SA Pathology State-wide Cumulative Antibiogram: Urine Isolates in General Practice (2021)

Organism	No. of isolates	Routinely reported antibiotics					
		Ampicillin/Amoxicillin	Amoxicillin-clavulanate	Cefalexin	Trimethoprim	Nitrofurantoin	Norfloxacin/Ciprofloxacin (Reserved antimicrobial)
		%S	%S	%S	%S	%S	%S
Escherichia coli	8537	64	93	94	81	100	
Enterococcus spp.	938	96				97	93
Klebsiella pneumoniae	556	0	97	96	85	86	
Proteus mirabilis	477	88	99	99	83	0	
Streptococcus agalactiae (Group B)	448	100		100		100	
Pseudomonas aeruginosa	379						92
Staphylococcus saprophyticus	293	90	93	93	96	100	
Klebsiella spp.	265	0	98	99	93	96	
Staphylococcus aureus	187	14	86	87	89	100	
Citrobacter koseri/amalonaticus complex	169	0	99	99	98	96	
Klebsiella oxytoca	164	0	95	95	91	98	
Morganella morganii	139	0	0	0	88	0	90
Enterobacter spp.	120	0	0	0	89	78	95

KEY

	<70% of isolates sensitive
	70-90% of isolates sensitive
	> 90% of isolates sensitive
	Not recommended to be used in children without specialist advice
	<50% of isolates tested, not clinically effective or intrinsically resistant

Government of South Australia
SA Health

INTERPRETATIVE COMMENTARY

NOTE: THIS INTERPRETATIVE COMMENTARY IS **NOT A CLINICAL GUIDELINE** – PLEASE REFER TO THE THERAPEUTIC GUIDELINES OR STATEWIDE UTI GUIDELINE FOR ADVICE ON ANTIBIOTIC CHOICE OR DURATION OF THERAPY

Asymptomatic bacteriuria

With the exception of pregnant women and patients undergoing urological procedures, screening for, and treating, asymptomatic bacteriuria is not recommended. Treatment of asymptomatic bacteriuria in healthy young women may increase the risk of future symptomatic UTI and antimicrobial resistance. Asymptomatic bacteriuria is common in older persons, however there is no evidence to support routine screening and treatment. Do not investigate or treat cloudy or malodourous urine in aged-care facility residents who do not have other signs or symptoms of UTI.

Organisms

E. coli is the predominant pathogen isolated from all urine samples received by SA Pathology® from South Australian General Practice in 2021. Other frequently isolated organisms include, *Klebsiella pneumoniae*, *Proteus mirabilis* and *Pseudomonas aeruginosa.*

Enterococcus spp. are the second most isolated organisms. However, *enterococci* are usually considered to be normal urogenital flora, therefore in most patients it will not be a significant pathogen. It may cause infection in certain patient groups, e.g., immunocompromised, long-term in-dwelling catheters, renal transplant patients. Ongoing use of antimicrobials, e.g., for asymptomatic bacteriuria, is associated with enterococcal UTIs. *Streptococcus agalactiae* (group B *Streptococcus*) will rarely cause acute uncomplicated cystitis in premenopausal women; specific treatment directed against this organism may not be required.

Notes on antibiotics

19% of *E. coli* urine isolates from adults in the general practice setting are resistant to trimethoprim. Despite the rates of *E. coli* resistance, trimethoprim continues to be recommended as a first-line option as empirical therapy for acute cystitis because it is safe and effective with few side effects and the risk of adverse outcomes from treatment failure is low. Much higher susceptibilities of *E. coli* urine isolates are observed for nitrofurantoin (100% susceptible) and cefalexin (94% susceptible). Renal function must be assessed if nitrofurantoin is considered; urinary concentrations may be inadequate, and the risk of side effects may be increased in renal impairment. Cefalexin has a broader spectrum of activity but may be used if trimethoprim and nitrofurantoin cannot be used.

Trimethoprim is no longer recommended as empirical therapy for non-severe pyelonephritis because it is a more serious infection than cystitis with a higher risk of adverse outcomes from treatment failure.

Amoxicillin-clavulanic acid is a first-line option for non-severe pyelonephritis; however, it has an unnecessarily broad spectrum of activity for empirical therapy of cystitis. The use of broad-spectrum antibiotics selects for antibiotic-resistant organisms and increases the risk of *Clostridium difficile* infection.

Oral fosfomycin, nitrofurantoin, or norfloxacin should not be used to treat pyelonephritis, as these drugs do not achieve adequate concentrations in kidney tissue.

Avoid use of norfloxacin or ciprofloxacin when other antibiotic choices are available as there is rising quinolone resistance in Gram negative bacteria. These antibiotics are the only oral antibiotics available to treat *Pseudomonas aeruginosa*.

Further Information

- Empirical Treatment of Bacterial Urinary Tract Infections (adult) Clinical Guideline
- SAAGAR position statement - Multi-drug resistant UTI
- SA Health – Antibiotic Allergies
- NCAS – Antibiotic Duration

References:

1. Therapeutic Guidelines: Antibiotics 2021, www.tg.org.au

Notes:

- Percentages are only shown when more than 50% of isolates were tested for each organism.
- Susceptibility testing method: EUCAST 2019 Clinical breakpoints.

Disclaimer

The antibiograms displayed on this page are intended to provide data on local antimicrobial susceptibilities. Consult clinical prescribing guidelines for advice on treatment of particular medical conditions.

Government of South Australia
SA Health