

ANTIMICROBIAL SUSCEPTIBILITY PATTERNS 2022

Microbiology Canterbury Health Laboratories Te Whatu Ora Waitaha Canterbury

GENERAL NOTES

- The antimicrobial agents selected for routine or first-line susceptibility testing are chosen because they have the narrowest spectrum that will treat and contain an infection.
- The data presented are from tests performed from January to December 2022. Results are for antimicrobial/organism combinations where more than 30 isolates were tested (95% confidence interval of $\pm 15\%$).
- Test methods are predominantly those recommended by EUCAST (www.eucast.org).
- Antimicrobial susceptibility test results are provided for Gram-positive (page 1) and Gram-negative (page 2) isolates.

Colour interpretation:

No data or not tested
≥ 90% susceptible
70 - 89% susceptible
< 70% susceptible, or intrinsically resistant (R)

GRAM-POSITIVE ISOLATES

Table 1: Antimicrobial susceptibility test results for Gram-positive isolates recovered from all sites (2022)

Organism Name	Number tested	Antibiotics in common use (1st line reporting)									Reserved (2nd line reporting)				Topical	
		Ampicillin/amoxicillin	Penicillin	Methicillin/flucoxacillin	Erythromycin	Clindamycin #	Gentamicin	Nitrofurantoin ^d	Trimethoprim ^d	Trimethoprim+sulfamethoxazole	Fusidic acid #	Tetracycline/doxycycline	Ciprofloxacin #	Vancomycin #	Chloramphenicol	Mupirocin (high-level)
<i>S. aureus</i> (not MRSA)	3511		22	100	88	90	98		98	99	94	98	96	100	99	99
MRSA	224		0	0	75	83	83			97	82	97	77	100	98	99
<i>S. epidermidis</i>	338		0	42	37	61			46	61	48	91	60	100		
<i>S. saprophyticus</i>	192	98		99					100	97				100		
<i>Enterococcus faecalis</i>	554	100							100			97		100		
<i>Enterococcus faecium</i>	102	18												100		
<i>Streptococcus pneumoniae</i>	197	97	100		89	95				70		89		100		
<i>Streptococcus</i> Grp A	44	100	100		84	84				100		65		100		

Notes:

* Tested on 10-30 isolates

^a *S. aureus* susceptibility to methicillin/flucoxacillin denotes susceptibility to cefazolin and amoxicillin-clavulanate

^b Enterococcus species are intrinsically resistant to cephalosporins

^c Includes Intermediate (Susceptible, Increased Exposure) results

^d Treatment of uncomplicated urinary tract infections only

Use requires patient-specific Infectious Diseases/Clinical Microbiology approval (document this in the clinical notes) unless following a Te Whatu Ora Waitaha Canterbury antimicrobial guideline e.g. 'The Pink Book'.

GRAM-NEGATIVE ISOLATES

Table 2: Antimicrobial susceptibility test results for Gram-negative isolates recovered from all sites (2022)

Organism Name	Antibiotics in common use (1st line reporting)									Reserved (2nd line reporting)							
	Number tested	Ampicillin/ amoxicillin	Amoxicillin+clavulanate	Cefuroxime IV	Cefalexin	Gentamicin	Nitrofurantoin ^d	Trimethoprim ^d	Trimethoprim+sulfamethoxazole	Tobramycin	Tetracycline	Ceftriaxone	Piperacillin+azobactam [§]	Cefepime [#]	Meropenem [#]	Fosfomycin [#]	Ciprofloxacin [#]
<i>Citrobacter freundii</i> complex	75	0	0	0	0	99		96	99			80	86	97	100		99
<i>Citrobacter koseri</i>	104	0	95	100	100	100		99	99			100	100	100	100		100
<i>Enterobacter cloacae</i> complex	207	0	0	0	0	98		90	92			77	92	95	100		96
<i>Escherichia coli</i>	4613	56	75	93	91	95	100	79	81			94	98	86	100	98	90
<i>Klebsiella aerogenes</i>	48	0	0	0	0	100		96	100			90	88	96	100		100
<i>Klebsiella oxytoca</i>	235	0	89	94	91	100		97	97			94	91	97	100		99
<i>Klebsiella pneumoniae</i>	495	0	86	91	91	96		84	88			91	94	93	100		90
<i>Morganella morganii</i>	76	0	0	0	0	93	0	71	92			99	97	100	100		95
<i>Proteus mirabilis</i>	240	90	98	99	97	92	0	85	88			99	100	99	100		98
<i>Serratia marcescens</i>	98	0	0	0	0	98	0	90	98			93	92	100	99		96
<i>Pseudomonas aeruginosa</i>	622	0	0	0	0		0	0	0	98			95	91	98		89
<i>Acinetobacter baumannii</i> complex	40	0	0	0	0	100	0	0	97						100		97
<i>Haemophilus influenzae</i>	528	68	86	72				75			99						99

Table 3: Antimicrobial susceptibility test results for Gram-negative isolates from urinary tract infections (2022)

Organism Name	Antibiotics in common use (1st line reporting)								Reserved (2nd line reporting)					
	Number tested	Ampicillin/amoxicillin	Amoxicillin+clavulanate	Cefalexin	Gentamicin	Nitrofurantoin ^d	Trimethoprim ^d	Trimethoprim+sulfamethoxazole	Ceftriaxone	Piperacillin+azobactam [§]	Cefepime [#]	Meropenem [#]	Fosfomycin [#]	Ciprofloxacin [#]
<i>Citrobacter freundii</i> complex	48	0	0	0	98		96	98	79	85	90	100		98
<i>Citrobacter koseri</i>	80	0	96	100	100		99	99	100	100	100	100		100
<i>Enterobacter cloacae</i> complex	106	0	0	0	100		90	92	75	76	94	100		99
<i>Escherichia coli</i>	4044	58	78	94	96	100	79	82	96	98	98	100	99	93
<i>Klebsiella aerogenes</i>	26	0	0	0	100		96	100	88	85	92	100		100
<i>Klebsiella oxytoca</i>	158	0	89	91	100		97	98	96	91	95	100		100
<i>Klebsiella pneumoniae</i>	357	0	88	91	97		85	90	94	95	95	100		93
<i>Morganella morganii</i>	42	0	0	0	90	0	71	86	100	95	100	100		90
<i>Proteus mirabilis</i>	72	90	99	97	94	0	85	88	99	100	99	100		98
<i>Serratia marcescens</i>	49	0	0	0	96	0	90	96	90	90	100	100		96

Notes:

* Tested on 10-30 isolates

^a *S. aureus* susceptible to methicillin/flucloxacillin denotes susceptibility to ceftazolin and amoxicillin-clavulanate

^b Enterococcus species are intrinsically resistant to cephalosporins

^c Includes Intermediate (Susceptible, Increased Exposure) results

^d Treatment of uncomplicated urinary tract infections only

[#] Use requires patient-specific Infectious Diseases/Clinical Microbiology approval (document this in the clinical notes) unless following a Te Whatu Ora Waitaha Canterbury antimicrobial guideline e.g. 'The Pink Book'.

[§] Use requires patient-specific Infectious Diseases/Clinical Microbiology/Respiratory Specialist approval (document this in the clinical notes) unless following a Te Whatu Ora Waitaha Canterbury antimicrobial guideline e.g. 'The Pink Book'.

Extended spectrum β-lactamase (ESBL) producers

- 5.7% (264/4613) of all *E. coli* and 9.9% (49/495) of all *K. pneumoniae* isolates were ESBL producers.