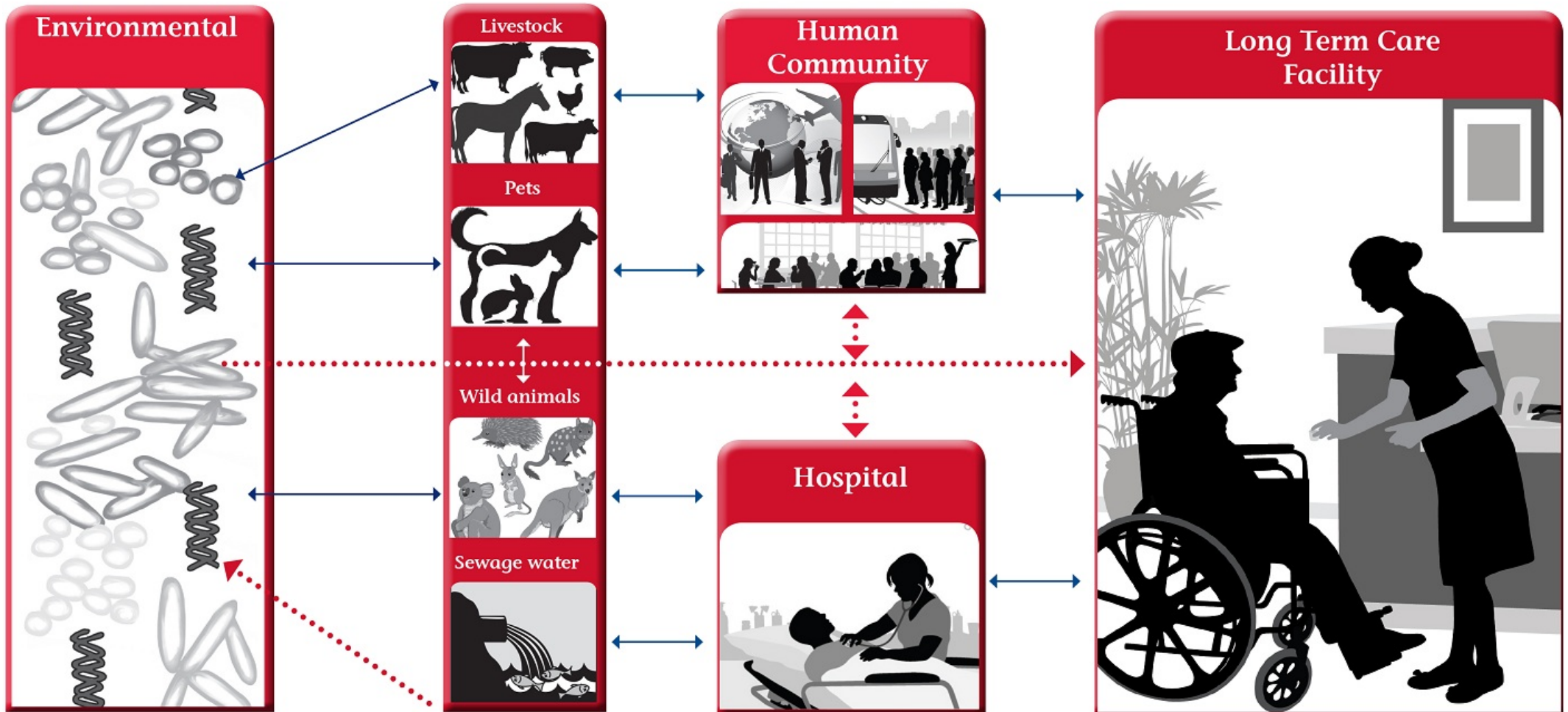


# Residential Aged Care Antibiogram Jan - Dec 2018



# Residential Aged Care Antibigram Jan - Dec 2018

Cumulative antibiograms specific for individual health care facilities can be a useful resource for local antimicrobial stewardship groups to inform empirical therapy recommendations and formulary management. The provision of yearly antibiograms by health care facilities is now required in the National Safety and Quality Health Service (NS&QHS) Standard 3 (3.14.3).<sup>1</sup>

This document contains the yearly cumulative antibiogram for your Residential Aged Care Facility (RACF). It is divided into three parts

1. Urinary Antibigram
2. Non Urinary Antibigram
3. Blood Culture Antibigram
  - Organisms are listed in descending order of frequency.
  - Organisms are colour coded according to whether they are Gram Positive or Gram Negative organisms.
  - Only the first isolate of a given species per patient per year per subtype (e.g urine, non urine, blood cultures) is included.
  - Screening isolates collected for infection control purposes have been removed.
  - Since 2012, susceptibility testing to produce these antibiograms is performed using EUCAST microbroth dilution and disc diffusion.<sup>2</sup>
  - Expert EUCAST rules in Antimicrobial Susceptibility testing have been applied.<sup>3</sup>
  - Where the total number of isolates tested is < 30, results are considered statistically invalid in accordance with CLSI M39-A4<sup>4</sup> and have therefore not been included.
  - Where only a subset (< 95%) of isolates from a particular organism group have been tested, reported susceptibilities are usually not indicative of the true susceptibility because of the selective nature of testing only more resistant isolates. These occasions are marked with an \* and susceptibility results should be interpreted with caution. The % susceptibility has not been colour coded.












