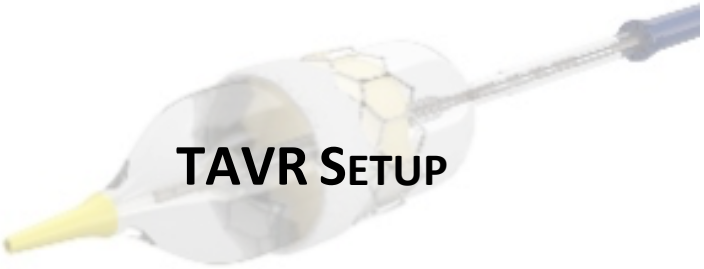


# TAVR SETUP

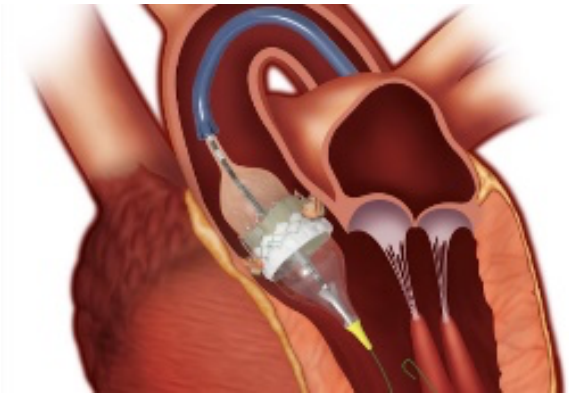
**PROCEDURE SYNOPSIS**

Transcatheter aortic valve replacement (TAVR) is an alternative to surgical aortic valve replacement for aortic stenosis. A 14 Fr catheter with a compressed valve is placed in the femoral artery and advanced into the aorta and across the stenotic aortic valve. Once positioning is confirmed, the valve is deployed with balloon dilation. Originally, TAVRs were performed under GA with arterial line, central line, PA catheter, and TEE. Now, the majority of TAVRs are performed with MAC sedation.

**Anesthesia setup and preoperative evaluation/consent should be completed to accommodate an in-room time between 0700-0715.** Once in the room, place monitors and begin sedation. The patient will be prepped and draped, and the procedure will begin with cannulation of the femoral vein and artery. The cardiologists will provide access to the **arterial line for blood pressure monitoring and a venous central line for volume access**. **Please have an IV bag prepared for connection to the central line.**

Femoral venous access is also used to place a pacing catheter in the RV or coronary sinus. The femoral artery access accommodates the large sheath that is used to advance the compressed TAVR valve across the native stenotic valve. Valve positioning begins with advancing a wire up the aorta and across the native valve. The wire is used to guide the valve delivery system across the native aortic valve. **Arrhythmias are common when the wire crosses the aortic valve and enters the left ventricle.** A second wire is advanced in the aortic root to capture an angiogram of the aortic root to map out the anatomy on fluoroscopy. The pressures in the left ventricle and aorta may also be measured to assess the gradient across the aortic valve.

A heparin bolus will be requested before the large sheath is advanced over the wire and across the valve. Please notify the attending anesthesiologist at this point as the valve will be advanced shortly and they should be present for valve deployment. **Transient hypotension should be expected as the valve delivery system is advanced across the native valve and the narrow orifice of the valve may be occluded. The arrhythmia burden may also increase. Cautiously treat hypotension as it is usually transient, treatment is only warranted if hypotension is persistent (>2-3 minutes).**



The cardiologist may ask to treat hypotension with an epinephrine drip thus have a drip available for this stage. Rapid ventricular pacing (180-200 bpm) is used to temporarily reduce myocardial motion during

valve deployment. After the TAVR valve is positioned, **rapid pacing** is initiated to confirm positioning with fluoroscopy. **Hypotension is common during pacing; however, it is transient and rarely requires treatment.** If the TAVR valve is well positioned, **rapid pacing** will be reinitiated, and the **valve will be deployed**. Again, the associated **hypotension is transient** and rarely requires treatment. Once the valve is deployed, blood pressure usually normalizes, and some patients may even **become hypertensive**.

Patients with aortic stenosis have significant ventricular remodeling. The ventricle is accustomed to ejecting blood against a highly resistant aortic valve, and when the stenosis is alleviated, the ventricle continues to function as if a resistant lesion is still in place. **If the systolic blood pressure remains elevated above 160-180 mmHg, the blood pressure should be managed with nitroglycerin, nicardipine, or cleviprex. Rapid ventricular pacing (120 bpm) may also be used by the cardiologist to decrease contractility efficiency and lower the blood pressure. Pacing is a temporary intervention, and it is ultimately our responsibility to maintain normotension. When correcting blood pressure please take into account if pacing is being used simultaneously as pressure will increase after cessation of pacing.**

Aortic and ventricular pressure will be measured again to obtain a post-deployment pressure gradient. The vascular access catheters will be removed, and a perc-closure device will be used to close the femoral artery where the valve deployment device was placed. The perc-closure device may cause patient discomfort.

**TECHNIQUES AND CONSIDERATIONS**

- TAVR may be approached using transcarotid or transapical access when the femoral/iliac vasculature cannot accommodate the deployment device
- Vascular surgery assists with the carotid cut-down and CT surgery assists with apical access
- Both transcarotid and transapical access require general anesthesia

**CONTRAINDICATIONS TO MAC SEDATION**

- Transcarotid or transapical approach
- Inability to lay flat
- Relative contraindications: suspected difficult airway, risk for significant airway obstruction, and significant respiratory disease

**SETUP**

- Standard ASA monitors
- Arterial line (typically placed by cardiology) cable connected to cath lab transducer
- 5 lead EKG (set to detect pacing)

**VASOACTIVE MEDICATIONS**

- Phenylephrine 100 mcg/mL, ephedrine 10 mg/mL, and epinephrine 10 mcg/mL syringes
- Phenylephrine infusion primed
- Epinephrine (8mg/250ml) and levophed (8mg/250ml) infusions available in room
- Heparin 1000 unit/mL bolus syringe
- Nitroglycerin 40 or 50 mcg/mL bolus or nicardipine 0.1 mg/mL bolus

**SEDATION**

- Remifentanil 0.05 – 0.1 mcg/kg/min
- Dexmedetomidine 0.5-15 mcg/kg/hr **OR** Propofol 10-50 mcg/kg/min
- **Please discuss the preferred sedation technique with your attending**

**TRANSFEMORAL UNDER GA OR TRANSCAROTID TAVR**

- TAVR setup as above
- Awake radial arterial line
- 2 peripheral IVs
- Femoral arterial and venous access via cardiology
- Plan for extubation and transport to PACU

**TRANSAPICAL**

- TAVR setup as above
- All under GA
- Awake radial arterial line
- IJ CVL after induction
- TEE
- Mini thoracotomy incision by CT surgery
- Apical cardiac puncture guided by TEE
- Femoral arterial and venous access by cardiology
- Plan for extubation