



Impact of Racial Disparities on *Clostridioides difficile* Infection (CDI) Outcomes at a Southern California Academic Teaching Hospital



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BACKGROUND

- Infectious diseases is the second contributor to disparities in mortality.¹
- CDI is associated with prolonged hospitalizations and mortality.^{2,3}
- Being racially and ethnically minoritized (REM) may increase one's odds of acquiring CDI, though the data is conflicting.⁴
- Black race was associated with higher mortality, severe CDI, and longer length of stay (LOS).⁵
- The objective of this study was to describe how race and ethnicity were associated with the outcomes of patients presenting with initial CDI.

METHODS

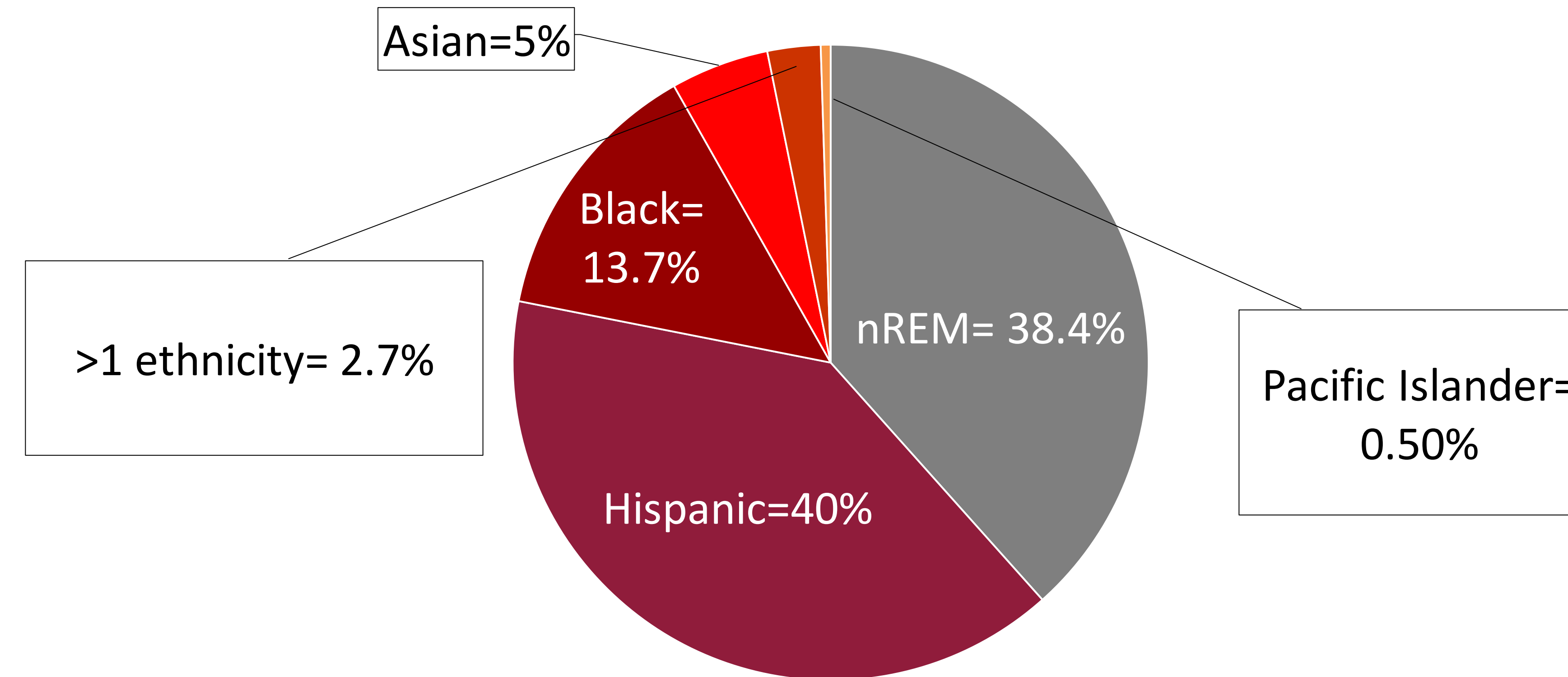
- Single-center, retrospective, observational study from 1/2020- 6/2021 at Loma Linda University Medical Center, a 482-bed teaching hospital in Southern California.
- Inclusion criteria: ≥ 18 years old with an initial episode of CDI (ICD-10 code A04.72).
- Exclusion criteria: recurrent CDI, unknown race/ethnicity
- Outcomes: clinical CDI outcomes including disease severity, mortality, LOS, rate of ICU admission, recurrence rate and receipt of ID or GI consult stratified by REM vs n-REM.
- Patient race and ethnicity are self-reported. Race includes American Indian or Alaska Native, Asian, Black or African American, Hispanic, Pacific Islander or Native Hawaiian, Middle Eastern, White or Caucasian, more than one, or Other. Ethnicity includes either "Hispanic or Latino" or "Not Hispanic or Latino".
- Statistical analysis:
 - Data analyses were conducted on IBM SPSS version 26.
 - Pearson's chi-squared test for categorical data; student T-test for parametric data; Mann-Whitney U test for non-parametric data.
 - Significance was defined as P ≤ 0.05.

