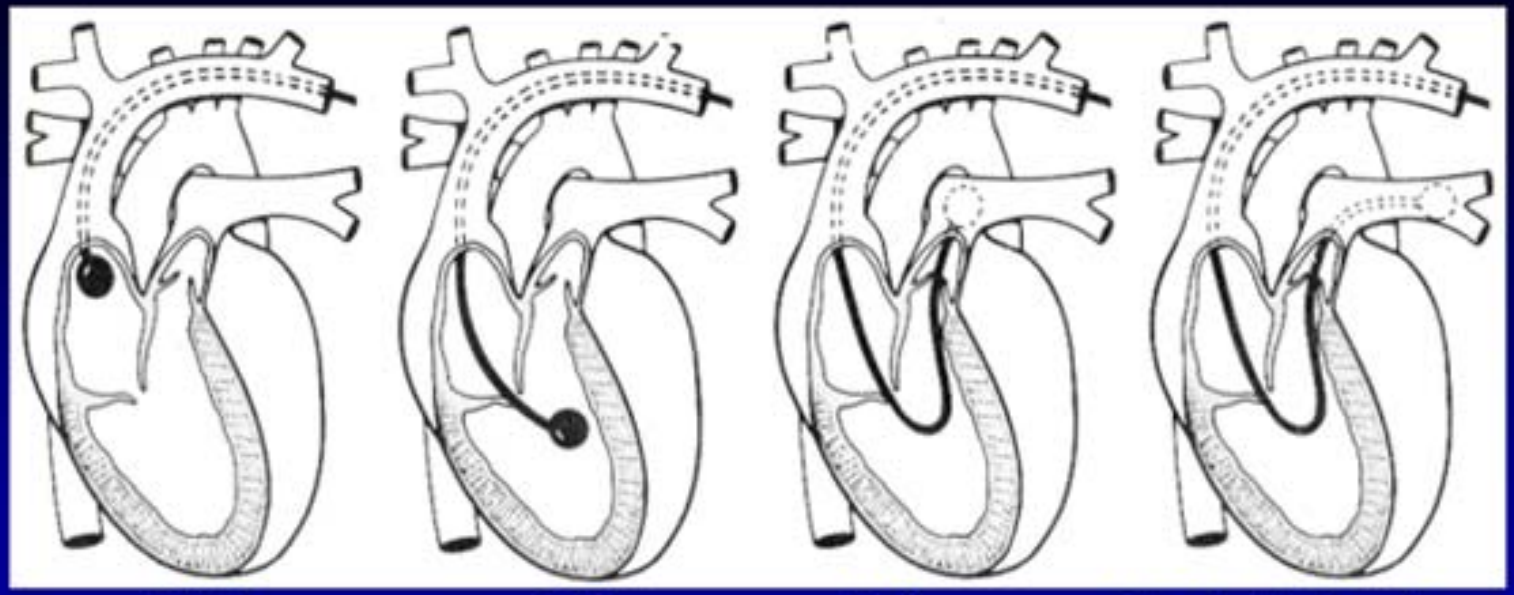
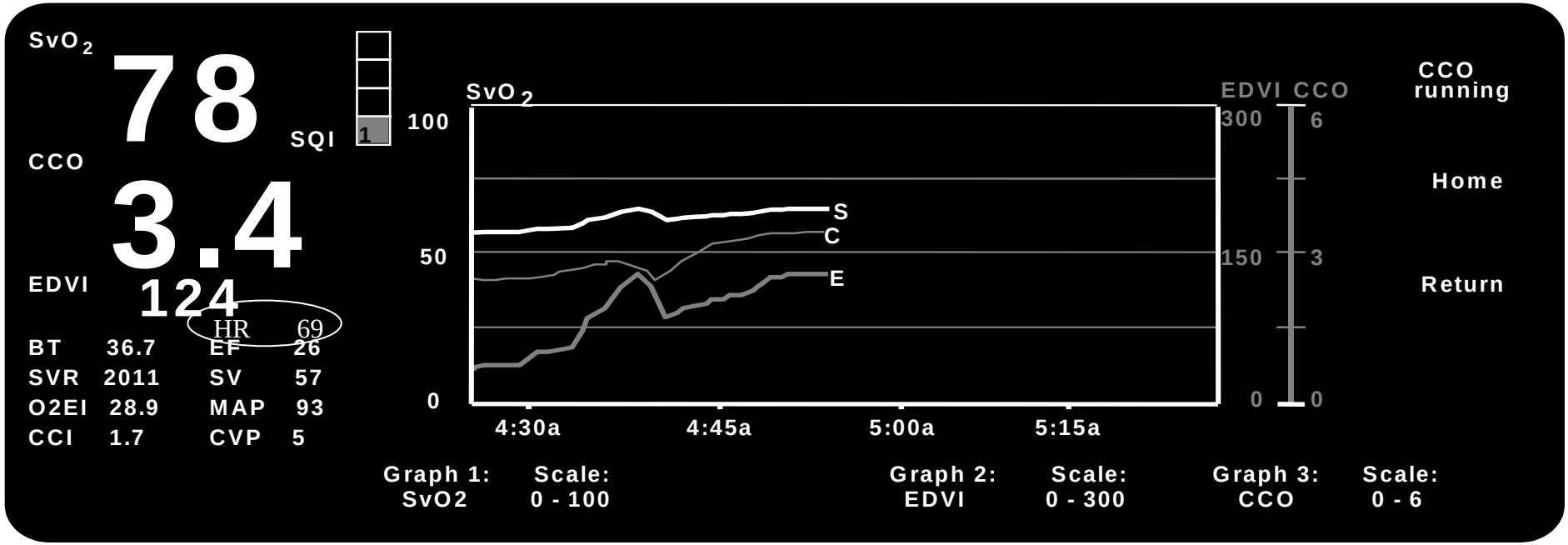


