Hospitals caring for diverse patient populations found to have higher mechanical ventilation mortality

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Disparities in mechanical ventilation. Credit: ATS

The odds of death for patients receiving mechanical ventilation for pneumonia or sepsis increase along with the diversity of hospitals'

patient populations, suggesting more systemic factors such as lack of resources and income levels may be to blame, according to research published at the ATS 2024 International Conference held May 17–22 in San Diego.

The study's results are in line with the findings of previous studies that looked at the association between hospital racial diversity and mortality after heart attack, and rates of improvement in ICU mortality, according to the authors.

"Taken together, this data highlights the importance of a careful examination of factors that could be contributing to these adverse outcomes and suggests a need for adjusting resource allocation both to reduce inequity and improve patient outcomes," said corresponding author Gwenyth Day, MD, third-year fellow, Division of Pulmonary Sciences and Critical Care Medicine, University of Colorado Anschutz Medical Campus.

Health disparities research has focused mostly on the role of singular patient-level factors, such as race or income. Less attention has been paid to the hospital systems in which patients experience disparities.

Dr. Day and colleagues previously showed that, for patients receiving mechanical ventilation for pneumonia or sepsis, Black women have highest risk-adjusted death rates while white men have the lowest risk-adjusted mortality rates.

To address this issue on a systemic basis, the team designed a study that would investigate disparities at the hospital level. They first identified non-surgical patients with pneumonia or sepsis treated with mechanical ventilation from seven geographically and racially diverse Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases from 2018 to 2019, across 1,045 hospitals and 16,405,853 hospitalizations.

After excluding hospitals with fewer than 25 patients of color with pneumonia/sepsis, the researchers categorized hospitals into quartiles of racial diversity by percentage of patients of color. They identified 161,560 eligible patients who received mechanical ventilation, of whom 13,786 were Black women and 58,828 were white men.

The team evaluated the risk-adjusted odds of death for Black women compared to white men in all hospitals; Black women compared to white men by quartile of hospital diversity, and all patients based on quartile of hospital diversity.

Patients identified as Black women had a 37.6% mortality rate, while mortality rates for white men were 36%. Adjusted odds of death for patients identified as Black women versus white men did not significantly vary between quartiles of hospital racial diversity. All patients admitted to hospitals with greater racial diversity had higher risk-adjusted hospital mortality.

"Our findings suggest that hospitals with more racial diversity experience strain that affects all patients," said Dr. Day. "This strain may be the result of other factors such as hospital resources, staffing, the types of hospital insurance payments, or neighborhood income."

Future studies by the group will seek to understand the large degree of intersectional variability in mechanical ventilation mortality. They will identify hospitals with high and low variability in mechanical ventilation mortality based on race and gender and use qualitative and survey methodologies to better understand this variability.

In the future, they hope to conduct a mixed survey-qualitative study to evaluate patient and provider experiences of bias, discrimination and practice variability at high and low variability hospitals to further dissect the observed differences in outcomes.

More information: Session: A93 – Critical care and acute care medicine: disparities, quality improvement, and outcomes. Examining the Association Between Hospital Environments and Intersectional Disparities in Mechanical Ventilation Outcomes

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