

Antibiogram of Carbapenemase Producing Enterobacterales - July, 2021

Table 1: Aggregate antibiogram of carbapenemase producing enterobacterales isolates by number and percentage susceptible to each antimicrobial, received by MDU PHL 31/10/2018 - 31/10/2020

CPO Gene(s)	Organism	N	Count of susceptible isolates and susceptibility proportion (%)																
			Meropenem	Ceftazidime	Cefepime	Ciprofloxacin	Tobramycin	Gentamicin	Amikacin	Attreonam	Tigecycline	Colistin	Ceftazidime / Avibactam	Ampicillin	Ampicillin-Sulbactam	Fosfomycin	Ceftolozane / Tazobactam		
IMP-4	<i>Citrobacter freundii</i>	7	7/7 (100.0%)	-	-	-	-	-	-	-	-	-	^	7/7 (100.0%)	*	-	*	7/7 (100.0%)	*
	<i>Enterobacter cloacae</i>	144	141/143 (98.6%)	1/124 (0.8%)	1/125 (0.8%)	34/124 (27.4%)	24/114 (21.1%)	1/125 (0.8%)	9/125 (7.2%)	122/124 (98.4%)	12/136 (8.8%)	^	128/131 (97.7%)	*	0/124 (0.0%)	*	136/144 (94.4%)	*	
	<i>Escherichia coli</i>	19	19/19 (100.0%)	1/15 (6.7%)	1/15 (6.7%)	9/15 (60.0%)	6/15 (40.0%)	0/15 (0.0%)	1/15 (6.7%)	15/15 (100.0%)	8/15 (53.3%)	15/15 (100.0%)	18/18 (100.0%)	*	0/15 (0.0%)	0/15 (0.0%)	18/19 (94.7%)	*	
	<i>Klebsiella oxytoca</i>	7	7/7 (100.0%)	0/6 (0.0%)	0/6 (0.0%)	3/6 (50.0%)	4/6 (66.7%)	0/6 (0.0%)	3/6 (50.0%)	6/6 (100.0%)	4/6 (66.7%)	^	7/7 (100.0%)	*	0/6 (0.0%)	0/6 (0.0%)	7/7 (100.0%)	*	
	<i>Klebsiella pneumoniae</i>	17	16/17 (94.1%)	1/15 (6.7%)	1/15 (6.7%)	9/15 (60.0%)	6/15 (40.0%)	0/15 (0.0%)	2/15 (13.3%)	15/15 (100.0%)	11/15 (73.3%)	^	15/15 (100.0%)	*	0/15 (0.0%)	0/15 (0.0%)	17/17 (100.0%)	*	
KPC-2	<i>Serratia marcescens</i>	9	6/9 (66.7%)	0/6 (0.0%)	0/7 (0.0%)	0/6 (0.0%)	0/5 (0.0%)	0/5 (0.0%)	1/6 (16.7%)	5/5 (100.0%)	6/7 (85.7%)	^	*	*	0/6 (0.0%)	*	6/9 (66.7%)	*	
	<i>Klebsiella pneumoniae</i>	7	5/7 (71.4%)	1/6 (16.7%)	1/6 (16.7%)	2/6 (33.3%)	1/5 (20.0%)	2/6 (33.3%)	4/6 (66.7%)	4/5 (80.0%)	0/6 (0.0%)	^	5/7 (71.4%)	7/7 (100.0%)	0/6 (0.0%)	0/6 (0.0%)	7/7 (100.0%)	*	
NDM-1	<i>Citrobacter freundii</i>	6	2/6 (33.3%)	0/5 (0.0%)	0/5 (0.0%)	0/5 (0.0%)	3/5 (60.0%)	4/5 (80.0%)	4/5 (80.0%)	5/5 (100.0%)	3/5 (60.0%)	^	4/5 (80.0%)	*	0/5 (0.0%)	*	6/6 (100.0%)	*	
	<i>Enterobacter cloacae</i>	6	3/5 (60.0%)	0/5 (0.0%)	0/5 (0.0%)	0/5 (0.0%)	-	1/5 (20.0%)	1/5 (20.0%)	3/5 (60.0%)	1/5 (20.0%)	^	6/6 (100.0%)	*	0/5 (0.0%)	*	6/6 (100.0%)	*	
	<i>Escherichia coli</i>	7	0/5 (0.0%)	0/5 (0.0%)	0/5 (0.0%)	0/5 (0.0%)	-	4/5 (80.0%)	4/5 (80.0%)	5/5 (100.0%)	4/5 (80.0%)	5/5 (100.0%)	6/6 (100.0%)	*	0/5 (0.0%)	0/5 (0.0%)	7/7 (100.0%)	*	
	<i>Klebsiella pneumoniae</i>	21	8/20 (40.0%)	0/16 (0.0%)	0/16 (0.0%)	0/16 (0.0%)	0/13 (0.0%)	4/16 (25.0%)	8/16 (50.0%)	5/16 (31.3%)	6/17 (35.3%)	^	17/20 (85.0%)	*	0/16 (0.0%)	0/16 (0.0%)	18/21 (85.7%)	*	
NDM-4	<i>Klebsiella pneumoniae</i>	7	0/7 (0.0%)	0/6 (0.0%)	0/6 (0.0%)	0/6 (0.0%)	1/5 (20.0%)	1/6 (16.7%)	1/6 (16.7%)	3/6 (50.0%)	1/7 (14.3%)	^	3/5 (60.0%)	*	0/6 (0.0%)	0/6 (0.0%)	7/7 (100.0%)	*	
