SynCardia Systems Inc was founded in 2001 by Dr. Marvin J. Slepian, M.D., Dr. Richard G. Smith, MSEE, and Dr. Jack Copeland, M.D. SynCardia Systems Inc manufactures the CardioWest™ temporary Total Artificial Heart (TAH-t) that is the first and only Artificial Heart to receive FDA, Health Canada and CE Approval. This medical device is the modern version of the Jarvik 7 artificial heart first implanted into Barney Clark.

In 1982, Jarvik-7 Artificial Heart was implanted into Barney Clark who lived for 112 days. In the 90's, the device and technology moved to University Medical Center (UMC) and was subsequently renamed the CardioWest temporary Total Artificial Heart (TAH-t). Budget cutbacks at UMC came close to stopping the study of this technology. To save the TAH-t, SynCardia Systems Inc was formed in 2001.

The TAH-t is used as a bridge-to-heart transplant device for transplant eligible patients dying from end stage biventricular failure. To save the lives of these morbidly ill patients, the diseased heart is removed and the CardioWest TAH-t is implanted. The TAH-t pumps more blood, up to 9.5 liters per minute, than any ventricular assist device. This higher level of perfusion helps patients regain their strength, making them better heart transplant candidates.

The design of the CardioWest™ temporary Total Artificial Heart (TAH-t) is a technological marvel, yet the heart is elegantly simple in appearance. The size and shape of the artificial heart is designed to fit in the space of the removed diseased ventricles. The device fits in a majority of adults and some larger adolescents. The CardioWest TAH-t utilizes a partial fill and full eject mechanism.
As patients exercise, their muscles and blood vessels contract causing more blood to fill the ventricles which is then fully ejected with each artificial heart beat. The TAH-t is able to pump high volumes of blood (up to 9.5 Liters per minute) safely through the body while minimizing contact with non-human surfaces. These design features combined with state of the art surgical and anticoagulation regiments have resulted in good outcomes and have minimized complications.

A New England Journal of Medicine paper published on August 26, 2004, states that in the pivotal clinical study of the TAH-t, the one year survival rate for patients receiving the CardioWest TAH-t was 70 percent versus 31 percent for control patients who did not receive the device. One-year and five-year survival rate survival rates after transplantation among patients who had received a TAH-t as a bridge to human heart transplant were 86 and 64 percent.

The number of CardioWest TAH-t certified implant centers has increased from 9 to 20 centers world wide in 2006, and plans to increase to 34 in 2007 and 72 hospitals in 2008. According to SynCardia’s CEO and President, Rodger Ford, “This growth will convert the company from a scientific venture into a profitable life-saving business.”

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