

Fluoroquinolones: Not a First Line Choice

BOTTOM LINE: Fluoroquinolones are associated with rare but **persistent** and **disabling** adverse effects.

- Avoid the use of fluoroquinolones (FQ) in the treatment of uncomplicated urinary tract infections, acute bronchitis, and acute sinusitis, as the risks (adverse effects, resistance) outweigh the benefits.
- Always discuss the risks and benefits with the patient before prescribing.

Fluoroquinolone Fast Facts

Fluoroquinolones are broad spectrum antibacterial agents that are used alone or in combination to treat respiratory, abdominal, and urinary tract infections (UTI).

They are among the top five prescribed antibiotics dispensed in Alberta.¹

They have excellent oral bioavailability. IV formulations should only be used when the oral route is not feasible.

AHS formulary status:

http://webappsint.albertahealthservices.ca/Pharmacy/AHS_FORMULARY/search_formulary.aspx

- Ciprofloxacin – formulary with guidelines
- Levofloxacin – formulary with guidelines +/- therapeutic interchange (TI)
- Moxifloxacin – non-formulary with guidelines and TI to levofloxacin +/- metronidazole

A New Appreciation of FQ Risks

Health Canada and the FDA have released **safety reviews** on fluoroquinolones.²⁻⁴

- Rare but persistent and disabling side effects linked to fluoroquinolones include: tendonitis, peripheral neuropathy, and central nervous system (CNS) effects.
- Fluoroquinolones are associated with a two to threefold increased risk of tendon rupture and aortic aneurysm.^{5,6}

Major Adverse Effects

Musculoskeletal: tendonitis and tendon rupture

- Increased risk if: greater than 60 years old, steroid use, transplant recipients
- Most frequently associated with Achilles tendon

Peripheral neuropathy

- Onset may be rapid, within a few days

CNS effects: depression, anxiety, dizziness, confusion

- Can exacerbate muscle weakness in myasthenia gravis

QTc prolongation and torsade de pointes

- Risk greatest with moxifloxacin, then levofloxacin, then ciprofloxacin

Clostridium difficile infection

Spectrum of Activity*	Ciprofloxacin	Levofloxacin	Moxifloxacin
Gram Negatives	✓	✓	✓
• <i>Pseudomonas aeruginosa</i>	✓		
Gram Positives	minimal	✓ These two are termed 'respiratory fluoroquinolones' for their enhanced <i>Streptococcus pneumoniae</i> coverage	
Atypicals	✓	✓	✓
Anaerobes			✓
Mycobacterium spp			✓

*These are general patterns of activity; always follow susceptibility data.

Susceptibility Rates - Alberta

Ciprofloxacin

- *E. coli*: 52-77%
- *Pseudomonas aeruginosa*: 84-86%

Levofloxacin

- *S. pneumoniae*: 99-100%

For more antibiogram information, visit:

<https://www.albertahealthservices.ca/lab/Page3294.aspx>

Optimizing Use of Fluoroquinolones

Do not use for empiric treatment of: uncomplicated UTI, acute bronchitis, acute sinusitis. The latter two conditions are mainly viral and do not require antibiotic therapy.

Weigh the risks and benefits. Avoid use of FQs if there is an equivalent alternative.

Discuss with your patient the adverse effects associated with FQ use. If a patient develops signs and symptoms of an adverse effect, stop the drug immediately.

Should a fluoroquinolone be used?

41 year old (yo) female presents with dysuria, frequency, and hematuria. She is otherwise well, with no fevers or flank pain.

- This is an *uncomplicated UTI*. A first line drug such as nitrofurantoin should be used (if renal function normal and pyelonephritis is not suspected). Always guide treatment by culture and susceptibility results.

60 yo female presents with dysuria, frequency, and hematuria. She complains of fevers and worsening flank pain.

- This is most likely pyelonephritis. Empiric use of fluoroquinolones is not recommended given the rising rates of antibiotic resistance in the most likely pathogens. If culture results confirm a fluoroquinolone *susceptible organism*, a fluoroquinolone may be an appropriate option.

60 yo female with moderate COPD presents with increased cough, sputum, and shortness of breath. She has not had an exacerbation nor recent antibiotic use.

- This is a *simple COPD exacerbation*. First line drugs include amoxicillin, doxycycline, or trimethoprim-sulfamethoxazole.

60 yo female with severe COPD presents with increased cough, sputum, and shortness of breath. This is her 4th exacerbation this year. She uses home oxygen.

- This is a *complicated COPD exacerbation*. Levofloxacin may be appropriate in patients who have an allergy to, or have failed, first line choices which include amoxicillin-clavulanate or cefuroxime axetil.

References:

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