

age of patients with NS was 3.75 days (0 - 22 days), with a slight male predominance (55%, $p < 0.001$). Peaks were observed from May to August ($p = 0.02$). Early NS cases (NS in patients aged less than 7 days) were most prevalent (86%, $p < 0.001$). Specimen culture and antimicrobial susceptibility testing was less frequent (7%) than complete blood count usage (65%). Findings regarding blood count included leukopenia (3%), thrombocytopenia (30%). A positive CRP and acute renal failure were noted in 76% and 21.7% of cases, respectively. The average hospital stay was 7.3 days. With regards to treatment, 73% of patients received a 2-drug antimicrobial therapy (ampicillin-gentamycin) and 22% received a 3-drug antimicrobial therapy (ampicillin-gentamycin-cefotaxime). Of all newborns hospitalized for NS, 49% received empirical antibiotic therapy within 3 hours of admission. **Conclusions:** This research highlights NS as a public health emergency in Haiti. The study advocates for improved access to culture and antibiotic susceptibility testing and emphasizes the impact of timely antibiotic administration. The findings of this study serve as a baseline for informing policymakers and medical practitioners dedicated to improving existing conditions of neonates in Haiti. Suggested targeted interventions include preventive measures during prenatal visits, strengthening laboratory capacities, improving infection prevention and control measures, and developing antimicrobial stewardship programs.

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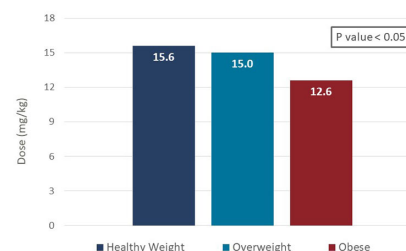
Subject Category: Pharmacokinetic

Optimal Weight-Based Dosing of Vancomycin to Achieve an Area Under the Curve of 400 to 600 Stratified by Body Mass Index

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Background: In 2020, the American Society of Health System Pharmacist (ASHP) and Infectious Diseases Society of America (IDSA) published a consensus guideline for vancomycin management, recommending area under the curve (AUC) as the preferred monitoring strategy. These guidelines recommend doses of 15-20 mg/kg every 8 to 12 hours for most patients with normal renal function. However, in extreme body weights, standard dosing may deviate to provide a therapeutic AUC. The primary objective of this pharmacokinetic study is to evaluate the optimal vancomycin weight-based dosing strategy that achieves a therapeutic AUC of 400-600 stratified by body mass index (BMI). The secondary objective is to evaluate the incidence of acute kidney injury (AKI) based on BMI. **Methods:** Patients were identified from two sites within the Department of Veterans Affairs who received vancomycin for at least 48 hours and had at least one steady-state level from January 2015 through July 2022. Regimens with a frequency of ≤ 8 hours or patients with baseline creatine clearance of < 50 ml/min were excluded. Patients were categorized based on the Center for Disease Control BMI groups: healthy weight, overweight, or obese. The online vancomycin calculator, VancoPK®, was utilized to calculate AUC. Renal function at baseline and during vancomycin therapy was collected. Descriptive statistics were used for data analysis. Continuous outcomes were summarized using mean and standard deviation. The primary and secondary endpoints were analyzed using the analysis of variance and Fisher's exact tests, respectively. Statistical significance was established at a p -value of < 0.05 . **Results:** A total of 347 unique vancomycin regimens were included: 120 in the healthy weight group, 101 in the overweight group, and 126 in the obese group. The average total daily doses that achieved a therapeutic AUC were 1971mg (15.6mg/kg/dose), 2298mg (15mg/kg/dose), and 2524mg (12.6mg/kg/dose) for the healthy weight, overweight, and obese groups, respectively. There was a statistically significant difference among these groups. AKI occurred in 10/254 (3.9%) unique patients: 2/89 (2.2%) in the healthy weight group, 3/71 (4.2%) in the overweight group, and 5/94 (5.3%) in the obese group. This did not reach statistical significance.

Primary Outcome – Therapeutic AUC mg/kg/dose



Primary Outcome – Therapeutic AUC Total Daily Dose (TDD)



Conclusions: Vancomycin dosing regimens largely followed guideline recommendations. However, the average vancomycin mg/kg/dose that achieved a therapeutic AUC decreased as BMI increased, which was a statistically significant trend. While further research is needed to draw clinically impactful conclusions, these findings suggest that a lower mg/kg vancomycin dose in obesity may be needed to achieve therapeutic targets.

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Trends of Early Onset Group B Streptococcus infections and Observed Racial and Geographic Disparities Associated with GBS Infections in Tennessee, 2005-2021

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Background: Group B Streptococcus (GBS) is one of the most common causes of bacterial sepsis in newborns. In 2002, the Center for Disease Control and Prevention (CDC) recommended universal screening of all pregnant women for GBS colonization and administering intrapartum prophylaxis to colonized pregnant women to prevent GBS infection in newborns. To identify racial disparities in GBS infections in Tennessee, we compared the incidence of early-onset GBS infection among Black and White infants from 2005-2021. **Methods:** GBS infections identified from normally sterile sites are reportable in Tennessee. We analyzed GBS data reported to surveillance systems from 2005 to 2021. We linked the surveillance data with the population data to calculate incidence rates. We excluded cases with unknown race status (9%) and other races (0.2%) as we do not have denominator data to calculate the incidence rate. Database linkage and data analyses were performed in SAS V.9.4. **Results:** A total of 399 early-onset GBS cases were reported from 2005-2021; 150 (37.59%) were Black, 212 (53.13%) were White, and 36 (9.02%) were of unknown race, and one (0.20%) reported as Other for race. While the incidence rates of early-onset GBS for all races declined from

