

**Los Angeles County Medical Center – Cardiac Surgery Rotation
Notes Compiled by the SRNA’s of the Keck School of Medicine**

Cart Set Up May Include:

Drug	Syringe	#	Concentration
Ephedrine	10 mL	1	5 mg/ mL
Epinephrine	10 mL	2	16 mcg/ mL (mix 4 mg in 250 mL bag for drip)
Phenylephrine	10 mL	2	40 mcg/ mL (mix 10 mg in 250 bag use for drip)
Nitroglycerine	10 mL	2	100 mcg/ mL (mix 2 ml in 8 = 1mg/ml then 1ml in 9 ml)
Fentanyl or Sufentanil	20 mL	2	12.5 mcg/ mL (250 mcg +15 mL NS = 20 mL 5 mcg/ mL (100 mcg + 18 ml NS = 20 mL)
Versed	10 mL	2	1 mg/ mL
Ketamine	10 mL	1	10 mg/ mL
Lidocaine 2%	10 mL	1	20 mg/ mL
Vecuronium or Pancuronium	10 mL	2	1 mg/ mL 1 mg/ mL
Succinylcholine	10 mL	1	20 mg/ mL
Atropine	3 mL	1	0.4 mg/ mL total of 2 mL
Heparin	20 mL	2	1000 units/ mL
Protamine	20 mL	2	10 mg/ mL (in refrigerator - towards end of case)
NS flush	10 mL	3	Pulmonary artery catheter port flush
Amicar for CABG	20 mL	1	Amicar 5 gr in 20 mL IVP followed by Amicar 5 gr in 250 mL to run at 50 mL /hr until finished.
Trasylol for Valve	1 mL	1	1 mL test dose right after sternal opening 1 st 200 mL bottle over 30 minutes then 2 nd bottle at 50 mL /hr till finished.

Disclaimer:

The cart set up and the following notes for anesthesia in cardiac surgery are compiled by the SRNA’s of the Program of Nurse Anesthesia in the Keck School of Medicine at the University of Southern California and do not represent any official recommendations or protocols from any institution.

Anesthesia is an ever changing discipline that requires individual assessment of patient needs. Anesthetic choices are not formula driven but are carefully tailored to individuals. These notes represent student guidelines and not intended as a prescription for patient care. All anesthetic plans need to be discussed with the supervising anesthesiologist assigned to the case.

LAC Cardiac Surgery Notes by David Godden

Starting the Case Outside of Room:

- Change IV bag to Plasmalyte
- Place grounding pads to lower back and ECG patches to lateral back

Once In the Room:

Add all ASA monitors including **BIS** - tape pulse Ox longitudinally

Place Arterial Line:

- Use Wide Tape for wrist 1/3 2/3 strip
- Prep add blue towels and drape
- Use local lidocaine 1%
- Band-Aid under hub + tegaderm

Attending Induction Notes:

- Asad - Sufentanil and Vecuronium
- Riad - Morphine and Succinylcholine
- Alli - Ketamine and Versed
- Lumb – Midazolam followed by Sufentanil for CABG or Fentanyl for AVR or MVR (Sufentanil has more sympatholysis)

All Attendings Use:

- Ketamine and Midazolam
- Lube eyes + half tegaderm to ea. Eye
- Gentle DL < 15 seconds – abort with **tachycardia**
- Line person scrubs for PA catheter

Double Lumen and PA Catheter:

- Attending or partner will prep
- Lumb: ETT & X'tree to left & T'burg
- Riad: Keep head straight
- Watch monitor when advancing PA cath
- Do not dress with tegaderm until transport to ICU
- Obtain baseline C.O.
- Obtain baseline ABG and ACT

- Notify surgeon before access of arterial line and the SBP pressure before draw.
- Perfusionist will perform tests
- OGT in/out to empty stomach

Prep for TEE

- Place on “freeze” when done to avoid heating of probe
- Surgilubes X 4 or use big tube to mouth

Prior to By-Pass

- **Ketamine** 1 mg/kg after induction and prior to incision
- **Sufentanil** 1.25 to 1.75 mcg/kg prior to sternotomy per Attending.
- Deflate lungs just prior to sternotomy
- Turn off vent
- Disconnect from circuit
- Resume ventilations after saw.
- **Aprotinin** dose after Sternal saw.
- Mammary retractors will elevate pts head. Support the pt's head and neck with additional towels.

Stimulating Events in Cardiac Surgery:

- Direct Laryngoscopy
- Skin incision
- Sternal SAW split
- Release of mammary retractors
- Opening of pericardium (contains sympathetic fibers).

Heparin Prior to By-Pass

- Dose per perfusionist (300 units/kg)
- Start timer at end of heparin bolus
- Notify surgical team at end of 3 minutes
- Draw ABG and ACT in one 5 ml syringe 4 ml total and give to perfusionist to run tests.

Valve surgery

- Pull back PA catheter to 20 cm
- Use side port of DL central line for drips.

More Info

- Asad – give sufentanil 25 mcg, versed 5 mg, and Vecuronium 5 mg all at start of By-Pass and Q 20 to 30 while on By-Pass.
- Riad – give phenylephrine 80-160 mcg before and just after By-Pass initiation to keep MAP ~ 50 mmHg until CPB stable
- “Zero Pop-Off” means that the pericardium is being spread. Anticipate Aortic cannulation and maintain SBP < 100. Hypertension and aortic cannulation dangers - what are they - Dissection is #1.)
- May see dysrhythmias with RA cannulation.
- Dose with NDMR before By-Pass to prevent shivering.

Rewarming and Post By-Pass

- Place in T’burg for “Hot Shot”
- Propofol gtt 25 mcg/kg/min (optional for Riad)
- Versed 5 to 10 mg IV
- Vecuronium 5 to 10 mg IV
- Sufentanil 25 mcg IV

When Cross-Clamp is off start IV drips:

- Dopamine 5 mcg/kg/min
- Propofol 25 mcg/kg/min
- Nitroglycerine to BP
- Epinephrine +/- 1 mcg/min
- Milrinone (if catecholamine depleted).
- Have Dobutamine ready.
- Start Albumin 5% 500 ml

Perfusionist will notify you when “full flow”. Gently hand ventilate lungs and check grafts for stretching before initiating mechanical ventilations.

Mechanically ventilate ½ TV until PA blood flow seen in PA tracings.

Monitor Core temp via the PA catheter as well as the bladder temperature. The value of the Bladder temp is that this is a peripheral temperature and if low may precipitate a drop in central temp once off By-Pass. Both must be adequate!!!

Protamine

- Slow IVP to avoid **systemic Hypotension** and **Pulmonary Hypertension** watch PA.
- Notify team when 1/3 of dose is in. Pump suckers will need to be turned **off** at this time.
- Riad adds epinephrine 16 mcg to Protamine syringe.
- When complete start timer and send ABG / ACT after 3-5 minutes.

Post By-Pass per Surgeon & Attending

- Platelets 2 Pks to PIV
- FFP 2 Units to DL central line
- PRBC to Hct of 30

After Chest Closure:

- TEE observation for wall motion
- Reinsert OGT and Tegaderm DL line.
- Titrate drips to blood pressure.
- NTG low dose for coronary perfusion.
- Get ready for transport to ICU.