table>

https://med.libretexts.org/Bookshelves/Nursing/Nursing_Pharmacology_(OpenRN)/03%3A_Antimicrobials/3.10%3A_Fluoroqu…

Updated: Sun, 18 Sep 2022 20:12:13 GMT
Powered by
Critical Thinking Activity 3.10a

Utilizing the above grid information, consider the following clinical scenario question:

A nurse is administering levofloxacin to a patient diagnosed with pneumonia. The patient reports that he has pain “above his heel” today. The nurse assesses and discovers the pain is over the Achilles tendon. What is the nurse’s next best response?

Note: Answers to the Critical Thinking activities can be found in the “Answer Key” sections at the end of the book.

1. This work is a derivative of Microbiology by OpenStax licensed under CC BY 4.0. Access for free at https://openstax.org/books/microbiology/pages/1-introduction.