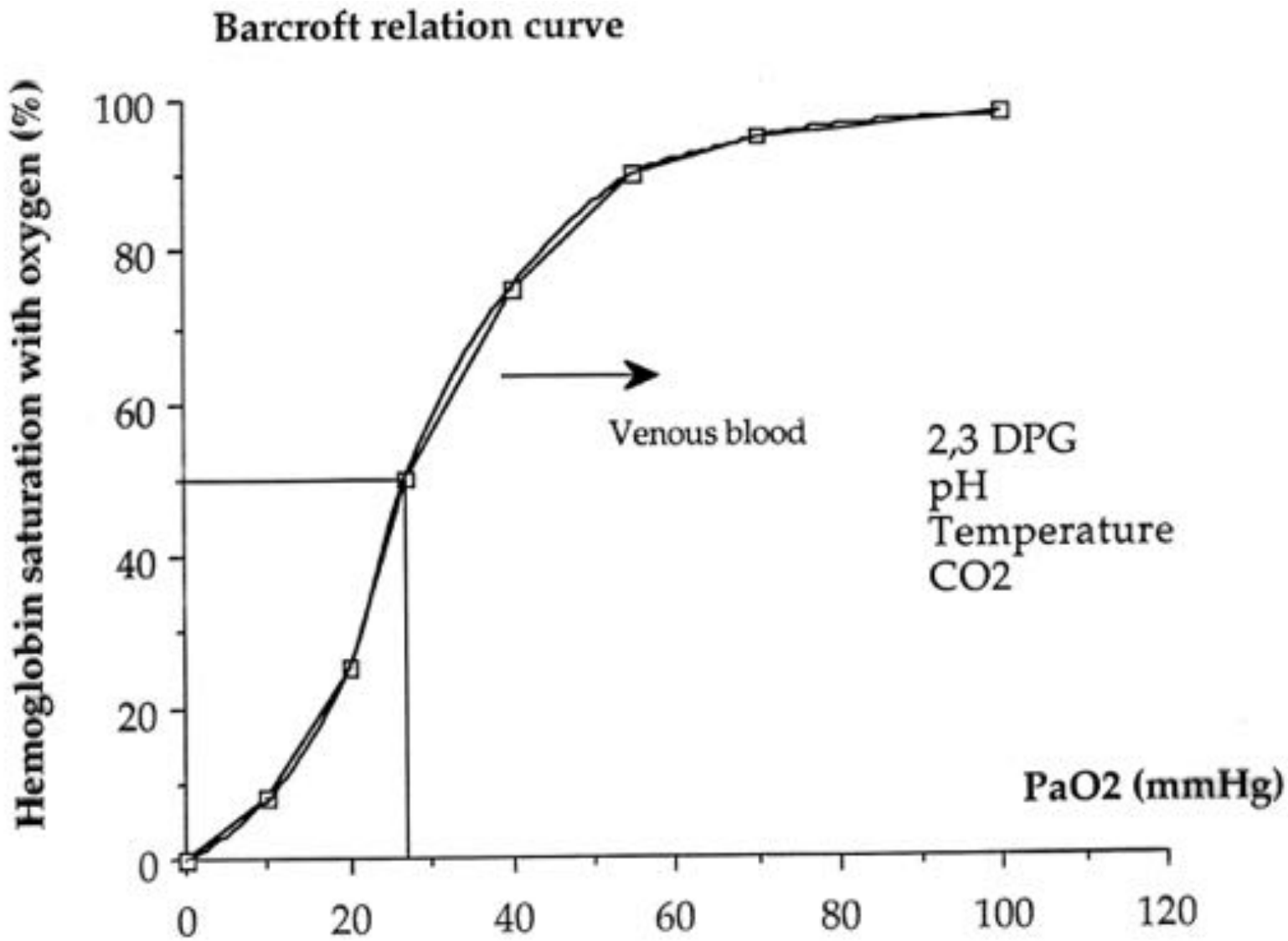
La saturation de l’hémoglobine en O_2

Définition

$$SO_2 = \frac{HbO_2}{Hb + HbCO + MétHb + HbO_2}$$

Dissociation de l’hémoglobine



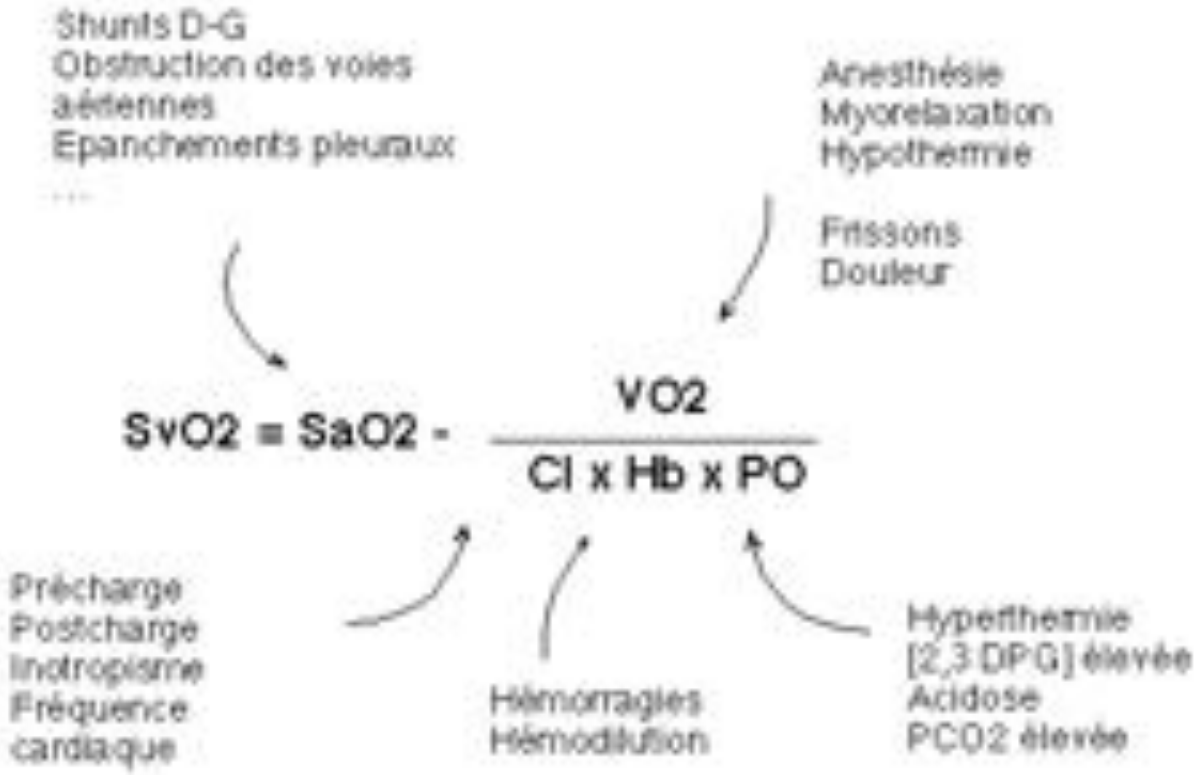
La SvO_2

Équation de Fick ?

