

Obtaining Numbers:

1. 500 mL bag of NS, standard IV tubing, 10 mL syringe, and addition stop-cock attached to the CVP (blue) port.
2. Select Procedures
3. Cardiac Output
4. Draw 10 mL of NS into syringe
5. 'Inject when ready' will appear on screen
6. Inject volume using a steady and continuous motion.
7. Perform a minimum of 3 measurements and obtain the average from the edit screen. Review waveforms before averaging and remove any with irregular waveforms or extreme values that are >10% apart.
8. Document results (CO/CI/SVR/SV). Found in Vitals Flowsheet under 'Invasive Hemodynamic Monitoring'

Supply List:

Transpac disposable pressure transducer kit

Swan Ganz catheter (usually 7 or 7.5 F)

Percutaneous sheath introducer kit (8F-**must be larger than Swan Catheter**)

Sterile cath sleeve

Sterile drape, gown, gloves, and towels

Masks/face shield

Tub 4x4

Dressing kit and biopatch

Primary IV tubing

Chlorapreps x3

4 way stopcock

Pressure bag

10cc syringe

500cc NS

250cc NS

1% Lidocaine vial

Cardiac output cable (brown cable-ensure 30ml bottle of Bacteriostatic NS attached to end for CO)

Pressure cable x2 (PA and CVP) will need splitter if monitoring Arterial line as well

Monitor Set up:

Insert CO cable into appropriate slot on PDM (brown cable)

Tap **Monitor Set up** (bottom of screen)

Tap **Parameter set up** (left side)

Tap **Cardiac Output** (right side) You are now on the Cardiac Output set up page. You will see the catheter size and computation constant information here in the center of the page (Edwards 7.5Fcc 0.595)

Tap **Demographics** (bottom left)

Enter pt. Height and weight- **you must complete this step in order to get your Cardiac Index/calculations**

Insert 2 pressure cables into PDM for PA and CVP monitoring

Return to Home Screen

Tubing set up:

Prime all 3 lines on transducer kit per normal and customary fashion

Ensure there are NO air bubbles in lines or transducers

Zero Balance each line

Cap end of line until ready to connect to catheter ports

Prime IV tubing and 4way stopcock for CO (ensure no air in line or stopcock)

Line Insertion:

Observe universal and sterile procedure precautions

Time out with verified 2x patient identifiers

Position patient and Assist with tray set up as needed

Check balloon integrity by inflating with 1.5cc air using provided syringe. Allow passive deflation

Taking care not to contaminate field, connect PA line to yellow/ distal PA port and flush line

Repeat with CVP line to blue/proximal CVP port and flush line

Connect PA pressure cable to transducer. Verify tracing is labeled PA and scale is set to optimal.
This must be done in order to verify waveforms transition during insertion.

Inflate balloon as directed by MD/APP (this allows the catheter to follow direction of blood flow)

Observe waveform for transition from CVP-RV-PA-PCWP

When PCWP tracing is obtained, deflate balloon. Ensure PA waveform returns to monitor
(Typical correct distance is 50-60cm)

Note/document depth of PA cath. (Thin line 10cm, thick line 50cm- total length 100cm)

Connect CVP pressure cable to CVP transducer

Connect primed IV tubing to one side and compressed (no air) 10cc syringe to the other side on 4way

