

212. Acute Kidney Injury with Piperacillin-tazobactam versus Cefepime in Combination with Vancomycin

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Session: P-8. Antimicrobial Stewardship: Trends in Antimicrobial Prescribing

Background: Drug-induced nephrotoxicity in the form of acute kidney injury (AKI) is a potential adverse effect of vancomycin, which is commonly prescribed empirically with an antipseudomonal agent. It is unclear if combinations with certain antipseudomonal agents (e.g., piperacillin-tazobactam) are associated with more AKI relative to others.

Methods: This retrospective cohort study conducted at two Veterans Affairs (VA) Medical Centers with differing preferred empiric vancomycin-antipseudomonal regimens aimed to assess the incidence of AKI in patients receiving vancomycin and piperacillin-tazobactam (VPT) at VA Greater Los Angeles Healthcare System (HCS) versus vancomycin and cefepime (VC) at VA Long Beach HCS. Patients who received VPT or VC for at least 48 hours in 2016–2018 were included. AKI definitions were derived from 2012 Kidney Disease Improving Global Outcomes guidelines. Secondary assessments included hospital length of stay, 90-day mortality, and incidence of *Clostridioides difficile* infection (CDI) within 90 days. Patients who developed AKI were further assessed for time-to-onset of AKI, development of chronic kidney disease (CKD) within 90 days, and hemodialysis (HD) dependence within 1 year. Statistical analysis was performed using Fisher's exact and Mann-Whitney U tests where appropriate. Propensity score matching using logistic regression with nearest-neighbor matching was performed to control for potential confounding baseline characteristics.

Results: 21/120 patients receiving VPT developed AKI vs. 4/120 receiving VC (17.5% vs. 3.3%, p=0.0005). After propensity score matching, AKI incidence remained significantly higher for VPT patients (15.2% vs. 4.0%, p=0.01). Median length of stay was significantly longer for VPT patients (10 days vs. 8 days, p=0.03). There was no significant difference in time-to-onset of AKI, 90-day mortality, or CDI. No significant difference was found in the development of CKD within 90 days nor the requirement of HD within 1 year.

Conclusion: VPT combination therapy was associated with increased incidence of AKI compared to VC, though 90-day mortality and other outcomes were similar. Advising prescribers about potentially increased risk of AKI with VPT is a viable stewardship intervention.

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213. An Analysis of the Impact of Gastrointestinal Polymerase Chain Reaction Panel Use on Antimicrobial use at a Tertiary Care Academic Medical Center

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Session: P-8. Antimicrobial Stewardship: Trends in Antimicrobial Prescribing

Background: Gastrointestinal Polymerase Chain Reaction (GI PCR) panels are increasingly utilized in place of conventional stool testing methods. Several studies have noted GI PCR testing is associated with a reduction in antibiotic prescribing. As it relates to the appropriate timing to order this test in hospitalized patients, one study showed decreased utility when ordered more than 72 hours into admission. At Tampa General Hospital, we utilize the BioFire® FilmArray® GI PCR panel. Since implementation in March 2015, its impact on antimicrobial use has not been formally assessed. Our aim was to evaluate the impact of the GI PCR panel and determine its usefulness as a potential tool for antimicrobial stewardship.

Methods: We conducted an IRB approved retrospective chart review in adult patients admitted to our institution who were ordered the GI PCR panel between 1/1/2018 and 12/31/19. Our primary objective was to assess antimicrobial prescribing patterns; secondary objectives included determining the quantity of tests ordered after 72 hours of admission and inpatient length of stay.

Results: Our initial chart review of 50 patients who were ordered the GI PCR panel revealed 60% (n = 30) females with an overall median age of 55 years (interquartile range (IQR): 40.75,66.75). GI PCRs were ordered a median of 1 day into the hospital admission (IQR: 1,3) with 6 patients having a test ordered longer than 72 hours into their admission. The median length of stay was 5 days (IQR: 3,7). Testing was negative for 82% of patients. For patients with positive tests, the most common pathogen identified was E coli (EPEC). Five out of 50 patients (10%) had antimicrobial therapy modified after GI PCR results. Internal medicine providers ordered the majority of tests in these patients (n = 26 (52 %)).

Conclusion: Our findings suggest the majority of GI PCRs were ordered within 72 hours of admission. However, changes in antimicrobial therapy were minimal. A limitation of our study includes patients who were on antimicrobials for other indications.

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214. Antibiotic Use for Common Infections in British Columbia: A Review of Outpatient Prescribing from 2000 - 2018.

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Session: P-8. Antimicrobial Stewardship: Trends in Antimicrobial Prescribing

Background: Antimicrobial resistance continues to jeopardize the future of modern medicine; as 92% of all antibiotics are used in the community, it is imperative to parse outpatient prescribing. In British Columbia (BC), efforts to curb the use of these essential medications have included: stewardship campaigns, practitioner guidelines, and vaccine scheduling amendments. This study reviews the trends in antibiotic use over the past two decades to identify new targets for Provincial stewardship and intervention.

