

# Thoracic Anesthesia – Pocket Guide

VERSION nov 2020

|   |  |   |
|---|--|---|
| Central Venous pressure (CVP)             | 2 - 6 mmHg   |   |
| Right Ventricular Pressure                | Systolic (RVSP) 15 - 25 mmHg<br>Diastolic (RVDP) 2 - 8 mmHg                              |   |
| Pulmonary Artery Pressure                 | Systolic (PASP) 15 - 25 mmHg<br>Diastolic (PADP) 8 - 15 mmHg<br>Mean (MPAP) 10 - 20 mmHg |   |
| Pulmonary Artery Wedge Pressure (PAWP)    | 6 - 12 mmHg  |   |
| Cardiac Output (CO)                       | HR x SV/1000   | 4.0 - 8.0 l/min   |
| Cardiac Index (CI)                        | CO/BSA   | 2.5 - 4.0 l/min/m <sup>2</sup>                          |
| Stroke Volume (SV)                        | CO/HR x 1000   | 60 - 100 ml/beat  |
| Stroke Volume Index (SVI)                 | CI/HR x 1000   | 33 - 47 ml/m <sup>2</sup> /beat                         |
| Systemic Vascular Resistance (SVR)        | 80 x (MAP - RAP)/CO  | 800 - 1200 dynes · sec/cm <sup>5</sup>                  |
| Systemic Vascular Resistance Index (SVRI) | 80 x (MAP - RAP)/CI  | 1970 - 2390 dynes · sec/cm <sup>5</sup> /m <sup>2</sup> |
| Pulmonary Vascular Resistance (PVR)       | 80 x (MPAP - PAWP)/CO  | <250 dynes · sec/cm <sup>5</sup>                        |
| Global Enddiastolic Volym Index (GEDVI)   | Heart filling = measure of preload & contractility                                       | 680-800 ml/m <sup>2</sup>                               |
| Intrathoracic blood volume Index (ITBVI)  | Intrathoracic blood volume = measure of preload  | 850-1000 ml/kg  |
| Extravascular Lung Water Index (ELWI)     | Extravascular pulmonary water - higher in pulmion edema                                  | 3-7 ml/kg   |
| Global Ejection Fraction (GEF)            | EF of all four heart chambers = measure of contractility                                 | 25-35 %   |

## SWAN-GANZ

≈ distance from skin: Atrium ≈ 25-30 cm Chamber ≈ 35-40 cm PA ≈ 45-50 cm Wedge

### Anesthesia at valve disease

#### AS - Aortic stenosis

- Avoid tachycardia - aim at 60-80 beats / min
- Maintain sinus rhythm
- Maintain preload
- Avoid a drop in blood pressure - maintain SVR.

#### MS - Mitral valve stenosis

- As an AS with even more respect.
- Avoid tachycardia & hypotension!
- Avoid hypoxia, hypercapnia & acidosis (worsens PH) - Low PVR (avoid hypoxia, hypercapnia & acidosis)

#### AI - aortic reglapse

- Filled - Fast - Forward
- High-> normal HR (90/min) possibly beta agonist
- Maintain preload
- Low SVR - anesthesia

#### MI - Mitral valve reglapse

- Think AI -> high heart rate + adequate preload
- Low SVR - anesthesia, milrinone, nitropruss, IABP
- Low PVR (avoid hypoxia, hypercapnia & acidosis)

| Pace       | Sense      | Sense-svar | Stimulation (output) | Atrial - normal 2-10 V (max range 0,1-18,0 V)      |
|------------|------------|------------|----------------------|--|
| Atrium     | Atrium     | Triggered  |                      | Chamber - normal 5-10 V (max range 0,1-18,0 V)     |
| Ventricle  | Ventricle  | Inhibited  |                      | Guideline - 5 V above the capture threshold        |
| Dual (A+V) | Dual (A+V) | Dual (T+I) | Sensing              | Atrial - normally 0,5- 1mV (max range 0,2 – 20 mV) |
| O=None     | O=None     | O=None     | AV-interval          | Chamber - normally 2-3 mV (max range 1,0 – 20 mV)  |
|            |            |            |                      | Usually 150-180 m - cf. the patient's PQ time      |

VOO = Fixed frequency chamber pace, VVI = Chamber inhibited pace, AAI = Atrium inhibited pace, DDD = Atrium & ventricular pace

### Double lumen tube

|                            |   |   |
|----------------------------|---|---|
| DLTR - at pulmect left     | Tube size: Men 37-39 fr<br>Women: 35-37 fr  | Technique:<br>- Rotate and lower the tube in one motion<br>(Jaw lift + reverse rotation of head can facilitate)<br>- Auscultate ear + with shutdown. Note peak pressure<br>- Blue = bronchial |
| DLTL - all other operation | Tube depth: Men 29-31 cm<br>Women: 27-29 cm |   |

## Tamponade

|                   |  |
|-------------------|--|
| Clinical picture: | Hypotension CVP ↑ Muted heart sounds<br>Tachycardia Collarvenous stasis Pulsus paradoxus |
| Risk factors:     | Coagulation disorder<br>Platelet inhibition<br>Valve surgery                             |