Les 4 déterminants de la SvO_2

$$SvO_2 = SaO_2 - \frac{VO_2}{CI\ .\ Hb\ .\ 1,34}$$

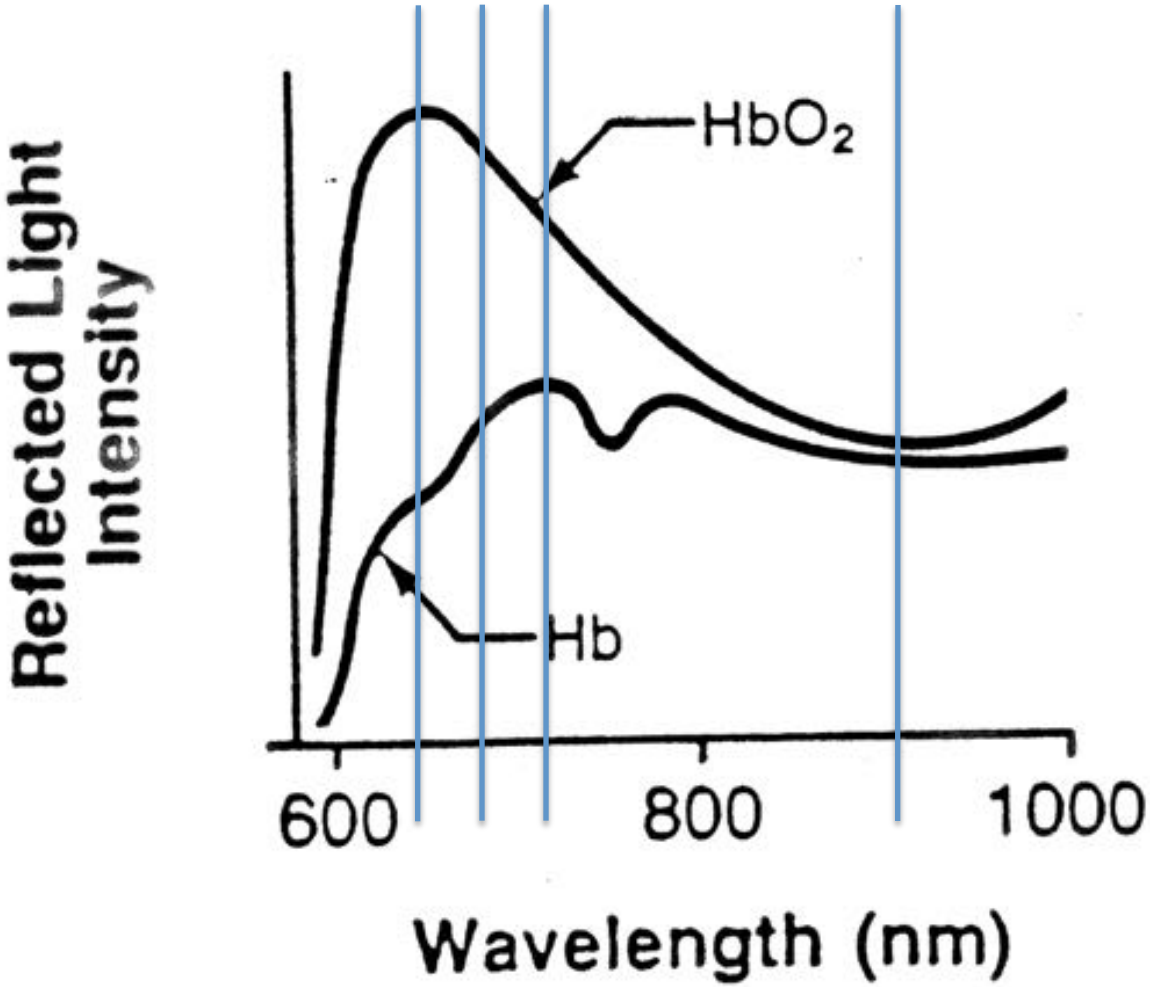
Les déterminants de la SvO_2



Extraction d' O_2

$$EO_2 = 1 - \frac{S\bar{v}O_2}{SaO_2} \approx 1 - S\bar{v}O_2 \qquad si SaO_2 = 1$$

