

Summary of Anaerobic Antimicrobial Susceptibility Test Results: 2011

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Introduction

This is the 2011 anaerobic bacteria susceptibility patterns data for Gram positive and Gram negative anaerobic organisms. The organisms were isolated over the last 8 years from clinical specimens from Auckland City Hospital, Starship Children's Hospital, and referred isolates from other New Zealand hospitals.

This data has been presented at Australian Society for Antimicrobials 13th Annual Scientific Meeting, Antimicrobials 2012, 23rd-25th February 2012, Brisbane, Australia.

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Table 1. CLSI interpretative criteria for susceptible, intermediate and resistant (mg/L)						
	Penicillin	Amox-CA	Pip/CA	Cefoxitin	Ertapenem	Imipenem
Susceptible	≤0.5	≤4/2	≤32/4	≤16	≤4	≤4
Intermediate	1	8.0/4	64/4	32	8	8
Resistant	≥2	≥16/8	≥128/4	≥64	≥16	≥16
	Meropenem	Doripenem	Moxifloxacin	Clindamycin	Metronidazole	Tigecycline*
Susceptible	≤4	≤2	≤2	≤2	≤8	≤4
Intermediate	8	4	4	4	16	8
Resistant	≥16	≥8	≥8	≥8	≥32	≥16

* FDA criteria

Table 2. MICs (mg/L), range and susceptibility pattern for <i>Bacteroides</i> species.						
	Range	MIC ₅₀	MIC ₉₀	S	CLSI (%)	
					I	R
B. fragilis group						
<i>B. fragilis</i> n=29						
Penicillin	8-256	16	256	0	0	100
Amoxicillin/clavulanate	0.5-16	0.5	4	97	0	3
Piperacillin/tazobactam	≤0.06-4	0.25	1	100	0	0
Cefoxitin	4.0-16	8	16	100	0	0
Ertapenem	0.12-8	0.25	4	97	3	0
Imipenem	0.12-4	0.25	1	100	0	0
Meropenem	<0.06-16	0.12	0.25	91	6	3
Doripenem	0.12-16	0.25	0.25	91	0	9
Clindamycin	<0.06-256	1	256	86	0	14
Metronidazole	0.5-1	0.5	1	100	0	0
Moxifloxacin	0.25-32	0.5	1	91	0	9
Tigecycline	0.5-16	1	8	86	7	7
<i>B. thetaiotaomicron</i> n=20						
Penicillin	16->128	32	>128	0	0	100
Amoxicillin/clavulanate	0.5-128	1	16	75	0	15
Piperacillin/tazobactam	8.0->256	8	16	95	0	5
Cefoxitin	16-64	32	64	20	65	15
Ertapenem	1.0-16	1	4	90	5	5
Imipenem	0.25-2	0.25	0.5	100	0	0
Meropenem	0.12-4	0.25	1	100	0	0
Doripenem	0.25 -4	0.25	1	100	0	0
Clindamycin	0.25->128	2	8	55	30	15
Metronidazole	0.5-32	1	2	95	0	5
Moxifloxacin	0.5-4	1	2	95	5	0
Tigecycline	0.5-16	0.5	2	100	0	0
<i>B. vulgatus</i> n=12						
Penicillin	16->128	32	>128	0	8	92
Amoxicillin/clavulanate	0.25-32	1	16	76	8	16
Piperacillin/tazobactam	0.12-32	1	32	100	0	0
Cefoxitin	0.5-16	4	16	100	0	0
Ertapenem	0.12-8	0.25	2	100	0	0
Imipenem	0.12-0.5	0.25	1	100	0	0
Meropenem	≤0.06-2	0.25	1	100	0	0
Doripenem	0.12-2	0.25	0.5	100	0	0
Clindamycin	≤0.06-0.5	≤0.06	0.5	100	0	0
Metronidazole	0.5-2	0.5	1	100	0	0
Moxifloxacin	0.5-32	1	8	84	0	16
Tigecycline	0.012-0.5	0.5	0.5	100	0	0
<i>B. ovatus</i> n=8						
Penicillin	8->128	16	>128	0	0	100
Amoxicillin/clavulanate	0.5-8	0.5	4	88	12	0
Piperacillin/tazobactam	2.0-8	2	8	100	0	0
Cefoxitin	16-128	32	32	16	72	12
Ertapenem	0.5-4	1	2	100	0	0
Imipenem	0.12-1	0.25	0.5	100	0	0
Meropenem	0.25-2	0.25	0.5	100	0	0
Doripenem	0.25-1	0.5	0.5	100	0	0
Clindamycin	0.5->128	2	>128	50	15	35
Metronidazole	1.0-2	1	2	100	0	0
Moxifloxacin	2.0-16	2	4	63	25	12
Tigecycline	0.5-8	0.5	2	100	0	0