ACRONYMS:

CDI= Clostridioides difficile; REM= Racially and Ethnically Minoritized; nREM= Not Racially and Ethnically Minoritized; LOS= Length of Stay; ID= Infectious Diseases; GI= Gastrointestinal; ICU= intensive care unit; CKD= Chronic Kidney Disease; Charlson Comorbidity Index= CCI

RESULTS

Figure 1: Race/Ethnicity Distribution



KEY TAKE AWAY

Despite being younger, racially and ethnically minoritized (REM) patients with initial CDI were more likely to be diagnosed with severe CDI, require an ICU admission during their hospitalization, have underlying comorbidities, have longer LOS, and be under-insured. REM patients were more likely to receive an ID/GI consult for the management of CDI. There were no differences in infection recurrence or all-cause mortality.

Table 1: Select Demographic Data

Demographics	Overall (N=219)	REM (N=135)	nREM (N=84)	P-Value
Age (years)	62	60	69	0.019
Male (%)	108 (49.3)	62 (45.9)	46 (41.7)	0.203
Medi-Cal (%)	124 (56.6)	90 (66.7)	34 (40.5)	<0.001
Diabetes (%)	86 (39.3)	66 (48.9)	20 (23.8)	<0.001
CKD (%)	84 (38.4)	66 (48.9)	18 (21.4)	<0.001
CCI- (median score)	5	5	5	0.352
Received Antibiotics prior to diagnosis of CDI (%)	194 (88.9)	121 (89.6)	73 (86.9)	0.537

RESULTS

Table 2: Select Clinical Outcomes

Clinical Outcomes	Overall (N=219)	REM (N=135)	nREM (N=84)	P-Value
Non-severe CDI (%)	94 (42.9)	52 (38.5)	42 (50)	0.095
Severe CDI (%)	86 (39.3)	54 (40)	32 (38.1)	0.779
Fulminant CDI (%)	39 (17.8)	29 (21.5)	10 (11.9)	0.072
LOS (median days)	10	12	7	0.023
ICU Admission (%)	79 (36.1)	57 (42.2)	22 (26.2)	0.016
CDI-associated mortality (%)	10/25 (40.0)	5/14 (35.7)	5/11 (45.5)	0.622
Recurrence with a positive test in ≥ 2 weeks (%)	22 (10.0)	14 (10.4)	8 (9.5)	0.839
ID Consult (%)	63 (28.8)	45 (33.3)	18 (21.4)	0.058
GI Consult (%)	28 (12.8)	21 (15.6)	7 (8.3)	0.120

DISCUSSION

- In this study, REM patients were younger but were found to have worse CDI outcomes including ICU admission (42.2% vs 26.2%) and longer LOS (12 days vs 7 days) when compared to their White counterparts.
- The REM patients in this study were also more likely to be under-insured (66.7% vs 40.5%) and have underlying comorbidities (~50% vs ~23%). 98.5% of REM patients were treated with oral vancomycin vs 100% of nREM patients.
- Unlike previous studies that found White patients with CDI were more likely to have received antibiotics prior to CDI diagnosis, we did not see this trend.
- Limitations of this study include:
 - We did not assess whether race or ethnicity were independent risk factors for CDI outcomes.
 - The retrospective nature of the study prevented the ability to capture all data including recurrence and readmission.
 - Lastly, the categorization of race and ethnicity as well as the definitions used for REM/nREM may not apply to other studies.
- Future studies should explore, in detail, whether race and ethnicity are independent risk factors for poor outcomes of CDI.

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