

Monitoraggio Emodinamico

Tommaso Togni





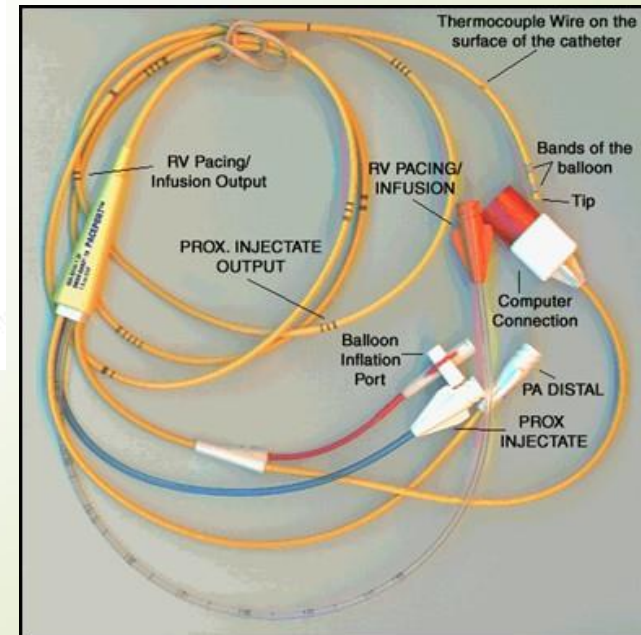
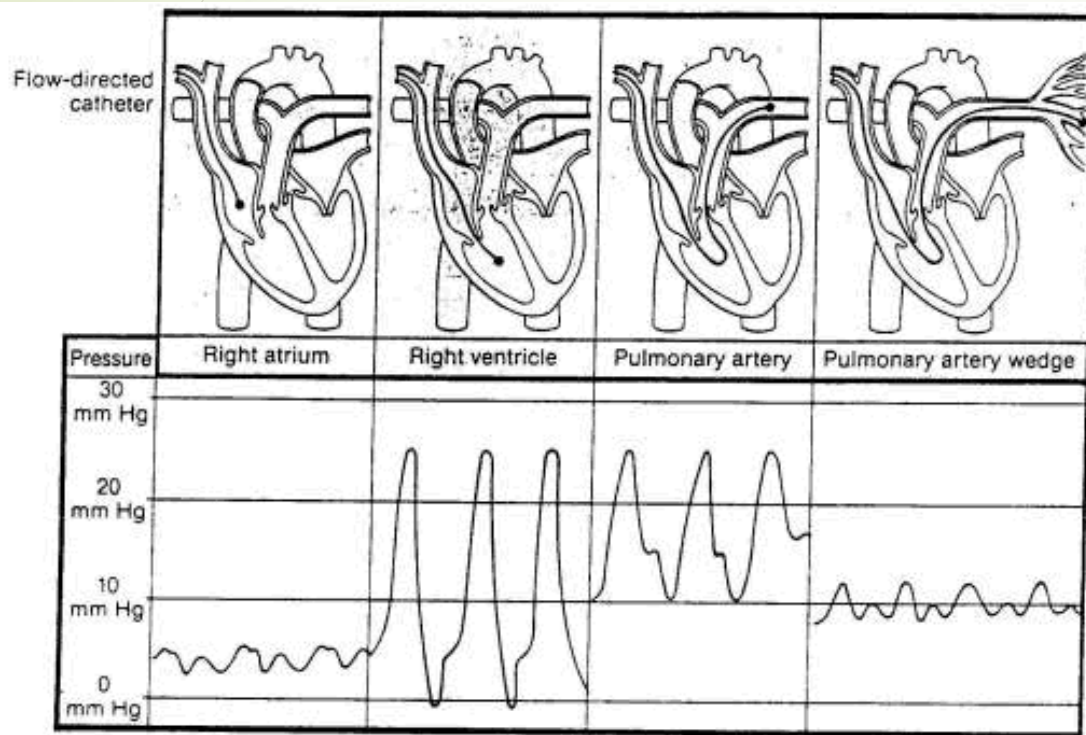
Monitoraggio Emodinamico

- Monitoraggio di base:
 - Pressione arteriosa invasiva
 - Pressione venosa centrale

- Monitoraggio Avanzato:
 - Cateterismo cardiaco destro
 - PiCCO
 - LidCO
 - Vigileo

- Ecografia

Cateterismo Cardiaco destro





Cateterismo Cardiaco destro

- Cosa posso misurare?
 - P atriale dx, P ventricolare dx, P arteria polmonare
 - PCWP/PAOP (Pressione di incuneamento capillare)
 - RVEF (frazione eiezione Vdx), RVEDV (volume telediastolico Vdx)
 - GC, IC

