

Background

- It has been previously demonstrated that county-level antibiotic prescribing (CP) and antibiotic resistance (AR) may influence urinary tract infection (UTI) severity of illness upon hospital presentation in New York State (NYS, Grillo et al. ID WEEK 2021).
- However, previous investigations were geographically limited to the most densely populated regions of NYS

Objective

- This study builds upon the previous study (Grillo et al.) by evaluating additional NYS regions to determine the association between CP, UTI severity of illness, costs, and length of stay among hospitalized patients in New York State.

Methods and Materials

Study Design and Population: Retrospective, cross-sectional analysis, combining data from New York State Statewide Planning and Research Cooperative System (SPARCS) and previously published data on CP.

Inclusion Criteria

- Female patients admitted to a New York inpatient setting in 2017
- Diagnosis code of acute urinary tract infection in New York State Planning and Research Cooperative System (SPARCS) diagnosis (CCS 159)
- Medicare beneficiary
- Previous data available for CP practices (Yu et al, OFID 2020)

Exclusion Criteria

- New York county (Manhattan) county was excluded

Outcome: Severe infection (SI) defined as All-patient refined (APR) severity of illness score of ≥ 3 . Additional outcomes include hospitalization costs and time to live discharge.

Exposures: Outpatient CP was categorized as “high” or “low”, defined as above ($> 45.4\%$) or below ($\leq 45.4\%$) the statewide median. Baseline characteristics include age, race, and ethnicity.

Data Analysis: Data were summarized as counts and proportions. Chi-squared test and logistic regression were used to compare CP and SI. Hospitalization costs were evaluated using Mann-Whitney U test and logistic regression. Log-rank test was used to assess time to discharge, censoring those that went to hospice or died inpatient.

Table 1. Baseline Characteristics

Variable	High CP (n = 4,250)	Low CP (n = 8,923)	P-value
Age (years)			
50 – 69	716 (16.85)	1256 (14.08)	< 0.001
70 and older	3534 (83.15)	7667 (85.92)	
Race			
Black/African American	490 (11.53)	915 (10.25)	< 0.001
Multi-racial	50 (1.18)	17 (0.19)	
Other race	755 (17.76)	1072 (12.01)	
White	2955 (69.53)	6919 (77.54)	
Ethnicity			
Non-Spanish/Non-Hispanic	3833 (90.19)	8237 (92.31)	< 0.001
Spanish/Hispanic	417 (9.81)	686 (7.69)	
Status on Arrival			
Emergency	4059 (95.51)	8671 (97.18)	< 0.001

Note: Data are n (%); P-values are for chi-squared test as appropriate.

- In general, patients were ages 70 and older, White, Non-Hispanic, and emergency admissions
- 13,173 patients were included, 4,250 (32.3%) were treated in a county with low prescribing, and 8,923 (67.7%) were treated in a county with high prescribing
- Baseline demographics (Table 1) that differed between groups included age, race, ethnicity, and emergency admission ($P < 0.001$, χ^2 test)

Results

Figure 1. Adjusted Odds Ratio for Severe Urinary Tract Infection

- Low CP was associated with increased odds for severe UTI after adjusting for potential confounders (aOR: 1.08 [1.00 – 1.16])
- An additional factor associated with an increased odds for severe infection are Age ≥ 70 (aOR: 1.21 [1.01 – 1.34])
- Hispanic ethnicity was associated with a decreased odds for severe infection (aOR: 0.84 [0.74 – 0.96]) and White race, but was not statistically significant (aOR: 0.97 [0.89 – 1.05])

