Nature Reviews Cardiology **9**, 432 (2012); published online 12 June 2012; doi:10.1038/nrcardio.2012.87

DEVICE THERAPY

NEW CENTRIFUGAL PUMP NONINFERIOR

A continuous-flow, centrifugal pump is noninferior to existing ventricular assist devices, according to the HVAD® Bridge to Transplant ADVANCE trial. "Functional capacity and quality of life improved markedly and the adverse event profile was favorable," report the investigators.

The HeartWare® Ventricular Assist System (HVAD®; HeartWare International Inc., Framingham, MA, USA) has only one moving part, as in commercially available axial-flow pumps. In this third-generation device, however, the 'impeller' has no mechanical bearings and is, instead, suspended by passive magnetic and hydrodynamic thrust bearing to allow contact-free rotation. The intrapericardial HVAD® is implanted directly into the left ventricle.

In 30 US centers, 140 patients with advanced heart failure who were eligible for heart transplantation had the HVAD® implanted between August 2008 and February 2010. In the prospective, nonrandomized trial, they were compared with 499 patients who received a commercially available pump over the same period, and who were included in the Interagency Registry for Mechanical Assisted Circulatory Support (INTERMACS). All 140 patients with the HVAD® were followed up for ≥180 days, or until transplantation or death.

Device success (survival on the originally implanted device, transplant, or explant for ventricular recovery at 180 days), occurred in 90.7% and 90.1% of patients with the HVAD® or a control pump, respectively (P<0.001 for noninferiority). Superiority was not established. The most-frequent complications were bleeding, infections, and perioperative right heart failure, but Kaplan–Meier survival estimates were similar between the groups. The median 6-min walk distance and scores of quality of life significantly improved in patients with the HVAD® at 6 months (no direct comparison with the 499 controls was reported).

This new, centrifugal pump seems to be at least as safe and effective as commercially available alternatives in the short term, but "an assessment of durability will require the much longer duration of follow-up that can be achieved only with the ongoing destination therapy trial," conclude the investigators.

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Original article Aaronson, K. D. *et al*. Use of an intrapericardial, continuous flow, centrifugal pump in patients awaiting heart transplant. *Circulation* doi:10.1161/CIRCULATIONAHA.111.058412