

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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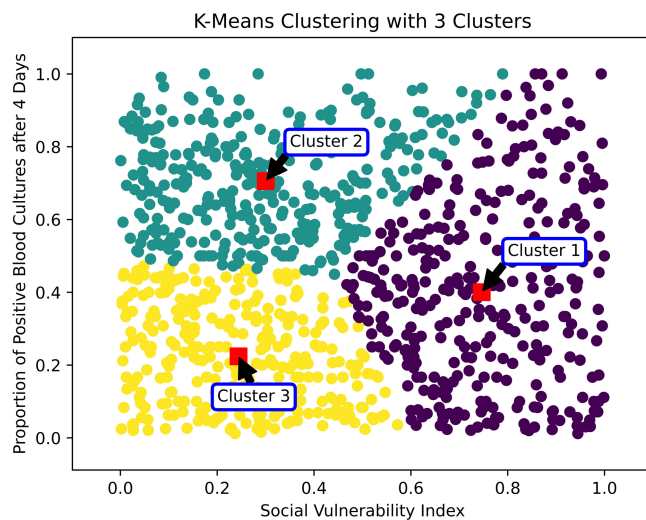
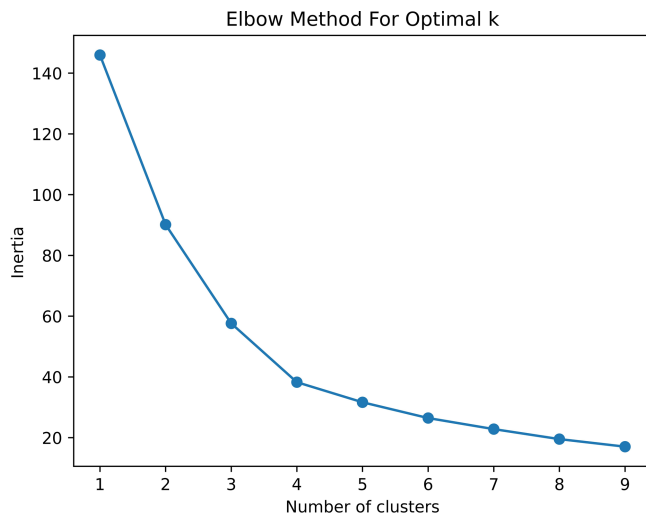
Poster Presentation - Poster Presentation

Subject Category: Public Health

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



October 2023. We identified blood cultures ordered ≥ 4 days of admission. To evaluate the association between social determinants of health and HOB, we employed an unsupervised machine learning approach (K-Means clustering) to discern patterns in HOB rates based on the Social Vulnerability Index (SVI). The SVI indicates the relative vulnerability of every U.S. Census tract. It ranks the tracts on 16 measures of vulnerability across 4 themes: socioeconomic factors, household characteristics, racial and ethnic minority status, and housing/transportation aspects. The number of clusters was determined using the Elbow Method (Figure 1). **Results:** Out of 209,947 blood cultures from 23,938 unique patients with a California address, we identified 81,653 blood cultures collected after 4 days (40%). The K-Means clustering algorithm identified 3 distinct clusters within the Californian census tracts, suggesting heterogeneity in the relationship between SVI and HOB (Figure 2). Cluster 1 had a higher SVI (median 0.73, range 0.46 – 0.99), with logistic regression indicating a positive SVI-HOB association (OR 4.84, 95% CI 4.02 – 4.81, $p < .001$). Cluster 2, had a median SVI of 0.29 (range 0.0009 – 0.78), also showed a positive association between SVI and HOB (OR 1.67, 95% CI 1.4 – 1.89, $p < .001$), aligning with trends of higher infection risks in more vulnerable groups. In contrast, Cluster 3 had a median SVI of 0.22 (range 0.002 – 0.84). In this cluster, the SVI showed a negative association with HOB (OR 0.24, 95% CI 0.18 – 0.31, $p < .001$). Cluster 3 was the cluster with the least number of subjects (15,000, versus 21,761 for Cluster 1 and 29,762 for Cluster 2). Most subjects in Cluster 3 resided in Santa Clara County, whereas those in Clusters 1 and 2 were spread across Santa Clara, San Mateo, Alameda, Merced, and Sacramento Counties (Figure 3). **Conclusions:** Advanced techniques can be used to explore the complex interplay between social determinants of health and healthcare-associated infections and could guide the development of community-specific strategies to improve outcomes.

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Does Patient Perception of Cleanliness Still Matter? The Relationship between HCAHPS and HAC During the COVID-19 Pandemic

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Background: Environmental contamination of surfaces is known to be one of the most common causes of healthcare associated infections (HAIs), with cleaning and disinfection of surfaces shown to reduce the incidence of HAIs and contribute to overall hospital cleanliness. Prior research showed that there was a relationship between a hospital’s performance on the Hospital Consumer Assessment of Healthcare Providers and Systems survey question on patient perception of cleanliness and their

