Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Method: Bacterial DNA was extracted and amplified using targeted AMEs gene-specific primers and sequence analysis was done to determine the mutation. Isolates were also investigated for efflux pump activity using efflux pump inhibitor (EPI) i.e. Carbonyl cyanide m-chlorophenyl hydrazone (CCCP) and the impact of both mechanisms was analyzed on the susceptibility of bacteria. 

Results: Among A. baumannii isolates, 55% isolates (n=22/40) were identified to have aminoglycoside modifying en- zymes; ant(3’)I gene (50.5%/11/ 22.), acc1B gene (45.4%/10/22), aph(3’)I gene (18.1%/4/22 ) and acc gene (9.1%/2/22). Two mutations T278C, G509T were identified in the aac(6’)-Ib gene with no increase in resistance level. Also, an aminoglycoside sensitive strain showed mutation (T324C) in the aac(6’)-Ib gene. A total of 28 isolates (70%) have shown an efflux pump activity, Efflux pump activity was found in 100% of amikacin sensitive isolates and 58.6% in amikacin resistant isolates and 93.7% and 57.1% among gentamicin sensitive and resistant isolates respectively. With the EPI (CCCP) treatment, alteration in the MIC values was found among isolates having individual AMEs [ant(3’)-I, acc1B, and aph (3’)I] genes and resulted in a reversal of susceptibility pattern.

Conclusions: The presence of aminoglycosides modifying enzymes is frequent among aminoglycosides resistant A. baumannii isolates and the coexistence of efflux pumps activity may interfere with the phenotypic expression of drug resistance.

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COMPARISON OF PHENOTYPIC METHODS FOR DETECTION OF COLISTIN RESISTANCE IN GRAM NEGATIVE BACTERIA

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Background: Colistin is one of the most important last line drugs to treat bacterial infections, especially those caused by carbapenem resistant bacteria. However, with the increasing use of colistin, incidence of colistin resistance have also increased. To complicate the problem further, there is no reliable phenotypic method to detect colistin resistance other than broth micro dilution which is both time consuming and labour intensive. Hence, this study was undertaken to study and compare the various phenotypic methods used for detection of colistin resistance in Gram negative bacteria.

Method: In our study conducted over a period of 15 months, consecutive non repeat samples of gram negative bacte- ria detected to have colistin resistance on VITEK 2 were collected. They were further subjected to testing for colistin resistance by broth microdilution (Gold standard) and E-strip and the results were compared

Results: A total of 28 Klebsiella pneumoniae which were colistin resistant in VITEK 2 were collected during the study period. All of the isolates were resistant to colistin on broth microdilution. However, on E -strip MIC testing, 4 out of 28 isolates were found to be sensitive. Our study had the drawback of less sample size and lack of control arm due to paucity of the testing kits

Conclusions: Microbroth dilution at present stays the gold standard method for testing of Colistin resistance while other methods are less reliable

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PREVALENCE OF METALLO-β-LACTAMASE (MBL) PRODUCING PSEUDOMONAS AERUGINOSA ISOLATED FROM PATIENTS ATTENDING TEACH- ING TERTIARY CARE HOSPITAL

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Background: Metallo-β-lactamase (MBL) - PA is an emerging threat. As they are carried by plasmids and integrons it is necessary to prevent their dissemination. Objectives: Our study was conducted with the following objectives 1. To find out the prevalence of Metallo beta lactamase producing Pseudomonas aeruginosa (MBL-PA) in our hospital. 2. To deter- mine antimicrobial susceptibility pattern of MBL Pseudomonas aeruginosa. 

Method: Institutional Ethical Committee approval was obtained. Prospective study – 1 year. Samples such as urine, respiratory tract samples, blood, ear swabs, wound swabs, and pus obtained during the study were analysed. All speci- mens were cultured on MacConkey agar and nonselective blood agar media. P. aeru- ginosa isolates were identified by standard microbiological and biochemical methods. Samples showing growth of PA was included. All of them were sub- jected to susceptibility testing to anti-pseudomonal drugs as per CLSI guidelines. The antibiotic discs used were as fol- lows: ceftazidime (30 μg), Cefepine (30 μg), Piperacillin-tazobactam (100 μg/10 μg), Ciprofloxacin (5 μg), levofloxacin (5 μg), Gentamicin (10 μg), Amikacin (30 μg), Aztreonam (10 μg). The MIC for Imipenem was determined by E test. An iso- late with MIC ≥8 μg/ml is categorized as imipenem resistant. 

