5 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 have 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. For November 2015, a total of 103 Enterobacteriaceae isolates were received. Ninety-four carbapenem-resistant isolates were screened, 75 of which were CPE isolates (Table 2 and Table 3). Majority of the CPE isolates were *Klebsiella pneumoniae* (41) followed by *Escherichia coli* (13) and *Serratia marcescens* (7).

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

Table 2. Enterobacteriaceae by CPE enzyme type, AMRL-CC, COTHI, NICD, 2015

Organism	NDM		OXA-48		VIM	
	Nov-15	Jan-Oct 2015	Nov-15	Jan-Oct 2015	Nov-15	Jan-Oct 2015
Klebsiella pneumoniae	21	227	19	86	3	29
Enterobacter cloacae	3	14	1	10	-	4
Serratia marcescens	6	33	1	5	-	2
Providentia rettgeri	2	18	-	26	-	-
Escherichia coli	1	9	12	26	-	2
Citrobacter freundii	3	11	-	-	-	-
Klebsiella oxytoca	-	9	1	2	1	3
Other Enterobacteriaceae	2	8	1	-	1	1
Total	**38**	**329**	**35**	**155**	**5**	**41**

NDM: New Delhi metallo-beta-lactamase; **OXA**: oxacillinase; **VIM**: verona integron-encoded metallo-beta -lactamase

Table 3. Enterobacteriaceae isolates by specimen type and province, AMRL-CC, COTHI, NICD, 2015

Organism	GP	KZN	WC	FS	EC	Unk	Total Nov 2015	Total Jan-Oct 2015
Klebsiella pneumoniae	**27**	**5**	**3**	**4**	**3**	**8**	**50**	**389**
Sterile	**14**	**3**	**3**	**1**	**3**	**2**	**26**	206
Non-sterile	6	1	-	3	-	2	12	103
Unknown	7	1	-	-	-	4	12	80
Enterobacter cloacae	**7**		**1**	**-**	**-**	**4**	**12**	**81**
Sterile	5	-	1	-	-	1	-	46
Non-sterile	2	-	-	-	-	1	-	23
Unknown	-	-	-	-	-	2	-	12
Escherichia coli	**15**	**-**	**-**	**-**	**-**	**-**	**15**	**49**
Sterile	14	-	-	-	-	-	-	24
Non-sterile	-	-	-	-	-	-	-	20
Unknown	1	-	-	-	-	-	-	5
Serratia marcescens	-		-	-	1	6	**7**	**40**
Sterile	-	-	-	-	1	-	-	8
Non-sterile	-	-	-	-	-	-	-	3
Unknown	-	-	-	-	-	6	-	29
Klebsiella oxytocoa	**1**	**-**	**-**	**-**	**-**	**-**	**1**	**17**
Sterile	1	-	-	-	-	-	-	12
Non-sterile	-	-	-	-	-	-	-	1
Unknown	-	-	-	-	-	-	-	4
Citrobacter freundii	**2**	**-**	**-**	**-**	**-**	**1**	**3**	**13**
Sterile	2	-	-	-	-	1	-	7
Non-sterile	-	-	-	-	-	-	-	2
Unknown	-	-	-	-		-	-	4
Other Enterobacteri-aceae	3	2	-	-	-	1	**6**	**67**
Sterile	2	-	-	-	-	-	-	29
Non-sterile	-	-	-	-	-	-	-	16
Unknown	1	2	-	-	-	1	-	22
Total Jan-Oct 2015	**308**	**122**	**11**	**27**	**78**	**101**	**94**	**656**