Réflectance de l'hémoglobine

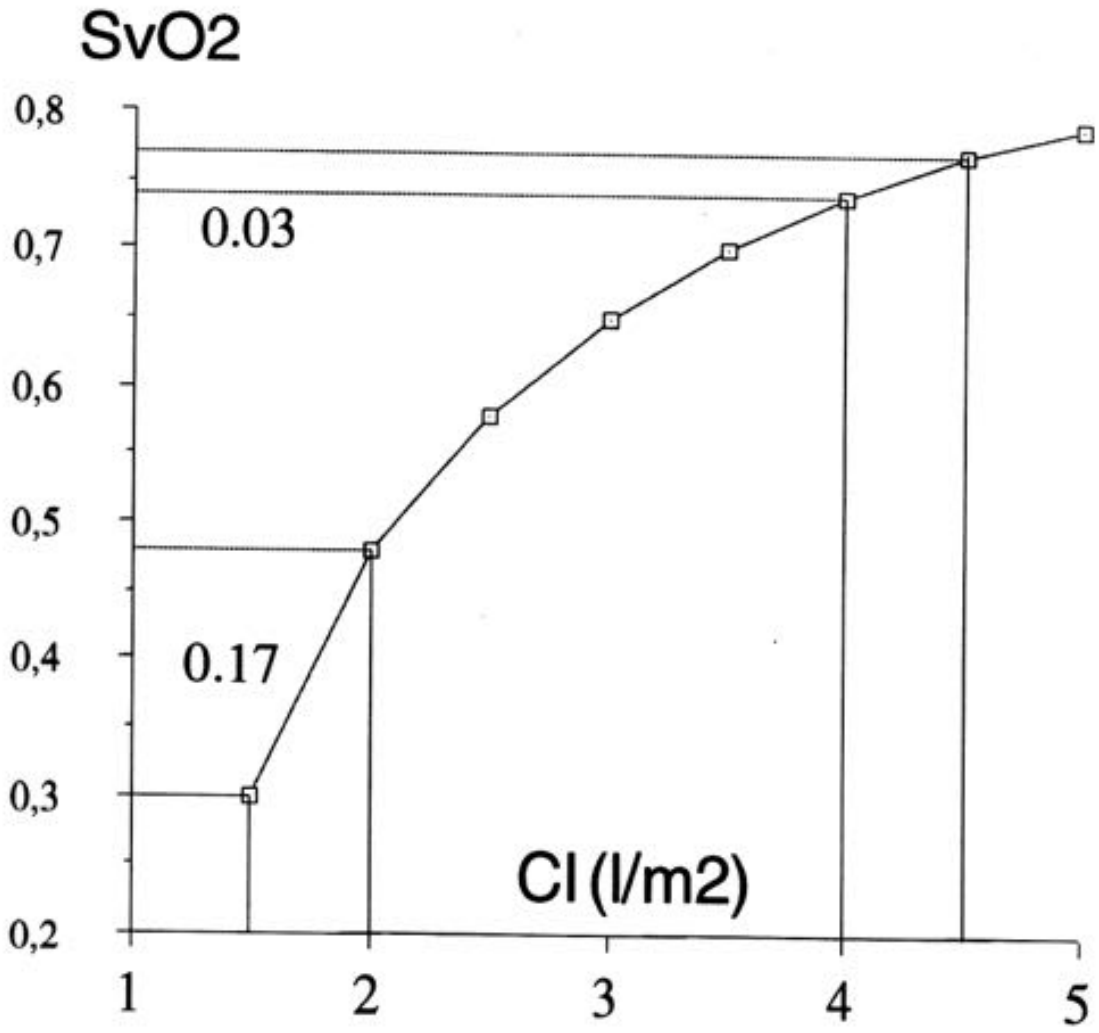


$$I_i = I_{(o,i)} \cdot e^{-Ai}$$

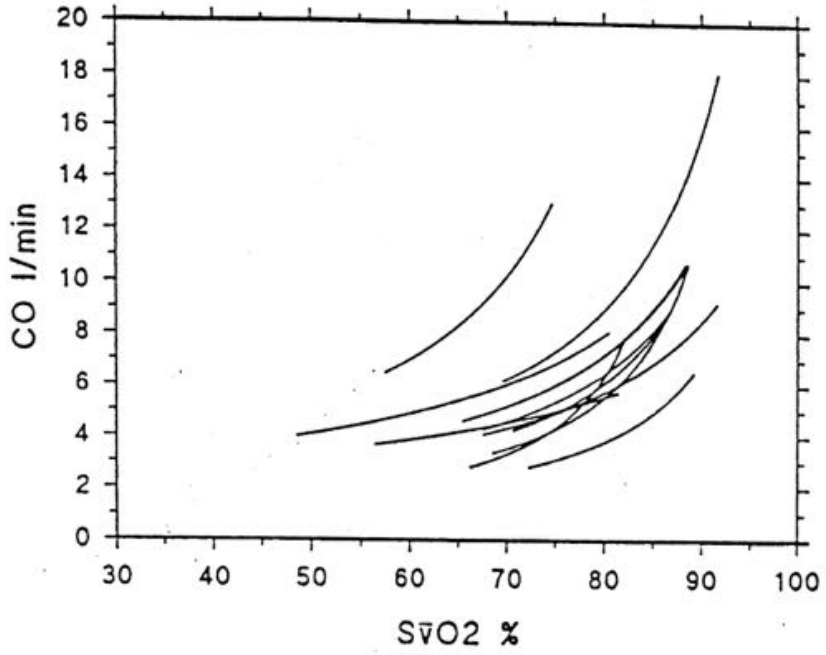
Déterminants linéaires ou non

$$SvO_2 = SaO_2 - \frac{VO_2}{CI \cdot Hb \cdot 1,34}$$

