



## US Hospital Discharges Patient Without a Human Heart



Freedom® Driver, a backpack-sized artificial heart device, allows patient to recover at home while waiting for a heart transplant.

For the first time in its history, the University of Michigan Frankel Cardiovascular Center has sent home a 24-year-old patient with a total artificial heart, as he awaits a heart transplant. Stan Larkin is the first patient to leave a Michigan hospital without a human heart and is part of a unique group of heart patients in the United States who have gained independence because of the mobile technology.

As University of Michigan cardiac surgeon Jonathan Haft, MD explained, the Freedom Driver is a portable 13-pound device “designed to help patients at risk of dying from end-stage biventricular heart failure”.

In Stan’s case it is the SynCardia temporary Total Artificial Heart, a mechanical pump that allows the patient to bridge the time required to transplantation. “He is still listed for a heart transplant and we hope to transplant him as soon as an organ is available. In the meantime he can be at home, he can be functional, and continue to rehabilitate himself so he is in the best possible shape when his opportunity comes,” Dr. Haft continued.

The total artificial heart functions by delivering compressed air into tube ventricles, allowing blood to be pumped through the body. These tubes, which exit the patient’s body, are connected to the machine.

### **The Big Blue**

The only FDA-approved driver for the SynCardia temporary Total Artificial Heart prior to the development of the Freedom portable driver was the “Big Blue” hospital driver, which weighs 418 pounds and is the size of a washing machine. Total artificial heart patients supported by Big Blue were confined to the hospital for months, sometimes years, while waiting for a matching donor heart. The portability of the new Freedom driver allows otherwise healthy patients to leave the hospital and wait for a matching donor at home and in their communities.

Stan Larkin, who was discharged just before Christmas, admitted having had “a lot of questions”, but he was enthusiastic to learn how to get along with the device.

### **Managing Advanced Heart Failure**

According to the American Heart Association, roughly 10 percent of the 5.7 million Americans living with heart failure have advanced heart failure. This condition makes patients feel shortness of breath even at rest, but

treatment options exist to help the heart pump as best as it can.

When all other treatment options (including medications, lifestyle changes and heart procedures) have failed, ventricular assist devices have been used for more than ten years to improve survival and quality of life for patients awaiting heart transplant.

The devices are most commonly used to support the left side of the heart, called left ventricular assist devices (LVADs), and may be used as destination therapy, which, unlike bridge therapy, keeps patients on an LVAD for the rest of their lives. Other devices may be used to support the right side of the heart. If both sides of the heart require support, the total artificial heart may be used.

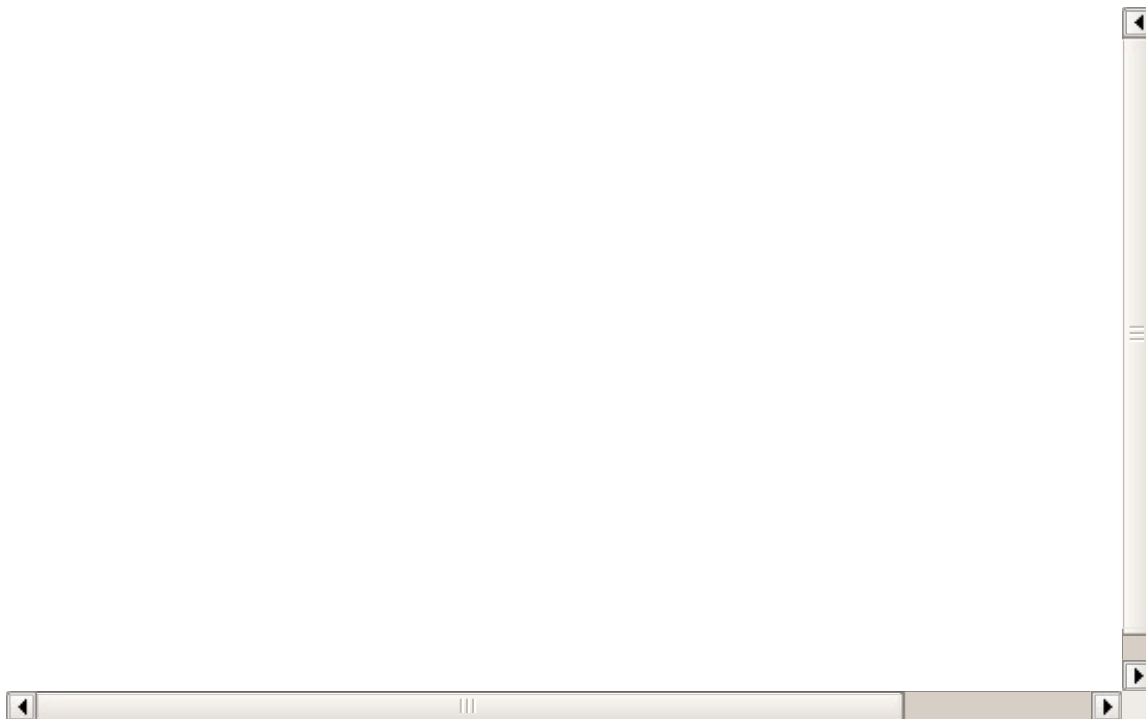
When Stan Larkin was diagnosed with the hereditary disease right ventricular dysplasia after collapsing at a basketball game in 2007, further tests revealed he and his brother Dominique suffered from familial cardiomyopathy, which impacts the heart muscle. As the heart becomes weaker, it is less able to pump blood through the body and maintain a normal electrical rhythm.

To help regulate Stan's heart rhythm, surgeons implanted a defibrillator, however his heart disease worsened to cardiogenic shock, and consequently, doctors removed his failing heart and replaced it with the SynCardia temporary Total Artificial Heart.

### **Double Milestone**

Stan was initially connected to Big Blue before being switched to the FDA-approved Freedom Driver to power the total artificial heart as a bridge to transplant. His care marks two milestones: as the first Michigan patient to make the transition to the Freedom Driver and first patient in Michigan to go home with it.

Dominique Larkin's condition also required an artificial heart and he remains at the University of Michigan's cardiovascular center intensive care unit while connected to Big Blue. Doctors are determining the next best steps for treating his advanced heart failure.



Source: [University of Michigan Health System](#)

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