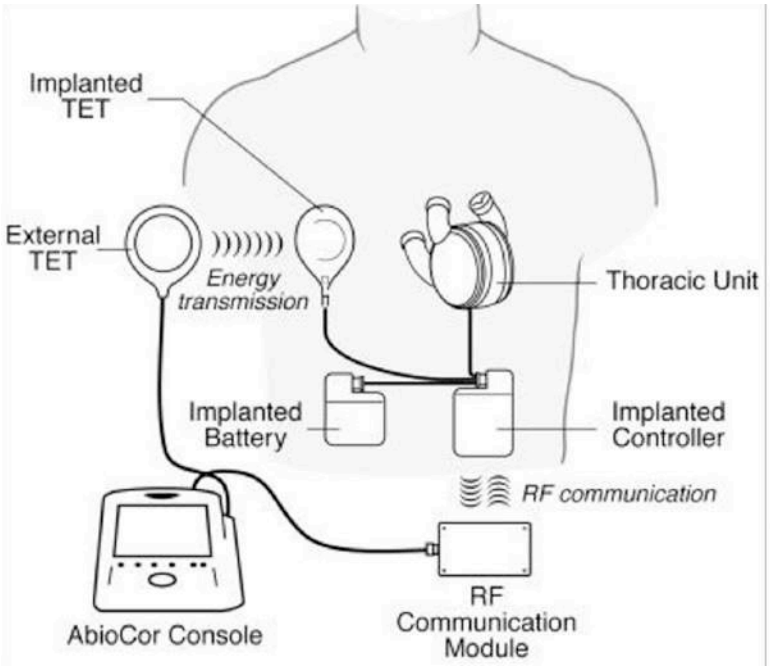
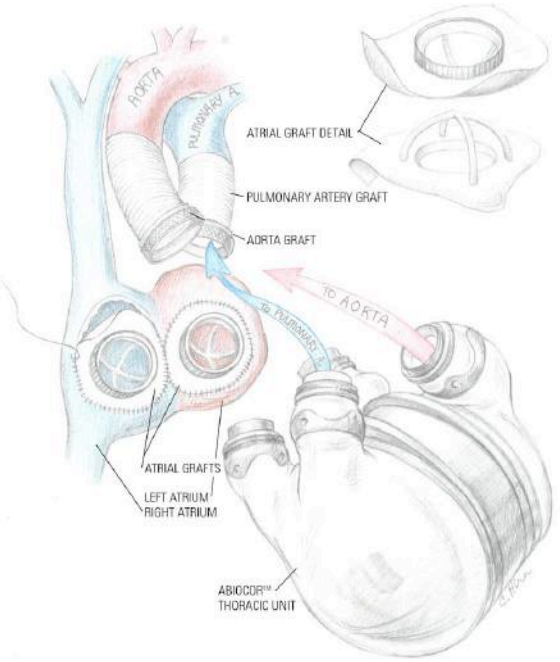
Artificial Hearts

A total artificial heart (TAH) replaces a failing heart completely, either as a bridge to transplant or as a permanent replacement. Although other similar inventions preceded it going back to the late 1940s, the first artificial heart to be successfully implanted in a human was the Jarvik-7 designed by a team including Willem Johan Kolff and Robert Jarvik. On December 2, 1982, Kolff implanted the Jarvik 7 artificial heart into Barney Clark, a dentist from Seattle who was suffering from severe congestive heart failure. While Clark lived for 112 days tethered to an external pneumatic compressor, a device weighing some 400 pounds (180 kg), during that time he suffered prolonged periods of confusion and a number of instances of bleeding, and asked several times to be allowed to die. Getting a total artificial heart (TAH) involves some serious risks including blood clots, bleeding, infection, and device malfunctions.

The development of the TAH was less active during the 1990's. Interestingly it was the development of the left ventricular assist device (LVAD) that solved some of the obstacles pertaining to blood clots and revilved the TAH project. On September 5, 2006, the FDA approved the first totally implanted artificial heart for patients with advanced heart failure involving both pumping chambers of the heart under the Humanitarian Use Device (HUD) provisions of the Food, Drug and Cosmetic Act. The AbioCor Implantable Replacement Heart, made by Abiomed, Inc. (Danvers, Mass.), is intended for people who are not eligible for a heart transplant and who are unlikely to live more than a month without intervention. In clinical studies, this product was shown to prolong the life and improve the quality of life for critically ill patients.





TET: transcutaneous energy transfer