0.23 per 1000 live births in 2005 to 0.18 per 1000 live births in 2021, Blacks experienced the largest decline in incidence from 0.6 per 1000 live births in 2005 to 0.37 in 2021. Among Whites, there was a slight decline in 2021 (0.13/1000 live births) compared to the rate in 2005 (0.21/1000 live births). The mean incidence rate of early onset GBS among Blacks (0.52 per 1000 live births) is significantly higher than the mean rates among Whites (0.20 per 1000 live births) (p value < 0.001) from 2005 to 2021. Shelby County, one of the 95 counties in Tennessee, is predominantly Black (54.6%) and reported 27.8% of all early-onset GBS. **Conclusion:** There was a significant decline in early-onset GBS infections among Blacks and some reductions among Whites, indicating the effectiveness of the prevention strategies. However, Blacks have significantly higher rates than their White counterparts. In addition, 27.8% of the cases are reported from one county, signaling geographic disparities as well. Further investigation is warranted to identify risk factors and causes of observed racial and geographic disparities to help reduce the infection rate among vulnerable populations and high-risk geographic areas.

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Subject Category: Public Health

Changes in Antibiotic Use and Disruptions to Antimicrobial Resistance Detection in South Africa and Uganda, 2019 – 2020

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Background: The COVID-19 pandemic disrupted routine health services worldwide, including systems to detect antimicrobial resistance (AR). AR is a mounting global health threat with some studies showing the highest mortality rate from AR infection is in Sub-Saharan Africa (SSA). Antibiotic use is a major contributor to AR. We sought to characterize COVID-19-related changes to antibiotic use and AR detection capacity in two countries in SSA from 2019 to 2020. **Methods:** Health facilities (HF) in South Africa and Uganda were surveyed as part of a larger study assessing disruptions to essential health services in SSA in the context of COVID-19. Modified stratified random sampling of HF by facility level was conducted in regions with high COVID-19 cumulative prevalence. Hospital pharmacists were surveyed to identify perceived changes in antibiotic use. Among facilities with the capacity to detect AR, surveys were conducted with AR laboratory managers to identify perceived changes in staff, equipment, training, and supplies. Descriptive data analysis was conducted using frequencies and proportions. **Results:** A total of 39 HFs in South Africa and 45 HFs in Uganda responded to the antibiotic use survey. Increases in total antibiotic use from 2019 to 2020 were reported by 82% (23/28) of HF in South Africa and 68% (27/40) in Uganda. Increased use of antibiotics for multi-drug resistant bacteria (per World Health Organization Reserve classification) was reported by 36% (9/25) and 38% (8/21) of HFs in South Africa and Uganda, respectively. 19 HFs in South Africa and 12 HFs in Uganda responded to the AR detection capacity survey. HFs in both countries reported decreases in laboratory staff responsible for AR (33% [13/40] in South Africa and 31% [11/35] in Uganda). Decreased availability of reagents and consumables for bacteriology and antimicrobial susceptibility testing was reported by 50% (8/16) and 33% (4/12) of HFs, and decreased availability of specimen collection supplies for bacterial cultures was reported by 41% (7/17) and 42% (5/12) of HFs in South Africa and Uganda, respectively.

Diversion of laboratory supplies was reported in both countries (32% [6/19] in South Africa and 25% [3/12] of HF in Uganda). **Conclusions:** HFs in South Africa and Uganda reported increases in antibiotic prescribing, a risk factor for increased AR, concurrently with disruptions in AR detection capacity during the early phases of the COVID-19 pandemic. These findings emphasize the importance of investing in bacteriology and AR testing in SSA and maintaining support during infectious disease pandemics.

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Infections in residents of long-term care facilities in southern Poland, 12-month surveillance preliminary results

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Long-Term Care Facility (LTCF) residents are particularly vulnerable to infections due to factors such as advanced age, co-morbidities, and regular medication use. Data from American and European sources indicate an anticipated occurrence rate of 2 to 11 infections per 1000 patient-days (pds) in LTCFs. The incidence rate of Clostridioides difficile infections (CDI) is reported at 0.52 per 10,000 resident days. The research objectives aimed to assess infection epidemiology in Polish LTCFs. An observational prospective study was conducted on residents from five LTCFs (2 residential homes and 3 nursing homes) in southern Poland between September 2022 and September 2023, utilizing the definition from the pan-European HALT study. The study received approval from the Bioethics Committee of the JU (1072.6120.73.2022) and was funded by the Polish NCN grant No.2021/41/B/NZ6/00749. CDI was defined by positive toxins A and B enzyme immunoassays (EIA) and positive glutamate dehydrogenase (DHA) EIA. Results from the study, involving 250 residents, revealed 157 cases of Healthcare-Associated Infections (HAIs) excluding gastrointestinal and CDI, with an incidence rate of 1.97/1000 pds. Lower respiratory tract infections dominated with 77 cases, including 36 pneumonia cases (47%). Additionally, 25 cases of gastrointestinal infections were reported, including only 7 CDI cases, resulting in an incidence rate of 0.88 CDI per 10,000 pds. Norovirus was detected in only one case, while the microbiological results were negative in the remaining cases. The incidence rate among Polish LTCF residents was lower than expected, contrasting with the CDI incidence that aligned with other research findings. Notably, the etiology of diarrhea remained undetermined in 68% of cases.

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A Machine Learning Exploration of Social Determinants of Health and Hospital-Onset Bacteremia, Northern California, 2019–2023

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Introduction: Social determinants of health can impact healthcare-associated infections. Hospital-onset bacteremia (HOB) may lead to poor outcomes, increased length of stay, and increased cost of care. We explored the association of social determinants of health and HOB. **Methods:** We retrieved blood culture data at Stanford Health Care from May 2019 to