

Fluoroquinolone antimicrobial drugs

Tiffany Chan MD, Paul E. Bunce MA MD

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1 Fluoroquinolones are antimicrobial drugs with broad-spectrum activity

Fluoroquinolones are bactericidal agents that inhibit DNA synthesis in bacteria. Early fluoroquinolones (e.g., ciprofloxacin) primarily target gram-negative bacteria, including *Pseudomonas* species. Newer agents (e.g., levofloxacin and moxifloxacin) have expanded coverage against gram-positive bacteria (e.g., *Staphylococcus* and *Streptococcus* species), *Mycobacterium* species and some anaerobes, but have reduced activity against *Pseudomonas* species.¹

2 Empirical use of fluoroquinolones for many community-acquired infections is not recommended

In 2016, the United States Food and Drug Administration advised that the adverse effects of fluoroquinolones outweighed their benefits for the treatment of acute sinusitis and bronchitis, and uncomplicated urinary tract infections.² If fluoroquinolones are used empirically, they should be changed to a narrower-spectrum agent after results for susceptibility testing are available.²

3 Fluoroquinolone use is associated with development of antimicrobial resistance and therapeutic failure

Resistance to fluoroquinolones is found in up to 34% of infections due to *Neisseria gonorrhoeae* in Canada³ and in 11% of urinary infections due to *Escherichia coli* in North America.⁴ Resistance in isolates of *Streptococcus pneumoniae* remains low (i.e., about 1.2% in Canada).³ Awareness of local resistance patterns is essential because of the variability in rates across regions.

4 Fluoroquinolones should be prescribed on an individual basis

Fluoroquinolones should be prescribed only for patients requiring broad spectrum antibiotics who have severe β -lactam allergies (e.g., anaphylaxis) or require treatment of organisms resistant to first-line agents. Fluoroquinolones offer a convenient and cost-effective option in patients with deep-seated infections (e.g., osteomyelitis and prostatitis) because of their once- or twice-daily dosing and greater than 90% oral bioavailability.¹ Consultation with an infectious disease specialist should be considered when prescribing fluoroquinolones for such complicated infections.

5 Fluoroquinolones may have serious adverse effects

Severe adverse effects include gastrointestinal complaints (common, up to 10% of cases), QT prolongation that may cause malignant arrhythmias, tendinopathy, diarrhea associated with *Clostridium difficile* (uncommon, up to 5% of cases), dysglycemia, neuropathy and retinal detachment (uncommon, up to 1% of cases).^{1,5} Fluoroquinolones should not be given in conjunction with calcium supplements, which decrease their bioavailability, or with other QT-prolonging agents.¹

References

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Affiliations: Department of Medicine (Chan, Bunce), University of Toronto; Division of Infectious Diseases (Bunce), University Health Network, Toronto, Ont.

Correspondence to: Paul Bunce, Paul.Bunce@uhn.ca

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