screening, routine point prevalence surveys, and interfacility communication as part of an MDRO prevention plan. CDPHE then developed the transfer network into an interactive ArcGIS dashboard enabling facilities to examine their own patient transfer patterns. **Conclusions:** SNA enabled CDPHE to identify at-risk facilities for KPC-CRE transmission and create an interactive tool for facility and public health use. Future applications of patient transfer networks can include geographical grouping of facilities based on transfers to zone healthcare coalitions and conduct preparedness activities, and creating medical operations preparedness plans for emergencies or disasters.

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Presentation Type:
Poster Presentation - Top Poster Abstract
Subject Category: Public Health
Health Equity Factors and Healthcare-Associated Infections in Louisiana Facilities, 2022
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Background: Health equity is a critical consideration in public health research, emphasizing the importance of fair and just access to healthcare resources. This study explores the impact of health equity factors on the incidence rates of Central Line-Associated Bloodstream Infections (CLABSI) and Methicillin-Resistant Staphylococcus aureus (MRSA) across diverse healthcare facilities in Louisiana. **Methods:** We conducted a comprehensive analysis utilizing 2022 data from the National Healthcare Safety Network (NHSN). Fourteen healthcare facilities were randomly selected from nine regions in Louisiana, with guidance from the 2022 NHSN external validation toolkit. Key health equity factors from Health Resources and Service Administration (HRSA) were assessed, including urbanicity, MUA/P, and HPSA_Primary Care. Risk ratios were calculated to quantify the association between these health equity factors and the incidence rates of CLABSI and MRSA. **Results:** The findings reveal intriguing insights into the relationship between health equity factors and infection rates. In urban settings, the risk of CLABSI was lower (Risk Ratio: 0.634, 95% CI: 0.2442–1.646), contrasting with a significantly higher risk of MRSA (Risk Ratio: 1.7, 95% CI: 1.119–2.582). This suggests a complex interplay between urbanicity and the specific infection types. For MUA/P, no significant impact on CLABSI rates was observed (Risk Ratio: 0.963, 95% CI: 0.4225–2.195), but an increased risk of MRSA emerged (Risk Ratio: 1.652, 95% CI: 1.029–2.652). In healthcare professional shortage areas for primary care (HPSA_Primary Care), both CLABSI (Risk Ratio: 1.37, 95% CI: 0.5854–3.204) and MRSA (Risk Ratio: 2.098, 95% CI: 1.305–3.372) exhibited elevated risks, though only MRSA risk was statistically significant. **Conclusions:** This research underscores the nuanced relationship between health equity factors and infection rates in healthcare facilities. Urban settings may contribute to a lower risk of CLABSI but a higher risk of MRSA, emphasizing the need for tailored preventive strategies. Living in medically underserved areas appears to heighten the risk of MRSA, warranting targeted interventions. Additionally, healthcare professional shortage areas for primary care demonstrate potential associations with increased risks for both CLABSI and MRSA. These findings provide valuable insights for public health practitioners, policymakers, and healthcare administrators aiming to address health disparities and enhance infection control measures in diverse healthcare settings. Further research is encouraged to unravel the multifaceted dynamics influencing infection rates and to inform targeted interventions for improved health outcomes.

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Presentation Type:
Poster Presentation - Top Poster Abstract
Subject Category: SSI
OPTIMIS PRO – A Novel Algorithm to Improve Perioperative Antibiotic Administration
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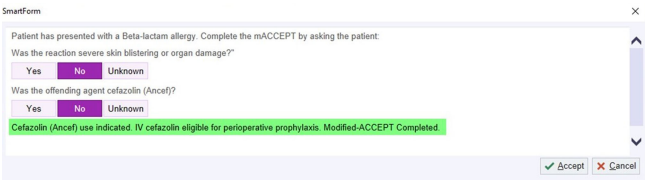
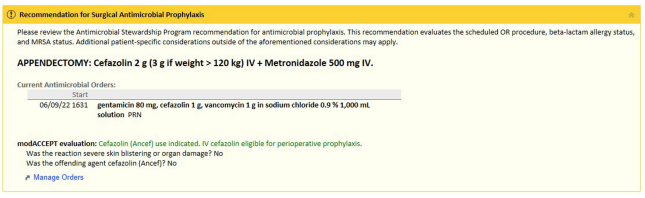
Objectives The selection and dosing of surgical antimicrobial prophylaxis (SAP) to prevent surgical site infections (SSIs) is often improvisational and inappropriate in clinical settings resulting in increased risk of SSI. We therefore developed and implemented a novel computer decision support tool, OPTIMIS PRO (OPTIMIzing PROphylaxis), to improve appropriate SAP selection specific to each patient's procedure and clinical context. **Methods:** This quality improvement study was conducted at a tertiary hospital network over 2 years, divided into pre-intervention (June 2021-June 2022) and post-intervention (June 2022-June 2023) periods. The intervention was a computer decision support tool programmed within the hospital's health information system to provide patient-specific SAP recommendations based on four variables: procedure name, patient's beta-lactam allergy status, MRSA status, and weight. Approximately 3046 unique surgical procedures were identified and a specific best practice SAP recommendation for each surgery was identified based on international practice guidelines, up-to-date literature, and panel expertise input from 14 surgical divisions at our institution. Safety of cefazolin prophylaxis among patients with self-reported beta-lactam allergy was established in the pre-operative clinic using a validated simple two-item questionnaire (Figure 1). During each standard preoperative preparation, a best practice SAP recommendation alert was then provided to the responsible anesthesiologist based on the inputs from the four aforementioned variables (Figure 2). To assess the impact of the OPTIMIS PRO tool on antibiotic prescribing, we retrospectively audited SAP selection before and after implementation, also assessing appropriateness for each of the specific inputs using evidence-based criteria. **Results:** Over 30 000 OPTIMIS PRO recommendation alerts were logged in the 12-month post-intervention period. A random sample audit of 408 surgical encounters were selected from the pre- and post-intervention period for analysis. Overall, appropriate antibiotic administration rose from 77% (161/208) to 92.5% (185/200) (x2=18.0, p < 0 .001) post-intervention. Usage of





