

4 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 has been testing referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemases. 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. We are receiving clinically significant isolates from all specimen types, based on antimicrobial susceptibility testing criteria, for molecular confirmation. For December 2016, a total of 124 Enterobacteriaceae isolates was received. One hundred and one isolates were screened, 90 of which expressed the carbapenemases that were screened for. Five isolate expressed two carbapenemases (NDM and OXA-48 & variants, n=3 and NDM and GES, n=2) (Table 1). The majority of the screened isolates were *Klebsiella pneumoniae* (70) followed by *Enterobacter cloacae* (16).

It is important to note that these figures do not represent the current burden of CPEs in South Africa.

ca. However our data reveal the presence of carbapenemases in Enterobacteriaceae isolates from all specimen types, nationally. As a first step CPE surveillance is required to determine the extent of the problem in order to restrain the emergence and spread of resistance. The AMRL-CC is currently running a surveillance programme at national sentinel sites for CPE infections in patients with bacteraemia which provides representative data. This significant data will inform public health policy and highlight priorities for action. Controlling the spread and limiting the impact of CPEs in South Africa requires 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.ac.za

Table 1. Enterobacteriaceae by CPE enzyme type for December 2016 and January-November 2016 at AMRL-CC, COTHI, NICD.

Organism	NDM		OXA-48 & Variants		GES	
	Jan-Nov 2016	Dec 2016	Jan-Nov 2016	Dec 2016	Jan-Nov 2016	Dec 2016
<i>Citrobacter freundii</i>	9	-	7	1	-	-
<i>Citrobacter koseri</i>	-	-	-	1	-	-
<i>Enterobacter aerogenes</i>	1	-	7	1	-	-
<i>Enterobacter cloacae</i>	29	3	45	11	-	1
<i>Escherichia coli</i>	11	-	84	5	-	-
<i>Klebsiella oxytoca</i>	2	1	5	1	1	-
<i>Klebsiella pneumoniae</i>	267	15	480	49	10	2
<i>Providencia rettgeri</i>	16	1	1	-	-	-
<i>Salmonella</i> spp.	-	1	-	-	-	-
<i>Serratia marcescens</i>	29	1	24	1	3	-
Total	364	23	653	70	14	3

NDM: New Delhi metallo-beta-lactamase; **OXA:** oxacillinase; **GES:** *Guiana* extended spectrum *beta* lactamase.