Methods: Antibiotic prescription information was extracted from PharmaNet, a centralized data system that links all pharmacies with prescriptions dispensed in the community setting. The Medical Service Plan records reimbursement claims submitted by physicians for services provided, including diagnostic codes. Antibiotic prescriptions were extracted from PharmaNet and then matched to the billing system using anonymized patient identifiers. Prescription rates were calculated, and trends were examined by major anatomical therapeutic chemical (ATC) classification.

Results: Our study included 3,564,258 individuals over an 18-year period, with a total of 26,108,576 antibiotic prescriptions issued, for common infections. Overall antibiotic utilization decreased 18% (from 228 to 187 prescriptions per 1000 population) over the course of the study period. This trend was reflected in both Beta-Lactam (-37%) and Macrolide (-50%) antibiotics; two of the most common classes prescribed in the outpatient setting. A significant outlier was the J01X class of *Other Antibacterials*, which increased by a staggering 218%, by 2018. Further analyses are currently underway to stratify these changes in magnitude by demographic variables to identify specific, new targets for stewardship.

Rates of outpatient antibiotic prescriptions, for common infections, per 1000 population, by major ATC class, over time.

Antibiotic Class (ATC)	Prescriptions per 1000 Population																		
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
OVERALL USE	209.28	227.87	204.69	202.19	203.62	208.52	208.98	202.04	199.47	177.48	219.44	228.84	227.36	207.27	207.52	201.22	208.75	208.88	188.71
BETA-LACTAM ANTIBIOTICALS	165.32	167.75	168.35	168.72	169.80	167.52	167.27	164.55	162.95	144.43	164.44	163.87	164.04	163.50	163.50	162.74	163.34	163.93	148.93
MACROLIDES (LINCOSAMIDES)	58.12	44.89	39.32	38.83	38.34	40.48	43.42	40.92	35.84	32.93	45.38	41.48	41.71	42.72	40.38	40.30	39.24	38.06	22.04
OTHER BETA-LACTAM ANTIBIOTICALS	55.87	37.40	42.87	43.81	38.52	38.76	40.54	71.18	122.83	92.96	38.77	35.58	38.63	40.30	42.87	47.52	38.35	41.05	35.75
SULFONAMIDES AND TRIMETHOPRIM	27.46	32.23	49.88	49.51	24.47	22.85	22.23	35.36	40.68	50.82	21.96	20.95	17.79	26.08	17.16	25.04	18.87	13.52	13.50
OTHER ANTIBIOTICALS (GLUCOSAMINES)	37.08	32.76	22.33	24.58	24.28	24.72	28.48	25.64	34.23	48.94	25.36	20.22	23.42	14.82	42.79	71.82	16.54	42.83	44.79
OTHER ANTIBIOTICALS (GLUCOSAMINES)	19.84	32.76	42.23	24.58	40.99	40.71	50.68	40.28	33.94	22.04	49.81	46.72	42.00	19.99	40.90	62.02	16.96	31.89	28.42
QUINOLONE ANTIBIOTICALS (GLUCOSAMINES)	11.46	7.88	12.24	12.87	6.52	6.56	6.71	11.25	21.80	18.23	7.89	8.33	8.17	14.14	9.36	18.59	11.33	12.23	11.76

Conclusion: Outpatient antibiotic prescribing has decreased steadily since 2000. These promising results can be ascribed to the various Provincial initiatives to quell the misuse of these medications. However, many of the indications tied to these prescriptions do not warrant the use of antibiotics, and further analyses are necessary to evaluate antibiotic quality to fully delineate the state of antibiotic use in BC. Next steps also include comparing BC rates with Ontario, another large province of Canada.

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215. Appropriateness and Accuracy of Antimicrobial Prescriptions at Pediatric Emergency Department Discharge

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Session: P-8. Antimicrobial Stewardship: Trends in Antimicrobial Prescribing

Background: Up to 20% of pediatric emergency department visits result in an antimicrobial prescription. The objective of this study was to evaluate the appropriateness and dosing accuracy of antimicrobial prescriptions given at discharge from an ED of a freestanding children's hospital.

Methods: Electronic medical records of patients seen in the ED at Oishei Children's Hospital from 12 dates (3 in each of 4 seasons) were screened. All patients discharged from the ED with a prescription for an antimicrobial were included. Diagnosis, provider type, antibiotic dose per weight, duration and frequency were recorded. Appropriateness of antibiotic choice and dosing accuracy were assessed using major medical society guidelines, pharmacy references and hospital antibiotics. Antibiotic doses were considered inaccurate if >10% outside of recommended weight-based dose ranges.

Results: Of a total of 1733 screened patients, 12% (207) were discharged with a systemic antimicrobial prescription. The percentage of visits resulting in an antimicrobial prescription varied by season, and was highest during the winter at 19%. Amoxicillin (33% of all) and oseltamivir (15%) were most frequently prescribed. Overall, 98% of patients were prescribed the appropriate antimicrobial, but only 65% of systemic antimicrobial prescriptions had accurate dosing. Amoxicillin was dosed incorrectly in 32% of prescriptions, Figure 1, specifically being below the high-dose recommended range in 28% of otitis media (OM) and 29% of pneumonia cases. Despite being the most common diagnosis, OM was treated with accurate dosing only 57% of the time, Figure 2. Also, more than 40% of patients with UTI or pneumonia