Results: A total of 29Shigella species were isolated by conventional method from 386 stool and rectal swab samples received in our Clinical Laboratory of Department of Microbiology for a period of 12 months were included in the study. All isolates were confirmed to be Shigella Flexneri by Antiserum testing( Denka Seikan Co, Tokyo,Japan) All isolates were subjected to antimicrobial susceptibility testing (AST) by Modified Kirby-Bauer disc diffusion methods and results were interpreted according to CLSI. 

Results: Of the 386 stool and rectal swab samples 29 Shigella flexneri were isolated of which ESBL was detected in 31.03%. Highest resistance was seen towards Nalidixic acid (96.55%) followed by Ofloxacin (82.75%) and Ciprofloxacin (62.06%). Whereas Ceftriaxone was sensitive in (68.96%) and Azithromycin in (89.65%) isolates.

Conclusions: Our present study shows the prevalence of Shigella species and their multi drug resistance pattern. Hence regular surveillance and monitoring of antibiotic sensitivity pattern is required. Further indiscriminate use of antimicrobials should be discouraged to prevent the emergence of multi drug resistance.

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A STUDY OF PREVALENCE OF MDROS PRE AND POST COVID-19 OUTBREAK

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Background: With the advent of COVID19, Infection control practices were followed rampantli in all health institutions. Whether these practices were able

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to restrict Multi-drug resistant organisms (MDROs) was an interesting thought. So a retrospective study was conducted to find out the prevalence of the MDROs before and after April 2020.

**Methods:** Total number of specimens sent for culture were reviewed from October 2019 till March 2020. The number of isolates were calculated and the number of MDROs were recognised. The same was done from April 2020 till August 2020 in a tertiary care hospital.

**Results:** A total of 1328 specimens were received from October 2019 to March 2020. 228 isolates were recovered from 221 culture positive specimens. 111 isolates from 228 were MDROs giving a prevalence of 48%. 500 specimens were received from April 2020 to August 2020 and 100 isolates were recovered from 96 culture positive specimens. Out of 100 isolates 41 were MDROs giving a prevalence of 41%. There was a reduction of 7% in the prevalence of MDROs.

**Conclusions:** Strict infection control practices like mask, social distancing and hand hygiene were followed after COVID19 outbreak. These practices seemed to have helped to reduce the prevalence of MDROs as seen in our study. If these are continued ever we may be able to control MDROs further.

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**SURVEILLANCE OF CARBAPENEM RESISTANT ENTEROBACTERIALES FROM RECTAL SWAB AMONG IMMUNOCOMPROMISED PATIENTS FOR INFECTION CONTROL MEASURES**

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**Background:** Nosocomial spread of Carbapenem Resistant Enterobacteriales (CRE) is very common amongst patients in health care set ups. Prompt diagnosis and prompt implementation of infection control measures (ICM) are the need of the hour. Therefore surveillance of rectal swabs can fulfill the purpose, especially amongst the immunocompromised groups. Aim of the study is to find out the prevalence of CRE amongst the immunocompromised patients and to evaluate the common genes prevalent amongst these organisms by GenXpert Carba test.

**Methods:** This retrospective analysis was done over a period of 20 months, from April, 2019 to November, 2020 in the Department of Microbiology in Dharmshtila Narayana Superspeciality Hospital, Delhi. Rectal samples were collected using sterile swabs by inserting the swab 1 cm into the rectum while rotating the swab. The swabs were placed in Amies transport medium. Samples were vortexed for 1 min at maximum speed upon arrival to the lab and processed in both MacConkey agar and Blood agar media. Culture plates were incubated for 24 hours and checked for growth of lactose fermenting and non-lactose fermenting colonies for further processing. In case of growth, the isolates were tested for CRE status by using carbenapenem disks. In 57 of the CRE positive cases, repeat rectal swabs were taken and processed for Xpert Carba-R (Cepheid, Sunnyvale, CA, USA).

