

## Fick Cardiac Output

Normal values are:

AVO<sub>2</sub> Difference: 4.5 – 5 (low AVO<sub>2</sub> = high cardiac output; high AVO<sub>2</sub> = low cardiac output)

Mixed venous saturation - 68%-75%

Arterial saturation - 95%-100%

Cardiac Output: 4 - 8 Liters / minute

Cardiac Index: 2.5 – 4 Liters / minute / meter<sup>2</sup>

### ❖ Calculate the patient's O<sub>2</sub> consumption

- Draw blood samples from PA & and arterial source.
- Convert patient's weight to Kg by multiplying pounds by 2.2
- Multiply the Kg by 3 (Based on formula 3ml of O<sub>2</sub> / Kg)
- **Example: Patient's weight 220 lbs. / 2.2 = 100kg x 3 = 300 ml/min**

### ❖ Calculate the patient's O<sub>2</sub> capacity

- Hemoglobin x 1.36 (based on correction factor) 0.0136 = conversion factor for mm Hg to cm H<sub>2</sub>O)
- Multiply volume % by oxygen saturation of each chamber
- **Example: 1.36 x 12.2 g/dl = 16.592 Volume %**

### ❖ Calculate the patient's C (a-v) O<sub>2</sub> (AV O<sub>2</sub> difference)

- The O<sub>2</sub> capacity x the arterial saturation -- The O<sub>2</sub> capacity x the mixed venous saturation
- **Example: Patients weight 220 lbs. Hemoglobin = 12.2 g/dl. Arterial saturation = 95% mixed venous saturation = 68%**
- **16.592 x 0.95 = 15.7624    16.592 x 0.68 = 11.28256**
- **15.7624 – 11.28256 = 4.47984 ml O<sub>2</sub> / 100 ml blood** (*this is the value you are writing on your flowsheet*)

### ❖ Calculate the patient's cardiac output

- Multiply C (a-v) O<sub>2</sub> by 10
- **Example: 4.47984 x 10 = 44.7984**
- CO Liters / minute = Oxygen consumption / C (a-v) O<sub>2</sub> x 10
- **Example: CO = 300 / 44.7984 = 6.7 L/min**

### ❖ Calculate the patient's cardiac index

- Divide the CO by the patient's BSA
- **Example: 6.7 / BSA = Liters / minute / meter<sup>2</sup>**