

Contemporary Evaluation of Hospital Readmissions Following Durable Left Ventricular Assist Device Implant

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INTRODUCTION

- Hospital readmission following durable left ventricular assist device (LVAD) placement has significant impact on patient quality of life
- Characterization of hospital readmission in this population is not completely understood
- This analysis seeks to quantify the days outside of hospital and analyze readmission trends within 1 year of discharge from index hospitalization

METHODS

- Durable LVAD recipients between November 2016 and December 2024 from a single institution were retrospectively reviewed
- Inclusion criteria: HeartMate 3 device
- Exclusion criteria: Death, transplant, or pump exchange within 1 year of discharge from index hospitalization,
- Primary outcome: quantification of the number of days spent outside of the hospital within 1 year of discharge
- Secondary outcome: Hospital readmission trend over time
- Univariable and multivariable risk-adjustment performed to identify risk factors for readmission
- Linear regression analysis performed to evaluate trends

DISCLOSURES

Arman Kilic is a speaker and consultant for Abiomed, Abbott, 3ive, and LivaNova. Additionally, A.K. is the founder and owner of QImetrix. All additional authors have no financial relationships to disclose.

RESULTS

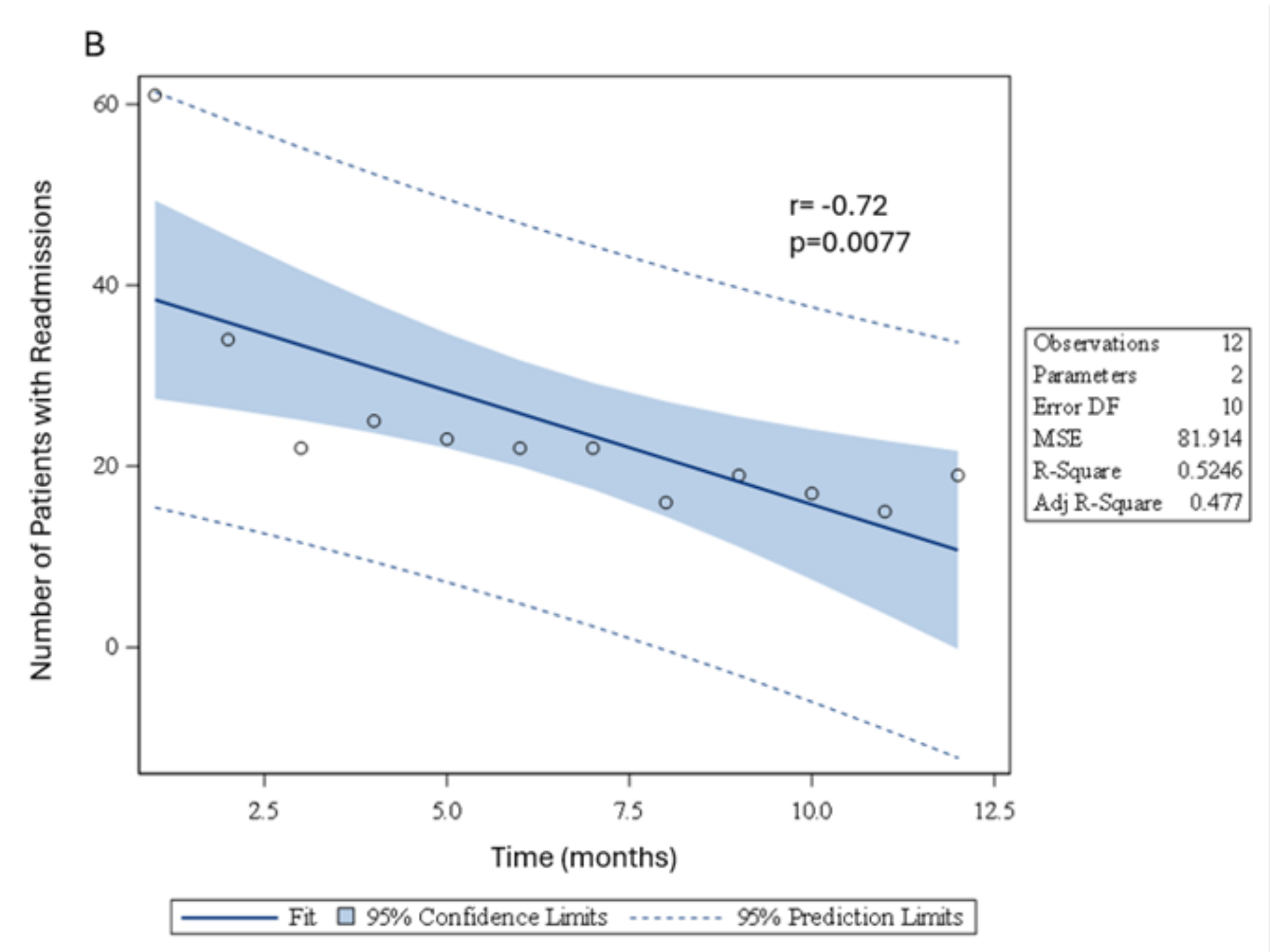
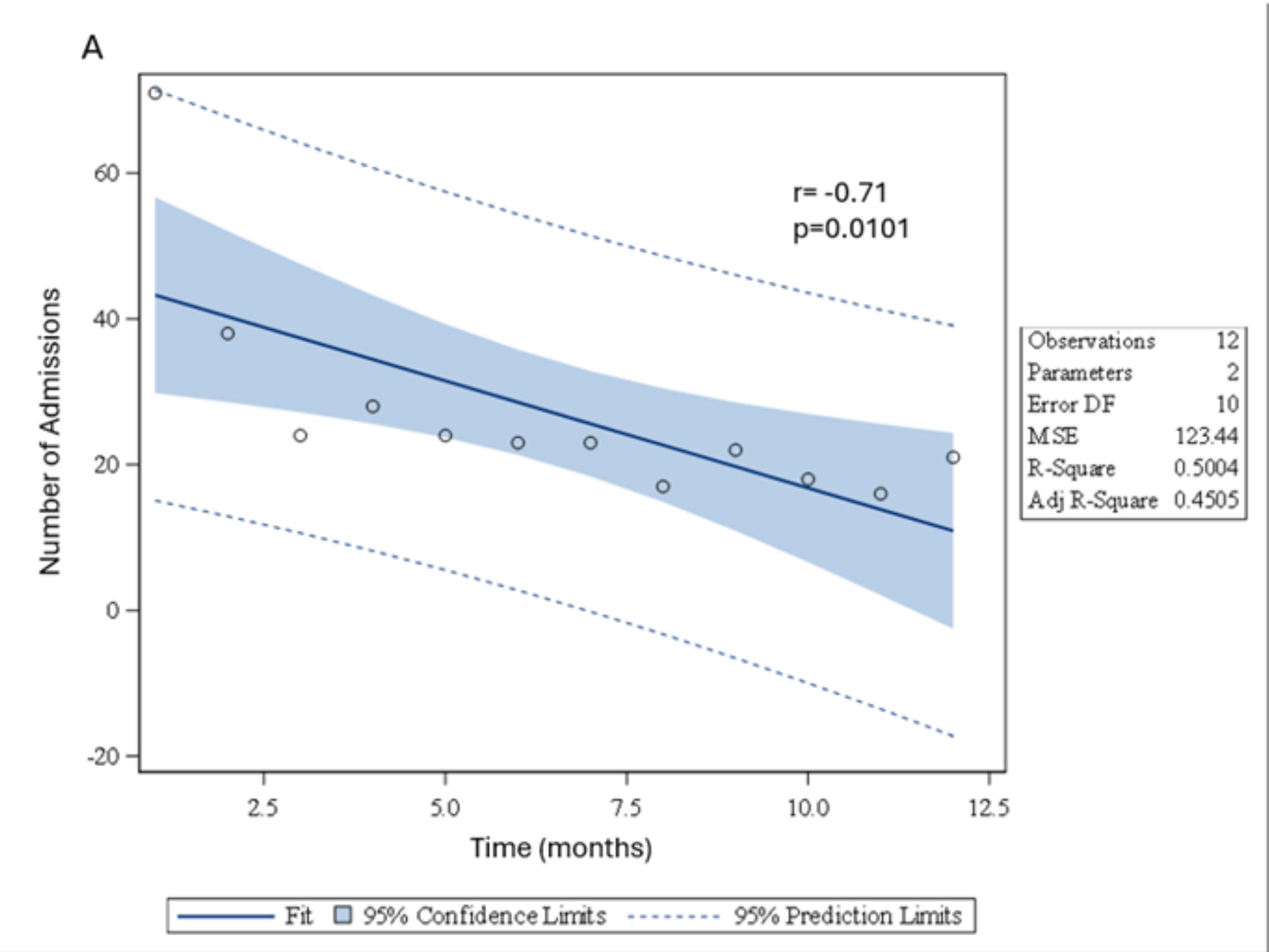
Table 1. Baseline characteristics for readmitted vs non-readmitted patients

