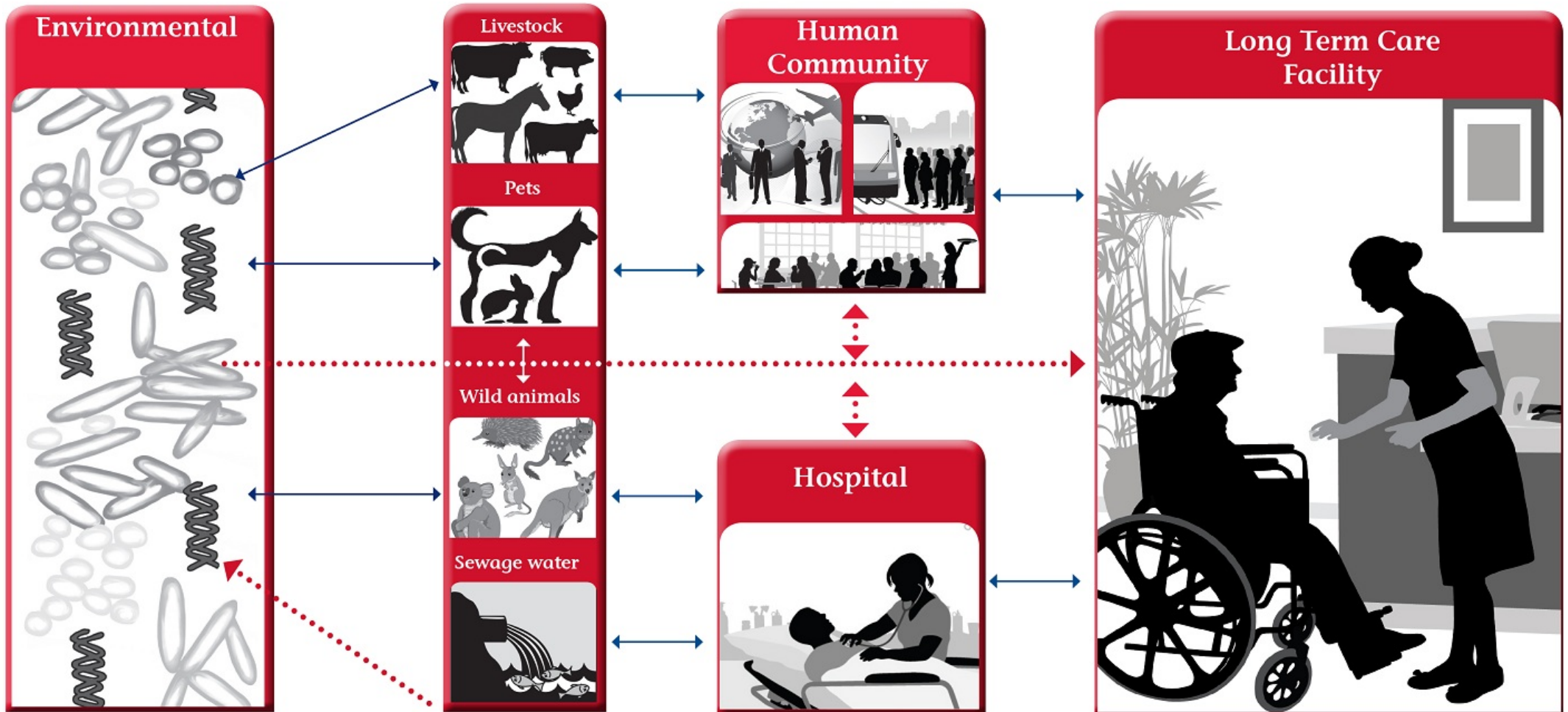


Residential Aged Care Antibiogram Jan - Dec 2017



Residential Aged Care Antibigram Jan - Dec 2017

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).¹

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.²
 - Expert EUCAST rules in Antimicrobial Susceptibility testing have been applied.³
 - Where the total number of isolates tested is < 30, results are considered statistically invalid in accordance with CLSI M39-A4⁴ 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

- *Enterobacteriaceae* resistant to third or fourth generation cephalosporins due to the presence of Extended Spectrum Beta Lactamases (ESBLs)
- *Enterobacteriaceae* resistant to third or fourth generation cephalosporins due to the presence of Plasmid Mediated AMPC production (PAMPs)
- *Enterobacteriaceae* resistant to carbapenems due to the presence of a plasmid mediated carbapenamase (CPE)
- Non *Enterobacteriaceae* (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 2017

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	R	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	%	Percentage of isolates sensitive to this particular antibiotic	n	Number of isolates tested with this antibiotic

References:

1. <http://www.safetyandquality.gov.au/our-work/safety-in-e-health/national-safety-and-quality-health-service-standard-3-14-3/>
2. http://www.eucast.org/clinical_breakpoints/
3. 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

