

## 7 SURVEILLANCE FOR ANTIMICROBIAL RESISTANCE

### a Update on carbapenemase-producing Enterobacteriaceae

The 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 February 2016, a total of 92 Enterobacteriaceae isolates were received. Seventy-eight isolates were screened, 61 of which expressed carbapenemases (Table 2 and Table 3). The majority of these CPE isolates were *Klebsiella pneumoniae* (59) followed by *Enterobacter cloacae* (8).

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](mailto:olgap@nicd.ac.za); for queries or further information.

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

**Table 2.** Enterobacteriaceae by CPE enzyme type, AMRL-CC, COTHI, NICD, January and February 2016

Organism	NDM		OXA-48 & Variants	
	Jan 2016	Feb 2016	Jan 2016	Feb 2016
<i>Citrobacter amalonaticus</i>	-	-	-	1
<i>Citrobacter freundii</i>	1	1	-	1
<i>Enterobacter aerogenes</i>	-	-	1	1
<i>Enterobacter cloacae</i>	5	1	4	1
<i>Escherichia coli</i>	-	-	3	1
<i>Klebsiella oxytoca</i>	-	1	-	-
<i>Klebsiella pneumoniae</i>	19	20	34	32
<i>Morganella morganii</i>	-	-	-	-
<i>Proteus mirabilis</i>	-	-	-	1
<i>Serratia marcescens</i>	5	2	2	-
Grand total	34	25	44	36

**NDM:** New Delhi metallo-beta-lactamase; **OXA:** oxacillinase.

**Table 3:** Enterobacteriaceae isolates by specimen type and province, AMRL-CC, CO THI, NICD, January– and February 2016

Organism	EC	FS	GA	KZ	WC	Total Feb 2016	Total Jan 2016
<b><i>Citrobacter amalonaticus</i></b>	<b>1</b>	-	-	-	<b>1</b>	<b>2</b>	-
Non-sterile	1	-	-	-	1	2	
Sterile	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-
Not stated	-	-	-	-	-	-	-
<b><i>Citrobacter freundii</i></b>	-	-	<b>1</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>2</b>
Non-sterile	-	-	-	-	-	-	-
Sterile	-	-	-	1	1	2	2
Unknown	-	-	-	-	-	-	-
Not stated	-	-	-	-	-	-	-
<b><i>Enterobacter aerogenes</i></b>	-	<b>1</b>	-	-	<b>1</b>	<b>2</b>	<b>1</b>
Non-sterile	-	-	-	-	-	-	1
Sterile	-	1	-	-	1	2	-
Unknown	-	-	-	-	-	-	-
Not stated	-	-	-	-	-	-	-
<b><i>Enterobacter cloacae</i></b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>8</b>	<b>16</b>	<b>18</b>
Non-sterile	-	-	-	-	-	-	4
Sterile	1	4	-	2	7	14	11
Unknown	-	-	1	-	1	2	3
Not stated	-	-	-	-	-	-	-

Organism	EC	FS	GA	KZ	WC	Total Feb 2016	Total Jan 2016
<b><i>Escherichia coli</i></b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>3</b>
Non-sterile	1	-	-	1	2	4	3
Sterile	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-
Not stated	-	-	-	-	-	-	-
<b><i>Klebsiella oxytoca</i></b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>1</b>
Non-sterile	-	-	-	-	-	-	-
Sterile	-	1	-	-	1	2	1
Unknown	-	-	-	-	-	-	-
Not stated	-	-	-	-	-	-	-
<b><i>Klebsiella pneumoniae</i></b>	<b>18</b>	<b>24</b>	<b>9</b>	<b>7</b>	<b>58</b>	<b>116</b>	<b>59</b>
Non-sterile	16	8	-	1	25	50	13
Sterile	1	12	2	6	22	44	39
Unknown	-	4	7	-	11	22	7
Not stated	-	-	-	-	-	-	-
<b><i>Morganella morganii</i></b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>-</b>
Non-sterile	-	-	-	-	-	-	-
Sterile	-	1	-	-	1	2	-
Unknown	-	-	-	-	-	-	-
Not stated	-	-	-	-	-	-	-
<b><i>Proteus mirabilis</i></b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>-</b>
Non-sterile	-	-	-	-	-	-	-
Sterile	-	-	-	-	-	-	-
Unknown	-	1	-	-	1	2	-
Not stated	-	-	-	-	-	-	-
<b><i>Providencia rettgeri</i></b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>4</b>
Non-sterile	-	-	-	-	-	-	-
Sterile	-	1	-	-	1	2	4
Unknown	-	-	-	-	-	-	-
Not stated	-	-	-	-	-	-	-
<b><i>Serratia marcescens</i></b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>-</b>	<b>2</b>	<b>4</b>	<b>7</b>
Non-sterile	-	-	-	-	-	-	-
Sterile	-	1	-	-	1	2	2
Unknown	-	-	1	-	1	2	3
Not stated	-	-	-	-	-	-	2
<b>Grand Total</b>	<b>21</b>	<b>34</b>	<b>12</b>	<b>11</b>	<b>78</b>	<b>156</b>	<b>95</b>