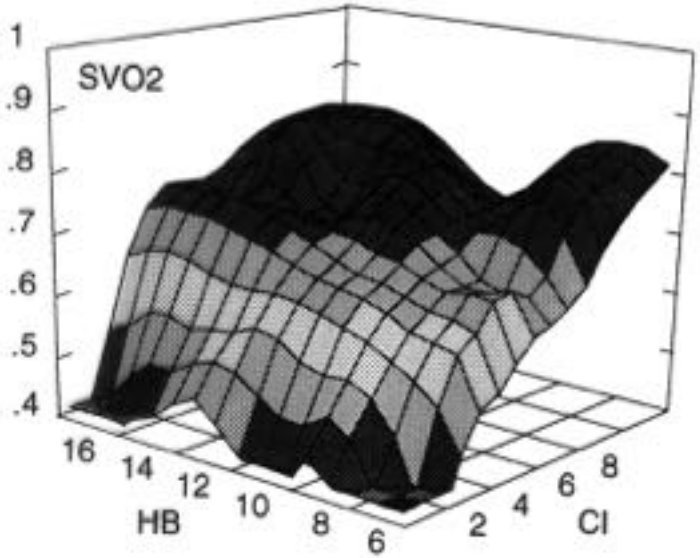
SvO_2 et débit cardiaque

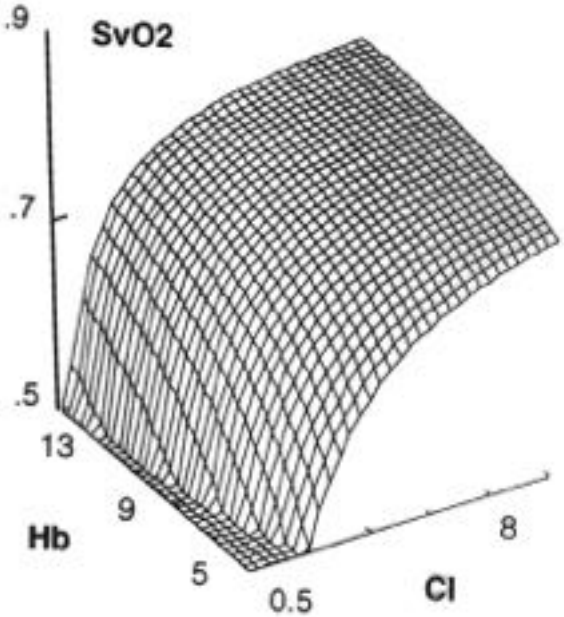


SvO_2 et débit cardiaque

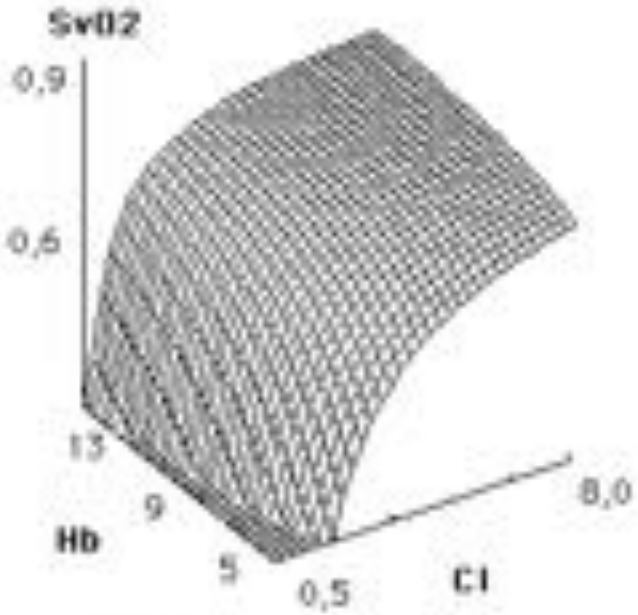


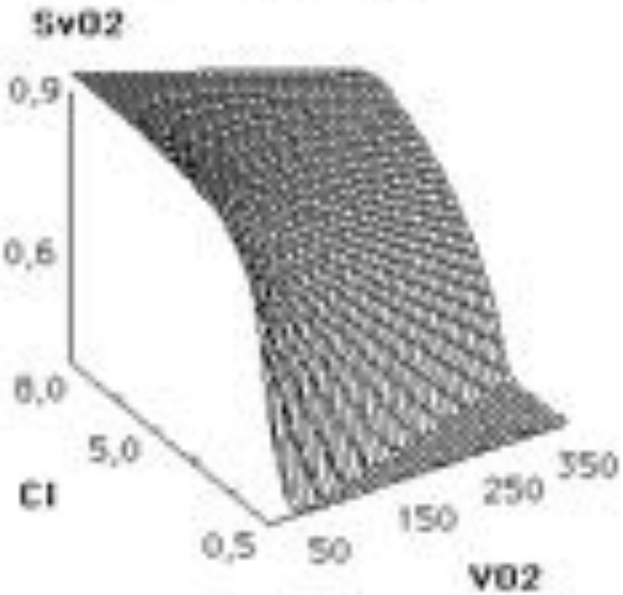
Modèle vs. réalité