Residential Aged Care Antibiogram Jan - Dec 2017

Urine Antibiogram			All SNP Nursing Home																					
Organism Group	No. Organisms	%Total		Amoxicillin	Amoxicillin-clavulanate	Ticarcillin-clavulanate	Piperacillin-tazobactam	Cefalexin	Ceftriaxone	Ceftazidime	Meropenem	Gentamicin	Amikacin	Trimethoprim	Nitrofurantoin	Norfloxacin	Ciprofloxacin	Fusidic Acid	Rifampicin	Gentamicin (High Level)	Fosfomycin	Quinupristin-dalfopristin	Vancomycin	
All isolates	5439	100																						
Escherichia spp	2649	48.7	%	54	84	53	90	88	80		100	90	98	73	98	87						99		
			n	2649	*2231	*1017	*1144	2646	*1151		*1044	*1157	*1048	2649	2647	2649						*211		
Klebsiella spp	633	11.6	%	R	94	82	89	95	92		99	97	99	86	86	95								
			n		*522	*171	*227	633	*227		*174	*228	*174	633	631	633								
Enterococcus spp	614	11.3	%	92										R	93	79			22	63		63	74	
			n	613											613	612			*68	*67		*68	*72	
Pseudomonas aeruginosa	450	8.3	%	R	R	45	95	R	R	95	94	94	91	R	R	95	91							
			n			*363	449			449	*365	450	*366			*427	440							
Proteus mirabilis	320	5.9	%	89	96	99	100	98	99		100	98	98	76	R	99								
			n	320	*263	*121	*150	319	*151		*122	*152	*123	320		320								
Enterobacter cloacae complex	144	2.6	%	R	R	44	63	R	62		98	88	97	69	85	90								
			n			*99	*120		*122		*109	*122	*110	144	144	144								
Staphylococcus aureus (ALL)	102	1.9	%	9	37									85	100	58		97	100				100	
			n	102	102									*91	101	*84		*64	*64				*64	
Citrobacter koseri, amalonaticus	88	1.6	%	R	93	81	94	93	88		100	97	100	97	92	100								
			n		*74	*26	*32	88	*32		*26	*32	*26	88	88	88								
Citrobacter freundii complex	80	1.5	%	R	R	63	71	R	68		100	93	100	81	94	95								
			n			*48	*55		*56		*52	*56	*52	80	80	80								
β haemolytic Streptococci Group B	65	1.2	%	100										85	100	70								
			n	65										65	65	*53								

Residential Aged Care Antibigram Jan - Dec 2017

Urine Antibigram			All SNP Nursing Home																					
Organism Group	No. Organisms	%Total		Amoxicillin	Amoxicillin-clavulanate	Ticarcillin-clavulanate	Piperacillin-tazobactam	Cefalexin	Ceftriaxone	Ceftazidime	Meropenem	Gentamicin	Amikacin	Trimethoprim	Nitrofurantoin	Norfloxacin	Ciprofloxacin	Fusidic Acid	Rifampicin	Gentamicin (High Level)	Fosfomycin	Quinupristin-dalfopristin	Vancomycin	
				All isolates	5439	100																		
Morganella spp	54	1.0	%	R	R	69	96	R	83		100	87	98	78	R	91								
			n			*45	54		54		*47	54	*47	54		54								
Coagulase negative Staphylococci	46	0.8	%	20	70									54	98	73								
			n	45	46										46	46	44							
Enterobacter aerogenes	40	0.7	%	R	R	56	54	R	54		96	100	100	93	78	95								
			n			*25	*28		*28		*26	*28	*26	40	40	40								
Miscellaneous GPC†	35	0.6	%	100										3	97	94								
			n	34										*33	35	35								

Residential Aged Care Antibiogram Jan - Dec 2017

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

Urine: Extended spectrum beta lactamase producing Enterobacteriaceae (ESBL)

Organism Group	Organism Name	No. Positive	% of Strain
Citrobacter freundii complex n = 80	Citrobacter freundii	2	2.5
Citrobacter koseri, amalonaticus n = 88	Citrobacter koseri	2	2.3
Enterobacter cloacae complex n = 144	Enterobacter cloacae	11	7.6
Escherichia spp n = 2649	Escherichia coli	219	8.3
Klebsiella spp n = 633	Klebsiella oxytoca	1	0.2
	Klebsiella pneumoniae	8	1.3
Pseudomonas aeruginosa n = 450	Pseudomonas aeruginosa	1	0.2

Urine: Plasmid mediated AMPC producing Enterobacteriaceae (PAMP)

Organism Group	Organism Name	No. Positive	% of Strain
Citrobacter koseri, amalonaticus n = 88	Citrobacter koseri	1	1.1
Enterobacter cloacae complex n = 144	Enterobacter cloacae	1	0.7
Escherichia spp n = 2649	Escherichia coli	107	4.0
Klebsiella spp n = 633	Klebsiella oxytoca	2	0.3
	Klebsiella pneumoniae	3	0.5
Proteus mirabilis n = 320	Proteus mirabilis	1	0.3
Raoultella spp n = 6	Raoultella ornithinolytica	1	16.7

Urine: Plasmid mediated Carbapenemase producing Enterobacteriaceae (CPE)

Organism Group	Organism Name	No. Positive	% of Strain
Enterobacter cloacae complex n = 144	Enterobacter cloacae	1	0.7
Escherichia spp n = 2649	Escherichia coli	1	0.0

