An Analysis of Social and Clinical Characteristics of Individuals who Acquired a Central Line-Associated Bloodstream Infection (CLABSI)

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Background

A previous exploratory analysis of surveillance data at our large academic medical center identified higher CLABSI rates among non-Hispanic Black patients compared to White patients. In the context of a growing understanding of the importance of social determinants of health (SDOH), we sought to better describe those patients who acquired a CLABSI.

Methods

We conducted a retrospective analysis of patients with CLABSI who were admitted to one of 3 hospitals (1 large academic and 2 community hospitals) in our health system in 2022. CLABSI was defined using standard NHSN criteria. We compared demographic, admission, clinical and SDOH data between patients identifying as White or non-Hispanic Black. These groups were selected due to sample size limitations. Race was defined based on information from the EHR. To identify variables associated with race that may mediate differences in acquiring CLABSI, we created a logistic regression model using stepwise backwards selection.

Results

Among 167 patients with CLABSI, 86 (52%) identified as White and 67 (40%) identified as Black. Social and clinical characteristics of the cohort are included in Table 2. Data on central lines in place at diagnosis are included in Table 5. The 3 most common organisms were *Staphylococcus epidermidis*, *S. aureus*, and *Pseudomonas aeruginosa*. Median Elixhauser scores (9 v. 10, p = 0.2) and median Social Deprivation Index (64 v. 66, p = 0.4) were not different between groups. Four clinical and social characteristics were independently associated with Black race in a multivariable logistic regression: presence of a dialysis catheter (odds ratio [OR] compared with White subjects, 3.6 [95% confidence interval {CI}, 1.5-9.4]), limitations in activities of daily living (OR 4.5 [95% CI, 1.9-11.0]), a lack of psychosocial stress concerns prior to or during admission (OR 3.4, [95% CI, 1.2-9.8]), and absent documentation on psychosocial stress concerns (OR 4.1, [95% CI, 1.7-10.6]). Two characteristics were identified to be associated with White race: the absence of food insecurity (OR compared with Black subjects 11.8 [95% CI, 1.7-240.4]) and absent documentation of food insecurity (OR 19.2, [95% CI 2.6-406]).

Discussion

Black patients with CLABSIs more frequently required assistance in their ADLs, more frequently had a line dedicated to dialysis, and were less likely to have psychosocial concerns identified or documented compared to White patients with CLABSI. The results of this analysis support the complex interrelatedness of biopsychosocial factors that may predispose to disparate needs for central venous catheters and therefore inequities in the risk of CLABSI. Additionally, disparities in screening and documentation of SDOH exist in this cohort. Future studies should aim to quantify the risk of acquiring a CLABSI conferred by race.