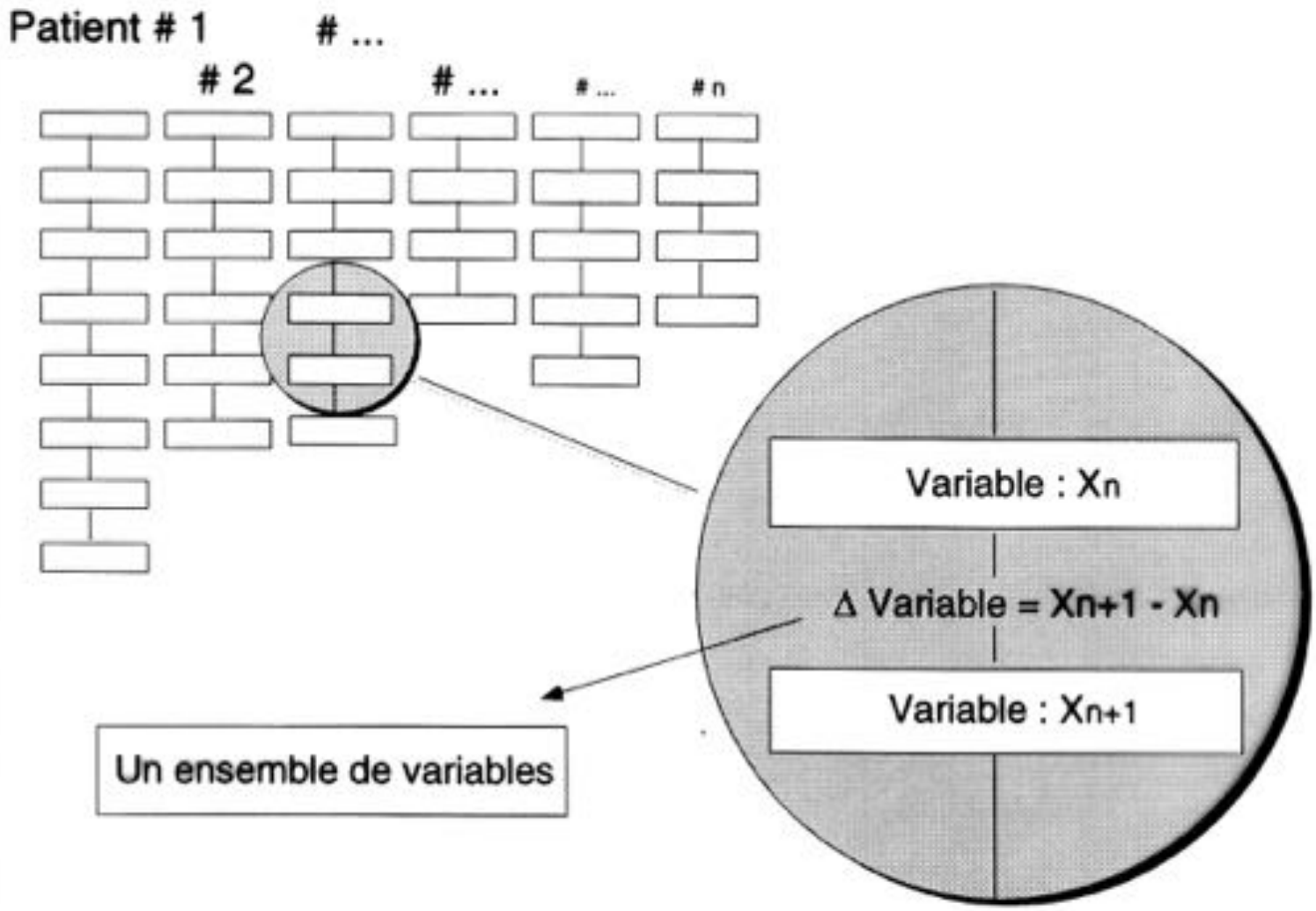


Hb & CI
VO_2 & CI

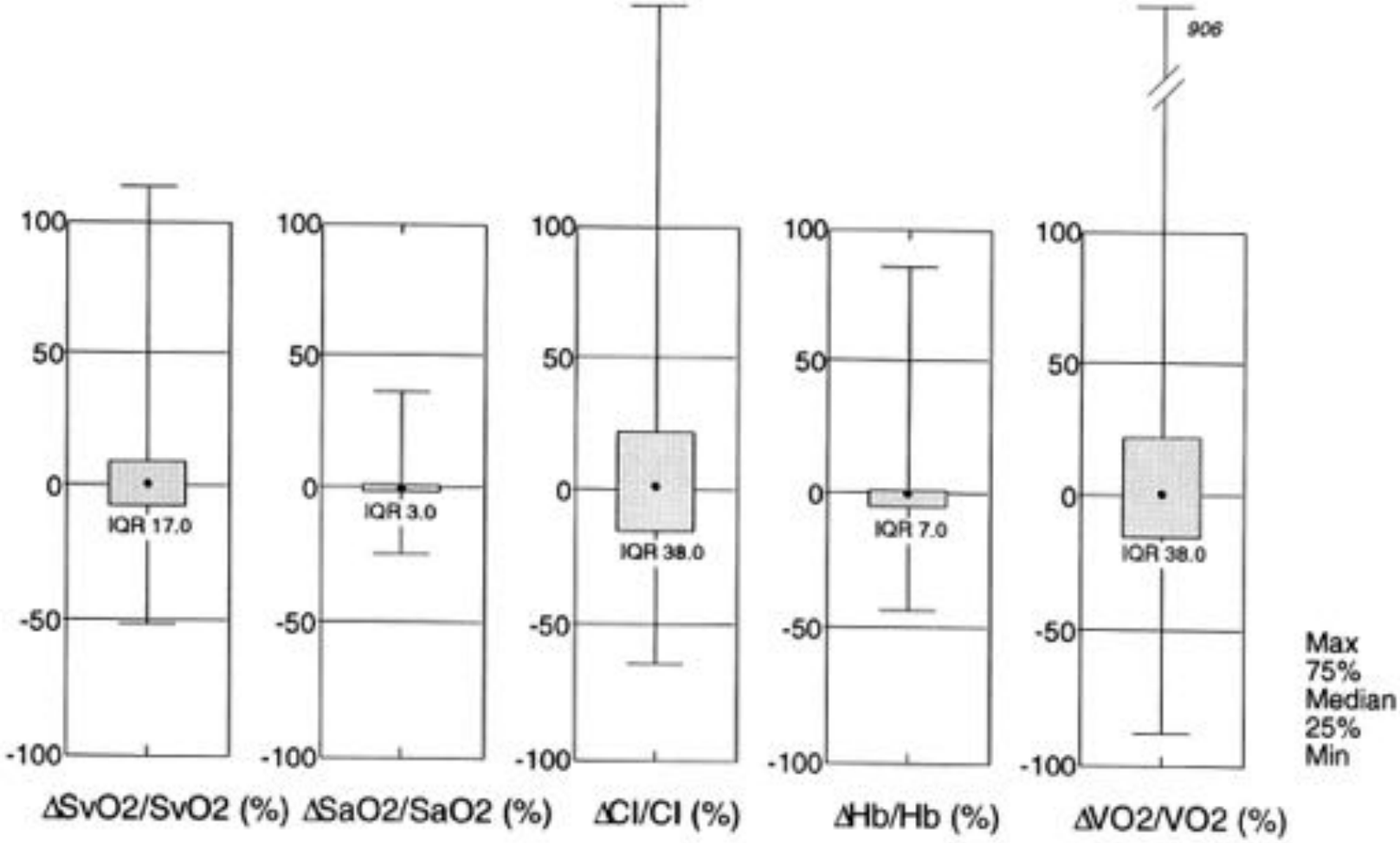

SvO2
0,9
0,6
13
9
5
Hb
0,5
CI
8,0


SvO2
0,9
0,6
8,0
5,0
CI
0,5
50
150
250
350
VO2

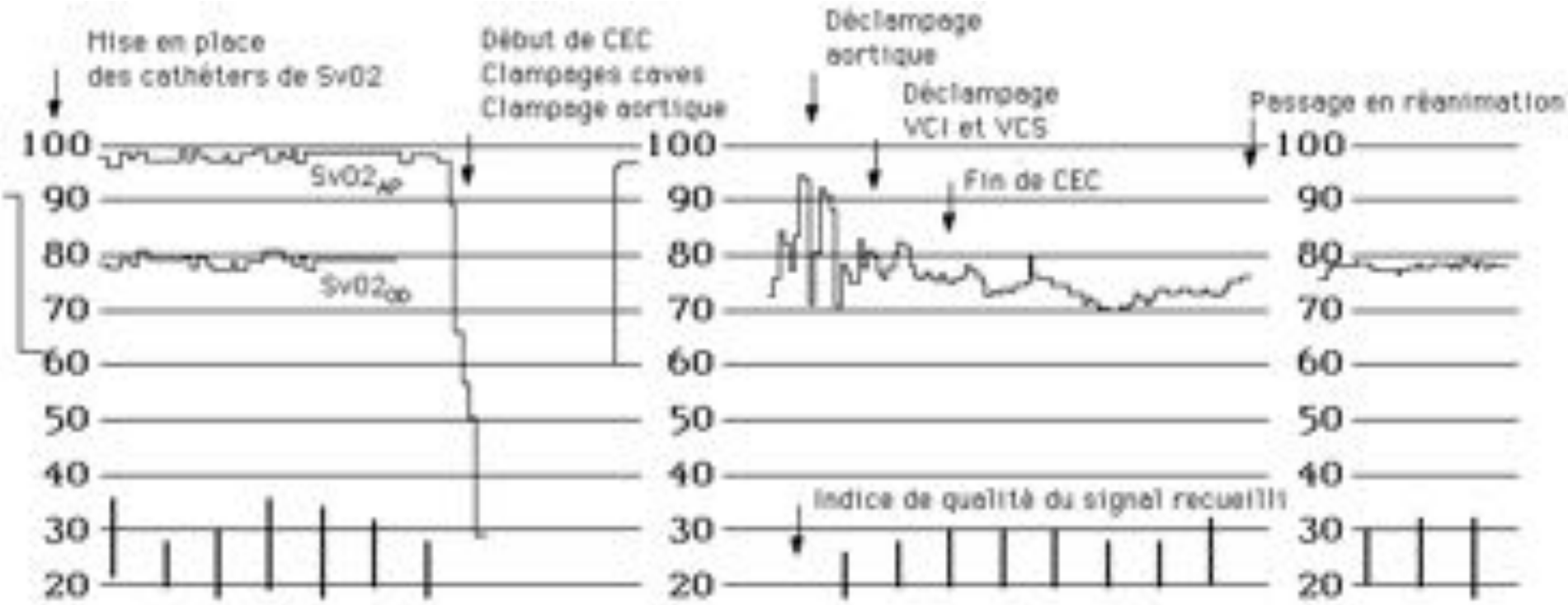