Table 3. MICs (mg/L), range and susceptibility pattern for <i>Prevotella</i> species.						
	Range	MIC ₅₀	MIC ₉₀	S	CLSI (%)	
					I	R
<i>Prevotella</i> spp.						
<i>P. bivia</i> n=28						
Penicillin	0.12-32	8	32	7	0	93
Amoxicillin/clavulanate	≤0.06-4	2	2	100	0	0
Piperacillin/tazobactam	≤0.06	≤0.06	≤0.06	100	0	0
Cefoxitin	0.5-16	1	2	100	0	0
Ertapenem	0.12-0.5	0.12	0.5	100	0	0
Imipenem	≤0.06-0.12	≤0.06	0.12	100	0	0
Meropenem	≤0.06-0.25	0.12	0.12	100	0	0
Doripenem	≤0.06-0.25	≤0.06	0.12	100	0	0
Clindamycin	≤0.06->128	≤0.06	>128	79	0	21
Metronidazole	≤0.06-0.25	0.12	0.12	100	0	0
Moxifloxacin	0.5->128	4	8	14	72	14
Tigecycline	0.12-2	0.5	1	100	0	0
<i>P. buccae</i> n=15						
Penicillin	≤0.06->128	32	64	20	0	80
Amoxicillin/clavulanate	≤0.06-8	1	2	93	7	0
Piperacillin/tazobactam	≤0.06	≤0.06	≤0.06	100	0	0
Cefoxitin	1.0-32	8	16	93	7	0
Ertapenem	0.12-0.5	0.25	0.5	100	0	0
Imipenem	≤0.06-0.5	0.12	0.25	100	0	0
Meropenem	≤0.06-0.5	0.25	0.5	100	0	0
Doripenem	≤0.06-0.5	0.12	0.25	100	0	0
Clindamycin	≤0.06- >128	≤0.06	≤0.06	93	0	7
Metronidazole	1.0-4	2	2	100	0	0
Moxifloxacin	0.5-2	0.5	0.5	100	0	0
Tigecycline	0.12-2	0.25	0.5	100	0	0
<i>P. intermedia</i> n=6						
Penicillin	≤0.06-16	4	16	7	0	83
Amoxicillin/clavulanate	≤0.06-2	0.25	2	100	0	0
Piperacillin/tazobactam	≤0.06	≤0.06	≤0.06	100	0	0
Cefoxitin	0.25-2	0.5	2	100	0	0
Ertapenem	≤0.06-0.12	≤0.06	0.12	100	0	0
Imipenem	≤0.06	≤0.06	≤0.06	100	0	0
Meropenem	≤0.06	≤0.06	≤0.06	100	0	0
Doripenem	≤0.06	≤0.06	≤0.06	100	0	0
Clindamycin	≤0.06-128	≤0.06	128	100	0	0
Metronidazole	1	1	1	100	0	0
Moxifloxacin	0.5	0.5	0.5	100	0	0
Tigecycline	0.25	0.25	0.25	100	0	0
<i>P. disiens</i> n=10						
Penicillin	≤0.06-16	2	16	11	22	67
Amoxicillin/clavulanate	≤0.06-2	0.25	2	100	0	0
Piperacillin/tazobactam	≤0.06	≤0.06	≤0.06	100	0	0
Cefoxitin	0.25-4	0.5	4	100	0	0
Ertapenem	≤0.06-0.12	≤0.06	0.12	100	0	0
Imipenem	≤0.06-0.12	≤0.06	0.12	100	0	0
Meropenem	≤0.06-0.12	≤0.06	0.12	100	0	0
Doripenem	≤0.06	≤0.06	≤0.06	100	0	0
Clindamycin	≤0.06	≤0.06	≤0.06	100	0	0
Metronidazole	2.0-4	2	2	100	0	0
Moxifloxacin	0.5	0.5	0.5	100	0	0
Tigecycline	0.12-4	0.25	4	100	0	0