SPECIAL ARTICLE

Anesthesiology 2003; 99:988–1014

Practice Guidelines for Pulmonary Artery Catheterization

An Updated Report by the American Society of Anesthesiologists Task Force on Pulmonary Artery Catheterization



TREND DATA

"C" CCO/CCI

"S" SvO_2

"E" EDV/EDVI

“Semi” - CONTINUOUS THERMODILUTION

Pre-determined warming of a thermal filament placed into the RV. The system is able to evaluate all the minimal temperature changes in the pulmonary artery.

The value obtained represents the mean of all data recorded in the time evaluated(at least 2 min)

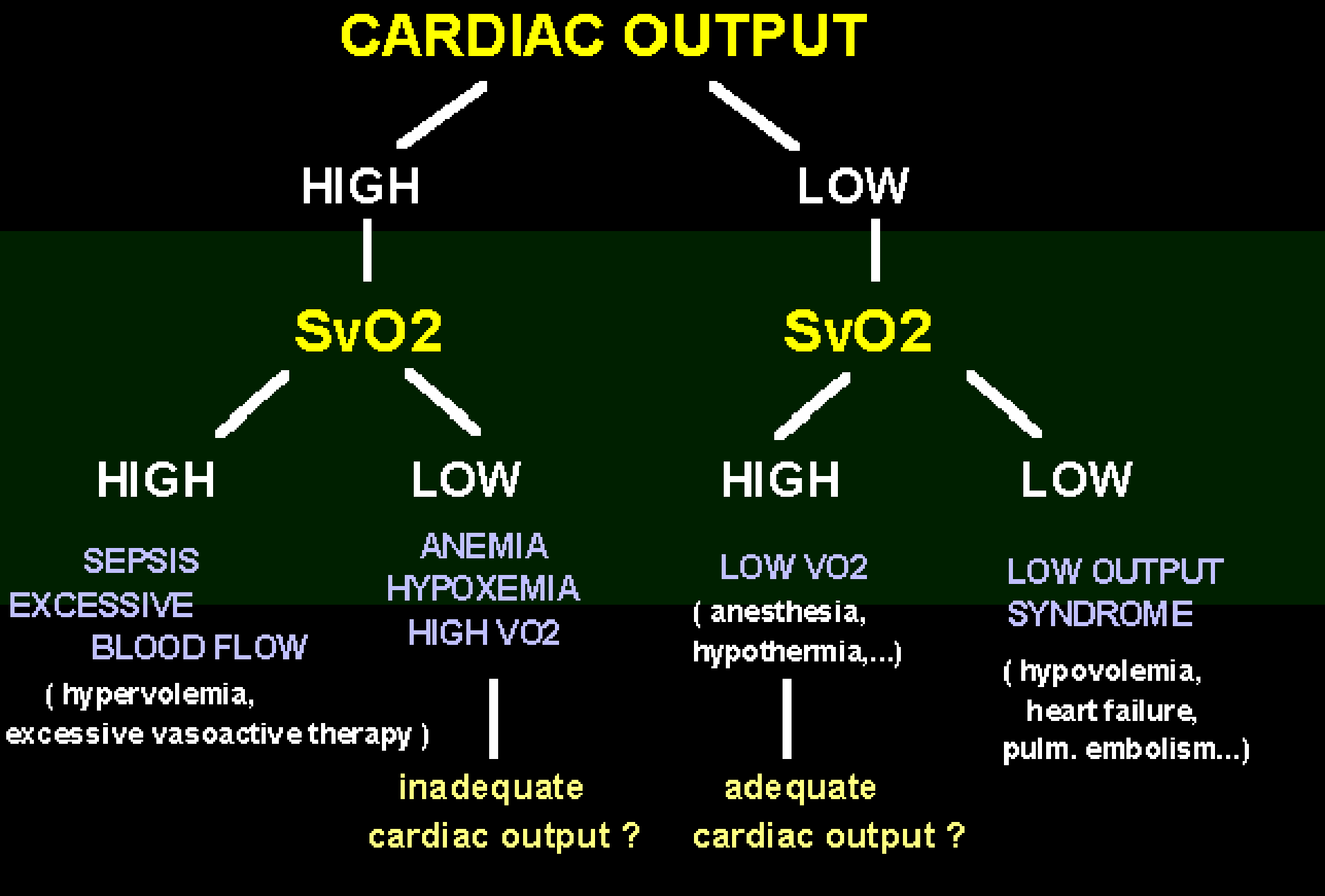
COpa vs CCO/PCCO Liver Tx (Piggy Back - n=62)

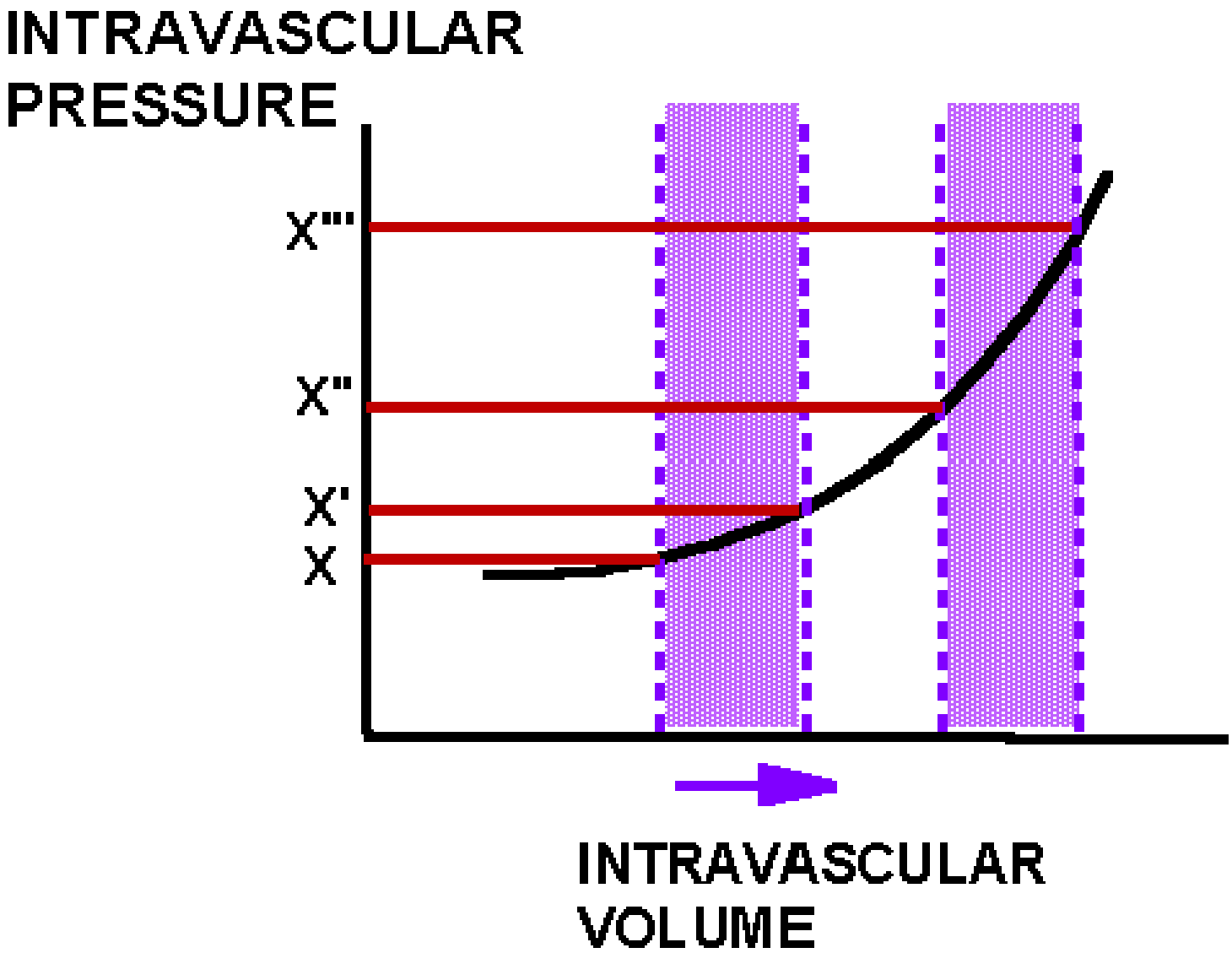
British Journal of Anaesthesia **88** (3): 350–6 (2002)

