

## Early Outcomes of Heart Transplantation Using Donation after Circulatory Death Donors in the United States

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**Objective:** Limited donor availability for orthotopic heart transplantation (OHT) continues to drive efforts to expand the donor pool. There is renewed interest in OHT using donation after circulatory death (DCD). However, there is limited data on outcomes after DCD OHT. The aim of this study is to evaluate trends and outcomes of OHT using DCD donors in the United States.

**Methods:** The United Network for Organ Sharing (UNOS) registry was used to identify patients undergoing OHT between 2019 and 2021. Patients were stratified by heart procurement method, either DCD or traditional donation after brain death (DBD). Propensity score matching was performed. Cox proportional hazards was used to assess survival.

**Results:** There were 215 OHT performed using DCD donors. The frequency of DCD OHT has increased each year from 2019 to 2021 from 0.25% (n=7/2,781) to 7.15% (n=105/1,469) of all OHT respectively. The percentage of centers performing DCD OHT also increased from 2.5% of centers in 2019 to 16.8% in 2021. In the unmatched cohort, DCD OHT recipients were less likely to be intubated (5.05% vs 15.88%, p<0.001) or in the ICU (21.61% vs 53.75%, p<0.001) pre-operatively. They also less frequently required bridging with IABP (10.70% vs 26.31%, p<0.001) or temporary VAD/ECMO (3.26% vs 10.25%, p<0.001). Unmatched DCD OHT donors were younger (29 vs 32 years, p<0.001), and more frequently male (86.51% vs 71.30%, p<0.001) and white (79.44% vs 63.36%, p<0.001). Kaplan-Meier unadjusted 1-year survival was 91.91% vs 90.24% in DCD and DBD OHTs, respectively (log rank p=0.263). After propensity matching, there were no differences in rejection episodes requiring treatment before hospital discharge (12.33% vs 10.00%, p=0.403) or within one year post transplant (20.47% vs 17.52%, p = 0.427) compared to DBD donor OHT. Kaplan-Meier one year survival in DCD OHT was similar to DBD in the matched cohorts (90.92% vs 89.90%, log rank p=0.653), a finding that persisted in the Cox model (HR 0.82, [95% CI 0.36 – 1.91], p=0.653).

**Conclusion:** Although rates are increasing, only a minority of transplant centers in the United States are performing OHTs with the use of DCD donors. The practice appears safe and feasible in select centers as outcomes are similar to cases utilizing traditional DBD donors. Efforts to educate non-utilizing centers and develop standardized practices may be prudent for broader implementation of DCD OHT.

