Trends In Use and Efficacy of Moxifloxacin for *Mycoplasma genitalium* Infection at Melbourne Sexual Health Centre, 2015 – 2024

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Background:
Moxifloxacin is the first-line agent for macrolide-resistant *M. genitalium*. Mutations in quinolone-resistance-determining-regions of the *M. genitalium* genome, particularly the *parC* gene, are increasing, jeopardising moxifloxacin's utility for this infection. In April 2024, Melbourne Sexual Health Centre (MSHC) introduced testing for the most common *ParC* mutation (S83I) and S83 wildtype in macrolide-resistant infections. This study reports trends in moxifloxacin use and efficacy over a ten-year period at MSHC.

Methods:
Clients diagnosed with urogenital or anorectal *M. genitalium* from January 2015 to December 2024 at MSHC who received moxifloxacin within 14 days of diagnosis were screened for inclusion. Only the first positive visit was included if a client re-attended within 365 days. Clients were asked to attend 14-90 days following regimen completion for a test-of-cure. Clients who returned, reported >50% adherence to moxifloxacin, and had no unprotected sex during treatment were eligible for the efficacy analysis.

Results:
5,673 *M. genitalium* infections were diagnosed during the study, representing 5,356 clients. 2,619/5,673 (46.17%, 95%CI: 44.86-47.47) infections received moxifloxacin. There was a significant rise in moxifloxacin use from 43/287 infections (14.98%, 95%CI: 11.06-19.65) in 2015 to 455/776 (58.63%, 95%CI: 55.08-62.13) in 2023 (P_{trend}*<0.001*). 1,888/2,619 (72.09%, 95%CI: 70.33-73.80) moxifloxacin infections were eligible for the efficacy analysis. Cure decreased significantly from 29/30 infections (96.67%, 95%CI: 82.78-99.92) in 2015 to 252/317 (79.50%, 95%CI: 74.63-83.80) in 2023 (P_{trend} *=0.026*). Introduction of *ParC* resistance-testing reduced moxifloxacin use from 455/776 (58.63%, 95%CI: 55.08-62.13) in 2023 to 426/857 (49.71%, 95%CI: 46.31-53.11) in 2024 (*P<0.001*), and increased cure from 52/317 (79.50%, 95%CI: 74.63-83.80) to 236/272 (86.76%, 95%CI: 82.15-90.56; *P=0.020*).

Conclusion:
Our data show significant declines in the efficacy of moxifloxacin over the past decade in Melbourne. The introduction of *ParC* resistance-testing has rapidly reduced its use and improved cure, suggesting this is a useful antimicrobial stewardship strategy.

Disclosure of Interest Statement:

The authors have no conflicts of interest to declare.

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