Analyse de variations de SvO_2



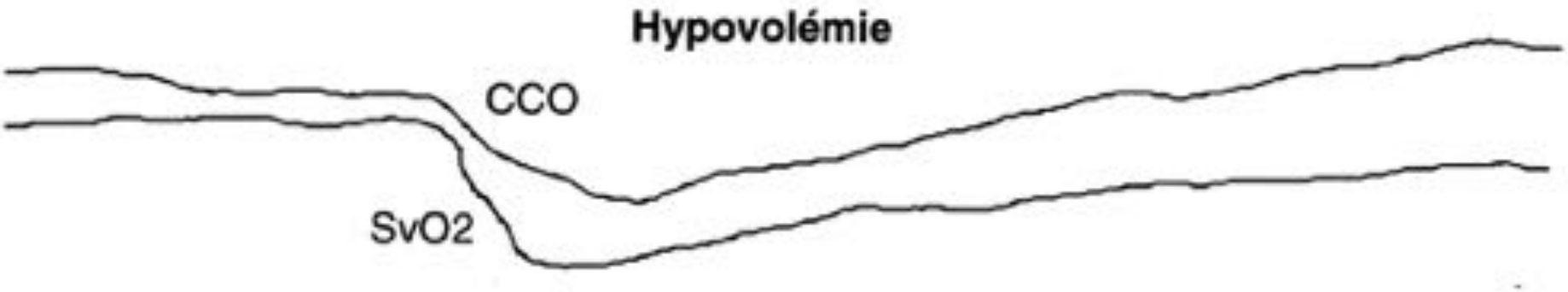
Variations observées lors d'un monitorage complet en réanimation sur 512 patients



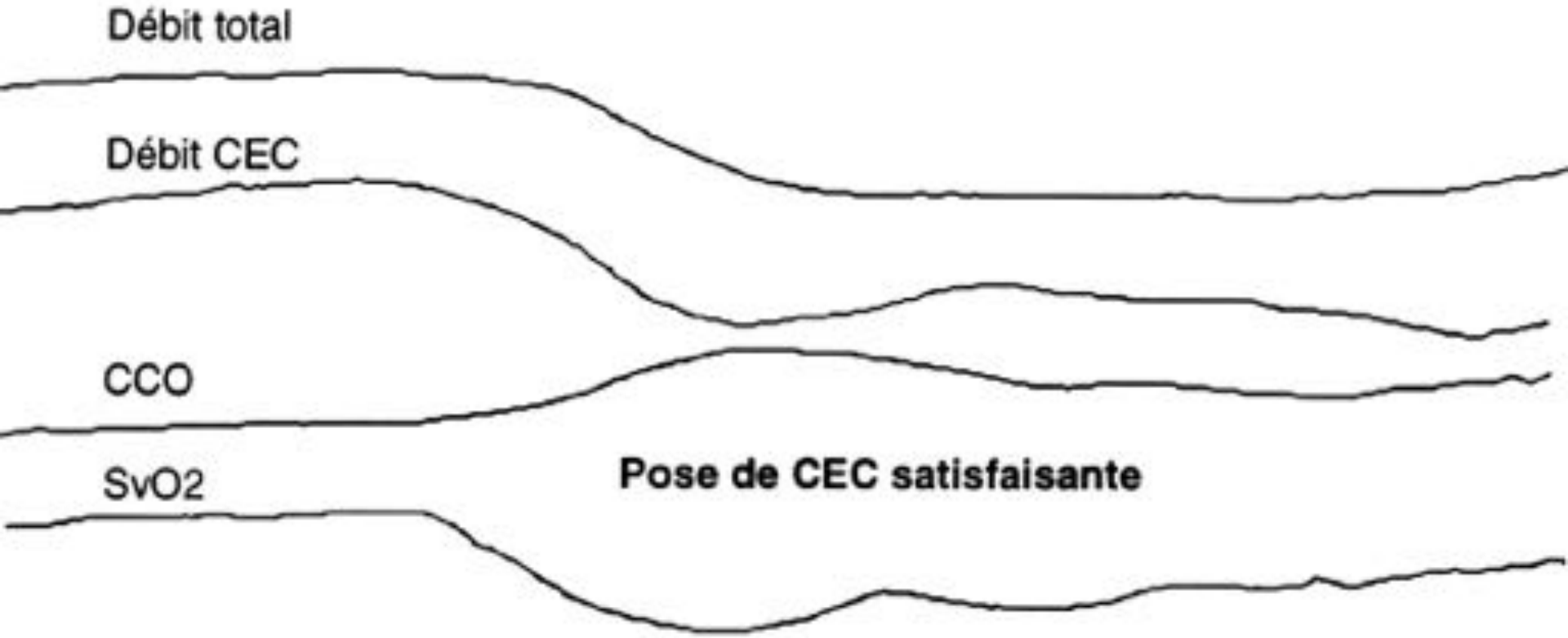
Quelle chirurgie cardiaque ?



