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832. Assessment of Risk Factors Associated with Wide-resistance Gram-negative Bacterial Infections
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Session: P-36. HAi-Gram-negatives (MDR-GNR)
Background. Enterobacteria and multidrug-resistant non-fermenting Gram-negative bacilli present a challenge in the management of invasive infections, leading to mortality rates due to their limited therapeutic arsenal. The objective of this work was to analyze risk factors that may be associated with these infections, for a better situational mapping and assertive decision-making in a university hospital in Brazil.
Methods. The study was conducted between January and September 2019, with 167 patients in contact isolation at a university hospital in Brazil. Potential outcome-related variables for wide-resistance Gram-negative bacteria (BGN) infections were evaluated. Risk factors were identified from univariate statistical analysis using Fisher's test.

Results. 51 (30.5%) out of 167 patients in contact isolation evolved with wide resistance BGN infection. Risk factors in univariate analysis were age, hospital unit and previous use of invasive devices. Patients aged up to 59 years were more likely to progress to infection than those aged over 60 years (p = 0.0274, OR 2.2, 95% CI 1.1-4.5). Those admitted to the oncology unit (p < 0.001, OR 32.5, CI 9.1-116.3) and intensive care unit (p < 0.001, OR 28.6, CI 3.5-225.9) were more likely to develop this type of infection. The least likely were those admitted to a kidney transplant unit (p = 0.0034, OR 15.33, CI 1.8-131.0). Prior use of mechanical ventilation (p = 0.0058, OR 12.2, CI 2.0-76.1) and delayed bladder catheter (p = 0.0266, OR 5.0, CI 1.2-20.1) in patients with respiratory and urinary tract infection, respectively, were also reported as risk factors related to these infections. The gender of the patients was not significant for the study.

Conclusion. This study determined that variables such as age, hospitalization unit, use of mechanical ventilation and delayed bladder catheter could be considered important risk factors in triggering the infectious process by wide-resistant gram-negative bacteria. Thus, the analysis of these factors becomes a great foundation to prevent the development of multiresistant pathogens through prevention strategies, prophylaxis management and more targeted empirical therapies.

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833. Characteristics and Utilization Patterns of Colistin Compared with Newer Agents in Gram-negative Infections
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Session: P-36. HAi-Gram-negatives (MDR-GNR)
Background. Colistin has resurfaced in light of Gram-negative (GN) resistance. New antibiotics to treat antibiotic resistant GN infections (eg, ceftazidime-avibactam, cefepime-tazobactam, meropenem-vaborbactam [new agents]), have recently been approved but their use vs colistin is unclear. We compared the overall use of colistin and new agents from 2014 to 2018 in patient days on therapy (PDOT).

Methods. Data on non-cystic fibrosis patients from the Premier Healthcare Database was used. PDOT was tabulated quarterly for Premier hospitals and projected to the US population. A subset of data from 2016 to 2018 with microbiologically confirmed GN (MCGN) infections was selected for adult inpatients receiving ≥3 days of therapy with colistin, new agents, carbapenems, or extended-spectrum cephalosporins. The index infection was defined either as the first carbapenem-resistant (CR) or -sensitive infection if no CR infection occurred. Patients could be treated with ≥1 antibiotic per infection. Utilization was examined by pathogen and patient characteristics.

Results. PDOT with colistin decreased from 2015 to 2018, while new agents have increased (Figure). During 2015–2018, colistin and any of 3 new agents were used by 3,320 and 5,781 inpatients, respectively, of whom, 649 (20%) and 1,284 (22%) had MCGN pathogens. Colistin-treated patients were sicker than patients treated with new agents (Table), underlying renal disease was present in 34.5% vs 36.3%, and median length of stay of 17 vs 15 days, respectively. Mean total hospital cost was $93,815 vs $84,013 for colistin and new agents, respectively. Mortality was greater in colistin patients (18% vs 12%; p < 0.0001), CR infections constituted similar proportions of colistin and new agent use (79% vs 75%). Colistin accounted for 15.2% of CR carbapenem treatments and 9.7% of CR Enterobacteriales (CRE) treatments compared with 4.5% and 12.8%, respectively, for new agents. Figure. Projected Inpatient PDOT

Table 1

Table

| Baseline Characteristics | Colistin | New Agents |
|--------------------------|---------|------------|
| Age (mean), yr | 60.3 (56.6) | 61.4 (63.9) |
| Gender | 0.100 | 0.303 |
| 0 | 0.589 | 0.566 |
| 1 | 0.411 | 0.434 |
| Year | 0.860 | 0.155 |
| 0 | 0.378 | 0.914 |
| 1 | 0.622 | 0.086 |
| Charlson Comorbidity Index, mean | 3.5 | 3.4 |
| Chronic renal disease, n | 1,165 (34%) | 1,218 (39%) |
| Healthcare utilization prior 6 mo (days, LOS), mean |
| 18.9 | 15.4 |
| Hospital Course Characteristics |
| Septic/shock shock present on admission, n (%) | 1,781 (54%) | 2,845 (46%) |
| During hospital course, n |
| 1,711 (44%) | 1,311 (34%) |
| Mechanical ventilation, n (%) | 1,703 (41%) | 2,860 (44%) |
| Length of stay (days), median | 17 | 15 |
| Hospital charges (USD), mean | $93,815 | $84,013 |
| Inpatient mortality, n (%) | 0.860 | 0.155 |

Conclusion. Colistin use has decreased simultaneously with the introduction and increased use of new agents in the USA. Colistin was used more frequently in sicker patients and for Acinetobacter spp. infections than for CRE infections. Patients on colistin have worse outcomes, probably due to baseline differences in their health status.

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834. Clinical Outcomes with Carbapenem-Resistant Pseudomonas aeruginosa that Retain Susceptibility to Traditional Antipseudomonal β-lactams: Atlanta, 2016-2018
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Session: P-36. HAi-Gram-negatives (MDR-GNR)
Background. Carbapenem-resistant Pseudomonas aeruginosa (CRPA) often results from multiple mechanisms, creating unique phenotypic patterns of resistance including retaining susceptibility to traditional antipseudomonal β-lactams: ceftime