DT

Destination Therapy

SO MUCH DATA
IN SUCH A SMALL DEVICE.

HeartWare™ HVAD™ System
The ONLY intrapericardial VAD approved for DT.

Medtronic

ONLY WE HAVE THIS BREADTH OF CLINICAL EVIDENCE TO SUPPORT DESTINATION THERAPY.

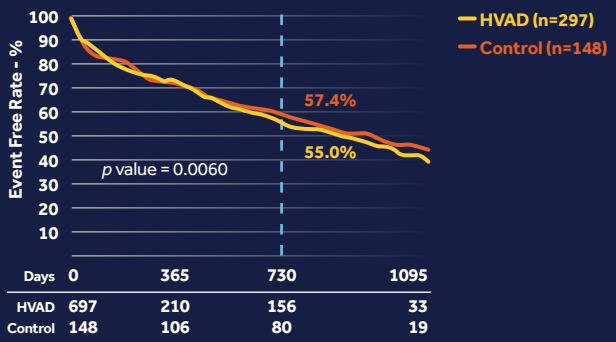
Medtronic is pleased to announce our destination therapy (DT) indication for the HeartWare™ HVAD™ System, and share the data that supports this important advancement in mechanical circulatory support therapy. With this indication, the HeartWare™ HVAD™ Pump is the only intrapericardial VAD with 2 years of data that is approved for DT in the U.S.

Nearly 1,000 patients were followed in the ENDURANCE and ENDURANCE Supplemental clinical trials:[1,2]

- Each was a prospective, randomized, controlled, un-blinded, multi-center trial including patients with chronic AHA D/NYHA class IIIB/IV heart failure who failed optimal medical management and were ineligible for cardiac transplantation.
- Only the HeartWare HVAD System has been evaluated in two head-to-head trials to study the safety and efficacy of centrifugal VADs in patients not eligible for cardiac transplantation.
- More than 600 HVAD patients enrolled between 2010 and 2015 and were followed for one year, nearly half were followed for two years.
- Both trials reported a similar composite endpoint: Survival free from disabling stroke, death, or device malfunction requiring exchange, explant or urgent transplantation.

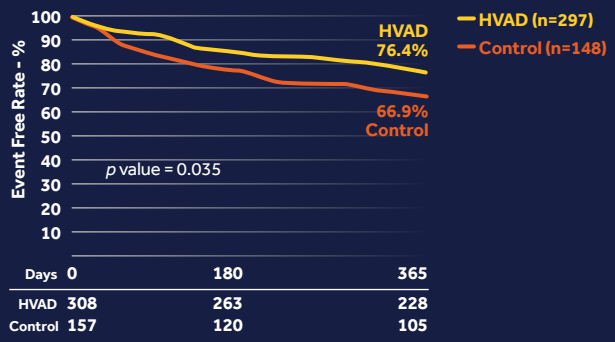
ENDURANCE: Similar outcomes between HVAD and control for the 2 year composite endpoint.[1]

Survival at two years free from disabling stroke (MRS ≥ 4 at 24-weeks post-stroke), and alive on the originally implanted device, or transplanted or explanted due to patient recovery.



ENDURANCE Supplemental: HVAD demonstrated better composite one year outcomes compared to control.[2]

Predefined secondary endpoint freedom from death, disabling stroke (MRS ≥4), device exchange and urgent transplant at 12 months.



ENDURANCE and ENDURANCE Supplemental trial results proved meaningful by demonstrating that careful attention to blood pressure management may reduce the risk of stroke.

ENDURANCE SUPPLEMENTAL TRIAL[5]

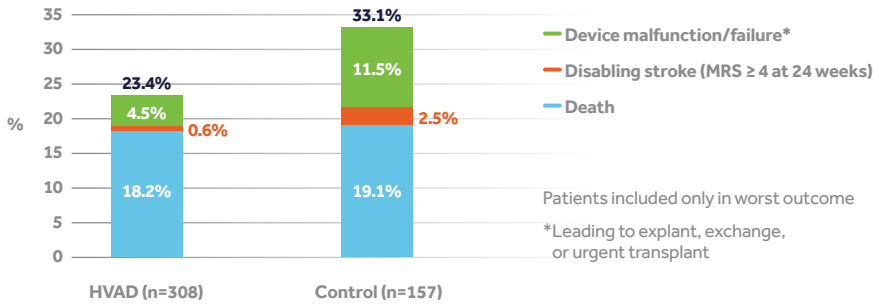
The primary objective of the ENDURANCE Supplemental trial was to prospectively determine the effectiveness of a blood pressure management strategy on neurological injury in patients receiving the HeartWare HVAD System.