Variable	Patients with readmissions	No readmissions	P value
N	137	69	
Age	52.3 (14.5)	51.2 (14)	0.6099
Male	89 (65%)	53 (76.8%)	0.0829
Race			0.2236
White	40 (29.2%)	29 (42%)	
Black	92 (67.2%)	37 (53.6%)	
Hispanic	4 (2.9%)	3 (4.3%)	
Asian	1 (0.7%)	0 (0%)	
BMI	30 (8.2)	31.1 (8.2)	0.3619
Diabetes	54 (40.3%)	23 (33.8%)	0.3706
HF Etiology			0.5696
NICM	43 (31.4%)	19 (27.5%)	
ICM	94 (68.6%)	50 (72.5%)	
NYHA Class			0.0520
Class 3	26 (19.1%)	6 (8.7%)	
Class 4	110 (80.9%)	63 (91.3%)	
INTERMACS			0.0739
Profile 1	34 (25%)	28 (40.6%)	
Profile 2	22 (16.2%)	15 (21.7%)	
Profile 3	49 (36%)	16 (23.2%)	
Profile 4	29 (21.3%)	9 (13%)	
Profile 5	2 (1.5%)	1 (1.4%)	
ICD	96 (72.2%)	48 (70.6%)	0.8127
Preoperative Inotropes	110 (80.3%)	57 (82.6%)	0.6887
Preoperative MCS			0.9074
None	99 (73.9%)	48 (70.6%)	
IABP	10 (7.5%)	5 (7.4%)	
Impella	18 (13.4%)	9 (13.2%)	
ECMO	5 (3.7%)	4 (5.9%)	
Preoperative ECHO			
RV Systolic Dysfunction			0.3529
None	40 (29.2%)	17 (24.6%)	
Mild	42 (30.7%)	16 (23.2%)	
Moderate	36 (26.3%)	21 (30.4%)	
Severe	19 (13.9%)	15 (21.7%)	
EF	18.9 (6.1)	19.8 (6)	0.2738
LVEDD	68.2 (10.3)	68.1 (11.9)	0.9421
Preoperative RHC			
RA pressure	11 (6.4)	10.8 (6.9)	0.8383
PVR	4 (2)	3.7 (2.4)	0.3530
Mean PAP	35.8 (10.7)	36 (11.6)	0.9218
PCWP	23.5 (9)	23.9 (9.5)	0.7879
Baseline Cr	1.3 (0.5)	1.4 (0.4)	0.5050
Baseline Tbili	1.3 (1)	1.5 (1.2)	0.3640
Pre op Dialysis	5 (3.6%)	5 (7.2%)	0.2569
PFTs			
FEV1	65.8 (16.2)	64.4 (15.1)	0.5636
FVC	70.1 (16.9)	68.2 (14.9)	0.4595
FEV1/FVC	74.1 (10.4)	75.1 (7.6)	0.4415
DLCO	64 (15.7)	67.2 (18.3)	0.2565
Mechanical Ventilation	1 (0.7%)	2 (2.9%)	0.2201
History of Stroke	17 (12.7%)	4 (5.9%)	0.1343
History of Cancer	10 (7.5%)	0 (0%)	0.0204
History of Smoking	83 (61.9%)	43 (63.2%)	0.8575
History Illicit Substance Use	27 (20.3%)	10 (14.7%)	0.3329
Surgical Approach			0.3422
Sternotomy	112 (81.8%)	60 (87%)	
Upper hemi-sternotomy + thoracotomy	25 (18.2%)	9 (13%)	
CPB Time	116.8 (70.6)	108 (57.8)	0.3731
RVAD Placement	3 (2.2%)	7 (10.1%)	0.0126
Redo Sternotomy	25 (18.2%)	13 (18.8%)	0.9176

Table 2. Primary Outcomes

Primary Outcomes	
Number of patients admitted w/in 90 days	90
Admissions per patient at 90 days	0.6 (0.9)
Number of patients admitted w/in 1 year	137
Admissions per patient at 1 year	1.6 (1.8)
Days alive outside of the hospital within 1 year of discharge – mean (SD)	356.1 (14.5)

Figure 1. Linear regression for (A) number of hospital readmissions and (B) number of unique patients with readmission over the course of 1 year of discharge from index hospitalization



RESULTS

Table 3: Multivariable analysis for risk of readmissions within 1 year following discharge

Variable	Multivariate Analysis HR (95% CI; p value)
Blood Type	
A	0.59 (0.37-0.95; 0.03)
B	1.49 (0.83-2.68; 0.181)
AB	1.37 (0.72-2.61; 0.335)
O	Reference
NYHA Class	
Class 3	Reference
Class 4	0.61 (0.39-0.95; 0.03)
INTERMACS	
Profile 1	Reference
Profile 2	0.92 (0.5-1.7; 0.786)
Profile 3	1.54 (0.96-2.47; 0.074)
Profile 4	1.39 (0.81-2.4; 0.237)
Profile 5	0.56 (0.12-2.51; 0.449)
History of Stroke	1.41 (0.82-2.45; 0.218)
History of Cancer	2.13 (1.08-4.24; 0.03)
RVAD Placement	0.47 (0.14-1.51; 0.204)

*All variables from Table 1 were included in univariable analysis. Variables with p value <0.2 from univariable analysis were included in multivariable analysis

CONCLUSIONS

- Despite most LVAD patients experiencing at least 1 hospitalization within the first year of discharge, readmission rates improve over the course of the first year
- This group of patients is still able to achieve a high average number of days outside of the hospital which is an important consideration for impact on quality of life

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