Cateterismo Cardiaco destro

- ▶ Fattori di rischio per complicanze correlate alla procedura di cateterizzazione:
 - ▶ Età > 60 anni
 - ▶ Sesso femminile
 - ▶ Ipertensione polmonare
 - ▶ Anticoagulazione
 - ▶ Terapia steroidea a lungo termine
 - ▶ Ipotermia

Clinical practice

Pulmonary artery pseudoaneurysm after Swan-Ganz catheterization: a case presentation and review of literature

Madhan Nellaiyappan¹, Hesham R Omar², Rafael Justiz³, Collin Sprenger¹, Enrico M Camporesi⁴ and Devanand Mangar^{1,5}

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Acute Cardiovascular Care
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Cateterismo Cardiaco destro

- Possibili effetti collaterali legati alla procedura:
 - Puntura arteriosa 1.9%
 - Pneumotorace 0,5%
 - Aritmie 12,5% - 70%
 - Batteriemie e Sepsi correlate al catetere 1,3% - 2,3%
 - Rottura Arteria polmonare 0,05% (e relative sequele: pseudo-aneurismi, ematomi, emorragia intrapolmonare)
NB Non trattata, ha una *mortalità superiore al 70%*!

Evans et al. Complications associated with pulmonary artery catheters: A comprehensive clinical review. *Scand J Surg* 2009; 98: 199-208.

Kearney TJ and Shabot MM. Pulmonary artery rupture associated with the Swan-Ganz catheter. *Chest* 1995; 108: 1349-1352.

Bossert T et al. Swan-Ganz catheter-induced severe complications in cardiac surgery: Right ventricular perforation, knotting, and rupture of a pulmonary artery. *J Card Surg* 2006; 21: 292-295.



Review

Evidence-based review of the use of the pulmonary artery catheter: impact data and complications

Mehrnaz Hadian and Michael R Pinsky

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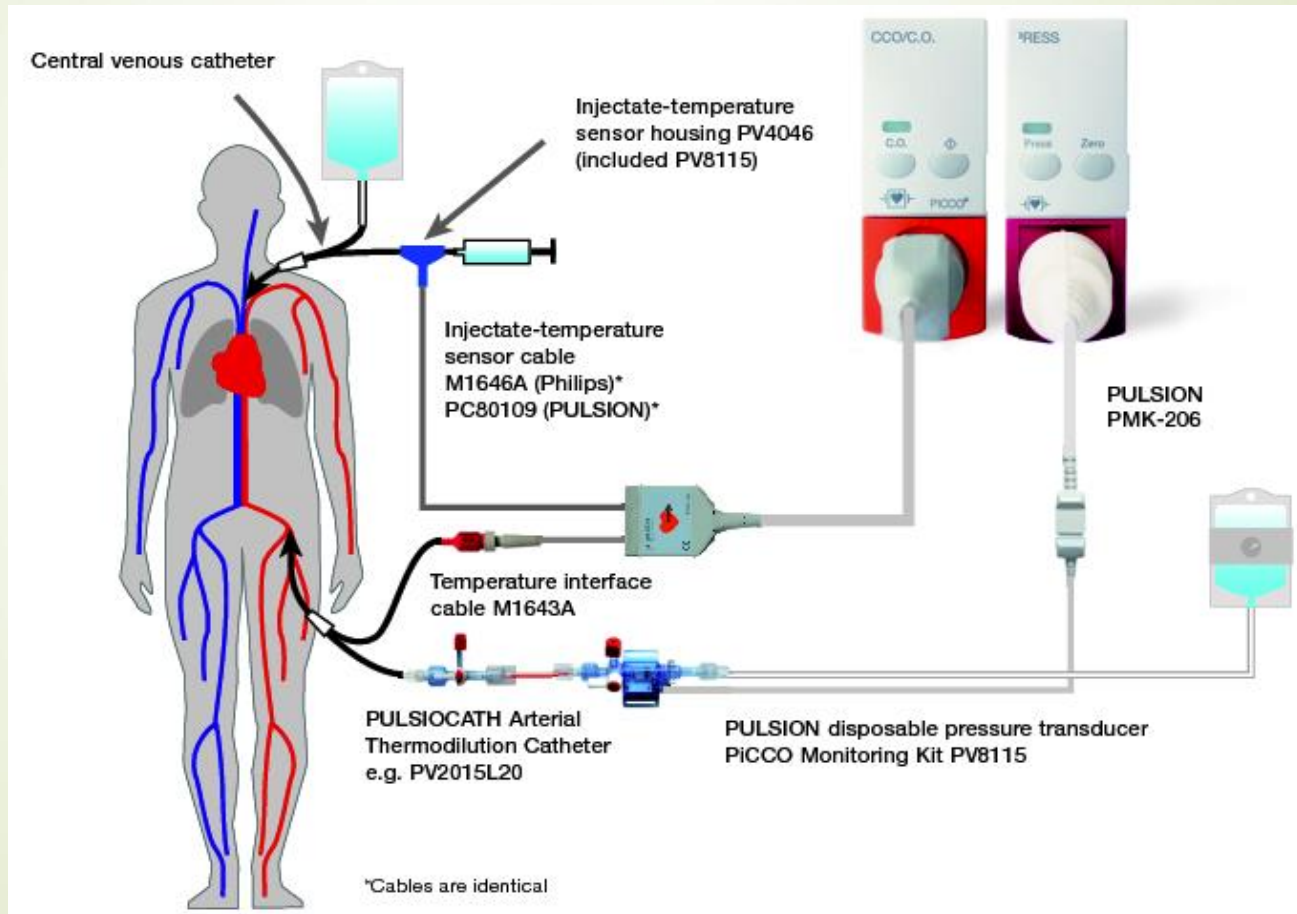
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Critical Care 2006, **10(Suppl 3):S8** (doi:10.1186/cc4834)

