

7 SURVEILLANCE FOR ANTIMICROBIAL RESISTANCE

a Update on carbapenemase-producing Enterobacteriaceae

The Johannesburg Antimicrobial Resistance Laboratory and Culture Collection (AMRL-CC) of the Centre for Opportunistic, Tropical and Hospital Infections (COTHI) at the NICD has been testing referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemase genes. CPE have become a threat to healthcare and patient safety worldwide by compromising empiric antibiotic therapeutic choices and increasing morbidity, hospital costs and the risk of death. CPE surveillance is required to determine the extent of the problem as a first step in order to restrain the emergence and spread of CPE. In December 2015, a total of 132 Enterobacteriaceae isolates were received. One-hundred and thirty isolates were screened, 106 of which expressed carbapenemases (Table 1 and Table 2). The majority of these CPE isolates were *Klebsiella pneumoniae* (84) followed by *Enterobacter cloacae* (9).

It is important to note that these figures do not represent the current burden of CPEs in South Africa. Given that CPE infections are currently not reportable or notifiable in South Africa, there is no platform for appropriate surveillance reports and consequently no locally representative data is available. This is of major concern, since meaningful data can inform public health policy and highlight priorities for action. Controlling the spread and limiting the impact of CPEs in South Africa will require intensive efforts in both the public and private healthcare sectors going forward. NHLS and private laboratories are encouraged to submit suspected CPE isolates based on antimicrobial susceptibility testing (AST) criteria to AMRL-CC, NICD/NHLS. Please telephone (011) 555 0342/44 or email: olgap@nicd.ac.za; for queries or further information.

Source: Centre for Opportunistic, Tropical, and Hospital Infections, NICD-NHLS; (olgap@nicd.za.za)

Table 4. Enterobacteriaceae by CPE enzyme type, AMRL-CC, COTHI, NICD, 2015

Organism	NDM		KPC		OXA-48 & Variants		VIM		GES	
	Dec-15	Jan-Nov-15	Dec-15	Jan-Nov-15	Dec-15	Jan-Nov-15	Dec-15	Jan-Nov-15	Dec-15	Jan-Nov-15
<i>Citrobacter freundii</i>	2	16	-	2		2		2	-	2
<i>Enterobacter cloacae</i>	5	18	-	1	3	12	1	4	-	-
<i>Enterobacter kobei</i>	1	-	-	-	-	-	-	-	-	-
<i>Escherichia coli</i>	1	13	-	2		41		4		2
<i>Klebsiella pneumoniae</i>	35	260	1	6	44	117	3	37	1	8
<i>Morganella morganii</i>	1	2	-	-	-	-	-	-	-	-
<i>Providencia rettgeri</i>	3	20	-	-	-	-	-	-	-	-
<i>Serratia marcescens</i>	5	42	-	-	-	6	-	2	-	1
Total	53	371	1	11	47	178	4	49	1	13

Table 5. Enterobacteriaceae isolates by specimen type and province, AMRL-CC, CO THI, NICD, 2015

Organism	EC	FS	GA	KZ	WC	Total Dec-15	Total Jan- Nov-15
<i>Citrobacter freundii</i>	-	-	-	1	2	3	16
Sterile	-	-	-	-	2	2	10
Non-sterile	-	-	-	-	-	-	1
Unknown	-	-	-	1	-	1	5
<i>Enterobacter cloacae</i>	3	5	8	-	1	17	94
Sterile	2	3	8	-	1	14	61
Non-sterile	1	2	-	-	-	3	16
Unknown	-	-	-	-	-	-	15
Not stated	-	-	-	-	-	-	2
<i>Enterobacter kobei</i>	1	-	-	-	-	1	-
Unknown	1	-	-	-	-	1	-
<i>Escherichia coli</i>	-	-	-	1	-	1	65
Sterile	-	-	-	-	-	-	50
Non-sterile	-	-	-	-	-	-	9
Unknown	-	-	-	1	-	1	6
<i>Klebsiella pneumoniae</i>	12	-	56	25	3	96	447
Sterile	3	-	36	11	3	53	280
Non-sterile	9	-	17	2	-	28	53
Unknown	-	-	3	12	-	15	108
Not stated	-	-	-	-	-	-	6
<i>Morganella morganii</i>	-	-	3	-	-	3	7
Sterile	-	-	3	-	-	3	2
Non-sterile	-	-	-	-	-	-	2
Unknown	-	-	-	-	-	-	3
<i>Providencia rettgeri</i>	-	-	3	-	1	4	20
Sterile	-	-	2	-	-	2	12
Non-sterile	-	-	1	-	-	1	-
Unknown	-	-	-	-	1	1	8
<i>Serratia marcescens</i>	-	-	1	4	-	5	50
Sterile	-	-	1	-	-	1	11
Unknown	-	-	-	4	-	4	38
Not stated	-	-	-	-	-	-	1
Total	16	5	71	31	7	130	1398

NDM: New Delhi metallo-beta-lactamase; **KPC:** *Klebsiella pneumoniae* carbapenemase; **OXA:** oxacillinase; **VIM:** verona integron-encoded metallo-beta-lactamase; **GES:** Guiana extended-spectrum beta-lactamase