

## Antibiogram of NDM-1 Producing Organisms - September, 2021

Table 1: Aggregate antibiogram of NDM-1 producing organisms by number and percentage susceptible to each antimicrobial, received by MDU PHL 10/01/2019 - 16/06/2021

CPO Gene(s)	Species	N	Count of susceptible isolates and susceptibility proportion (%)										
			Meropenem	Aztreonam	Amikacin	Gentamicin	Tobramycin	Ciprofloxacin	Tigecycline	Colistin	Fosfomycin	Ceftaz-Avibactam*	Ceftoloz-Tazobactam**
<b>Enterobacterales</b>													
NDM-1	<i>Klebsiella pneumoniae</i>	21	10/21 (47.6%)	8/18 (44.4%)	7/17 (41.2%)	10/17 (58.8%)	7/17 (41.2%)	0/12 (0.0%)	17/17 (100.0%)	17/19 (89.5%)	18/21 (85.7%)	0/21 (0.0%)	0/20 (0.0%)
	<i>Escherichia coli</i>	13	2/11 (18.2%)	8/11 (72.7%)	11/11 (100.0%)	10/11 (90.9%)	8/11 (72.7%)	7/10 (70.0%)	10/10 (100.0%)	11/11 (100.0%)	12/13 (92.3%)	1/12 (8.3%)	0/12 (0.0%)
	<i>Enterobacter cloacae</i> complex	10	5/9 (55.6%)	2/9 (22.2%)	6/9 (66.7%)	1/9 (11.1%)	1/9 (11.1%)	2/8 (25.0%)	9/9 (100.0%)	10/10 (100.0%)	9/10 (90.0%)	0/10 (0.0%)	0/10 (0.0%)
	<i>Citrobacter freundii</i> complex	9	4/9 (44.4%)	5/6 (83.3%)	6/6 (100.0%)	6/6 (100.0%)	5/5 (100.0%)	4/6 (66.7%)	5/5 (100.0%)	7/8 (87.5%)	9/9 (100.0%)	0/9 (0.0%)	0/9 (0.0%)
	<i>Klebsiella oxytoca</i>	9	2/9 (22.2%)	6/6 (100.0%)	6/6 (100.0%)	4/6 (66.7%)	4/6 (66.7%)	1/5 (20.0%)	5/5 (100.0%)	8/8 (100.0%)	9/9 (100.0%)	0/9 (0.0%)	0/9 (0.0%)
	<i>Citrobacter braakii</i>	3	0/3 (0.0%)	2/3 (66.7%)	3/3 (100.0%)	2/3 (66.7%)	2/3 (66.7%)	2/3 (66.7%)	2/2 (100.0%)	3/3 (100.0%)	3/3 (100.0%)	0/3 (0.0%)	0/3 (0.0%)
	<i>Proteus mirabilis</i>	2	2/2 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	^	^	2/2 (100.0%)	0/2 (0.0%)	0/2 (0.0%)
	<i>Raoultella ornithinolytica</i>	2	1/2 (50.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	2/2 (100.0%)	2/2 (100.0%)	0/2 (0.0%)	0/2 (0.0%)
	<i>Citrobacter amalonaticus</i>	1	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	-	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	0/1 (0.0%)	0/1 (0.0%)
<i>Citrobacter farmeri</i>	1	0/1 (0.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	0/1 (0.0%)	0/1 (0.0%)	
NDM-1,IMP-4	<i>Klebsiella aerogenes</i>	1	0/1 (0.0%)	-	-	-	-	-	-	1/1 (100.0%)	1/1 (100.0%)	0/1 (0.0%)	0/1 (0.0%)
NDM-1,OXA-181	<i>Escherichia coli</i>	1	1/1 (100.0%)	0/1 (0.0%)	0/1 (0.0%)	0/1 (0.0%)	0/1 (0.0%)	0/1 (0.0%)	-	1/1 (100.0%)	1/1 (100.0%)	0/1 (0.0%)	0/1 (0.0%)
NDM-1,OXA-232	<i>Klebsiella pneumoniae</i>	1	0/1 (0.0%)	0/1 (0.0%)	1/1 (100.0%)	1/1 (100.0%)	0/1 (0.0%)	0/1 (0.0%)	1/1 (100.0%)	0/1 (0.0%)	0/1 (0.0%)	0/1 (0.0%)	0/1 (0.0%)
<b>Pseudomonas &amp; Acinetobacter</b>													
NDM-1	<i>Pseudomonas aeruginosa</i>	5	0/5 (0.0%)	2/4 (50.0%)	0/4 (0.0%)	0/4 (0.0%)	0/4 (0.0%)	0/4 (0.0%)	^	4/5 (80.0%)	0/2 (0.0%)	0/5 (0.0%)	0/5 (0.0%)
NDM-1,IMP-62	<i>Pseudomonas aeruginosa</i>	1	0/1 (0.0%)	0/1 (0.0%)	1/1 (100.0%)	0/1 (0.0%)	0/1 (0.0%)	0/1 (0.0%)	^	0/1 (0.0%)	-	0/1 (0.0%)	0/1 (0.0%)
NDM-1, OXA-94	<i>Acinetobacter baumannii</i>	1	0/1 (0.0%)	0/1 (0.0%)	1/1 (100.0%)	1/1 (100.0%)	1/1 (100.0%)	0/1 (0.0%)	-	1/1 (100.0%)	^	0/1 (0.0%)	^

Legend	
^	Intrinsic Resistance Reported
-	No isolates tested

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

NDM-1 gene carbapenemase-producing organisms (*Enterobacterales*, *Acinetobacter*, *Pseudomonas*) isolates identified or submitted to the Microbiological Diagnostic Unit Public Health Laboratory (MDU PHL) between 10/01/2019 and 16/06/2021 with available susceptibility data are included in the analysis above. Antimicrobial susceptibility testing was performed by broth microdilution, except for fosfomycin (agar dilution). Please note, due to the small sample size, results are included for bug-drug combination with as few as one observation; this may limit the accuracy of inferences, please interpret with caution. 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 11.0, 2021. <http://www.eucast.org>.

\*Ceftazidime/Avibactam is not active against metallo-beta-lactamases.

\*\*Ceftolozane/Tazobactam is not active against carbapenemases.

\*\*\* No isolates tested reported susceptibility to Ceftazidime, Ampicillin, Amp-Sulbact, Cefepime or Ceftriaxone.