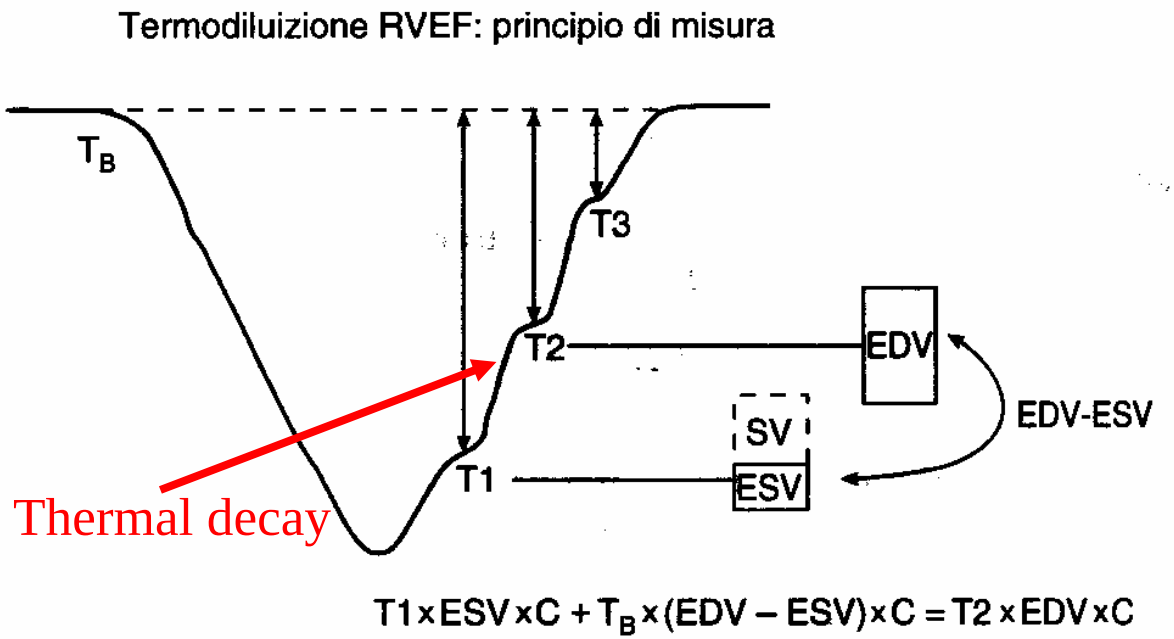
Continuous and intermittent cardiac output measurement: pulmonary artery catheter *versus* aortic transpulmonary technique