Table 4. MICs (mg/L), range and susceptibility pattern for <i>Fusobacterium</i> spp. and <i>Veillonella</i> spp..						
	Range	MIC ₅₀	MIC ₉₀	CLSI (%)		
				S	I	R
<i>F. nucleatum</i> n=12						
Penicillin	≤0.06->128	1	>128	42	25	33
Amoxicillin/clavulanate	≤0.06->128	≤0.06	0.5	83	0	17
Piperacillin/tazobactam	≤0.06->256	≤0.06	>256	83	0	17
Cefoxitin	≤0.06->128	0.25	>128	83	0	17
Ertapenem	≤0.06->128	0.12	>128	83	0	17
Imipenem	≤0.06->128	0.12	>128	83	0	17
Meropenem	≤0.06->128	0.25	>128	83	0	17
Doripenem	≤0.06->128	≤0.06	>128	83	0	17
Clindamycin	≤0.06-4	0.12	0.5	83	17	0
Metronidazole	≤0.06-0.5	0.12	0.25	100	0	0
Moxifloxacin	≤0.06-8	0.25	8	83	0	17
Tigecycline	≤0.06-0.25	0.12	0.25	100	0	0
<i>F. necrophorum</i> n=9						
Penicillin	≤0.06->256	≤0.06	>256	78	0	22
Amoxicillin/clavulanate	≤0.06->256	≤0.06	>256	78	0	22
Piperacillin/tazobactam	≤0.06->256	≤0.06	>256	78	0	22
Cefoxitin	≤0.06->256	≤0.06	>256	78	0	22
Ertapenem	≤0.06->32	≤0.06	>32	78	0	22
Imipenem	≤0.06->32	≤0.06	>32	78	0	22
Meropenem	≤0.06->32	≤0.06	>32	78	0	22
Doripenem	≤0.06->32	≤0.06	>32	78	0	22
Clindamycin	≤0.06	≤0.06	≤0.06	100	0	0
Metronidazole						
Moxifloxacin	0.25-1	0.25	1	100	0	0
Tigecycline	≤0.06	≤0.06	≤0.06	100	0	0
<i>Veillonella</i> spp. n=10						
Penicillin	≤0.06-16	4	8	30	0	70
Amoxicillin/clavulanate	≤0.06-4	1	4	100	0	0
Piperacillin/tazobactam	≤0.06-64	16	64	60	40	0
Cefoxitin	0.5-8	4	8	100	0	0
Ertapenem	≤0.06-1	0.12	0.5	100	0	0
Imipenem	≤0.06-1	0.5	1	100	0	0
Meropenem	≤0.06-1	≤0.06	1	100	0	0
Doripenem	≤0.06-0.5	0.25	0.5	100	0	0
Clindamycin	≤0.06-1	≤0.06	0.12	100	0	0
Metronidazole	1.0-4	2	2	100	0	0
Moxifloxacin	≤0.06-1	0.25	0.25	100	0	0
Tigecycline	0.25-1	0.25	1	100	0	0