Summary:

- The observed difference in neurological event rates at 12 months between HVAD and control was small (2.6%), but did not meet the primary endpoint of the study.
- Secondary results demonstrated 76.4% of patients were alive on the originally implanted device and free from disabling stroke, compared to 66.9% of patients in the control arm.
- ENDURANCE Supplemental trial demonstrated lower MAP and reduced overall incidence of neurological injury than ENDURANCE trial.

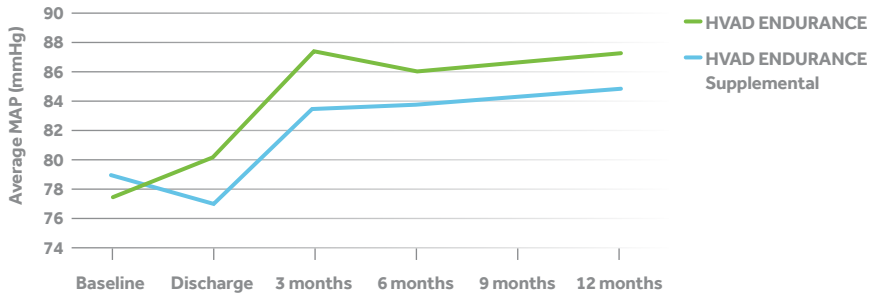
ENDURANCE Supplemental Trial

Death, Disabling Stroke, Device Malfunction/Failure at 12 months[5]



ENDURANCE Supplemental Trial

Mean Arterial Pressure (MAP)[5]



ENDURANCE Supplemental trial demonstrated adverse event rates for stroke, major bleeding, cardiac arrhythmias, renal dysfunction and infections, including percutaneous driveline infections, were similar between HVAD and control subjects. TIAs were more frequent in the HVAD cohort, while hemolysis, pump replacement, and exchange due to pump thrombus were all significantly higher in the control cohort.

Both studies demonstrated significant and sustained improvements in patients' quality of life and functional capacity, regardless of device. In the majority of patients, heart failure symptoms improved to NYHA Class I or II.

ONE SMALL DEVICE. SO MUCH DATA.

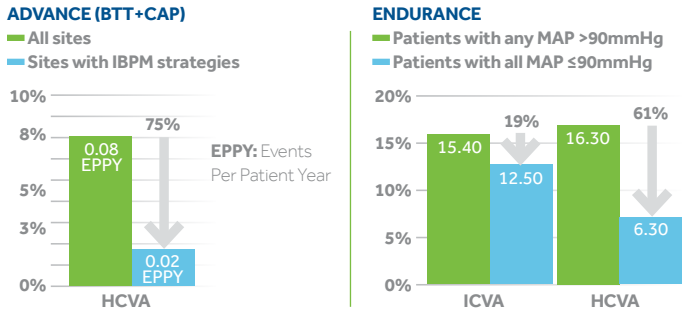
What we've learned about the importance of managing blood pressure

RETROSPECTIVE

Analysis of ADVANCE BTT/CAP[3] and ENDURANCE[1] showed:

- MAP >90mmHg as a risk factor for the development of stroke, especially hemorrhagic stroke
- When blood pressure management was improved, stroke rates were lower

Effects of Improved Blood Pressure Management (IBPM)



IBPM PROTOCOL

In the ENDURANCE Supplemental trial the improved blood pressure management protocol included:[2]

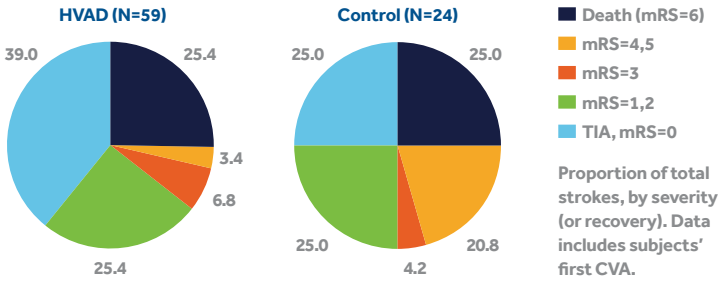
- A recommended mean arterial pressure (MAP) ≤ 85mmHg when using an automated cuff or ≤ 90mmHg when using a doppler
- Teaching patients to check and monitor blood pressure daily
- Instructing patients to report out-of-range values

