Effect of VA -ECMO Vs Impella on Survival

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Extracorporeal membrane oxygenation (ECMO) is used as a heart-lung bypass to oxygenate and pump blood outside the body. VA – ECMO supports both heart and lungs. Impella catheter is a pump that is used to increase blood flow from the inlet area which pulls from the left ventricle through the aorta of the heart. As

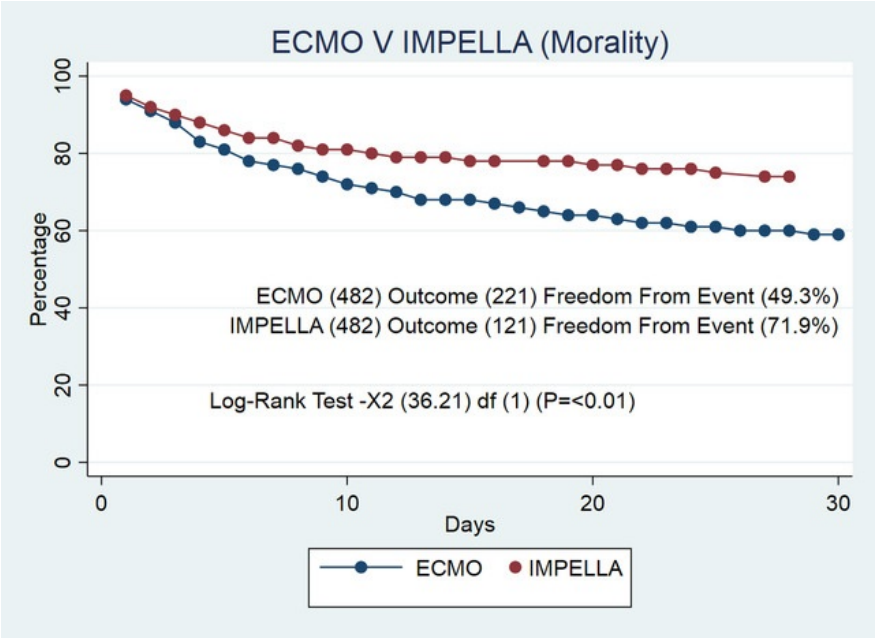
both of these devices are support devices their effectiveness in terms of mortality as a result of individuals having a myocardial infarction then that required the implantation of either an ECMO and or Impella or their long term survival outcome(1-2).

In order to understand long term survival of ECMO vs Impella we queried the TriNetx database (Research Network) which is a network of 38 health care organizations with cases from Jan 1st 2017 – August 3, 2020. We identified VA-ECMO (N=579) and Impella (N=1,377). We followed the cases until follow-up was lost. In order to compare the differences we conducted a Prosperity Score Match with a 1:1 (N= 482/482) match with the covariates (Age, Male, Female, Hypertension, CAD, CHF, Diabetes, CKD, Smoking History, COPD, Stroke History, Liver Disease History, Cardiogenic Shock, Medications, ACE, ARB Warfarin). After the match was complete a measure of association and a Kaplan Meir survival curve was conducted as long with a long-rank test.

The unmatched age at event of MI that required the use of VA – ECMO was (56.1± 13.5), Impella (67.1±11.9) (P = <0.01), CAD (70.2% vs 81.3%) (P= <0.01) COPD (13.6% vs 20.4%) (P = 0.04), ACE (26.5% vs 41.4%) (P= < 0.01) Cardiogenic Shock (82.9% vs 54.8%) (P=<0.001). The matched cohort had a difference of mortality of (45.8% vs 25.1%) (P = <0.01). The Kaplan Meir Survival Curve showed that VA-ECMO had a much lower chance of survival compared to Impella with a log-rank test of (P=<0.01) as seen in and a lower survival probability of (0.49/0.72).

We found that it appears that VA-ECMO cases even after the PSM was conducted had worse outcome as compared to Impella cases in terms of mortality. Even controlling for literature driven covariates it appears that VA-ECMO as a result of MI have worse outcomes compared to Impella.

Figure Legend - ECMO V IMPELLA (Morality)



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