Management of Lower UTI in Chronic Kidney Disease (CKD)

When male and female are stated within this policy, it refers to sex assigned at birth

Urinary tract infection (UTI) is a common occurrence. The presence of CKD is significant when managing suspected UTI as it can affect section of appropriate antibiotic treatment and effective infection management is important to prevent further kidney injury. In the case of renal transplant patients seek advice from the renal service. This guidance applies to non-pregnant individuals who do not have an indwelling urinary catheter.

Patients with renal impairment are possibly more likely to have a resistant strain[1] so always send urine for culture when UTI is suspected and be guided by sensitivities in the first instance. However, where immediate treatment is required the following table gives guidance for empiric management of UTI where CKD exists. It may be necessary to contact microbiology to obtain the full range of sensitivities available.

CKD	1st Line	2nd Line (or as per sensitivities)
CKD 3a female	Trimethoprim* 200mg twice daily for 3 days	Pivmecillinam† 400mg three times daily for 3 days
CKD 3b female	Pivmecillinam† 400mg three times daily for 3 days	Trimethoprim* 200mg twice daily for 3 days
CKD 4/5 female	Pivmecillinam† 400mg three times daily for 3 days	Ciprofloxacin‡ 250mg bd for 3 days (but see cautions)
CKD 3a male	Trimethoprim* 200mg twice daily for 7 days	Pivmecillinam† 400mg three times daily for 7 days
CKD 3b male	Pivmecillinam† 400mg three times daily for 7 days	Ciprofloxacin‡ 500mg bd for 7 days (but see cautions)
CKD 4/5 male	Pivmecillinam† 400mg three times daily for 7 days	Ciprofloxacin‡ 250mg bd for 7 days (but see cautions)

Where prostatic involvement is known or suspected in males with UTI, a 7 day course of antibiotics is not considered appropriate and may need to be increased to 14 days. At least 50% of men with recurrent UTI and over 90% of men with febrile UTI have prostate involvement.[2] For more information around treating UTI in prostatitis click here.

Cautions

*Due to the risk of hyperkalaemia, trimethoprim should be avoided

- With co-prescription of **spironolactone**[3]
- With co-prescription of **ACEI or ARB**

It is unlikely that 3 days of trimethoprim for uncomplicated UTI in females with CKD 3a/b will cause significant problems, even with spironolactone or ACE / ARB, so may be considered as a treatment option.

†Pivmecillinam is being used in 'off label' regimes different from the manufacturers literature based on knowledge of required duration of antibiotic therapy in men and knowledge of resistance patterns[4].

‡ Ciprofloxacin is not usually an appropriate empiric choice for UTI due to the significantly increased risk of *Clostridium difficile* infection in renal impairment. However due to the limited options available when managing UTI in patients with CKD 4 and 5 (also 3b in men) it may be used with caution. The dose differs from that in the product literature and is based on the Renal Drug Database.

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[1] Public Health England

[2] Management of suspected bacterial urinary tract infection in adults. Scottish Intercollegiate Guideline Network Guideline No.88 July 2012.

[3] Antoniou et al. Trimethoprim-sulfamethoxazole induced hyperkalaemia in elderly patients receiving spironolactone: nested case-control study. *BMJ* 2011;343:d5228

[4] Søraas A, Sundsfjord A, Jørgensen SB, Liestøl K, Jenum PA. High rate of per oral mecillinam treatment failure in community-acquired urinary tract infections caused by ESBL-producing Escherichia coli. PLoS One. 2014 Jan 15;9(1):e85889. doi: 10.1371/journal.pone.0085889. eCollection 2014

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