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## Effect of Covid-19 on Patients with a Left Ventricular Ejection Fraction 40%-50%

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There is little data on mid-range left ventricular ejection fraction (LVEF), and more specifically the long-term complications for individuals who contract SARS-COV-2 who have heart failure with LVEF 40%-50%. We sought to understand the long-term implications and outcomes of a COVID-19 diagnosis among patients with pre-existing heart failure and LVEF, from 40%-50%. Patients in the SARS-COV-2 had a higher mortality at 30 days (13.0% vs 4.3%,  $P=0.001$ ). This data suggests that patients with COVID-19 and heart failure with LVEF 40%-50% are a particularly high-risk group for mortality.

It has been reported that patients with pre-existing reduced LVEF who contract SARS-COV-2 face a staggering 40% increase in mortality post-hospitalization [1]. In addition, for COVID-19 patients with an LVEF <25%, have corresponding 5-fold increase in mortality [2]. We sought to understand the long-term implications and outcomes of a COVID-19 diagnosis among patients with pre-existing heart failure and LVEF from 40%-50%.

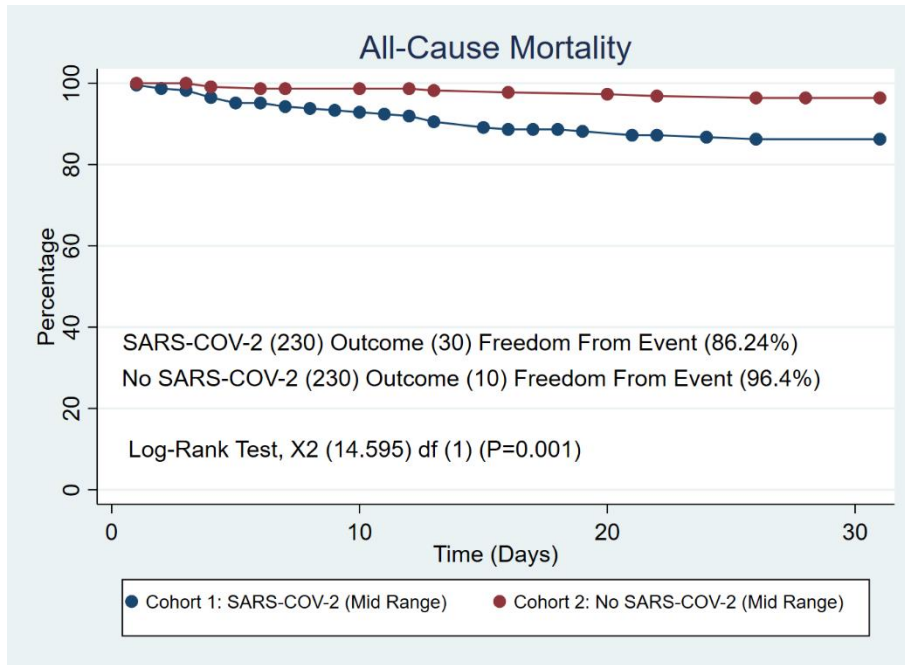
We queried the Trinetx (Covid-19 Research Network) which is composed of 66 health organizations in 11 countries. The researchers identified 10,685 patients with 231 having a positive SARS-COV-2 diagnosis with a heart failure and LVEF between 40%-50% compared to those without a SARS-COV-2 diagnosis with confirmed heart failure and LVEF between 40%-50%. Cases were identified from January 20 2020 to July 30 2021 aged 18 to 90 and in order to measure the association between the two cohorts a 1:1 propensity matched analysis was performed to match the covariates (age, white, male, female, black, hispanic, hypertension, diabetes, atherosclerotic heart disease, history of smoking, chronic obstructive pulmonary disease, history of alcohol use, body mass index <30% kg/m<sup>2</sup>). The researchers were able to match  $n=230/230$  patients over a 30-day period.

The SARS-COV-2 group were slightly older ( $68.7\pm 12.4$  vs  $66.8\pm 14.4$ ,  $P=0.05$ ), The SARS-COV-2 group also had a higher prevalence of hypertension (95.2% vs 80.5%,  $P<0.001$ ), diabetes (67.1% vs 40.2%,  $P<0.001$ ) Patients in the SARS-COV-2 had a higher mortality at 30 days (13.0% vs 4.3%,  $P=0.001$ ) and this was confirmed with a Kaplan Meier Curve and a log-rank test ( $P=0.001$ ) (Figure 1).

This data suggests that patients with COVID-19 and heart failure with LVEF 40%-50% are a particularly high-risk group for mortality.

## Figure Legend

### 1. All-Cause Mortality (Mid-Range)



## Work Cited

1. Goyal, Parag, Evgeniya Reshetnyak, Sadiya Khan, Mahad Musse, Babak B. Navi, Jiwon Kim, Larry A. Allen et al. "Clinical Characteristics and Outcomes of Adults With a History of Heart Failure Hospitalized for COVID-19." *Circulation: Heart Failure* 14, no. 9 (2021): e008354.
2. Undetected Early Heart Damage Raises Risk of Death in Hospitalized COVID-19 Patients." n.d. American Heart Association. Accessed December 28, 2021. <https://newsroom.heart.org/news/undetected-early-heart-damage-raises-risk-of-death-in-hospitalized-covid-19-patients?preview=5b37>.