Table 5. MICs (mg/L), range and susceptibility patterns for <i>Clostridium</i> spp.						
	Range	MIC ₅₀	MIC ₉₀	S	CLSI (%)	
					I	R
<i>Clostridium perfringens</i> n=8						
Penicillin	≤0.06-0.12	0.12	0.12	100	0	0
Amoxicillin/clavulanate	≤0.06-0.12	≤0.06	0.12	100	0	0
Piperacillin/tazobactam	≤0.06-0.25	≤0.06	0.25	100	0	0
Cefoxitin	0.5-1	1	1	100	0	0
Ertapenem	≤0.06-0.12	≤0.06	0.12	100	0	0
Imipenem	≤0.06-0.5	≤0.06	0.5	100	0	0
Meropenem	≤0.06	≤0.06	≤0.06	100	0	0
Clindamycin	≤0.06-2	≤0.06	2	100	0	0
Metronidazole	1.0-4	2	4	100	0	0
Moxifloxacin	0.5-2	0.5	1	100	0	0
Linezolid	2	2	2			
<i>Clostridium tertium</i> n=19						
Penicillin	≤0.06-2	2	2	16	32	52
Amoxicillin/clavulanate	≤0.06-1	0.5	1	100	0	0
Piperacillin/tazobactam	0.12.-16	8	16	100	0	0
Cefoxitin	0.5-4	2	2	100	0	0
Ertapenem	0.12-1	0.5	1	100	0	0
Imipenem	0.12-1	0.25	1	100	0	0
Meropenem	≤0.06-1	0.5	0.5	100	0	0
Clindamycin	0.25->128	8	>128	5	0	95
Metronidazole	0.25-4	2	4	100	0	0
Moxifloxacin	0.5-4	0.5	1	100	0	0
Linezolid	1.0-4	4	4			
<i>Clostridium septicum</i> n=10						
Penicillin	≤0.06-0.06	0.06	0.06	100	0	0
Amoxicillin/clavulanate	≤0.06-0.06	0.06	0.03	100	0	0
Cefoxitin	0.03-0.05	0.25	0.5	100	0	0
Ertapenem	≤0.06	≤0.06	≤0.06	100	0	0
Imipenem	≤0.06-0.06	0.06	0.06	100	0	0
Meropenem	≤0.06	≤0.06	≤0.06	100	0	0
Clindamycin						
Metronidazole	0.12-2	0.5	2	100	0	0
Moxifloxacin	0.12-2	0.25	2	100	0	0
Linezolid	0.5-2	1	2			
<i>Clostridium hathewayi</i> n=8						
Penicillin	≤0.06-2	2	2	25	0	75
Amoxicillin/clavulanate	0.25-0.5	0.5	0.5	100	0	0
Cefoxitin	4	4	4	100	0	0
Ertapenem	0.12-4	2	4	100	0	0
Imipenem	0.25-4	2	4	100	0	0
Meropenem	≤0.06-2	2	2	100	0	0
Clindamycin						
Metronidazole	0.12-0.25	0.25	0.25	100	0	0
Moxifloxacin	4.0-8	8	8	100	0	0
Linezolid	2	2	2			

