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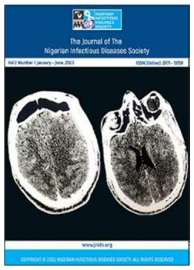

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Carbapenem Non-susceptible Enterobateriaceae Carriage among Patients Attending Healthcare Facilities in Ibadan, Nigeria

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ABSTRACT

Background: Gastrointestinal carriage of Carbapenem Resistant Enterobacteriaceae (CRE) may serve as a source of infection in healthcare settings and increasingly, the community. CREs and those with intermediate susceptibility to carbapenems (CIE), may evade carbapenems , the preferred last-line therapeutics. We describe the frequency of CRE or CIE rectal colonization and their antimicrobial susceptibilities.

Methods: Rectal swab samples were collected from 292 patients (45, 67 and 180 from primary, secondary and tertiary facilities, respectively) between 6th December 2021 and 28th September 2022. The swabs were cultured on agar plates and isolates identified using API prior to antimicrobial susceptibility testing. CRE detection was done using carbapenem inactivation method (CIM).

Results: 260 isolates of Enterobacteriaceae were cultured from the rectal swabs, of which 51 (19. 7%) were meropenem resistant or intermediately susceptible. Majority (35, 68.6%) of the 51 isolates were E. coli. Regarding age distribution, 22.4% of children, 16.9% of adults and 20.6% of elderly adults sampled had CRE or CIE colonization p=0.581. According to levels of care, 11. 4%, 13.8% and 24.7% of patients sampled at the primary , secondary and tertiary facilities respectively had CIE or CRE isolated from them p=0.058. Of these 51 isolates, 94.1% or more were resistant to 3 third generation cephalosporins and 92.2% were resistant to amoxicillin - clavulanate. There was 84.3%, 78.4% and 45.1% resistance to gentamicin, levofloxacin, and amikacin respectively with <16% resistance to tigecycline and colistin.

Conclusion: Gut carriage of CRE and CIE is seen in all age groups and across all level of care. These bacteria are also resistant to multiple other classes of antibiotics. Efforts should be made to obtain cultures before treatment to guide antimicrobial therapy in invasive infections suspected to be caused by Enterobacteriaceae. Strict infection control and sanitation and hygiene practices are required to prevent nosocomial and community spread of these organisms.

Key words: Carbapenem-resistance, Carbapenem susceptibility, Enterobacteriaceae, Antimicrobial resistance, Antimicrobial Stewardship