## Signal resistances:

At the end of each antibiogram, signal resistances are summarised even if the organism occurs at a frequency too low (< 30) to appear in either the urinary, non-urinary or blood Culture antibiograms. These organisms include

- *Enterobacteriales* resistant to third or fourth generation cephalosporins due to the presence of Extended Spectrum Beta Lactamases (ESBLs)
- *Enterobacteriales* resistant to third or fourth generation cephalosporins due to the presence of Plasmid Mediated AMPC production (PAMPs)
- *Enterobacteriales* resistant to carbapenems due to the presence of a plasmid mediated carbapenamase (CPE)
- Non *Enterobacteriales* (e.g *Acinetobacter* spp; *Pseudomonas aeruginosa*) resistant to carbapenems due to the presence of a plasmid mediated carbapenamase (CPNE)
- Vancomycin resistant Enterococci (VRE)
- Methicillin resistant *Staphylococcus aureus* (MRSA)
- Vancomycin intermediate and vancomycin resistant *Staphylococcus aureus* (hVISA, VISA, VRSA)
- Penicillin intermediate and resistant *Streptococcus pneumoniae* noting that breakpoints differ according to clinical condition (meningitis, pneumonia, other) and mode of administration
- Penicillin intermediate and resistant viridans *Streptococci*

# Residential Aged Care Antibigram Jan - Dec 2018

Colour coding for all antibiograms tables is shown below.

	Gram Positive Organism		≥90% of isolates susceptible		≥90% of isolates susceptible (where sample size <95% of total isolates tested)
	Gram Negative Organism		70-89% of isolates susceptible		70-89% of isolates susceptible (where sample size <95% of total isolates tested)
	Antibiotic Not recommended to be used in children without specialist advice		<70% of isolates susceptible		<70% of isolates susceptible (where sample size <95% of total isolates tested)
	Restricted or 2nd Line Antibiotics	<b>R</b>	Intrinsic Resistance is present with this organism-antibiotic combination	*	Sample size <95% of the total isolates tested
	Restricted or 2nd Line Antibiotics and Antibiotic Not recommended to be used in children without specialist advice	<b>%</b>	Percentage of isolates sensitive to this particular antibiotic	<b>n</b>	Number of isolates tested with this antibiotic

## References:

1. <https://www.safetyandquality.gov.au/our-work/safety-in-e-health/>
2. [http://www.eucast.org/clinical\\_breakpoints/](http://www.eucast.org/clinical_breakpoints/)
3. [http://www.eucast.org/expert\\_rules\\_and\\_intrinsic\\_resistance/](http://www.eucast.org/expert_rules_and_intrinsic_resistance/)
4. Clinical and Laboratory Standards Institute (CLSI). Guideline for Analysis and Presentation of Cumulative Antimicrobial Susceptibility (M39-A4). 3rd ed. Pennsylvania: CLSI, 2014
5. [www.snp.com.au](http://www.snp.com.au)