G. Della Rocca*, M. G. Costa, L. Pompei, C. Coccia and P. Pietropaoli

	bias (l min^{-1})	95% Limits of Agreement	r^2
COart vs COpa	0.15	-1.59 to 1.89	0.86•
PCCO vs COpa	0.04	-1.65 to 1.73	0.86•
CCO vs COpa	0.02	-1.46 to 1.50	0.88•
PCCO vs CCO	-0.03	-1.78 to 1.72	0.85•


CARDIAC OUTPUT
HIGH
LOW
SvO2
SvO2
HIGH
LOW
HIGH
LOW
SEPSIS
EXCESSIVE
BLOOD FLOW
(hypervolemia,
excessive vasoactive therapy)
ANEMIA
HYPOXEMIA
HIGH VO2
LOW VO2
(anesthesia,
hypothermia,...)
LOW OUTPUT
SYNDROME
(hypovolemia,
heart failure,
pulm. embolism...)
inadequate
cardiac output ?
adequate
cardiac output ?


INTRAVASCULAR
PRESSURE
X'''
X''
X'
X
INTRAVASCULAR
VOLUME



RVEF

- The catheter quantifies the RVEF, and then derives the RVEDV
- The interval of time (Dt) between the consecutive beats on the decay thermal curve is evaluated
- Based on the principle of the energy consevation (thermal energy within the bloodin the PA) close measures of t° are analyzed (T1, T2, T3) to obtain a differential between the points that represents the EF