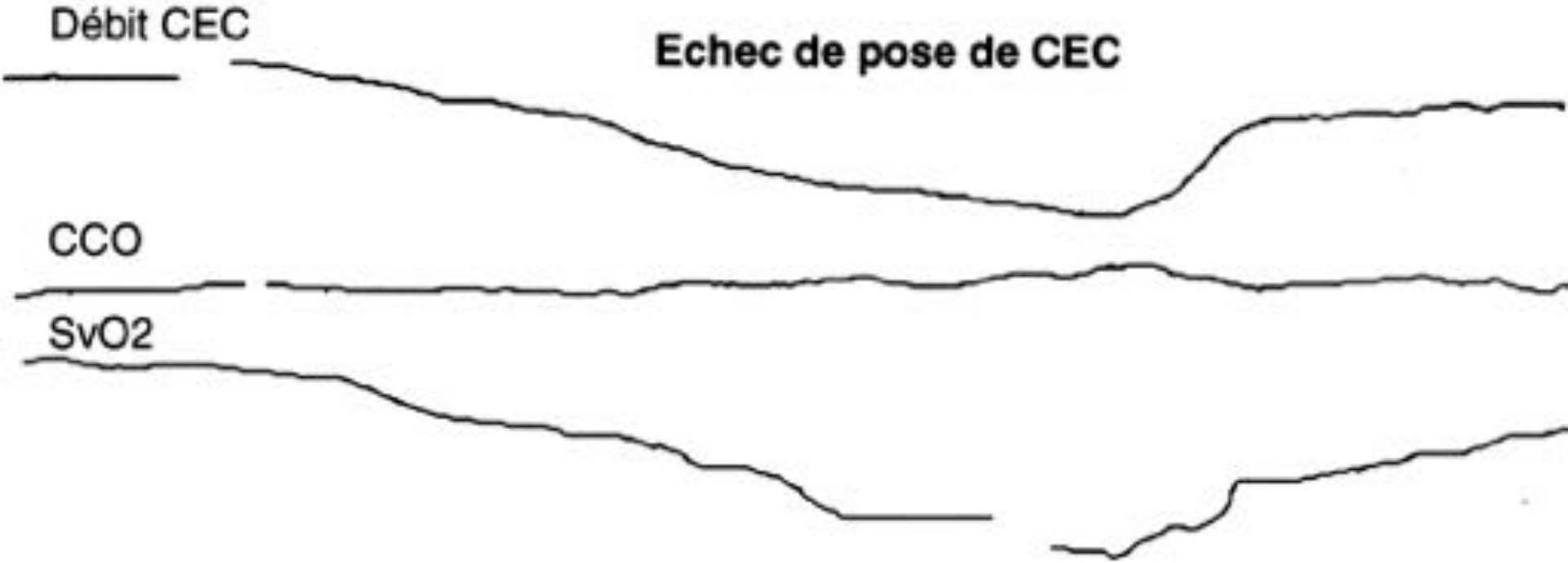
Choc hémorragique



Sevrage de CEC



Sevrage de CEC (2)



