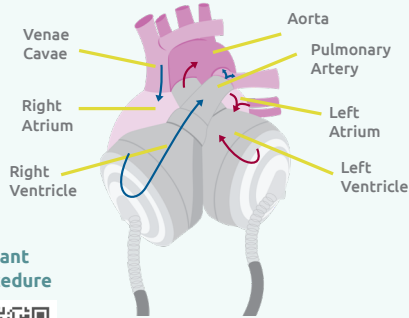# SynCardia (TAH-t)

OPS

The Device

The TAH-t replaces the tricuspid valve, right ventricle, pulmonary valve, mitral valve, left ventricle, and aortic valve. Only a small rim of patient atrial tissue remains.

Patient Device Size Selection
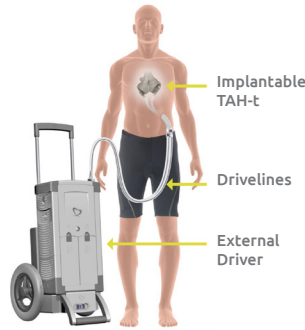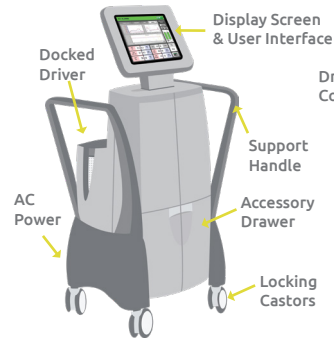- $>1.7M^2$ BSA = 70 cc
- $\leq 1.7M^2$ BSA = 50 cc

- Venae Cavae
- Aorta
- Pulmonary Artery
- Right Atrium
- Left Atrium
- Right Ventricle
- Left Ventricle

Implant Procedure

Scan QR for a medical animation.

Anticoagulation

- Start **Heparin** within 72 hours, with goal of PTT 50–70 *(should be determined by care team)*
- **Aspirin** POD 3–5
- Start **Coumadin** when PO intake is tolerated
  - Maintain INR between 2–3
  - Monitor intake of Vitamin K

Blood Pressure

- Pump is afterload-sensitive, maintain blood pressure goal below 135 mmHg
- Patient will have palpable pulse at the set pump rate

Fluid Status

- Pump is preload-dependent
- Prevent overfill with close attention to fluid status

Device Components

HOSPITAL CART

- Implantable TAH-t
- Drivelines
- External Driver
- Docked Driver
- Display Screen & User Interface
- AC Power
- Support Handle
- Accessory Drawer
- Locking Castors

DRIVER SYSTEM

- Driveline Connection
- On/Off Switch
- External Batteries*
- Display Screen & User Interface
- LED Array
- USB Port
- Filter Cover
- External Air Connection
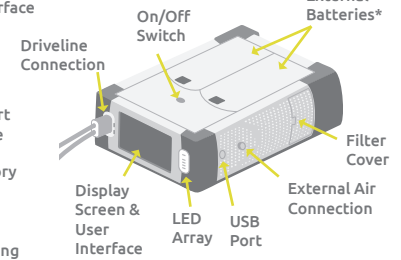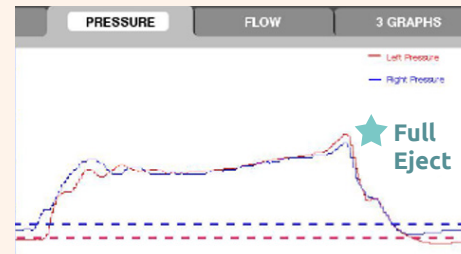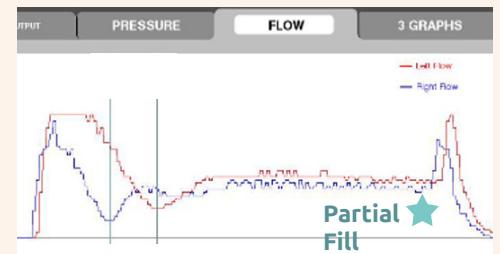
*Battery Life: 1hour

C2 Driver: Typical Settings

Typical Device Settings
- Rate: 125 ± 15 bpm
- Right Drive Pressure: 80–100 mmHg
- Left Drive Pressure: 180–210 mmHg
- Right Vacuum Pressure: 0–(-10) mmHg
- Left Vacuum Pressure: 0–(-13) mmHg
- Left vacuum typically greater than right vacuum
- % Systole: 50 ± 5 %

- Alarm Status Bar
- Graphical Display
- Output Monitoring
- Alarm Mute Button
- Mode Status
- Menu Button
- External Air Status
- Power Status
- Driver Settings

LEFT CO	6.8	6.5	RIGHT CO	RATE	125	50 % SYST.	AVG. CO
LEFT AVG. CO	6.7	6.5	RIGHT AVG. CO	LEFT PRESS.	180	80 RIGHT PRESS.	6.6
LEFT FILL	55	52	RIGHT FILL	LEFT VACUUM	-10	-10 RIGHT VACUUM	

Pressure

- Left Pressure
- Right Pressure

★ Full Eject

Flow

- Left Flow
- Right Flow

Partial Fill ★

Eject: Determined by systolic pressure and % systole. Look for full eject waveform.

Fill: Determined by rate, vacuum and % systole. Look for partial fill.

Goal Fill: 70 cc TAH = 50–60 mL   50 cc TAH = 30–40 mL

Avoid Emergencies

- There is **no ECG lead**
- **No chest compressions**
- High afterload, such as code dose epi, could lead to the pump unable to eject.
- **No upper lines** should be placed. If a wire gets into the valve the TAH could stop.
- If concern for **obstruction** to flow consider liver U/S to look at IVC size and for obstruction.
- Biggest concern post-op should be for **bleeding**

Emergency Care

Bleeding
- **Why:** This occurs more frequently in the TAH due to the multiple anastomosis sites
- **Watch for:** Changes in chest tube drainage and signs of low output. This may include lower CO on the device.
- **Treatment:** Alter the anticoagulation strategy of consider surgical intervention.

Tamponade (or Compression)
- **Why:** Fluid accumulation may cause compression around the native atria and the SVC and IVC.
- **Watch for:** Decreased fill volumes and decline in overall CO, from baseline. Watch for unique waveform patterns to determine location of compression.
- **Treatment:** Urgent surgical exploration is needed if CO is inadequate.

Device Malfunction
- **Why:** As with all devices there could be a mechanical malfunction.
- **Watch for:** Driver to read inaccurate numbers or to stop working.
- **Treatment:** If the patient is stable switch drivers. If the driver stops use the handpump while retrieving back up driver.

Device Overfill
- **Why:** The pump should only reach partial fill or the fluid can back into the lungs and cause pulmonary edema.
- **Watch for:** Changes in lung compliance and high fills on the device. Also watch for the full fill waveform. The 50 cc pump does not alarm for overfilling.
- **Treatment:** Increase the rate on device, decrease the vacuums and give diuretics. Support respiratory status.