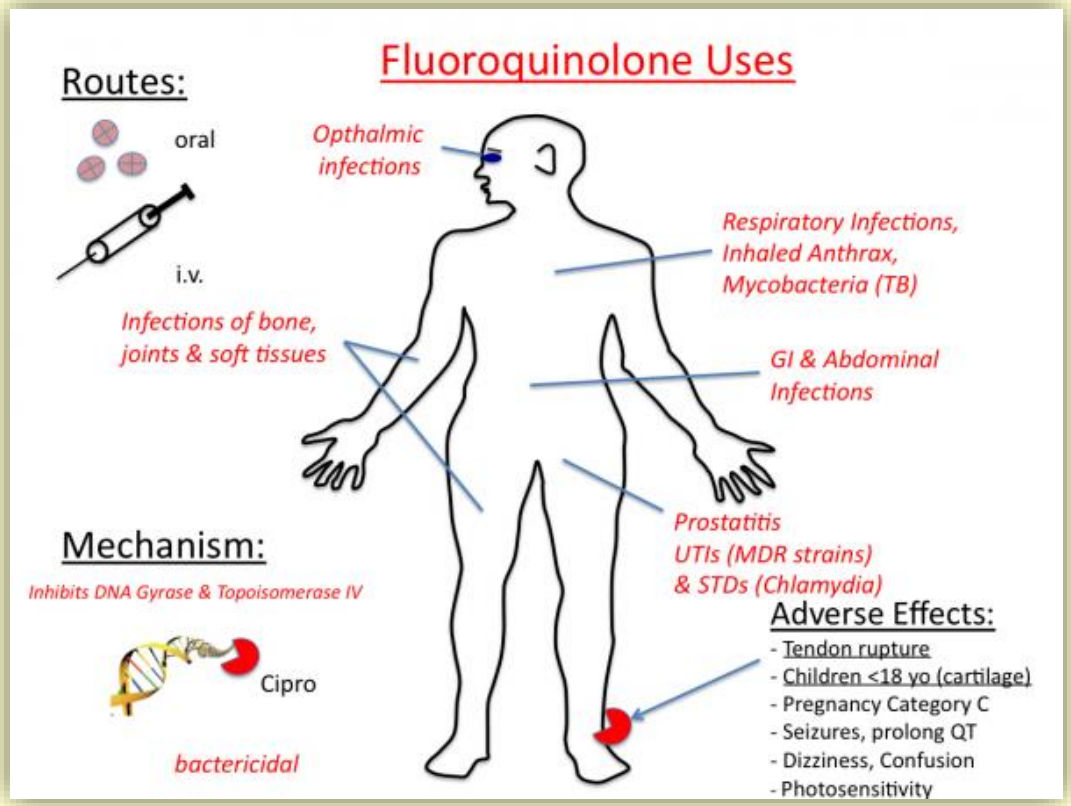
Chapter 9
Antibacterial Drugs That Interfere With DNA/RNA Synthesis

Fluoroquinolones

- Ciprofloxacin (Cipro)
- Gemifloxacin (Factive)
- Levofloxacin (Levaquin)
- Moxifloxacin (Avelox)
- Ofloxacin (Floxin)



Fluoroquinolones: Actions

- Bactericidal effect:
  - Interfere with the synthesis of bacterial DNA
    - Prevents cell reproduction, leading to death of the bacteria

Fluoroquinolones: Uses

- Used to treat infections caused by gram-positive and gram-negative microorganisms
- Used for the treatment of:
  - Lower respiratory infections
  - Bone and joint infections
  - Urinary tract infections and infections of the skin
  - Sexually transmitted diseases

Fluoroquinolones: Adverse Reactions

- Common adverse effects:
  - Nausea; diarrhea; headache; abdominal pain or discomfort; dizziness
- Serious adverse effects:
  - Photosensitivity and hypersensitivity
  - Bacterial or fungal
  - Pseudomembranous colitis-superinfections-if client develops abdominal cramping, diarrhea, and fever-hold medication and notify PCP;may start on fidaxomicin (Dificid)

Fluoroquinolones: Contraindications and Precautions

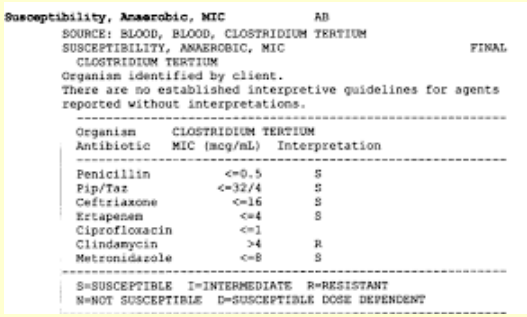
- Contraindicated:
  - In patients with a history of hypersensitivity; in children younger than 18 years; during pregnancy; in patients who cannot follow precautions regarding photosensitivity
- Used cautiously in:
  - Patients with diabetes; renal impairment; patients with history of seizures; geriatric patients; patients on dialysis