Residential Aged Care Antibigram Jan - Dec 2017

Urine: Plasmid mediated Carbapenemase producing Non Enterobacteriaceae (CPNE)

Organism Group	Organism Name	Positive	
----------------	---------------	----------	--

Urine: Vancomycin Resistant Enterococci (VRE)

Organism Group	Organism Name	No. Positive	% of Strain
Enterococcus spp n = 614	Enterococcus faecalis(VRE) - VAN-A	1	0.2
	Enterococcus faecium (VRE) - VAN-A	4	0.7
	Enterococcus faecium (VRE) - VAN-A, VAN-B	1	0.2
	Enterococcus faecium (VRE) - VAN-B	8	1.3

Urine: Methicillin Resistant Staphylococcus aureus (MRSA)

Organism Group	Organism Name	No. Positive	% of Strain
Staphylococcus aureus (ALL) n = 102	S.aureus (non-multiresistant MRSA)	30	29.4
	Staphylococcus aureus (MRSA)	3	2.9
	Staphylococcus aureus (UK EMRSA-15)	28	27.5

Residential Aged Care Antibigram Jan - Dec 2017

Non-urine Antibigram			All SNP Nursing Home																								
Organism Group	No. Organisms	%Total		Penicillin	Amoxicillin	Flucloxacillin	Amoxicillin-clavulanate	Ticarcillin-clavulanate	Piperacillin-tazobactam	Cefalotin	Cefazolin	Ceftriaxone	Ceftazidime	Cefepime	Meropenem	Gentamicin	Amikacin	Sulpha-trimethoprim	Ciprofloxacin	Fusidic Acid	Rifampicin	Erythromycin/Clarithromycin	Clindamycin	Tetracycline	Mupirocin	Vancomycin	
				All isolates	2821	100																					
Staphylococcus aureus (ALL)	1784	63.2	%	15		74	74			74								97	80	95	100	77	79	94	99	100	
			n	1783		1784	1784			1784								1784	*1631	*1632	*1632	1784	1783	1784	*1576	*1632	
Pseudomonas aeruginosa	676	24.0	%		R		R	59	96		R	R	97	98	97	96	95	R	95								
			n					*501	675				676	653	676	675	*505		675								
Haemophilus influenzae	84	3.0	%		63		88											57						100			
			n		84		84											84						84			
Moraxella catarrhalis	53	1.9	%		2		100											85				100	100	100			
			n		53		53											52				53	53	53			
β haemolytic Streptococci Other (nonA nonB)	41	1.5	%	100						100		100						100				80	80	66		100	
			n	41						41		*14						41				41	41	41		*15	

Residential Aged Care Antibiogram Jan - Dec 2017

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

NonUrine: Extended spectrum beta lactamase producing Enterobacteriaceae (ESBL)

Organism Group	Organism Name	No. Positive	% of Strain
Escherichia spp n = 25	Escherichia coli	5	20.0
Klebsiella spp n = 15	Klebsiella oxytoca	1	6.7
	Klebsiella pneumoniae	1	6.7

NonUrine: Plasmid mediated AMPC producing Enterobacteriaceae (PAMP)

Organism Group	Organism Name	No. Positive	% of Strain
Escherichia spp n = 25	Escherichia coli	1	4.0

NonUrine: Plasmid mediated Carbapenemase producing Enterobacteriaceae (CPE)

Organism Group	Organism Name	No. Positive	% of Strain
----------------	---------------	--------------	-------------

NonUrine: Plasmid mediated Carbapenemase producing Non Enterobacteriaceae (CPNE)

Organism Group	Organism Name	No. Positive	% of Strain
----------------	---------------	--------------	-------------

NonUrine: Vancomycin Resistant Enterococci (VRE)

NonUrine: Methicillin Resistant Staphylococcus aureus (MRSA)

Organism Group	Organism Name	No. Positive	% of Strain
Staphylococcus aureus (ALL) n = 1784	S.aureus (non-multiresistant MRSA)	237	13.3
	Staphylococcus aureus (MRSA)	29	1.6
	Staphylococcus aureus (UK EMRSA-15)	199	11.2

Residential Aged Care Antibiogram Jan - Dec 2017

NonUrine: Streptococcus pneumoniae Penicillin Susceptibility ** (Oral penicillin V breakpoints)			
Organism Group	MIC category	No.	% of Strain
Streptococcus pneumoniae n = 9	Intermediate 0.12 - 1 mg/L	4	44.4
	Sensitive ≤ 0.06 mg/L	5	55.6

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 Enterobacteriaceae (ESBL)			
Organism Group	Organism Name	No. Positive	% of Strain

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

Blood Culture: Plasmid mediated Carbapenemase producing Enterobacteriaceae (CPE)			
Organism Group	Organism Name	No. Positive	% of Strain
Enterobacter cloacae complex n = 144	Enterobacter cloacae	1	0.7
Escherichia spp n = 2649	Escherichia coli	1	0.0

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

Residential Aged Care Antibigram Jan - Dec 2017

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](#).