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Spotlight on Special Topics

PERSONALIZING THE OPTIMAL CARDIAC TROPONIN THRESHOLD FOR COVID-19 PROGNOSTICATION BASED ON PRE-EXISTING COMORBIDITIES

Poster Contributions
For exact presentation time, refer to the online ACC.22 Program Planner at https://www.abstractsonline.com/pp8/#!/10461

Session Title: Spotlight on Special Topics Flatboard Poster Selections: COVID
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Background: Cardiac troponin (cTn) has been proven to be accurate for predicting COVID-19 severity, even when only the initial cTn value is used. However, commercial cut-offs to diagnose ischemia may need to be modified for COVID-19 prognostication.

Methods: From Mar to Nov 2020, data was obtained from patients with COVID-19 admitted in the Rush University, which uses Troponin I with normal values of 0.00-0.09 ng/mL. Severe COVID-19 was defined as 60-day mortality or requiring the ICU, mechanical ventilation, or non-invasive ventilation. Threshold estimates were calculated using a published equation for calculating the optimal threshold of a continuous variable that uses decision costs and disease prevalence without assumptions regarding distribution. Confidence intervals were calculated using a bootstrap-based methodology.

Results: Of the initial 1682 patients, 1013 patients had cTn during their admission. The figure shows that patients who suffered severe infection, median initial cTn levels were significantly higher in those with CHF, CKD, atrial fibrillation (AF), but not diabetes, compared to those without the condition.

Conclusion: In our cohort, the optimal cTn threshold for predicting severe COVID-19 as calculated by an equation to calculate the optimal threshold of a continuous variable was higher in those with pre-existing CHF, CKD, and AF. This suggests a more personalized approach for cTn threshold based on pre-existing comorbidities may maximize its prognostication in COVID-19.

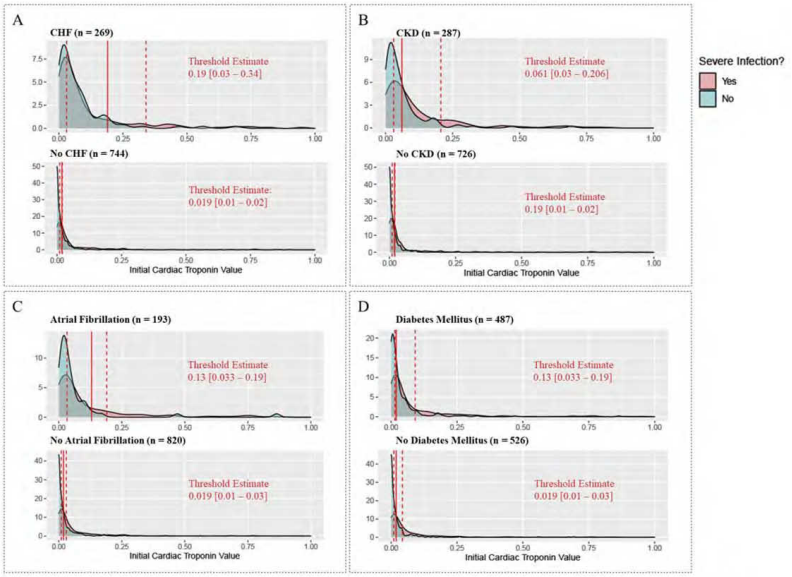

Figure 1. Optimal cardiac troponin threshold estimates for predicting severe COVID-19 infection in patients with four pre-existing conditions. The solid red vertical line indicates the threshold estimate, while the two dotted red lines indicate 95% confidence intervals of the threshold. Some cardiac troponin outliers were excluded in this figure to highlight the area of most interest. In the 516 (50.9%) patients who suffered severe infection, median initial cTn levels were significantly higher in the CHF vs no CHF condition (0.06 vs 0.02, p<0.001), CKD vs no CKD (0.07 vs 0.02, p<0.001), and atrial fibrillation vs no atrial fibrillation (0.05 vs 0.02, p<0.001). Median cTn values were no different in those with and without diabetes (0.03 vs 0.02, p=0.07).