Survival Outcomes in DCD vs DBD Heart Transplants in Patients with HeartMate 3 Devices

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INTRODUCTION

- Heart transplantation (HT) is the gold standard treatment option for patients with end-stage heart failure
- Use of donors after circulatory death (DCD) expands the donor pool
- Post-transplant survival outcomes comparable to those in donor after brain death (DBD)
- Patients supported by durable left ventricular assist devices (LVADs) could benefit from expansion to DCD donors.
- Limited data investigating short- and long-term survival outcomes for DCD vs DBD donors in patients bridged with the HeartMate 3 (HM3) device.

METHODS

- Patients were included from the UNOS database between Oct 2018-Mar 2025 on adults over 18
- Inclusion criteria: existing HM3 at time of transplant, stratified by DBD and DCD donor type
- Exclusion criteria: multiorgan transplant
- The **primary outcomes** were survival comparisons at 90 days, 1 year, and 3 years
- Secondary outcomes include acute rejection requiring treatment prior to discharge, acute renal failure requiring dialysis, stroke, pacemaker implantation, and hospital length of stay (LOS)
- Univariable and multivariable COX regression analysis to identify significant factors impacting 1-year mortality

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RESULTS

Table 1. Baseline Characteristics of Donors and Recipients

	DCD(n=332)	DBD (n=2084)	P value
Recipient Variables			
Patients-N (%)	332	2084	
Time on durable LVAD support-median (IQR)	658.5 (336.5, 1122)	535 (294.5, 912.5)	0.0014
Time on durable LVAD support>=2 years or not	153 (46.1%)	720 (34.5%)	<.0001
Age-median (IQR)	55 (44, 64)	57 (48, 63)	0.0578
Male- N(%)	273 (82.2%)	1612 (77.4%)	0.0462
Race-N(%)			0.6049
White	204 (61.5%)	1230 (59.0%)	
Black	81 (24.4%)	571 (27.4%)	
Hispanic	35 (10.5%)	196 (9.4%)	
Other	12 (3.6%)	87 (4.2%)	
Heart Failure Etiology- N(%)			0.9811
NICM	213 (64.2%)	1318 (63.2%)	
ICM	110 (33.1%)	702 (33.7%)	
Restrictive	5 (1.5%)	39 (1.9%)	
Congenital	2 (0.6%)	10 (0.5%)	
Other	2 (0.6%)	15 (0.7%)	
BMI- median (IQR)	29.7 (26.4, 33.7)	29.9 (26.4, 33.2)	0.9124
Diabetes -N(%)	114 (34.4%)	721 (34.6%)	0.9558
Ventilator at transplant- N(%)	0 (0.0%)	3 (0.1%)	1.0000
Inotropes at transplant- N(%)	20 (6.0%)	167 (8.0%)	0.2077
Dialysis at Transplant- N(%)	1 (0.3%)	34 (1.6%)	0.0780
Creatinine at Transplant-median (IQR)	1.1 (0.9, 1.3)	1.2 (1.0, 1.4)	0.0624
Total Bilirubin at transplant – median (IQR)	0.6 (0.4, 0.9)	0.6 (0.4, 0.8)	0.2391
eGFR at transplant – median (IQR)	74.5 (58.6, 93.7)	68.6 (54.0, 86.7)	0.0066
Days on Waitlist – median (IQR)	81.5 (19.5, 334)	137.5 (32, 426)	0.0021
Blood type – n (%)			<.0001
A	110 (33.1%)	858 (41.2%)	
AB	5 (1.5%)	107 (5.1%)	
B	37 (11.1%)	319 (15.3%)	
O	180 (54.2%)	800 (38.4%)	
ICU at time of transplant	19 (5.7%)	268 (12.9%)	0.0002
Status			<.0001
1	3 (0.9%)	102 (4.9%)	
2	38 (11.5%)	411 (19.7%)	
3	145 (43.7%)	838 (40.2%)	
4	146 (44.0%)	733 (35.2%)	
Donor Variables			
Age – median (IQR)	33 (25.5, 39)	35 (27, 43)	0.0113
Male – N(%)	277 (83.4%)	1474 (70.7%)	<.0001
Race N(%)			<.0001
White	261 (78.6%)	1357 (65.1%)	
Black	28 (8.4%)	329 (15.8%)	
Hispanic	38 (11.5%)	330 (15.8%)	
Other	5 (1.5%)	68 (3.3%)	
Mechanism of death – N (%)			0.0352
Trauma	126 (38.0%)	660 (31.7%)	
Cerebrovascular	39 (11.8%)	328 (15.7%)	
Drug Overdose	85 (24.7%)	620 (29.8%)	
Other	82 (24.7%)	476 (22.8%)	
BMI – median (IQR)	27.4 (23.7, 32.1)	27.7 (24.1, 32.1)	0.3146