# Residential Aged Care Antibioqram Jan - Dec 2018

Urine Antibioqram			All SNP Nursing Home																				
Organism Group	No. Organisms	%Total		Amoxicillin	Amoxicillin-clavulanate	Piperacillin-tazobactam	Cefalexin	Ceftriaxone	Ceftazidime	Meropenem	Gentamicin	Amikacin	Trimethoprim	Nitrofurantoin	Norfloxacin	Ciprofloxacin	Fusidic acid	Rifampicin	Gentamicin (High Level)	Fosfomycin	Quinupristin-dalfopristin	Vancomycin	
				<b>All isolates</b>	<b>5072</b>	<b>100</b>																	
Escherichia spp	2543	50.1	%	54	85	91	87	78		100	90	99	72	98	86					99			
			n	2541	2542	*1071	2542	*1072		*978	*1076	*979	2542	2541	2543						*228		
Enterococcus spp	566	11.2	%	93				R	R				R	94	84		R	12	75		39	79	
			n	565										563	565			*58	*61		*61	*61	
Klebsiella spp	564	11.1	%	R	94	86	94	92		100	96	99	87	85	93								
			n		564	*207	563	*208		*167	*208	*167	564	562	564								
Pseudomonas aeruginosa	366	7.2	%	R	R	93	R	R	95	94	96	95	R	R	96	94							
			n			365			366	*286	366	*286			*346	364							
Proteus mirabilis	311	6.1	%	87	96	99	97	97		100	99	100	72	R	100								
			n	311	311	*137	311	*137		*120	*138	*120	311		311								
Enterobacter cloacae complex	131	2.6	%	R	R	60	R	62		95	94	98	73	78	91								
			n			*113		*114		*99	*114	*99	131	131	131								
Staphylococcus aureus (ALL)	95	1.9	%	11	46								79	100	59		88	100				100	
			n	95	95								*90	95	91		*50	*50				*50	
Citrobacter koseri, amalonaticus group	78	1.5	%	R	96	96	94	85		100	96	100	96	95	100								
			n		78	*25	78	*26		*17	*26	*17	78	78	78								
β haemolytic Streptococci Group B	69	1.4	%	100									88	100	73								
			n	69									68	69	*52								
Citrobacter freundii complex	53	1.0	%	R	R	60	R	56		100	93	100	81	94	91								
			n			*43		*43		*39	*43	*40	53	53	53								

# Residential Aged Care Antibiogram Jan - Dec 2018

Urine Antibiogram			All SNP Nursing Home																					
Organism Group	No. Organisms	%Total		Amoxicillin	Amoxicillin-clavulanate	Piperacillin-tazobactam	Cefalexin	Ceftriaxone	Ceftazidime	Meropenem	Gentamicin	Amikacin	Trimethoprim	Nitrofurantoin	Norfloxacin	Ciprofloxacin	Fusidic acid	Rifampicin	Gentamicin (High Level)	Fosfomycin	Quinupristin-dalfopristin	Vancomycin		
				<b>All isolates</b>	<b>5072</b>	<b>100</b>																		
Morganella spp	51	1.0	%	R	R	98	R	90		100	96	100	75	R	90									
			n			50		50		*41	50	*41	51		51									
Klebsiella aerogenes	46	0.9	%	R	R	70	R	73		100	97	100	93	59	93									
			n			*37		*37		*32	*37	*32	46	46	46									
Coagulase negative Staphylococci	46	0.9	%	24	72				R				41	100	72									
			n	46	46									46	46	46								
Aerococcus spp	34	0.7	%	100									17	97	97									
			n	34										*30	34	33								

# Residential Aged Care Antibiogram Jan - Dec 2018

Signal Resistances: Where the tables below contain no data no multiresistant organisms have been detected.

Urine: Extended spectrum beta lactamase producing Enterobacterales (ESBL)			
Organism Group	Organism Name	No. Positive	% of Strain
Citrobacter freundii complex n = 53	Citrobacter freundii	2	3.8
Citrobacter koseri, amalonaticus group n = 78	Citrobacter koseri	2	2.6
Enterobacter cloacae complex n = 131	Enterobacter cloacae	5	3.8
Escherichia spp n = 2543	Escherichia coli	219	8.6
Klebsiella spp n = 564	Klebsiella oxytoca	1	0.2
	Klebsiella pneumoniae	13	2.3
Proteus spp other n = 16	Proteus vulgaris	1	6.3

Urine: Plasmid mediated AMPC producing Enterobacterales (PAMP)			
Organism Group	Organism Name	No. Positive	% of Strain
Escherichia spp n = 2543	Escherichia coli	97	3.8
Klebsiella spp n = 564	Klebsiella oxytoca	1	0.2
	Klebsiella pneumoniae	5	0.9
Proteus mirabilis n = 311	Proteus mirabilis	2	0.6

Urine: Plasmid mediated Carbapenemase producing Enterobacterales (CPE)			
Organism Group	Organism Name	No. Positive	% of Strain
Enterobacter cloacae complex n = 131	Enterobacter cloacae	1	0.8

Urine: Plasmid mediated Carbapenemase producing Non Enterobacterales (CPNE)			
Organism Group	Organism Name	No. Positive	% of Strain

## Residential Aged Care Antibigram Jan - Dec 2018

Urine: Vancomycin Resistant Enterococci (VRE)			
Organism Group	Organism Name	No. Positive	% of Strain
Enterococcus spp n = 566	Enterococcus faecium (VRE) - VAN-A	1	0.2
	Enterococcus faecium (VRE) - VAN-B	3	0.5

Urine: Methicillin Resistant Staphylococcus aureus (MRSA)			
Organism Group	Organism Name	No. Positive	% of Strain
Staphylococcus aureus (ALL) n = 95	S.aureus (non-multiresistant MRSA)	24	25.3
	Staphylococcus aureus (MRSA)	2	2.1
	Staphylococcus aureus (UK EMRSA-15)	22	23.2

