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PREAMBLE

Over the last 5 years, AHS has done work to increase awareness around the safety risks of fluoroquinolone use and overuse leading to increasing rates of resistance. The long-term care (LTC) population is potentially at higher risk of negative outcomes with these agents, and the benefits of treatment with a fluoroquinolone may not outweigh these risks.

Health Canada Safety Reviews

- Rare and potentially persistent and/or disabling adverse reactions, specifically tendonitis/tendinopathy, peripheral neuropathy, and central nervous system disorders[1].
- Health Canada could not rule out a link between the use of fluoroquinolones and the occurrence of retinal detachment[2].

Serious Warnings and Precautions of Fluoroquinolones (CPhA Monograph)[3]

- Severe, and in some cases persistent, peripheral neuropathy, tendinitis with tendon rupture, and neuropsychiatric effects including depression, psychosis and suicidality have been reported.
- Serious anaphylactic and other hypersensitivity reactions are possible.
- Seizures have been reported with quinolone therapy. Fluoroquinolones should be used with caution in patients with CNS disorders, which may predispose to seizures or lower the seizure threshold. Intravenous doses of fluoroquinolones should be given by slow infusion over 60 minutes to avoid causing seizures or other adverse effects such as hypotension.
- Prolongation of the QTc interval has been demonstrated with systemic use.
- Liver failure has been reported, including fatal cases, with systemic use.
- Exacerbations of muscle weakness and breathing difficulty have occurred with systemic fluoroquinolone use in patients with myasthenia gravis. Avoid use in patients with a known history of myasthenia gravis.
- Case reports of retinal detachment 8–365 days after completion of oral fluoroquinolone therapy have been published. If visual difficulties are reported by a patient who is currently or has previously taken fluoroquinolones, it is recommended that they urgently seek medical attention as this is considered a medical emergency.

In addition, adverse drug reactions are of concern for the LTC population

- *Clostridioides difficile* infection (CDI)[3]
- Glycemic excursions (hyperglycemia & hypoglycemia)[3]
- Tendinopathy and other neuromuscular reactions[3]

To support AHS antimicrobial stewardship and safety initiatives, fluoroquinolone use in LTC should be limited or avoided as a first-line antimicrobial choice for common bacterial infections. Use should be

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focused on culture and susceptibility (C&S) confirmed infections or highly suspected susceptible infections where the benefit of treatment outweighs the safety and resistance risks.

PROTOCOL

1. Fluoroquinolone funding is restricted to the following clinical situations:

a) For a suspected specific organism (e.g. pseudomonas) or specific indication as directed in Bugs & Drugs[4], latest edition or Firstline Clinical Decisions - AHS version 5, ***and*** when other antimicrobials of choice are contraindicated or not suitable (e.g. recent use, true allergy[8]),

OR

b) For culture-directed therapy, as indicated by a culture and susceptibility (C&S) report, ***and*** when other antimicrobials of choice are contraindicated or unsuitable.

2. The duration of therapy is 3 to 7 days[4,5,8]. For longer courses of treatment or prophylaxis use, authorization is required through the non-formulary process.

3. When selected as empiric therapy, antimicrobial stewardship best practice recommends that after 2-3 days of therapy, the following should be reassessed:

a) Review the initial diagnosis and response to treatment,
b) Review microbiology results (when available),
c) Review antimicrobial use, choice, and duration,
d) Tailor antimicrobial: stop or change therapy if indicated.

PROCESS

The pharmacist's documentation should include alignment of the treatment plan (route, dose, frequency, duration) to indication, guidelines (Bugs & Drugs or Firstline), and C&S review as available.

Note: Microbiology lab reports for urinary isolates of E. coli, P. Mirabilis, and Klebsiella spp. (excluding K. aerogenes) will not routinely report ciprofloxacin if other agents also test as susceptible. It will include the following statement, "*Ciprofloxacin is not routinely reported, given the potential for significant adverse events and increasing antimicrobial resistance."* If the urinary isolate is resistant to ciprofloxacin, this result will still be reported.

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REFERENCES AND RESOURCES

1. Summary Safety Review - Fluoroquinolones - Assessing the potential risk of persistent and disabling side effects - Canada.ca

2. Summary Safety Review - Oral FLUOROQUINOLONES - Assessing the Potential Risk of Retinal Detachment - Canada.ca

3. E-Therapeutics. Canadian Pharmacists Association. Fluoroquinolones CPhA Monograph. Date of Revision: March 1, 2018. (Accessed July 25, 2023)

4. Bugs & Drugs (2023). 2.0 Edition. Alberta Health Services https://www.bugsanddrugs.org

5. Firstline Clinical Decisions App – Alberta Health Services version (2023). Spectrum Mobile Health Inc. Version 4.0.9 (Jan 19, 2023). Firstline - Clinical Decisions

6. Fluoroquinolones: not a first-line choice. Antimicrobial Stewardship Backgrounder - Issue 16, Nov 2018 (albertahealthservices.ca)

7. Avoid Fluoroquinolones as First-line Therapy. Antimicrobial Stewardship Backgrounder - Issue 22, Apr 2022 (albertahealthservices.ca)

8. Short Course Antimicrobial Therapy in Adults. Antimicrobial Stewardship Backgrounder- Issue 25, Jan2023 (albertahealthservices.ca)

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10. Antibiograms - Alberta Antibiograms | Alberta Precision Laboratories (albertaprecisionlabs.ca)

11. Crawley A, Regier L, LeBras M. Antibiotics Oral & IV Antibiotics: Overview. July 2023. Available from www.rxfiles.ca.