PROSPECTIVE

The ENDURANCE Supplemental trial[2] showed:

- 75% patient compliance to blood pressure monitoring and recording[4]
- With improved blood pressure management there is a reduction in stroke rate, including a 50% reduction in HCVA rates
- Lower rates of disabling neurological events compared to control

ENDURANCE Supplemental Trial: Stroke Severity Comparison[2]



Proportion of total strokes, by severity (or recovery). Data includes subjects' first CVA.

"In the ENDURANCE trial, we were concerned about the higher rate of stroke in the HVAD group compared to the control. In the ENDURANCE Supplemental trial, that gap closed and the stroke rates are comparable: there was no clinically significant difference between the HVAD and HeartMate II™. We believe the narrowing of those rates was most likely due to blood pressure management."

Carmelo Milano, M.D., co-principal investigator, Surgical Director, Cardiac Transplantation and Left Ventricular Assist Device (LVAD) Programs, Division of Cardiothoracic Surgery, Duke University Medical Center, Durham, N.C.

600+
HVAD DT Patients

1000+
total patient years for DT

PROVEN, MEANINGFUL RESULTS.

References:

1. Rogers, J. et al, Intrapericardial Left Ventricular Assist Device for Advanced Heart Failure. N Engl J Med. 2017; 376:451-460.

2. Milano, C. et al, Impact of Blood Pressure Management on Patient Outcomes with the HeartWare HVAD: the ENDURANCE Supplemental Trial. 2017, in press.

3. Teuteberg, J. et al, The HVAD Left Ventricular Assist Device: Risk Factors for Neurological Events and Risk Mitigation Strategies. JACC Heart Fail. 2015; 3(10): 818-828.

4. Data on file with Medtronic as of September 27, 2017.

5. Data on file with Medtronic as of September 27, 2017. Manuscript submitted and under review.

Brief Statement: HeartWare™ HVAD™ System

Indications for Use

The HeartWare™ HVAD™ System is indicated for hemodynamic support in patients with advanced, refractory left ventricular heart failure; either as a Bridge to Cardiac Transplantation (BTT), myocardial recovery, or as Destination Therapy (DT) in patients for whom subsequent transplantation is not planned.

Contraindications

The HeartWare System is contraindicated in patients who cannot tolerate anticoagulation therapy.

Warnings/Precautions

Proper usage and maintenance of the HVAD™ System is critical for the functioning of the device. Serious and life threatening adverse events, including stroke, have been associated with use of this device. Blood pressure management may reduce the risk of stroke. Never disconnect from two power sources at the same time (batteries or power adapters) since this will stop the pump, which could lead to serious injury or death. At least one power source must be connected at all times. Always keep a spare controller and fully charged spare batteries available at all times in case of an emergency. Do not disconnect the driveline from the controller or the pump will stop. Avoid devices and conditions that may induce strong static discharges as this may cause the VAD to perform improperly or stop. Magnetic resonance imaging (MRI) could cause harm to the patient or could cause the pump to stop. The HVAD™ Pump may cause interference with automatic implantable cardioverter-defibrillators (AICDs), which may lead to inappropriate shocks, arrhythmia and death. Chest compressions may pose a risk due to pump location and position of the outflow graft on the aorta - use clinical judgment. If chest compressions have been administered, confirm function and positioning of HVAD Pump post CPR.

Potential Complications

Implantation of a VAD is an invasive procedure requiring general anesthesia and entry into the thoracic cavity. There are numerous known risks associated with this surgical procedure and the therapy including, but not limited to, death, stroke, neurological dysfunction, device malfunction, peripheral and device-related thromboembolic events, bleeding, right ventricular failure, infection, hemolysis and sepsis.

Refer to the "Instructions for Use" for detailed information regarding the implant procedure, indications, contraindications, warnings, precautions and potential adverse events prior to using this device. The IFU can be found at www.heartware.com/clinicians/instructions-use.

Caution: Federal law (USA) restricts these devices to sale by or on the order of a physician.

Medtronic
14400 NW 60th Ave
Miami Lakes, FL 33014
Tel: (305) 364-1402
Fax: (954) 874-1401

heartware.com

Medtronic