# Residential Aged Care Antibigram Jan - Dec 2018

Non-urine Antibigram			All SNP Nursing Home																						
Organism Group	No. Organisms	%Total		Penicillin	Amoxicillin	Flucloxacillin	Amoxicillin-clavulanate	Piperacillin-tazobactam	Cefalotin	Cefazolin	Ceftriaxone	Ceftazidime	Cefepime	Meropenem	Gentamicin	Amikacin	Sulpha-trimethoprim	Ciprofloxacin	Fusidic Acid	Rifampicin	Erythromycin/Clarithromycin	Clindamycin	Tetracyclines	Mupirocin	Vancomycin
				%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
<b>All isolates</b>	<b>2592</b>	<b>100</b>																							
Staphylococcus aureus (ALL)	1623	62.6	%	15		72	72		72			R					97	83	95	100	77	79	93	96	100
			n	1623		1622	1621		1623								1623	*1468	*1472	*1473	1623	1622	1623	*1460	*1476
Pseudomonas aeruginosa	651	25.1	%		R		R	96		R	R	97	98	98	97	98	R	95					R		
			n				648					651	*618	650	651	*490		650							
Haemophilus influenzae	85	3.3	%		76		92										65						99		
			n		85		85										84						85		
β haemolytic Streptococci Other (nonA nonB)	56	2.2	%	100					100		100						100				91	91	79		100
			n	56					55		*22						56				56	56	56		*25
Moraxella catarrhalis	54	2.1	%		2		100										94				100		100		
			n		54		54										54				54		54		



# Residential Aged Care Antibiogram Jan - Dec 2018

Signal Resistances: Where the tables below contain no data no multiresistant organisms have been detected.

## NonUrine: Extended spectrum beta lactamase producing Enterobacterales (ESBL)

Organism Group	Organism Name	No. Positive	% of Strain
Escherichia spp n = 15	Escherichia coli	2	13.3
Klebsiella spp n = 9	Klebsiella pneumoniae	1	11.1

## NonUrine: Plasmid mediated AMPC producing Enterobacterales (PAMP)

Organism Group	Organism Name	No. Positive	% of Strain
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## NonUrine: Plasmid mediated Carbapenemase producing Enterobacterales (CPE)

Organism Group	Organism Name	No. Positive	% of Strain
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## NonUrine: Plasmid mediated Carbapenemase producing Non Enterobacterales (CPNE)

Organism Group	Organism Name	No. Positive	% of Strain
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## NonUrine: Vancomycin Resistant Enterococci (VRE)

## NonUrine: Methicillin Resistant Staphylococcus aureus (MRSA)

Organism Group	Organism Name	No. Positive	% of Strain
Staphylococcus aureus (ALL) n = 1622	S.aureus (non-multiresistant MRSA)	291	17.9
	Staphylococcus aureus (MRSA)	33	2.0
	Staphylococcus aureus (UK EMRSA-15)	128	7.9

## NonUrine: Streptococcus pneumoniae Penicillin Susceptibility (Non-meningitis breakpoints)

# Residential Aged Care Antibiogram Jan - Dec 2018

Organism Group	MIC category	No.	% of Strain
Streptococcus pneumoniae n = 8	Intermediate 0.12 - 2 mg/L	2	25.0
	Sensitive ≤ 0.06 mg/L	6	75.0

**NonUrine: Streptococcus pneumoniae Ceftriaxone Susceptibility**

**Blood Cultures:** There are no isolates where n is 30 or greater.

**Signal Resistances:** Where the tables below contain no data no multiresistant organisms have been detected.

Blood Culture: Extended spectrum beta lactamase producing Enterobacterales (ESBL)			
Organism Group	Organism Name	No. Positive	% of Strain

Blood Culture: Plasmid mediated AMPC producing Enterobacterales (PAMP)			
Organism Group	Organism Name	No. Positive	% of Strain

Blood Culture: Plasmid mediated Carbapenemase producing Enterobacterales (CPE)			
Organism Group	Organism Name	No. Positive	% of Strain
Enterobacter cloacae complex n = 131	Enterobacter cloacae	1	0.8

Blood Culture: Plasmid mediated Carbapenemase producing Non Enterobacterales (CPNE)			
Organism Group	Organism Name	No. Positive	% of Strain

# Residential Aged Care Antibigram Jan - Dec 2018

Blood Culture: Vancomycin Resistant Enterococci (VRE)			
Organism Group	Organism Name	No. Positive	% of Strain

Blood Culture: Methicillin Resistant Staphylococcus aureus (MRSA)			
Organism Group	Organism Name	No. Positive	% of Strain

† Miscellaneous organism groupings detail [report](#).