cefazolin among patients reporting a beta lactam allergy rose from 48% (16/33) to 100% (12/12). None of these 12 patients experienced adverse reactions as a result of beta lactam exposure. Appropriate antibiotic selection based on MRSA status was high pre- and post-implementation (98.4% vs 99.4%); but significant improvements were made for procedure-specific antibiotic selection (80.5 vs 94.5%; x2=19.3, p < 0 .001) and weight-based dosing (92.5% vs 98.4%; x2=7.45, p=0.006). **Conclusion:** In this first-ever intervention designed to direct SAP prescribing based on patient specific variables, we significantly improved appropriate SAP selection across a comprehensive list of surgical procedures. Future analysis should include assessing potential reductions in SSIs as result of using the support

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Presentation Type:
Poster Presentation - Oral Presentation
Subject Category: Antibiotic Stewardship

Appropriateness of Antibiotic Prescriptions in Emergency Departments in the United States, 2016-2021

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Background: Inappropriate antibiotic prescribing contributes to antimicrobial resistance, a global health threat. Prior studies have used ICD-9-CM codes to estimate inappropriate prescribing rates in ambulatory settings, including emergency departments (EDs), though the last national estimates date back to 2010-2015 (Hersh et al, CID 2021). Using the most recent publicly available data, we estimated inappropriate antibiotic prescribing rates in EDs across all conditions. For further characterization, we estimated rates of inappropriate antibiotic prescribing with and without codes that could be plausible indications for which antibiotics are prescribed. **Methods:** We analyzed 2016-2021 data from the National Hospital Ambulatory Medical Care Survey, a nationally representative survey of EDs, subsetting to visits with ≥1 oral antibiotic prescription. Using ICD-10-CM codes (Chua et al, BMJ 2019), we calculated proportions of visits with inappropriate antibiotic prescribing; inappropriate antibiotic prescribing and ≥1 plausible antibiotic-inappropriate indication (e.g., viral infection); and inappropriate prescribing without plausible antibiotic-inappropriate indications. Among visits with plausible antibiotic-inappropriate indications, we subcategorized these further (e.g. viral infection, ophthalmologic conditions). Among visits without plausible antibiotic-inappropriate indications, we determined the most common diagnosis codes. We conducted analyses overall and separately among children (0-17 years), adults (18-64 years), and older adults (≥65 years). **Results:** Demographic characteristics by age group are shown in Table 1. Antibiotic prescription rates overall and for children, adults, and older adults were 18.6%, 17.8%, 19.1%, and 18.0%, respectively. Inappropriate prescription rates were 27.6%, 23.7%, 29.8%, and 24.6%, respectively. Inappropriate antibiotic prescription rates with plausible indications were 14.9%, 16.7%, 15.0%, and 12.6%, while inappropriate antibiotic prescription rates without plausible indications were 12.7%, 7.0%, 14.9%, and 12.0%, respectively (Figure 1). Rates of subcategories of

