tional use of expanded spectrum cephalosporins and to decrease the antibiotic pressure and treatment failure in clinical setting in this part of the world.

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Beta-lactamases in a Nepalese hospital: Wake up before the "biological quake" destroys you

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Background: In this era of modern medicine, antimicrobial resistance has emerged as a major health catastrophe. Emergence of drug resistance mechanisms like Extended-spectrum beta–lactamases (ESBLs), AmpC beta-lactamases and metallo-beta-lactamases (MBLs) can be regarded as "biological quake" posing therapeutic challenge to the health care settings. Therefore, this study was designed to determine the prevalence of ESBL-, MBL-, AmpC-producing bacteria in hospital-admitted patients.

Methods & Materials: A prospective study was conducted among the inpatients of Medicare National Hospital in central Kathmandu for four months (April-July, 2015), a period when the hospital was engaged with "Nepal Earthquake 2015" victims too. Different clinical specimens were collected, processed and the isolates were identified following standard methodology. Antibiotic sensitivity test was done by Kirby-Bauer disc diffusion method. ESBL was detected by standard combination disc method. Besides, tests for ESBL, AmpC, and co-production of ESBL and AmpC were done by MASTDISCS^{TM} ID AmpC and ESBL Detection Discs, as well as ESBL and AmpC detection Ezy MIC^{TM} Strip (HiMedia, India). EDTA-Imipenem combination disc method was followed for MBL detection.

Results: Among the total 75 gram-negative bacterial isolates resistant to third generation cephalosporin, ESBL was seen in 30.6% (n=23). Similarly, MBL and AmpC production were seen in 8% (n=6) and 1.3% (n=1) respectively. Interestingly, ESBL-AmpC co-production was found in 4% (n=3). *Escherichia coli* was the most frequent ESBL-producer (n=20). *E. coli* was found to produce MBL (n=4), AmpC (n=1), and ESBL-AmpC combination (n=2) as well. Two isolates of *P. aeruginosa* were ESBL-AmpC co-producers. Out of 23 ESBL-producer, 78.2% (n=18) were from intensive care unit patients. The ESBL-producing bacteria showed sensitivity to different antibiotics as follows- meropenem (n=21, 91.3%), amikacin (n=20, 86.9%), and cefoperazone-sulbactam (n=19, 82.6%). Consistent results were found with different methods employed for detection of ESBL and AmpC.

Conclusion: ESBL-producing bacteria were more commonly seen though AmpC- and MBL-producers were relatively less Identification, characterization and surveillance of antibiotic susceptibility profile of beta-lactamase-producing organisms can lead to successful infection control.

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Fecal carriage of carbapenem resistant enterobacteriaceae (CRE) and risk factor analysis in hospitalised patients: A single centre study from India

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Background: Carbapenem resistant *Enterobacteriaceae* (CRE) have emerged and disseminated widely causing a variety of infections. The emergence of carbapenem resistant *Enterobacteriaceae* is associated with limited therapeutic options and increased mortality in patients infected by these strains. These organisms also have the propensity to undergo widespread dissemination via mobile genetic elements. Enteric strains possessing these carbapenemases have shown remarkable success in the form of large scale geographical dissemination. Gut colonization by CRE may act as reservoir of these pathogens for dissemination within an enclosed setting as in a hospital. To the best of our knowledge, there are no studies of CRE fecal carriage using genotypic methods and those analysing risk factors leading to such colonization in hospitalised patients in India.

Methods & Materials: We conducted the present study to observe gut carriage rate of CRE in patients presenting to our tertiary care hospital using both phenotypic (modified Hodge test) and genotypic (polymerase chain reaction for bla_{VIM}, bla_{KPC},bla_{IMP} and bla_{NDM-1} genes) methods and tried to identify the risk factors for CRE gut colonization.

Results: A total of 239 fecal swabs yielded 259 *Enterobacteriaceae* isolates, of which 108 isolates (majority included *E. coli* and *Klebsiella* spp.) from 84 patients showed presence of CRE (prevalence 84/239; 35.14%); 28 isolates from 23 patients had bla_{NDM-1} while 20 isolates from 17 patients possessed bla_{VIM} gene. No isolate was positive for bla_{KPC} and bla_{IMP} genes. Although highest isolation of CRE was from the wards, approximately half of patients of intensive care units yielded CRE in fecal swabs. The CRE were also found to have significantly high antimicrobial resistance as compared to non-CRE isolates. Multivariate analysis of risk factors showed use of any antibiotic (P = 0.002), cephalosporins use (P = 0.000) and presence of any indwelling device (P = 0.014) as independent risk factors for acquiring gut colonization.

Conclusion: The study is the first from India to show high CRE carriage in patients admitted to a tertiary care centre and emphasises the need of strict antimicrobial stewardship implementation in hospitals to prevent dissemination of multidrug resistant CRE.

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