Fluoroquinolones: Interactions

Interactant drug	Effect of interaction
Theophylline	Increased serum level
Cimetidine (Tagamet)	Hampers elimination of antibiotic
Oral anticoagulants	Increased risk of bleeding
Antacids, iron salts, or zinc (should space drugs by at least 2 hr)	Decreased antibiotic absorption
NSAIDs like ibuprofen	Risk of seizure

Nursing Process: Assessment #1

- Preadministration assessment:
  - Take and record vital signs and identify symptoms and history of drug allergies
  - assess the IV site prior to starting infusion
  - Primary health care provider may order:
    - Culture and sensitivity: to be done before first dose of the drug is given
    - Renal and hepatic function tests; CBC; urinalysis



Susceptibility, Anaerobic, MIC AB

SOURCE: BLOOD, BLOOD, CLOSTRIDIUM TERTIUM
SUSCEPTIBILITY, ANAEROBIC, MIC FINAL
CLOSTRIDIUM TERTIUM
Organism identified by client.
There are no established interpretive guidelines for agents reported without interpretations.

Organism / Antibiotic	CLOSTRIDIUM TERTIUM MIC (mcg/mL)	Interpretation
Penicillin	<=0.5	S
Pip/Taz	<=32/4	S
Ceftriaxone	<=16	S
Ertapenem	<=4	S
Ciprofloxacin	<=1	
Clindamycin	>4	R
Metronidazole	<=8	S

S=SUSCEPTIBLE I=INTERMEDIATE R=RESISTANT
N=NOT SUSCEPTIBLE D=SUSCEPTIBLE DOSE DEPENDENT

Nursing Process: Assessment #2

- Ongoing assessment:
  - Monitor patient's vital signs and for any adverse reactions during the first 48 hours; assess the IV site prior to starting infusion
    - Notify the primary health care provider of any adverse reaction before the next dose of the drug is due

Nursing Process: Nursing Diagnosis

- **Risk for Impaired Comfort** related to fever
- **Risk for Impaired Skin Integrity** related to photosensitivity
- **Acute Pain** related to tissue injury during drug therapy
- **Diarrhea** related to superinfection secondary to antibiotic therapy adverse drug reaction

Nursing Process: Planning

- The expected outcome includes an optimal response to therapy based on the reason for administration of the anti-infective:
  - Management of adverse drug reactions
  - Decrease in anxiety
  - Understanding of and compliance with the prescribed treatment regimen

Nursing Process: Implementation #1

- Promoting an optimal response therapy:
  - Observe patients for adverse reactions: Notify primary health care provider
  - Intramuscular administration: monitor, record, and develop a plan for rotating injection sites
  - Intravenous administration: monitor needle site; check rate of infusion; inspect the vein
  - Oral meds that are extended-release or sustained release need to be taken whole

Nursing Process: Implementation #2

- Monitoring and managing patient needs:
  - Diarrhea
    - Check and record the color and consistency of each stool
  - Acute pain at injection site
    - Inform the patient about discomfort
    - Use proper flush solution

Nursing Process: Implementation #3

- Educating the patient and family:
  - Explain the importance of taking the drug at prescribed time intervals and as directed-for example-Norfloxacin is given on an empty stomach
  - Advise about the importance of completing the entire course of treatment
  - Explain the necessity of contacting the primary health care provider immediately if symptoms occur

Nursing Process: Implementation #4

- Monitoring and managing patient needs:
  - Acute pain: tissue injury
    - Inspect every 15 min should assess needle site, rate of infusion, and vein for signs of tenderness, pain, and redness

Nursing Process: Implementation #4

- Monitoring and managing patient needs:

NURSING ALERT

- **There is a risk with all fluoroquinolone drugs of causing pain, inflammation, or rupture of a tendon. The Achilles tendon is particularly vulnerable. Those 60 years and older who take corticosteroids are at greatest risk for tendon rupture.**

Nursing Process: Implementation #5

- Monitoring and managing patient needs (cont.)
  - Diarrhea
    - Check the patient's stools and report any incidence of diarrhea or the presence of blood and mucus immediately-possible superinfection happens because of body being rid of all bacteria including normal

Nursing Process: Implementation #6

- Educating the patient and family:
  - Explain the adverse reactions of specific prescribed antibiotics
  - Advise about the signs and symptoms of potentially serious adverse effects

Nursing Process: Implementation #7

- Educating the patient and family (cont.)
  - Explain the necessity of contacting the primary health care provider immediately if symptoms occur
  - Develop a teaching plan to include the information that appears in the Home Care Checklist

Nursing Process: Evaluation #1

- The therapeutic effect is achieved; infection is controlled; bowel is cleansed sufficiently if surgery is to occur
- Fluid intake and output is appropriate

Nursing Process: Evaluation #2

- Adverse reactions are identified, reported, and managed
- Patient and family demonstrate understanding of the drug regimen
- Patient verbalizes the importance of complying with the prescribed therapeutic regimen