Ventricular Assist Device Program | Types of VADs

Boston Children's Hospital | Benderson Family Heart Center

There are several types of Ventricular Assist Devices (VAD). The Benderson Family Heart Center at Boston Children's Hospital is a leader in VAD innovation. The VAD team will decide which device is most appropriate for each patient's unique situation.

Your child's size, age, and disease state are all considered when deciding which device is right. Some are intended for short-term use and others for long-term use.

Name	Age/Size Requirement	Hospital vs. Home	Internal or External	Indication	Short-term/ Long-term
SynCardia Total Artificial Heart® The Total Artificial Heart® is a pump inside the chest that replaces the whole heart for older children who are waiting for a transplant. Patients can go home on this device by transitioning to the smaller, portable Freedom Driver.					
SynCardia Total Artificial Heart®	Based on 3-D imaging	Hospital and Home	Internal	BTT	Long-term
Berlin Heart EXCOR® The Berlin Heart EXCOR® stays outside the chest and is attached to the heart with cannulas. It provides heart support while the patient waits for a heart transplant.					
Berlin Heart EXCOR®	All ages and sizes	Hospital	External	BTT	Long-term
Heartmate 3 VAD® The Heartmate 3 VAD® works by continuously spinning blood from the weak part of the heart, through the device, out to the aorta and the rest of the body. There is a small rotor located inside the VAD that helps with this spinning motion. The pump is always connected to a controller and requires a power source to keep the VAD spinning. Patients on this device are eligible to go home.					
Heartmate 3 Vad®	Based on imaging	Hospital and Home	Internal	BTT or Lifelong Therapy	Long-Term
Impella® The Impella® is a small axial flow pump designed for short-term use in children with heart failure. The pump is about the size of a AAA battery and is placed through the femoral artery or axillary artery by using a catheter. This is done in the cardiac catheterization lab or the operating room. The pump helps the heart by pulling blood from the left ventricle to the aorta. The Impella can allow the heart to temporarily rest and recover.					
Impella®	All ages and sizes	Hospital	Internal	BTT	Short-term
Maquet ROTAFLOW ® The Maquet ROTAFLOW® is a heart pump outside of the body with a motor that spins the blood and increases blood flow to temporarily improve the symptoms of heart failure.					
Maquet ROTAFLOW®	All ages and sizes	Hospital	External	BTT	Short-term

Extracorporeal membrane oxygenation, or ECMO, is also used to provide emergent, short-term heart and lung support. If it is determined your child needs ECMO support, the VAD team will work with the ECMO team in the CICU.