**BSWMC – Temple VAD Perioperative TEE Protocol/Checklist**

**1. Preimplantation Perioperative TEE Exam**

Goals: confirm previous echocardiography (TTE or TEE) findings; detect unexpected abnormal findings before and after LVAD implantation

* Blood pressure: via arterial line; for hypotension, consider vasopressor agent to assess AR severity
* LV: size, systolic function, assess for thrombus
* LA: size, assess for LA appendage/LA thrombus
* RV: size, systolic function, catheters/leads
* RA: size, assess for thrombus, catheters/leads
* Interatrial septum: detailed 2D, color Doppler, IV saline contrast; red flag: PFO/ASD
* Systemic veins: assess SVC, IVC
* Pulmonary veins
* Aortic valve: red flags: > mild AR, prosthetic valve
* Mitral valve: red flags: > moderate mitral stenosis, prosthetic mitral valve
* Pulmonary valve: red flags: > mild PS, $ moderate PR, if RVAD planned; prosthetic valve
* Pulmonary trunk: red flags: congenital anomaly (PDA, pulmonary atresia or aneurysm)
* Tricuspid valve: TR, systolic PA pressure by TR velocity; red flags: > moderate TR, > mild TS, prosthetic valve
* Pericardium: screen for effusion; consider constrictive physiology
* Aorta: root, ascending, transverse, and descending thoracic aorta; screen for aneurysm, congenital anomaly, dissection, or complex atheroma at each level

**2. Postimplantation Perioperative TEE Exam**

Goals: monitor for intracardiac air; rule out shunt; confirm device and native heart function

* + Pump type: \_\_\_\_\_\_\_\_\_\_
	+ Pump speed: \_\_\_\_\_\_\_\_\_\_
	+ Blood pressure: via arterial line; for hypotension (MAP of <60 mmHg), consider vasopressor agent before assessing AR severity and other hemodynamic variables
	+ Intracardiac air: left-sided chambers and aortic root during removal from CPB
	+ LV: size, inflow-cannula position and flow velocities, septal position; red flags: small LV (over-pumping or RV failure), right-to-left septal shift; large

LV (obstructed or inadequate pump flows)

* + Inflow-cannula position: 2D/3D, assess for possible malposition
	+ Inflow-cannula flow: spectral and color Doppler (red flag: abnormal flow pattern/high/low velocities, especially after sternal closure)
	+ LA: Assess LA appendage
	+ RV: size, systolic function; red flags: signs of RV dysfunction
	+ RA: size, assess for thrombus, catheters/leads
	+ Interatrial septum: repeat IV saline test and color Doppler evaluation of IAS (red flags: PFO/ASD)
	+ Systemic veins: (SVC, IVC)
	+ Pulmonary veins: inspect
	+ Aortic valve: degree of AV opening and degree of AR (red flags: > mild AR)
	+ Mitral valve: exclude inflow-cannula interference with submitral apparatus; assess MR
	+ Pulmonary valve: assess PR, measure RVOT SV if able
	+ Pulmonary trunk: (if applicable, demonstrate RVAD outflow by color Doppler); assess PR
	+ Tricuspid valve: assess TR (red flags: > moderate TR); systolic PA pressure by TR velocity (if not severe TR)
	+ Pericardium: screen for effusion/hematoma
	+ Aorta: exclude iatrogenic dissection
	+ Outflow graft: identify conduit path adjacent to RV/RA with color and spectral Doppler (when able)
	+ Outflow graft-to-aorta anastomosis: assess patency/flow by color and spectral Doppler (when able) red flags: kinked appearance/turbulent flow/velocity >2 m/sec, particularly after sternal closure