Characteristic	Overall, No. (%) (n = 152,449,442)	Children, No. (%) (n = 31,714,726)	Adults, No. (%) (n = 94,016,603)	Older adults, No. (%) (n = 26,718,112)
Female sex	87,737,545 (57.6%)	15,702,068 (49.5%)	56,638,335 (60.2%)	15,397,141 (57.6%)
Age group, years				
0-1	···	6,631,523 (20.9%)	···	···
2-5	···	9,857,892 (31.1%)	···	···
6-11	···	8,583,401 (27.1%)	···	···
12-17	···	6,641,908 (20.9%)	···	···
18-25	···	···	20,222,873 (21.5%)	···
26-34	···	···	21,959,043 (23.4%)	···
35-44	···	···	19,096,807 (20.3%)	···
45-54	···	···	17,037,165 (18.1%)	···
55-64	···	···	15,700,713 (16.7%)	···
65-74	···	···	···	12,569,714 (47.0%)
75-84	···	···	···	8,825,326 (33.0%)
≥85	···	···	···	5,323,071 (19.9%)
Race and ethnicity				
Hispanic, any race	23,919,528 (15.7%)	8,334,426 (26.3%)	13,228,368 (14.1%)	2,356,733 (8.8%)
Non-Hispanic, Black	35,632,730 (23.4%)	8,374,515 (26.4%)	24,175,496 (25.7%)	3,082,719 (11.5%)
Non-Hispanic Other	4,472,256 (2.9%)	1,200,030 (3.8%)	2,294,975 (2.4%)	977,250 (3.7%)
Non-Hispanic, White	88,424,926 (58.0%)	13,805,754 (43.5%)	54,317,762 (57.8%)	20,301,409 (76.0%)
Geographic census region				
Northeast	21,295,859 (14.0%)	4,217,838 (13.3%)	12,695,069 (13.5%)	4,382,952 (16.4%)
Midwest	33,528,031 (22.0%)	7,079,006 (22.3%)	20,382,776 (21.7%)	6,066,249 (22.7%)
South	67,065,134 (44.0%)	14,693,094 (46.3%)	41,778,892 (44.4%)	10,593,148 (39.6%)
West	30,560,415 (20.0%)	5,724,787 (18.1%)	19,159,865 (20.5%)	5,675,762 (21.2%)
Residence in metropolitan statistical area	127,965,999 (83.9%)	26,991,719 (85.1%)	79,395,431 (84.4%)	21,578,848 (80.8%)

Table 1: Demographic characteristics overall and by age group for patients prescribed oral antibiotics in emergency departments in the United States, 2016-2021.

Overall	Children	Adults	Older adults
1. R109: Unspecified abdominal pain 2. R51: Headache 3. R112: Nausea with vomiting, unspecified 4. R060: Dyspnea 5. R509: Fever, unspecified 6. R111: Vomiting 7. R197: Diarrhea, unspecified 8. R101: Pain localized to upper abdomen 9. R05: Cough 10. R103: Pain localized to other parts of lower abdomen	1. R509: Fever, unspecified 2. R111: Vomiting 3. R109: Unspecified abdominal pain 4. R05: Cough 5. R197: Diarrhea, unspecified 6. R112: Nausea with vomiting, unspecified 7. R51: Headache 8. R21: Rash and other nonspecific skin eruption 9. R103: Pain localized to other parts of lower abdomen 10. R098: Other specified symptoms and signs involving the circulatory and respiratory systems	1. R109: Unspecified abdominal pain 2. R51: Headache 3. R112: Nausea with vomiting, unspecified 4. R101: Pain localized to upper abdomen 5. R060: Dyspnea 6. R103: Pain localized to other parts of lower abdomen 7. R197: Diarrhea, unspecified 8. R111: Vomiting 9. R110: Nausea 10. R05: Cough	1. R060: Dyspnea 2. R109: Unspecified abdominal pain 3. R197: Diarrhea, unspecified 4. R112: Nausea with vomiting, unspecified 5. R51: Headache 6. R101: Pain localized to upper abdomen 7. R05: Cough 8. R509: Fever, unspecified 9. R111: Vomiting 10. R110: Nausea

Table 2: Most frequent diagnosis codes for potential signs and symptoms of infection for inappropriate antibiotic prescriptions with plausible antibiotic-inappropriate indications in emergency departments in the United States, 2016-2021.

Overall	Children	Adults	Older adults
1. I10: Essential (primary) hypertension 2. R079: Chest pain, unspecified 3. M255: Pain in joint 4. R078: Other chest pain 5. M796: Pain in limb, hand, foot, fingers and toes 6. F419: Anxiety disorder, unspecified 7. R55: Syncope and collapse 8. M545: Low back pain 9. F329: Major depressive disorder, single episode, unspecified 10. R42: Dizziness and giddiness	1. S099: Unspecified injury of face and head 2. M255: Pain in joint 3. K590: Constipation 4. S934: Sprain of ankle 5. R458: Other symptoms and signs involving emotional state 6. K529: Noninfective gastroenteritis and colitis, unspecified 7. S060: Concussion 8. F329: Major depressive disorder, single episode, unspecified 9. M796: Pain in limb, hand, foot, fingers and toes 10. T148: Other injury of unspecified body region	1. R079: Chest pain, unspecified 2. I10: Essential (primary) hypertension 3. M255: Pain in joint 4. R078: Other chest pain 5. F419: Anxiety disorder, unspecified 6. M796: Pain in limb, hand, foot, fingers and toes 7. M545: Low back pain 8. F329: Major depressive disorder, single episode, unspecified 9. R458: Other symptoms and signs involving emotional state 10. F179: Nicotine dependence	1. I10: Essential (primary) hypertension 2. R079: Chest pain, unspecified 3. M255: Pain in joint 4. R55: Syncope and collapse 5. I489: Unspecified atrial fibrillation and atrial flutter 6. R42: Dizziness and giddiness 7. E119: Type 2 diabetes mellitus without complications 8. R531: Weakness 9. I509: Heart failure, unspecified 10. N179: Acute kidney failure, unspecified

Table 3: Most frequent diagnosis codes for inappropriate antibiotic prescriptions without plausible antibiotic-inappropriate indications in emergency departments in the United States, 2016-2021.