

Safe prescribing of fluoroquinolones Position Statement

Recommendations

- 1) Only prescribe systemic (by mouth, injection, or inhalation) fluoroquinolones **in line with Trust or [NICE/PHE Antimicrobial Guidance](#) or as guided by an Infection Specialist.**
- 2) Where a patient has a documented penicillin allergy take a **full allergy history** to differentiate between *intolerance* and allergy. Penicillins are typically first-line treatment due to excellent efficacy and safety profiles therefore only use **alternative/second-line treatment** in those **with true penicillin allergy.**
- 3) **Do not use** fluoroquinolones in patients with known **aortic aneurysm, aortic dissection or history of serious side effects related to quinolone treatment** (including tendon disease/disorder) unless there are no other treatment options available
- 4) Fluoroquinolones are **cautioned** in the following high risk groups and every effort should be made to **minimise the course length:**
 - Elderly (≥ 60 years)
 - Individuals with renal impairment
 - Individuals who have had an solid organ transplantation
 - Individuals on concomitant corticosteroids
 - Risk factors for aneurysm:
 - o family history of aneurysm
 - o conditions predisposing for aortic aneurysm; Marfan syndrome, vascular Ehlers-Danlos syndrome, Takayasu arteritis, giant cell arteritis, Behçets disease and connective tissue disorders, hypertension, atherosclerosis
 - o men ≥ 65 years old
 - o current or previous smokers
 - o use of systemically administered VEGF pathway inhibitors.
- 5) Patients should be counselled to discontinue fluoroquinolone treatment and seek urgent medical attention at the **first sign** of:
 - Tendon pain or inflammation (particularly in shoulder or ankle)
 - Symptoms of neuropathy such as pain, burning, pins & needles, tingling, numbness or weakness
 - Sudden-onset of severe and constant abdominal, chest or back pain
- 6) Provide patients with information about risks associated with fluoroquinolones. Consider providing the MHRA 'Side effects of tendons, muscles, joints and nerves' FAQ to patients receiving new fluoroquinolone prescriptions ([link](#))
- 7) Signpost men ≥ 65 years to the national Abdominal Aortic Aneurysm screening programme (a painless ultrasound scan; people who have not been screened should contact the North London service on 0333 009 6971). Never delay antibiotics for active symptomatic bacterial infections.

1. Background

There are two patient safety alerts regarding the use of systemic (by mouth, injection, or inhalation) fluoroquinolone antibiotics recently issued by the MHRA:

- Very rare reports of long-lasting and disabling tendon, joint and nervous system side-effects ([link](#))
- Small increased risk of aortic aneurysm and dissection ([link](#))

Fluoroquinolones are active against Gram-negative and Gram-positive bacteria and therefore remain valuable in certain infections, particularly in patients with penicillin allergy or where alternative antibiotics are not suitable.

Fluoroquinolones licensed in the UK:

- Ciprofloxacin
- Levofloxacin
- Ofloxacin
- Moxifloxacin

2. Severe side effects

2.1. Joint and movement disorders

Including tendonitis, tendon rupture, arthralgia, pain in extremities, gait disturbance, neuropathies.

Tendon damage (especially to Achilles tendon but also other tendons) can occur within 48 hours of starting fluoroquinolone treatment but the damage may be delayed several months after stopping treatment.

Fluoroquinolone associated tendinopathy is a very rare side effect (<1/10,000) although this number may be higher in patients with risk factors for tendinopathy, such as those over 60 years of age, patients with renal impairment, solid organ transplant patients and individuals taking concomitant oral corticosteroids. The combination of fluoroquinolone antibiotics and corticosteroids should be avoided wherever possible, though there are certain circumstances where it may be unavoidable (such as the treatment of infected exacerbations of bronchiectasis).

2.2. Aortic Aneurysm and dissection

Epidemiological studies suggest an increased risk of aortic aneurysm and dissection with fluoroquinolone usage, particularly in older patients. Even amongst elderly patients, aortic aneurysm and dissection is a rare side effect (<1/1000).

Patients with a history of aortic aneurysm and/or aortic dissection are considered locally to be at particularly high risk; fluoroquinolones should therefore be avoided in this group unless there are no other treatment options available.

Patients with a greater risk of aortic aneurysm or dissection than the general population include those with a family history of aneurysm disease, elderly patients, other conditions (such as Marfan syndrome, vascular Ehlers-Danlos syndrome, Takayasu arteritis and connective tissue disorders, giant cell arteritis, Behcet's disease, hypertension^a and known atherosclerosis) and use of systemically administered VEGF pathway inhibitors. The use of fluoroquinolones in these patients should be based on a careful benefit-risk assessment and consideration of other available therapeutic options.

All patients prescribed a fluoroquinolone should be advised of the rare events of aortic aneurysm and dissection, and to seek immediate medical attention in case of sudden-onset severe abdominal, chest or back pain.

Men >65 years are eligible for the national abdominal aortic aneurysm (AAA) screening programme. Whilst appropriate treatment with a fluoroquinolone should not be delayed in this cohort, it is recommended that eligible individuals who have not been screened contact the North London

^a All patient with hypertension are known to be at greater risk of an abdominal aortic aneurysm (AAA); however, the risk is highest amongst those with untreated/uncontrolled hypertension.

Screening service directly on 0333 009 6971 to obtain an abdominal ultrasound in one of their 45 screening centres.

2.3. Other side effects

Gastro-intestinal including *Clostridium difficile* associated diarrhoea, QT-prolongation, transaminitis (note: MHRA alert for Moxifloxacin associated risk of life-threatening liver reactions [link](#)), depression, fatigue, memory impairment, sleep disorders, reduced seizure threshold, rhegmatogenous retinal detachment, hypoglycaemia (note: FDA alert for quinolone associated hypoglycaemia in elderly and those with diabetes taking oral or insulin therapy [link](#)) and impaired hearing, vision, taste and smell.

For further queries please contact an Infection specialist

Acknowledgement

This statement is based on a version written by Chelsea & Westminster Hospital NHS Foundation Trust. All necessary permissions have been obtained.

References

EMA. Disabling and potentially permanent side effects lead to suspension or restrictions of quinolone and fluoroquinolone antibiotics. March 2019 ([link](#))

EMA. Assessment report: Quinolone and fluoroquinolone medicinal products for systemic and inhalation use. October 2018 ([link](#))

MHRA. Systemic and inhaled fluoroquinolones: small increased risk of aortic aneurysm and dissection; advice for prescribing in high-risk patients. November 2019 ([link](#))

MHRA. Systemically administered VEGF pathway inhibitors: risks of aneurysm and artery dissection. July 2020 ([link](#))

Groups / Individuals who have overseen the development of this guidance:	NCL Microbiologists: Dr I Balakrishnan [RFL], Dr M Kelsey [WH], Prof P Wilson [UCLH] Vascular surgeon: Miss T Mastracci [RFL] NCL Antimicrobial Pharmacist Group
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