

# Cognitive/Affective and Somatic Aspects of Depression Prior to LVAD Implantation and Associations with Mortality

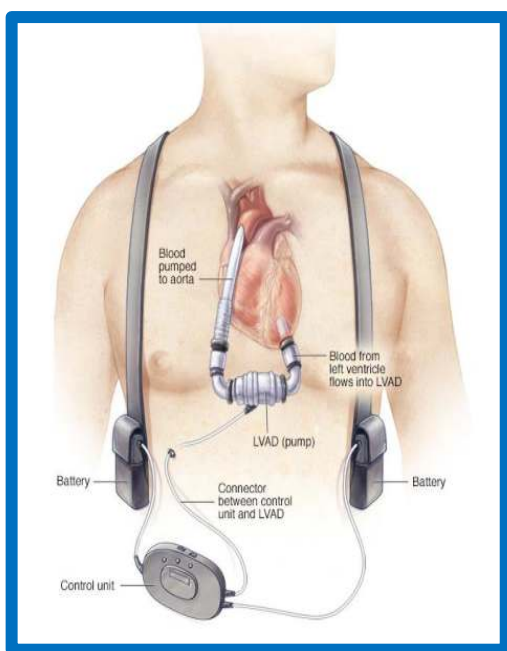
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## Background

Left ventricular assist devices (LVAD) are increasingly utilized as a bridge to transplant (BTT) or destination therapy (DT) for patients with advanced heart failure. There is limited evidence regarding the effect of depressive symptoms on BTT and DT patients.



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## Aim & Hypotheses

Assess characteristics and impact of depression in two cohorts of left ventricular assist device (LVAD) patients, destination therapy (DT) and bridge-to-transplant (BTT).

1. DT recipients would have more severe depressive symptoms pre-implantation than BTT recipients because of greater medical comorbidity and other factors precluding transplantation.

2. Somatic symptoms would contribute more to depressive burden than cognitive/affective symptoms.

3. Somatic symptoms are more strongly associated with all-cause mortality post implantation compared to cognitive/affective symptoms.

## Methods

- Retrospective study using pre-operative PHQ-9 scores to evaluate somatic and cognitive/affective symptoms of depression in 203 adult patients who underwent LVAD placement from 2007-2017.
- Compared demographic variables, mean PHQ-9 scores (total, somatic, and cognitive/affective symptoms), as well as proportions of patients with total PHQ-9 scores  $\geq 10$  in BTT and DT groups.
- Analysis of the effect of PHQ-9 total, proportions of patients with total PHQ-9 scores  $\geq 10$ , somatic, and cognitive/affective scores on all-cause mortality using a Cox Proportional Hazards Model, adjusted for demographic and clinical variables.

## Cognitive/Affective & Somatic Components

### Cognitive/Affective

Item 1  
Little interest/pleasure

Item 2  
Feeling depressed/hopeless

Item 6  
Feeling bad about self

Item 9  
Thoughts about death/SI

### Somatic

Item 3  
Sleep difficulties

Item 4  
Tired/little energy

Item 5  
Appetite changes

Item 7  
Concentration difficulties

Item 8  
Psychomotor changes

## All-Cause Mortality Cox Regression

Variable	Adjust HR	95% CI	P-value
PHQ-9 Total	1.02	0.98-1.06	0.316
PHQ-9 $\geq 10$	0.81	0.52-1.26	0.352
Cognitive/Affective	1.04	0.95-1.15	0.381
Somatic	1.03	0.97-1.09	0.341

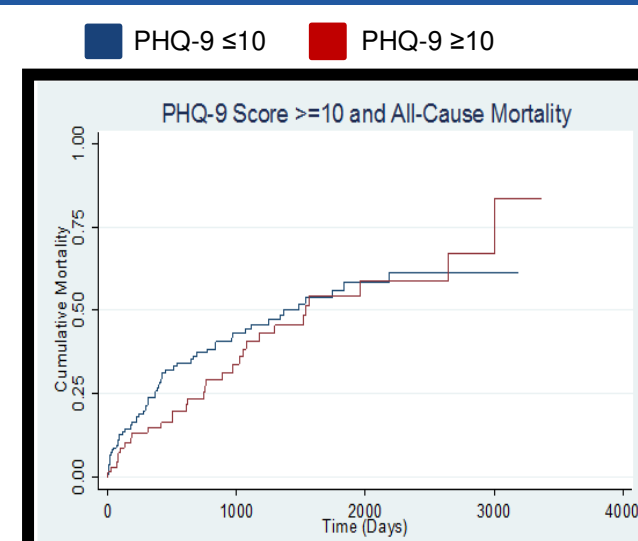
## Results

- We included 81 BTT and 122 DT patients.
- Total PHQ-9 scores did not differ between groups (BTT 6.4 vs. DT 7.5,  $p=0.12$ ), but there was a trend toward more patients in the DT group with PHQ-9 scores  $\geq 10$  (BTT 26% vs. DT 39%,  $p=0.063$ ).
- Somatic symptoms accounted for three-quarters of total PHQ-9 scores in both groups (BTT 76% vs. DT 74%).
- In Cox Proportional Hazards Models: PHQ-9 total (adjusted HR 1.02, 95% CI 0.98-1.06,  $p=0.316$ ), proportion of patients with PHQ-9  $\geq 10$  (adjusted HR 0.81, 95% CI 0.52-1.26,  $p=0.352$ ), cognitive/affective symptoms (adjusted HR 1.04, 95% CI 0.95-1.15,  $p=0.381$ ), and somatic symptoms (adjusted HR 1.03, 95% CI 0.97-1.09,  $p=0.341$ ) were not associated with all-cause mortality.

## Demographics & PHQ-9

Variables	BTT (%) N=81	DT (%) N=122	P-value
Age at Implant	54.5	62.7	<0.001
Male	56 (69)	100 (82)	0.042
White	78 (96)	110 (90)	0.191
Not Hispanic	77 (95)	108 (89)	0.077
Retired	8 (10)	30 (25)	0.004
Married	64 (79)	102 (84)	0.272
CCI	5.8	7.4	<0.001
PHQ-9 Total	6.4	7.5	0.124
PHQ-9 $\geq 10$	21 (26)	47 (39)	0.063
Cognitive/Affective	1.6	2.0	0.172
Somatic	4.9	5.6	0.197

## Kaplan-Meier: PHQ-9 $\geq 10$ and Mortality



## Discussion

- Somatic symptoms were the biggest contributor to total PHQ-9 scores.
- The mean severity of depressive symptoms and the proportion of patients with clinically significant depressive symptoms did not differ between BTT and DT patients.
- Pre-implantation depressive symptoms were not associated with post-implantation mortality.
- Mean depressive symptoms were mild in both groups, with a predominance of somatic symptoms, which may have been due to medical morbidity. Core cognitive/affective symptoms were low in our patients, so it is not surprising that PHQ-9 scores were not associated with mortality. Nonetheless, depression has been linked to other negative outcomes in patients with end-stage heart failure.
- Additional work is needed to identify depression better in patients being considered for LVAD and to measure its unique effects on their clinical course and well-being.

## Conclusions

In patients who underwent LVAD implantation, pre-operative mean PHQ-9 scores revealed mild depressive symptoms, did not differ between those receiving DT vs. BTT, and were not associated with all-cause mortality. Somatic symptoms were the biggest contributor to total PHQ-9 scores.

## References

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