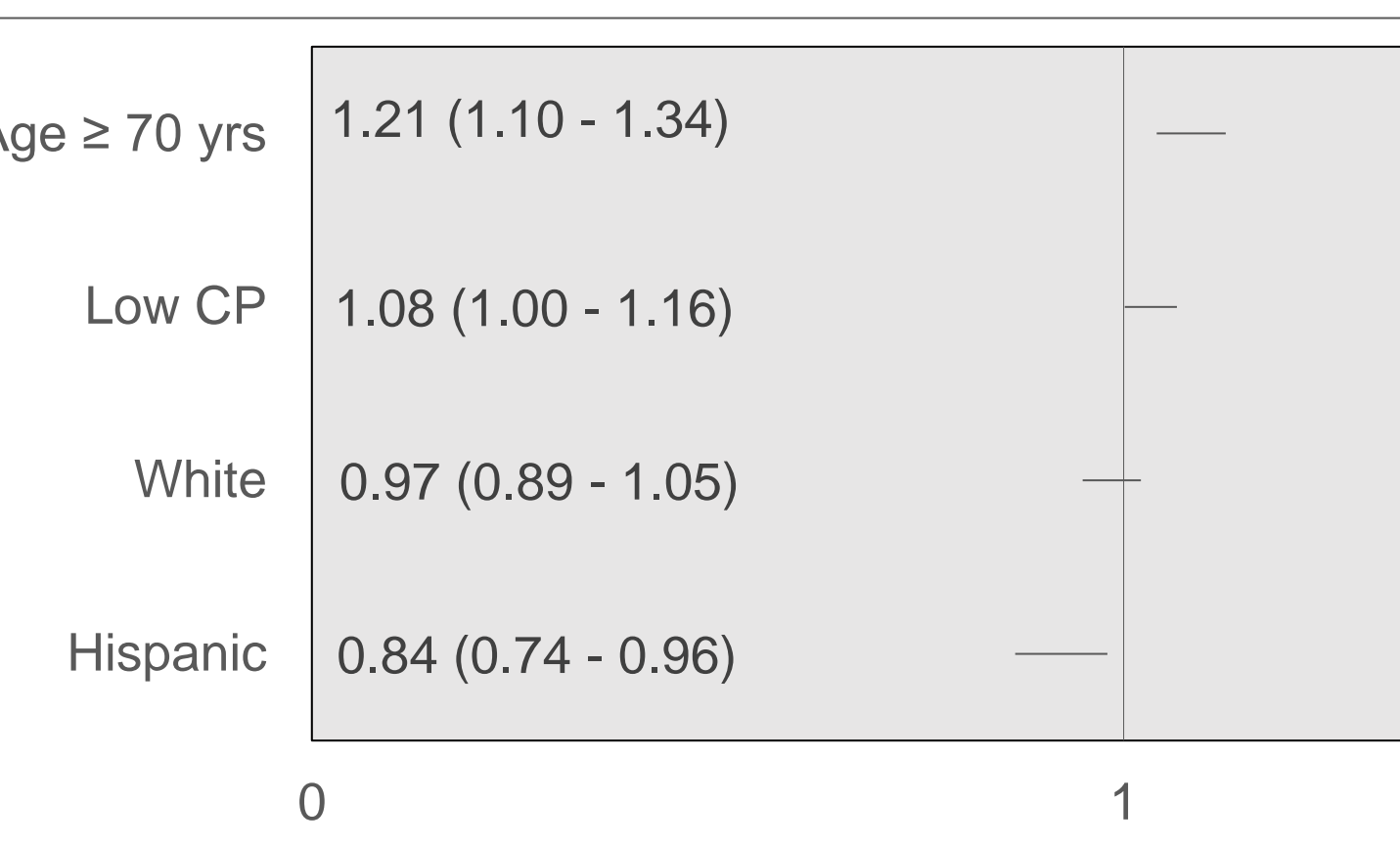
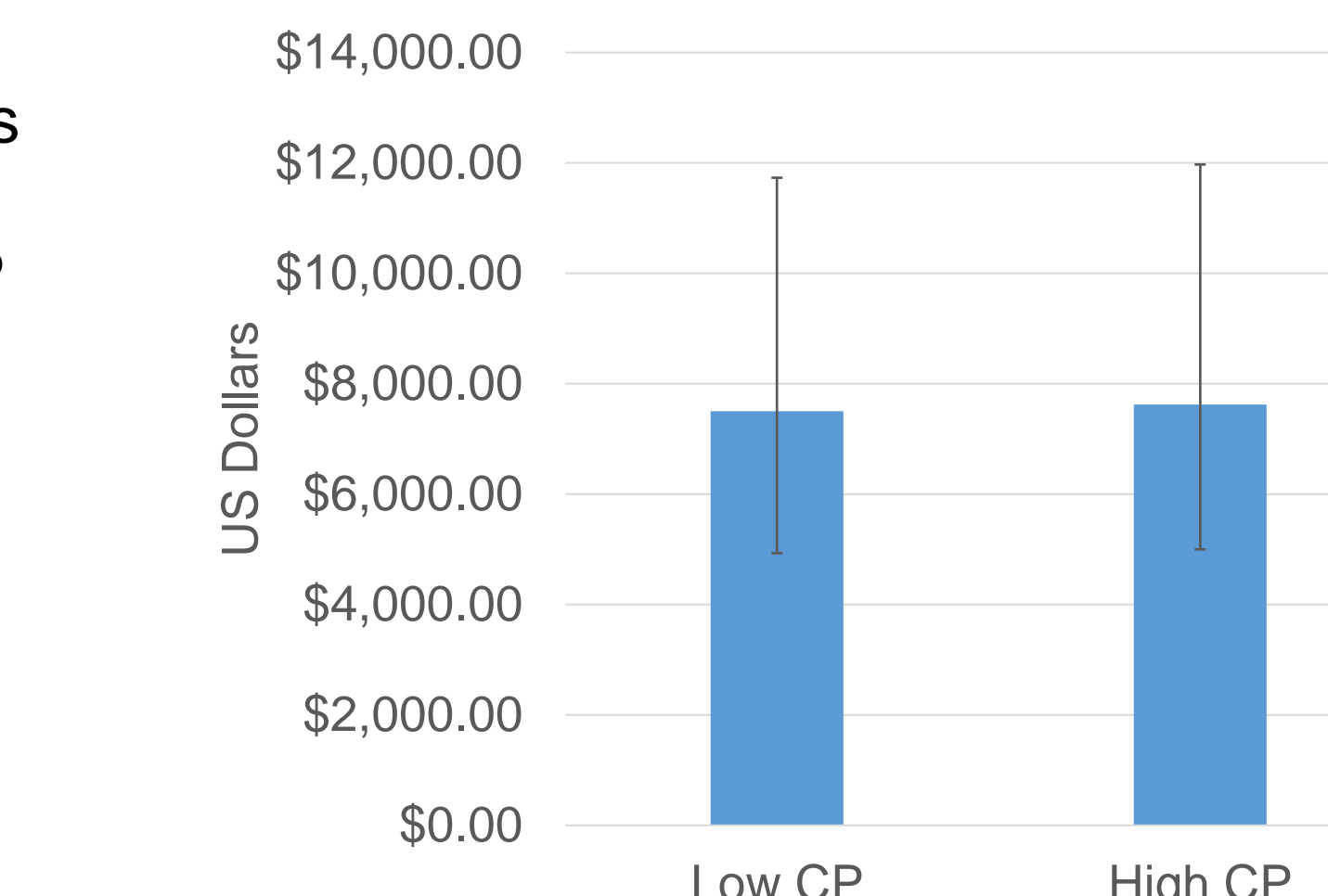


Figure 2. Hospital Costs

- Median (IQR) hospital costs were similar across both groups but were statistically significantly lower in the low CP group (\$7,503.09 low CP vs. \$7,622.04 high CP)
- Median (IQR) time to hospital discharge was 4 days in each group ($P < 0.001$)



Conclusions

- Low outpatient county-prescribing and patient factors may be associated with severe initial presentation to the hospital in patients with urinary tract infections
- Limitations to this study includes cross sectional design and possibility of ecological fallacy
- Further research is needed to examine the effects of prescribing patterns and additional factors that may influence severity of infection in this setting