Figure 1. Survival estimation at 3 years following HT

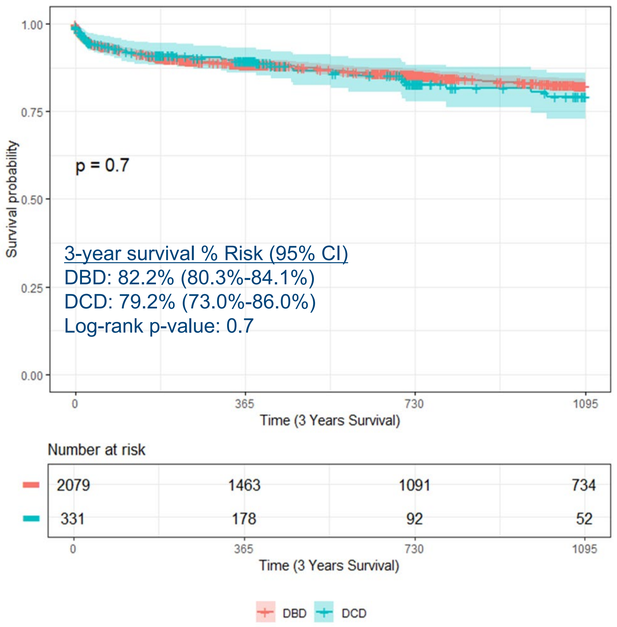

Table 2. Secondary outcomes following HT

	DCD(n=332)	DBD (n=2084)	P value
Outcome			
Acute rejection before discharge, n (%)	35 (10.6%)	181 (8.7%)	0.2617
Dialysis before discharge, n (%)	60 (18.1%)	339 (16.3%)	0.4141
Stroke before discharge, n (%)	11 (3.3%)	100 (4.8%)	0.2284
Pacemaker before discharge, n (%)	4 (1.2%)	39 (1.9%)	0.3933
Hospital length of stay, days, median [IQR]	17 (13, 26)	18 (13, 28)	0.5262

Table 3. Multivariable cox regression analysis for impact on 1-year mortality

Variables	Multivariate Analysis 1-year Mortality with p-value<0.2
	HR (95% CI; p-value)
Recipients Characteristics	
DCD	0.96 (0.66-1.41; 0.845)
Time on durable LVAD support	1.02 (1.01-1.04; 0.012)
Age, y, median [IQR]	1.03 (1.02-1.05; <.001)
Sex (n%)	
Male	
Female	1.59 (1.2-2.12; 0.001)
Diabetes	1.33 (1.04-1.71; 0.025)
Ventilator at transplant	
Inotropes at transplant	1.49 (1-2.21; 0.049)
Dialysis at Transplant	1.84 (0.86-3.94; 0.113)
Creatinine, mg/dL	1.21 (1.03-1.41; 0.018)
Total bilirubin, mg/dL	1.22 (0.99-1.5; 0.06)
Predicted Heart Mass Ratio	0.35 (0.13-0.92; 0.034)
ICU at time of transplant	1.43 (1.01-2.02; 0.044)

CONCLUSIONS

- Short- and long-term survival outcomes are similar between DCD and DBD HT in patients bridged with HM3 device.
- Indicates safety for utilization of DCD donors to expand the donor pool.
- Variables that impact mortality warrant further exploration, many of which indicate worsening recipient condition or end-organ dysfunction.

DISCLOSURES

Arman Kilic is a speaker and consultant for Abiomed, Abbott, 3ive, and LivaNova. Additionally, A.K. is the founder and owner of Qimetrix.