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Spotlight on Special Topics

USING MACHINE LEARNING TO ASSESS RACIAL DISPARITIES IN COVID-19 MORBIDITY AND MORTALITY

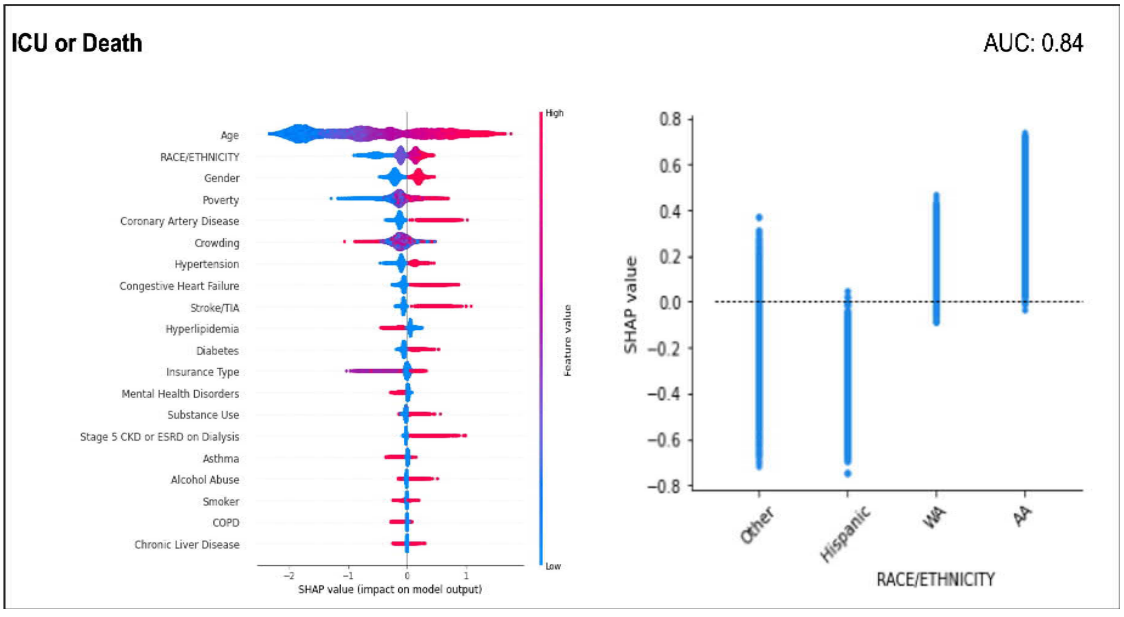
Moderated Poster Contributions
Special Topics Moderated Poster Theater_Hall C
Monday, April 4, 2022, 1:15 p.m.-1:25 p.m.

Session Title: The Crystal Ball: Clinical Characteristics, Bio-markers and Imaging to Predict Outcomes in COVID-19
Abstract Category: 61. Spotlight on Special Topics: Coronavirus Disease (COVID-19)
Presentation Number: 1120-11

Authors: *Osama Dasa, Chen Bai, Mamoun Mardini, Thomas A. Pearson, University of Florida, Gainesville, FL, USA*

Background: African Americans (AA) disproportionately suffered from higher incidence and worse outcomes of COVID-19 compared to White Americans (WA). We hypothesize that AA have excess cardiovascular comorbidities compared to WA, accounting for disparities in COVID-19 severity and death.

Methods: We examined 63,545 lab-confirmed COVID-19 cases from the One Florida Research Consortium's sample of healthcare recipients through April, 2021. We assessed the prevalence of preexisting comorbidities and COVID-19 outcomes using EHR data. We used XGBoost machine learning algorithm based on the gradient boosting framework to predict COVID-19 outcomes. We evaluated the relationship across features and outcomes using SHAP values. Outcomes compared rates of ICU admission or all-cause death at index admission.

Results: Compared to WA, AA patients were more likely to be younger, female, and uninsured. AA patients had the highest comorbidity burden (mainly cardiovascular), as well as higher ICU admission, and death rates. The strongest outcome predictors were age, race, gender, poverty, and cardiometabolic diseases. AA race was the strongest predictor of adverse outcomes compared to other races (Figure 1).

Conclusion: Even after including a multitude of risk factors, a residual excess risk of adverse outcomes persists in AAs and requires further investigation. Such data are essential to identify high-risk subgroups benefitting from enhanced preventive and early therapeutic interventions.