« Considering that there are no benefits of PAC use that is not associated with a defined treatment protocol, this review supports the discontinuance of routine PAC insertion unless it is coupled to a defined treatment protocol of proven efficacy. Such protocols exist but they need to be followed in defined high-risk patient populations. »

PiCCO





PiCCO

Table 2 Normal ranges (reproduced by kind permission of Pulsion Medical UK Ltd)

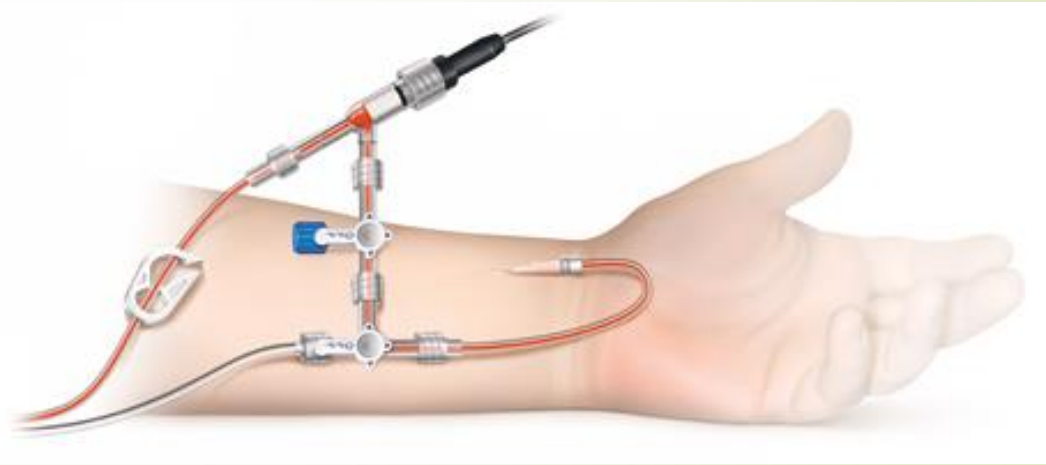
Variable	Normal ranges	Unit
CI	3.0–5.0	l/minute/m ²
ITBI	850–1000	ml/m ²
ELWI	3.0–7.0	ml/kg
CFI	4.5–6.5	l/minute
HR	60–90	1/minute
CVP	2–10	mmHg
MAP	70–90	mmHg
SVRI	1200–2000	dyne seconds/cm ⁵ /m ²
SVI	40–60	ml/m ²
SVV	≤10	%



PiCCO

- ▶ Efficace almeno quanto il cateterismo polmonare di destra Sakka et al. (2000) Intensive Care Medicine 26:180-187
- ▶ ITBV è un miglior indicatore del precarico cardiaco, rispetto alla Pressione di Wedge Bindels et al. (2000) Critical Care 4: 193-199

LiDCO



Vigileo





Ecografia

- ▶ Valutazione della volemia tramite misurazione V. Cava inferiore
- ▶ Stima della GC e dei volumi delle camere cardiache
- ▶ TAPSE (escursione anello tricuspidalico duante la sistole) e PAPS (stima delle pressioni in arteria polmonare)