NDM-5	<i>Escherichia coli</i>	78	14/78 (17.9%)	0/66 (0.0%)	0/66 (0.0%)	0/66 (0.0%)	3/59 (5.1%)	36/66 (54.5%)	41/66 (62.1%)	55/65 (84.6%)	10/67 (14.9%)	67/67 (100.0%)	73/73 (100.0%)	*	0/66 (0.0%)	0/66 (0.0%)	74/76 (97.4%)	*	
NDM-5,OXA-181	<i>Escherichia coli</i>	6	0/6 (0.0%)	0/5 (0.0%)	0/5 (0.0%)	0/5 (0.0%)	-	2/5 (40.0%)	2/5 (40.0%)	3/5 (60.0%)	1/5 (20.0%)	5/5 (100.0%)	-	*	0/5 (0.0%)	0/5 (0.0%)	6/6 (100.0%)	*	
OXA-181	<i>Escherichia coli</i>	14	14/14 (100.0%)	2/14 (14.3%)	3/14 (21.4%)	6/14 (42.9%)	1/12 (8.3%)	10/14 (71.4%)	11/14 (78.6%)	13/14 (92.9%)	3/14 (21.4%)	14/14 (100.0%)	12/12 (100.0%)	14/14 (100.0%)	0/14 (0.0%)	0/14 (0.0%)	14/14 (100.0%)	2/14 (14.3%)	
	<i>Klebsiella pneumoniae</i>	10	7/10 (70.0%)	4/8 (50.0%)	3/8 (37.5%)	5/8 (62.5%)	0/7 (0.0%)	5/8 (62.5%)	6/8 (75.0%)	7/7 (100.0%)	5/9 (55.6%)	^	9/9 (100.0%)	10/10 (100.0%)	0/8 (0.0%)	0/8 (0.0%)	9/10 (90.0%)	4/9 (44.4%)	
OXA-232	<i>Klebsiella pneumoniae</i>	13	2/13 (15.4%)	0/12 (0.0%)	0/12 (0.0%)	0/12 (0.0%)	0/11 (0.0%)	0/12 (0.0%)	0/12 (0.0%)	1/12 (8.3%)	0/12 (0.0%)	^	10/13 (76.9%)	12/12 (100.0%)	0/12 (0.0%)	0/12 (0.0%)	12/13 (92.3%)	0/13 (0.0%)	
OXA-48	<i>Escherichia coli</i>	13	12/13 (92.3%)	1/11 (9.1%)	5/11 (45.5%)	7/11 (63.6%)	4/8 (50.0%)	8/10 (80.0%)	9/11 (81.8%)	11/11 (100.0%)	3/11 (27.3%)	10/11 (90.9%)	13/13 (100.0%)	12/12 (100.0%)	0/11 (0.0%)	0/11 (0.0%)	11/13 (84.6%)	10/13 (76.9%)	
	<i>Klebsiella pneumoniae</i>	9	5/9 (55.6%)	0/9 (0.0%)	2/9 (22.2%)	1/9 (11.1%)	4/6 (66.7%)	2/9 (22.2%)	5/9 (55.6%)	7/8 (87.5%)	2/9 (22.2%)	^	9/9 (100.0%)	9/9 (100.0%)	0/9 (0.0%)	0/9 (0.0%)	8/9 (88.9%)	1/9 (11.1%)	

Legend	
*	Intrinsic Resistance Reported
^	No Interpretive Guidelines
-	Less than five isolates tested

Percentage susceptible (%)				
0-20%	21-40%	41-60%	61-80%	81-100%

Carbapenemase producing Enterobacterales isolates identified or submitted to the Microbiological Diagnostic Unit Public Health Laboratory (MDU PHL) between 31/10/2018 and 31/10/2020 with available susceptibility data are included in the analysis above. Antimicrobial susceptibility testing was performed by broth microdilution, except for fosfomycin (agar dilution). Aggregate antibiograms exclude antimicrobials for an organism and carbapenemase gene combinations where fewer than five valid results were available. Aggregate antibiograms are categorised by carbapenemase gene sub-type(s) and isolates may contain other antimicrobial resistance (AMR) mechanisms not indicated. Carbapenemase gene subtypes have been determined by whole genome sequence analysis. EUCAST 2020 clinical breakpoints have been used for all susceptibility interpretations (1). Intermediate susceptibility included as susceptible in aggregate antibiograms.

(1) The European Committee on Antimicrobial Susceptibility Testing. Breakpoint Tables for Interpretation of MICs and Zone Diameters. Version 10.0, 2020. <http://www.eucast.org>.