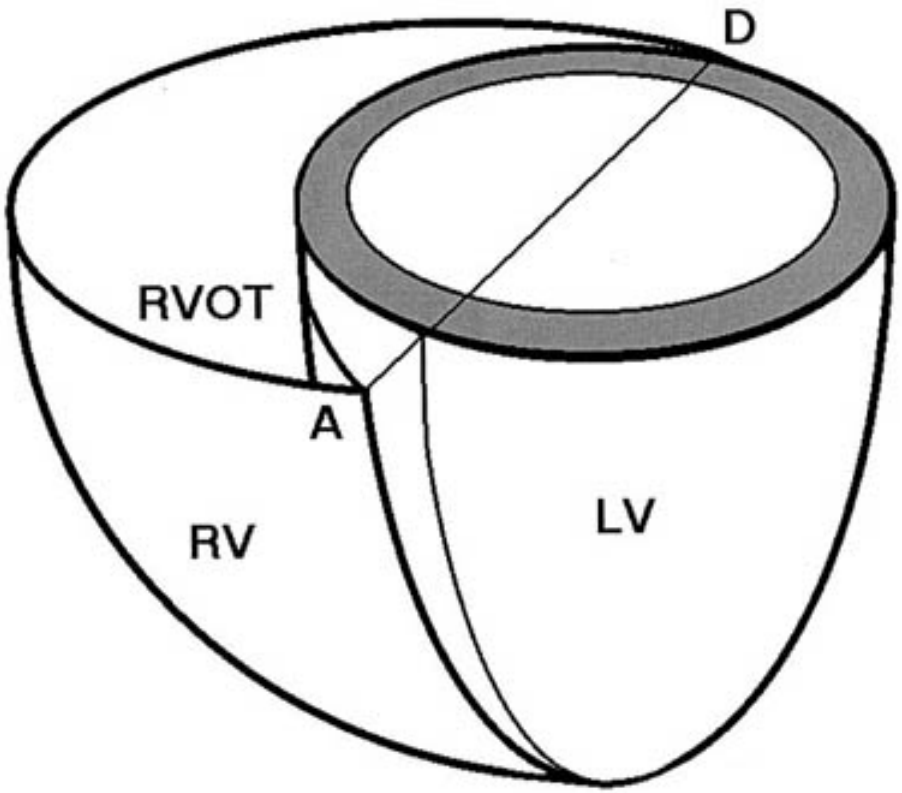
THERMODILUTION PROBLEMS

Mr. Right Ventricle

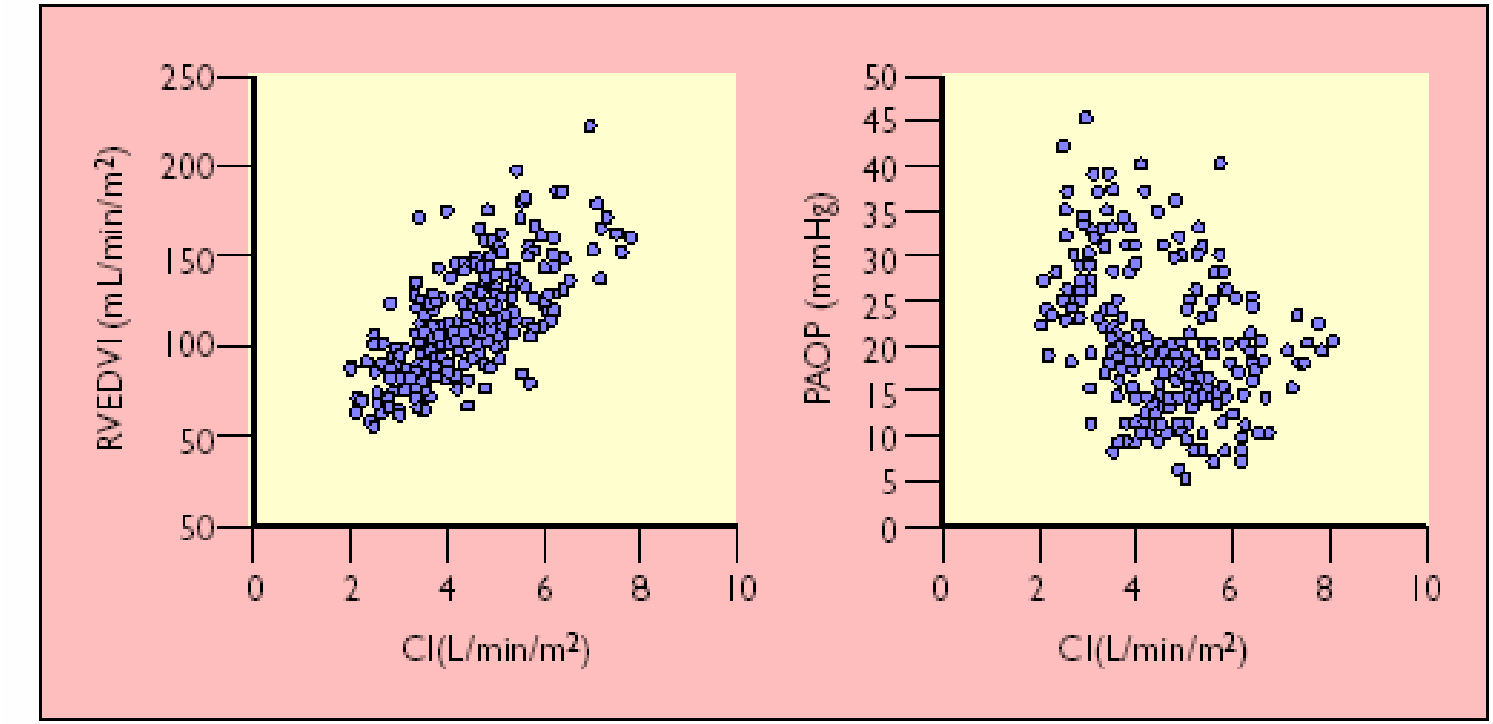
EF depends on the RV afterload (only in part on the RV contractility)

EF can not be measured in case of tachiarrythmias (including AF)