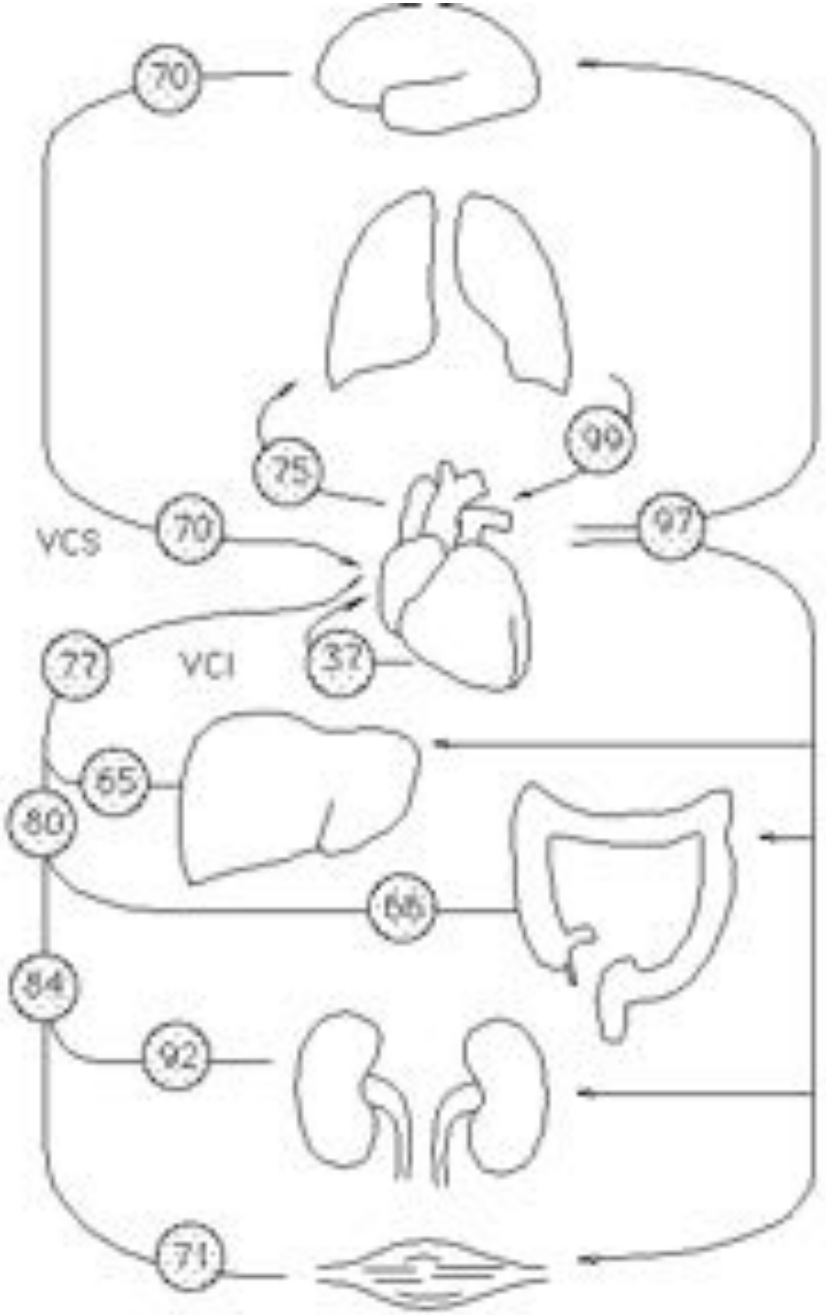
Transport veineux en O_2

$$T\bar{v}O_2 = CI.S\bar{v}O_2.Hb.PO$$

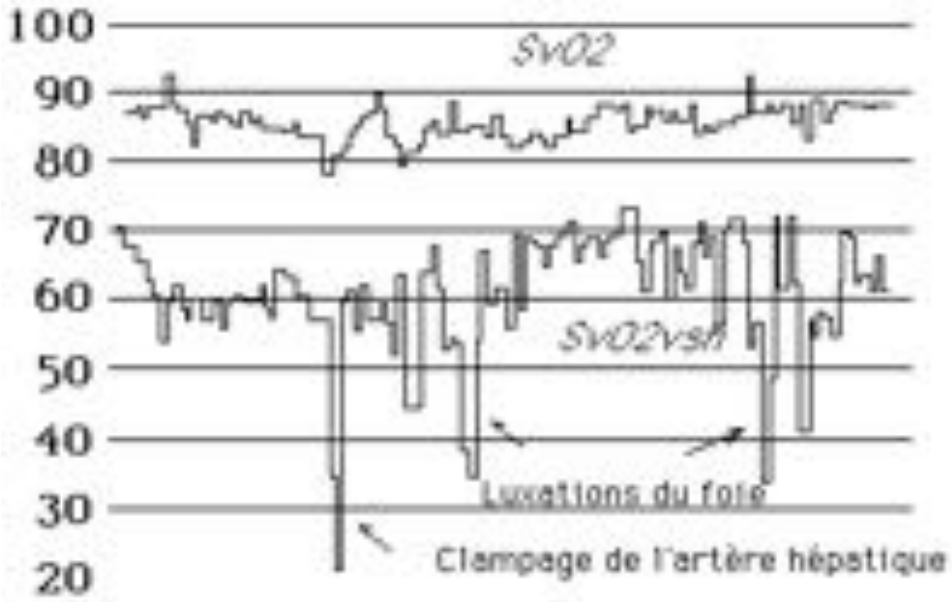
$$T\bar{v}O_2 = \sum_{i}^{organes} Hb_i.PO_i.Q_i.SvO_2i$$

Les SvO_2 régionales

$$S\bar{v}O_2 \approx \sum_i \frac{Q_i}{CI}.SvO_{2i}$$

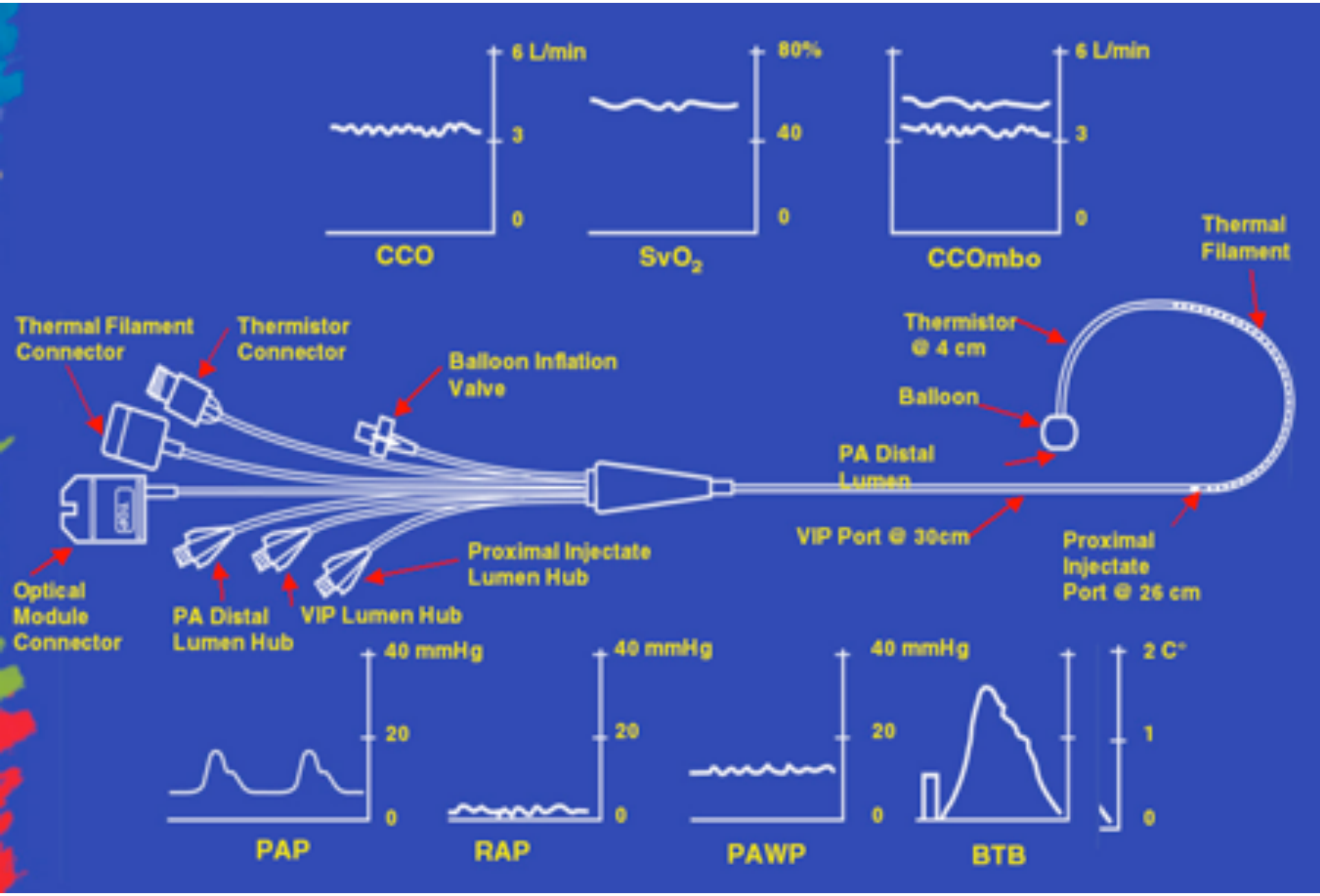


Chirurgie hépatique



EARLY GOAL-DIRECTED THERAPY IN THE TREATMENT OF SEVERE SEPSIS AND SEPTIC SHOCK

Emanuel Rivers, M.D., M.P.H., Bryant Nguyen, M.D., Suzanne Havstad, M.A., Julie Ressler, B.S., Alexandria Muzzin, B.S., Bernhard Knoblich, M.D., Edward Peterson, Ph.D., and Michael Tomlanovich, M.D., for the Early Goal-Directed Therapy Collaborative Group*


6 L/min
3
0
CCO
80%
40
0
SvO2
6 L/min
3
0
CCOmbo
Thermal Filament
Thermal Filament Connector
Thermistor Connector
Balloon Inflation Valve
Thermistor @ 4 cm
Balloon
PA Distal Lumen
VIP Port @ 30cm
Proximal Injectate Port @ 26 cm
Proximal Injectate Lumen Hub
Optical Module Connector
PA Distal Lumen Hub
VIP Lumen Hub
40 mmHg
20
0
PAP
40 mmHg
20
0
RAP
40 mmHg
20
0
PAWP
2 C°
1
0
BTB