Connect 4 way to side port on CVP tubing

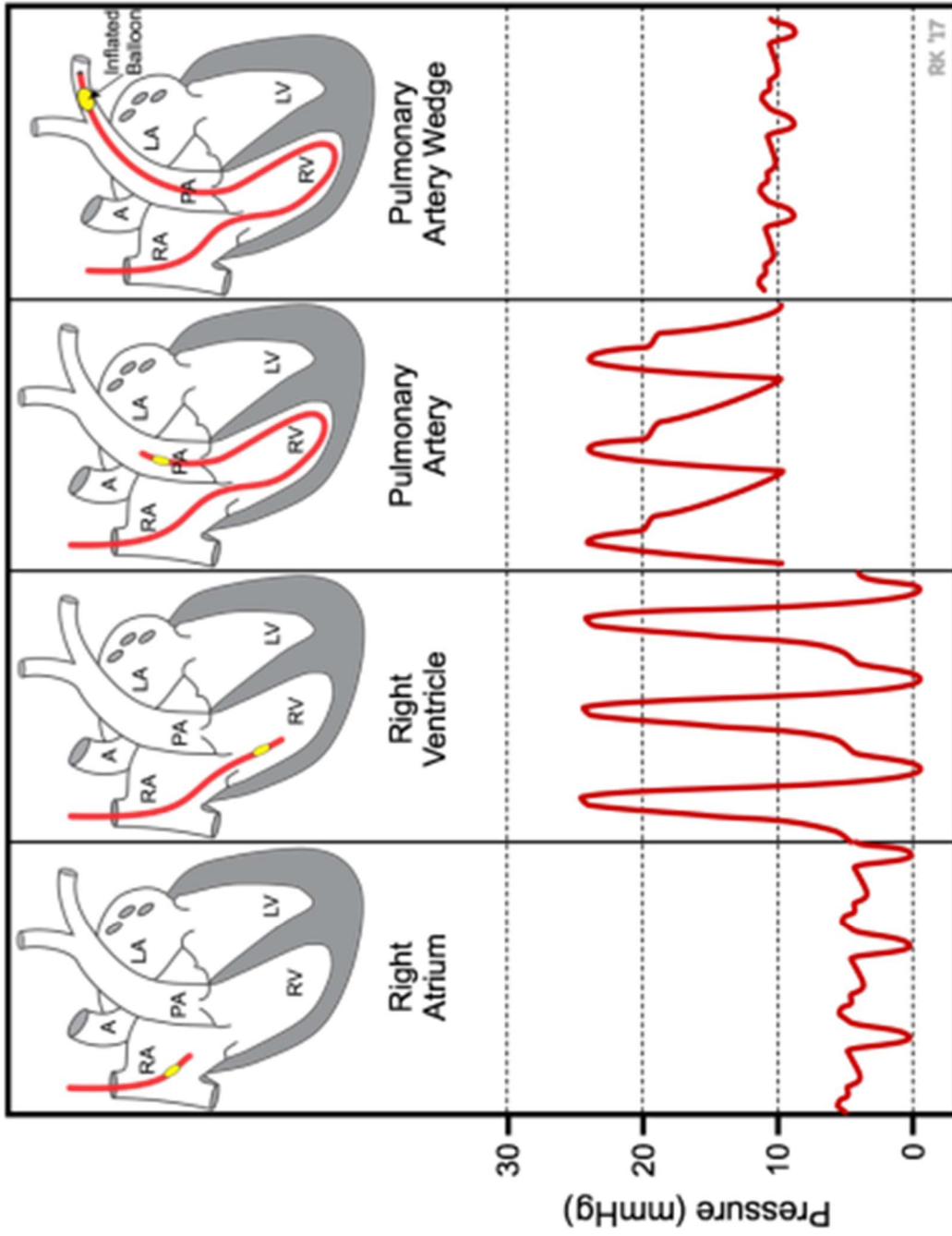
Connect Thermistor port to CO cable (ensure saline bottle is not placed on a warm surface as this will affect your cardiac output and index results)

Ensure all caps are “dead-enders” on all pressure tubing and stopcocks

Clean insertion site and apply dressing using aseptic technique

Obtain hemodynamics per protocol as ordered by MD/APP

PA waveforms during insertion:



Swan Removal:

1. According to Erlanger policy, a RN may remove a swan-ganz catheter with a MD order to remove.
2. Place patient in a slight Trendelenburg position and ask them to turn their head away from the site.
3. De-pressurize the flush system-if not in use for Aline, or clamp off fluid-filled pressure lines to CVP/PA ports by turning the stopcocks
4. Attach the 1.5 ml syringe to the red port void of air and aspirate gently to verify the balloon is down, then remove syringe
5. THE PA CATHETER BALLOON MUST BE DEFLATED DURING REMOVAL OF THE CATHETER
6. Gently twist the connection to unlock the Swan sleeve from the Cordis, this will expose the catheter
7. Ask the patient to take a deep breath and bear down, creating a Valsalva response.
8. Stabilize the cordis and withdraw the catheter with a steady, gentle pull
9. If resistance is felt stop and immediately notify the MD, monitor the patient for ectopy
10. Be sure the catheter is removed with tip intact, culture tip if ordered
11. Once the catheter is removed, you must cap the end of the Cordis with an obturator cap in order to prevent contamination of the Cordis and air embolus occurring through the opening of the hemostasis valve
12. Align and twist to lock the cap onto the Cordis
13. Document how the patient tolerated the procedure and that the catheter was removed with the tip intact
14. Once capped, the Cordis can remain in the patient to be used for IV access
15. The Cordis must be removed or converted to a central line before transferring patient to the floor

Hemodynamic Normal ranges:

CO	4-8
CI	2.5-4
SVR	800-1200
SV	60-130
PAS	20-30
PAD	6-12
CVP	2-6
MAP	70-90
SVO2	60-80

PA Catheter Trouble shooting:

Problem	Causes	Troubleshooting
Dampened Waveform	<ul style="list-style-type: none"> • Incorrect scale • Air in system • Spontaneous wedge/ Catheter advanced too far 	<ul style="list-style-type: none"> • Optimize scale • Check pressure in bag; connections are tight • Look for and remove any air bubbles • Flush system • May need xray to evaluate position; contact provider for repositioning if needed
Overdamping <i>Diminished systolic peak, loss of dicrotic notch, rounder waveform</i>	<ul style="list-style-type: none"> • Large air bubbles • Clots or blood in system • Loose connections • Kinked catheter or tip against vessel wall 	<ul style="list-style-type: none"> • Check tubing for air or blood; remove any or change out tubing • Check connections • Evaluate need for repositioning
Underdamping <i>Falsely high systolic peak, falsely low diastolic value, artifact</i>	<ul style="list-style-type: none"> • Pressure tubing too long • Small air bubbles • Defective transducer 	<ul style="list-style-type: none"> • Check tubing; shorten if appropriate and remove any additional components (stopcocks ect.)
Ventricular Waveform	<ul style="list-style-type: none"> • PA catheter in RV 	<ul style="list-style-type: none"> • Will need advanced by provider or if unavailable needs to be removed