**Results:** Total rectal swabs processed were 1428; growth of CRE isolates were 400 (28.01%). CRE E. coli (290, 72.5%) predominated over CRE Klebsiella spp. (102, 25.5%). 57 rectal swab culture positive patients were screened for Xpert Carba-R test using rectal swab specimens. This was used to detect five common carbapenemase genes (blaKPC, blaNDM, blaVIM, blaIMP-1, and blaOXA-48). The most common combination of enzymes that was prevalent were blaNDM and blaOXA-48 (34, 59.65%).

**Conclusions:** Rectal swab specimens are helpful for surveillance purpose to know the carriage status of the patient for CRE isolates. Direct rectal swab specimens for GenXpert Carba assay is another helpful diagnostic tool for implementa- tion of prompt infection control measures. This can also be helpful in treatment purpose as well. Use of broad spec- trum, newly available drug Ceftazidime –avibactum use can be restricted by this test method. In case of Pan Drug re- sistant cases, use of the new drug can be systematized by the GenXpert Carba test.

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**DETECTION OF METALLO-BETA-LACTAMASE PRODUCING PSEUDOMonas AERUGINOSA IN INTENSIVE CARE UNITS OF A TERTIARY CARE HOSPITAL IN AJMER, RAJASTHAN**

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**Background:** Pseudomonas aeruginosa possesses intrinsic resistance to antibiotics and commonly used disinfectants and in due course of time, has unfortunately acquired resistance to a number of antimicrobial agents such as beta lactams, quinolones, tetracyclines and sulphonamides. It is the most frequently isolated troublesome pathogen causing life threatening respiratory tract infection (ventilator associated pneumonia), surgical site and urinary tract infections in patients from ICU. Metallo-beta-lactamase (MBL) producing Pseudomonas aeruginosa has emerged as a threat to hospital infection control.

**Methods:** A prospective study was undertaken to detect MBLs in 100 P. aeruginosa isolates obtained from various clinical samples received from various intensive care units and inpatient dormitories. A total of 14 strains were recovered from patients admitted in ICUs between November 2019 to October 2020, and screened for imipenem resistance by Kirby Bauer disk diffusion method. Detection of MBLs was further done by imipenem-EDTA disk synergy test, combined disk diffusion test and modified hodge test.

**Results:** Out of 14 isolates, 3 isolates (21.4 per cent) were imipenem resistant. All 3 imipenem resistant P. aeruginosa strains, when further tested, were positive for MBL production by combined disk diffusion test, but, only one showed positive results by imipenem-EDTA disk synergy test and modified hodge test.

**Conclusions:** The results of this study are indicative that MBL production is an important mechanism of carbapenem resistance among P. aeruginosa. Phenotypic test for MBL production should be standardized, and all the isolates should be routinely screened for MBL production.

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**STUDY OF RESISTANCE TO COLISTIN AND TIGECYCLINE IN KLEBSIELLA SPECIES ISOLATED FROM SPECIMENS OF ICU PATIENTS**

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**Background:** Klebsiella species have been among the most common pathogens isolated in ICUs in recent years. Extremely vulnerable population of critically ill patients, heavy use of invasive procedures, and frequent use of antimicrobials in the ICU settings have built an environment for creating, disseminating, and amplifying antimicrobial resistance. Multidrug resistance in Klebsiella species leads to frequent failures in the empirical therapy by broad spec- trum antibiotics. Tigecycline and Colistin are the higher end antimicrobials used against such bacteria. Hence it becomes useful to know the Minimum Inhibitory Concentrations (MIC) of these antibiotics to optimize their use against these multi-drug resistant bacteria.

**Methods:** 200 Klebsiella isolates from pus, urine, blood, CSF and respiratory samples were identified following standard laboratory protocol. Antimicrobial sensitivity profile of isolated Klebsiella species was determined by Kirby Bauer Disc Diffusion method. MIC of Tigecycline and Colistin was calculated by E-test and microbroth dilution method. Hetero- resistance in Klebsiella isolates to Colistin was determined by E-strip method and heteroresistance to Tigecycline was determined by Disk diffusion and E-strip method.

**Results:** Resistance to colistin was 3% and 7.5% detected by E-strip and broth microdilution method respectively. Resistance to tigecycline was 98% and 49.5% detected by E-strip and broth microdilution method respectively. Maximum resistance was seen in Ceftazidime 94.5% and Ciprofloxacin 91% followed by Imipenem 49%. Maximum sensitivity was observed in colistin 92.5% followed by imipenem 51% and tigecycline 50.5%. Multidrug resistance was observed.