

Multi-drug resistant UTI

The incidence of urinary tract infections (UTIs) caused by organisms resistant to most first-line antibiotics is increasing. This fact sheet provides advice from the SA expert Advisory Group on Antimicrobial Resistance (SAAGAR) on treatment options for these infections.

For uncomplicated UTIs caused by multi-drug resistant organisms, oral treatment in the outpatient setting is more cost-effective than inpatient IV therapy. Oral treatment for resistant organisms should always be directed by susceptibility testing and include testing for trimethoprim/sulfamethoxazole, nitrofurantoin, norfloxacin and fosfomycin susceptibility. Increasingly nitrofurantoin or fosfomycin may be the only oral options available.

Nitrofurantoin

Nitrofurantoin is a **first-line empiric treatment** for uncomplicated urinary tract infections in adults. It is also a preferred treatment option for pregnant women.^{2,3}

Nitrofurantoin is active against the majority of *E.coli* isolates in Australia (98.9% in 2017).¹ If susceptible, consider nitrofurantoin as the **preferred antimicrobial agent for multi-drug resistant urinary tract infections** in adults and children over one month old.

A recently published randomised controlled trial found that a five-day course of nitrofurantoin was superior to single dose fosfomycin for treating uncomplicated UTI in women (clinical resolution at 28 days 70% with nitrofurantoin versus 58% with fosfomycin. Difference 12% [95%CI: 4-21%], p=0.004).⁶

Nitrofurantoin is less effective in renal impairment, however it may be used for 5–7 days in patients with multidrug resistant UTI whose eGFR is above 30mL/minute/1.73 m².⁴

Fosfomycin

Fosfomycin is a **last-line broad-spectrum antibiotic**, used for the treatment of urinary tract infections resistant to other antibiotics. Reserving fosfomycin for treatment of infections where no other option is available is important in preventing fosfomycin resistance from developing and spreading.¹

The usual dose for the treatment of **multi-drug resistant** uncomplicated urinary tract infection in adults is fosfomycin 3g as a single dose.³

Key stewardship messages:

- **If susceptible, consider nitrofurantoin before prescribing fosfomycin**
- **Do not use fosfomycin for infections susceptible to other agents. Fosfomycin should be reserved for UTIs caused by pathogens resistant to all first line antimicrobials.**
- **Do not use nitrofurantoin or fosfomycin for treatment of multi-drug resistant pyelonephritis due to insufficient evidence regarding tissue penetration into the kidney¹ - Seek expert advice.**

References

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6. Huttner A, Kowalczyk A, et al (2018). Effect of 5-day Nitrofurantoin vs single-dose fosfomycin on clinical resolution of uncomplicated lower urinary tract infection in women: A randomised controlled trial. *JAMA*; 319(17): 1781-9.

For more information

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