

Evaluation of the Results of *In-vitro* Primary Antimicrobial Susceptibility Testing for Positive Blood Cultures with *Enterobacteriaceae* According to Clinical Laboratory Testing Standards Institute ABST Guidelines

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Abstract

Antimicrobial Susceptibility Testing (ABST) is used to determine the effectiveness of different antibiotics against specific bacteria or microorganisms. The main objectives of this study were to determine the antimicrobial susceptibility of *Enterobacteriaceae* isolated from blood cultures of tertiary care hospitals and to compare the proper ABST results with the primary ABST results of the blood cultures for different antibiotics in the disk diffusion method. A descriptive cross-sectional study was conducted among patients with positive blood cultures with *Enterobacteriaceae* at Sri Jayewardenepura General Hospital. A total number of 34 samples were collected within a period from 09th of March to 09th of April 2023 and both primary and proper ABST were conducted. Statistical Package for Social Sciences version 25 software and World Health Organisation network 2023 software were used for the analysis of the study and evaluation of results. According to the primary results, *Enterobacteriaceae* from positive blood cultures were highly resistant to amoxicillin / clavulanic acid (susceptibility-32.4%), cefotaxime (susceptibility-32.4%), amikacin (susceptibility-23.5%), gentamicin (susceptibility-32.4%), cefuroxime (susceptibility-17.6%), ciprofloxacin (susceptibility-8.8 %) and piperacillin/tazobactam (susceptibility-29.4%). Highest sensitivity in *Enterobacteriaceae* from the positive blood cultures were for meropenem (susceptibility-67.6%). Co-trimoxazole (susceptibility-58.8%) and netilmicin (susceptibility-52.9%) showed remarkable susceptibility. Comparison of primary and proper ABST demarcated that few isolates with all antibiotics had major errors in results, i.e., resistant, and susceptible. Meropenem had the highest rate of susceptibility of all antibiotics. Most *Enterobacteriaceae* isolates showed no major errors in primary and proper ABST test results in *Enterobacteriaceae* in blood cultures.

Keywords: *In-vitro*, Antibiotic sensitivity testing, *Enterobacteriaceae*, Clinical Laboratory Testing Standards Institute, Disk diffusion method, Blood culture