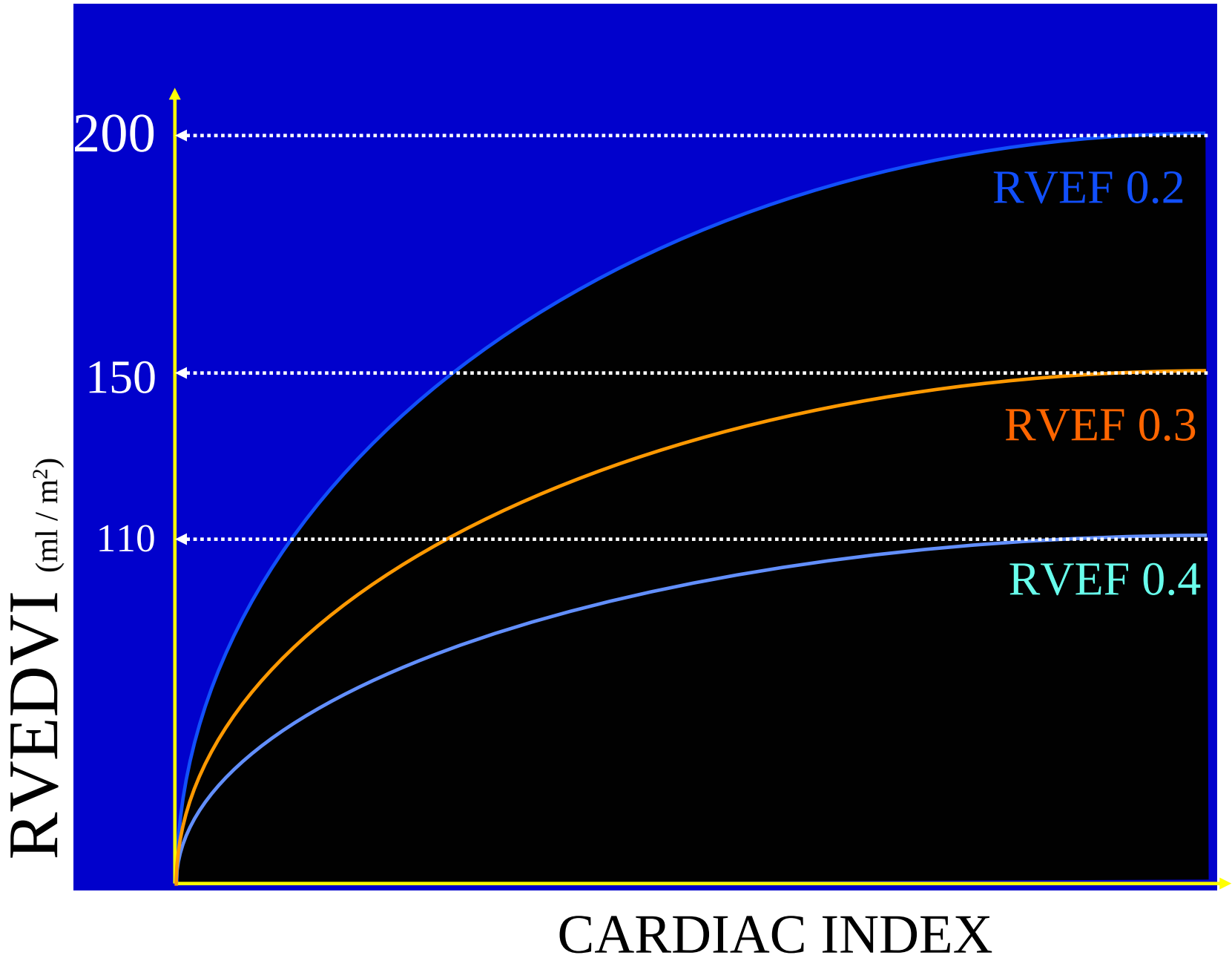
Dimensional schematic of proposed model of RV wrapped around “bullet-shaped” left ventricle “ELIPSOIDAL SHAPE around the LV”



LV, Left ventricle; *RV*, right ventricle; *RVOT*, right ventricular outflow tract.



Cheatam, Int J Int Care, 2000


200
150
110
RVEF 0.2
RVEF 0.3
RVEF 0.4
RVEDVI (ml / m²)
CARDIAC INDEX

Which is the best RVEDVI ?

- Diebel 1992 e Durham 1995 identified the upper limit (130-140 ml/m^2): for volumes higher than, the pt doesn't respond to higher RVEDVI
- But, the best RVEDVI depends also on the contractility or better on the RVEF
- ↓ is the contractility, ↑ is the target of RVEDVI

N. B. the normal Right VEF is < 50%