Table 6. MICs (mg/L), range and susceptibility patterns for anaerobic Gram positive cocci						
	Range	MIC ₅₀	MIC ₉₀	S	CLSI (%)	
					I	R
<i>Finnegoldia magna</i> n=30						
Penicillin	≤0.06-1	0.12	0.25	97	3	0
Amoxicillin/clavulanate	≤0.06-2	0.25	0.5	100	0	0
Piperacillin/tazobactam	≤0.06-0.25	0.12	0.25	100	0	0
Cefoxitin	0.25-8	0.5	1	100	0	0
Ertapenem	≤0.06-0.25	≤0.06	0.12	100	0	0
Imipenem	≤0.06-0.25	0.12	0.25	100	0	0
Meropenem	≤0.06-0.25	≤0.06	0.12	100	0	0
Doripenem	≤0.06-0.5	≤0.06	≤0.06	100	0	0
Clindamycin	≤0.06->128	1	4	73	10	17
Metronidazole	0.12-4	1	2	100	0	0
Moxifloxacin	≤0.06-1	0.12	0.25	100	0	0
Tigecycline	0.12-1	0.25	0.25	100	0	0
Linezolid	1.0-2	2	2			
Daptomycin	0.25-32	0.5	2			
<i>Parvimonas micra</i> n=20						
Penicillin	≤0.06-0.12	≤0.06	0.12	100	0	0
Amoxicillin/clavulanate	≤0.06-0.25	≤0.06	0.25	100	0	0
Piperacillin/tazobactam	≤0.06	≤0.06	≤0.06	100	0	0
Cefoxitin	0.12-1	0.25	1	100	0	0
Ertapenem	≤0.06	≤0.06	≤0.06	100	0	0
Imipenem	≤0.06-0.12	≤0.06	≤0.06	100	0	0
Meropenem	≤0.06-0.25	≤0.06	≤0.06	100	0	0
Doripenem	≤0.06-0.25	≤0.06	≤0.06	100	0	0
Clindamycin	≤0.06-4	0.12	0.25	100	0	0
Metronidazole	≤0.06-1	0.5	1	100	0	0
Moxifloxacin	0.12-0.25	0.25	0.25	100	0	0
Tigecycline	≤0.06-0.25	≤0.06	≤0.06	100	0	0
Linezolid	0.5-1	0.5	0.5			
Daptomycin	0.25-2	0.25	2			
<i>Peptoniphilus harei</i> n=22						
Penicillin	≤0.06-0.25	≤0.06	0.12	100	0	0
Amoxicillin/clavulanate	≤0.06-0.25	≤0.06	0.12	100	0	0
Piperacillin/tazobactam	≤0.06-0.12	≤0.06	≤0.06	100	0	0
Cefoxitin	≤0.06	≤0.06	≤0.06	100	0	0
Ertapenem	≤0.06	≤0.06	≤0.06	100	0	0
Imipenem	≤0.06	≤0.06	≤0.06	100	0	0
Meropenem	≤0.06	≤0.06	≤0.06	100	0	0
Doripenem	≤0.06	≤0.06	≤0.06	100	0	0
Clindamycin	≤0.06->128	0.25	2	95	0	5
Metronidazole	0.5-2	1	2	100	0	0
Moxifloxacin	0.25-2	0.25	0.25	100	0	0
Tigecycline	≤0.06-0.25	≤0.06	0.12	100	0	0
Linezolid	0.25-1	0.5	1			
Daptomycin	≤0.06	≤0.06	≤0.06			

Table 6 continues next page

Table 6. cont. MICs (mg/L), range and susceptibility patterns for anaerobic Gram positive cocci						
	Range	MIC ₅₀	MIC ₉₀	S	CLSI (%)	
					I	R
<i>Peptostreptococcus anaerobius</i> n=13						
Penicillin	0.12-16	8	16	32	0	68
Amoxicillin/clavulanate	0.25-32	32	32	32	0	68
Piperacillin/tazobactam	0.12-16	8	16	100	0	0
Cefoxitin	0.5-16	8	16	100	0	0
Ertapenem	0.25-4	2	2	100	0	0
Imipenem	≤0.06-2	1	2	100	0	0
Meropenem	0.25-4	2	4	100	0	0
Doripenem	0.12-4	2	2	100	0	0
Clindamycin	≤0.06-0.25	0.25	0.25	100	0	0
Metronidazole	0.5-1	0.5	1	100	0	0
Moxifloxacin	0.12-8	0.12	0.25	92	0	8
Tigecycline	0.12	0.12	0.12	100	0	0
Linezolid	0.5-1	0.5	0.5			
Daptomycin	0.12-0.25	0.25	0.25			