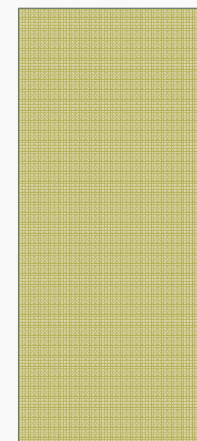


EVALUATION DE LA PRECHARGE DEPENDANCE

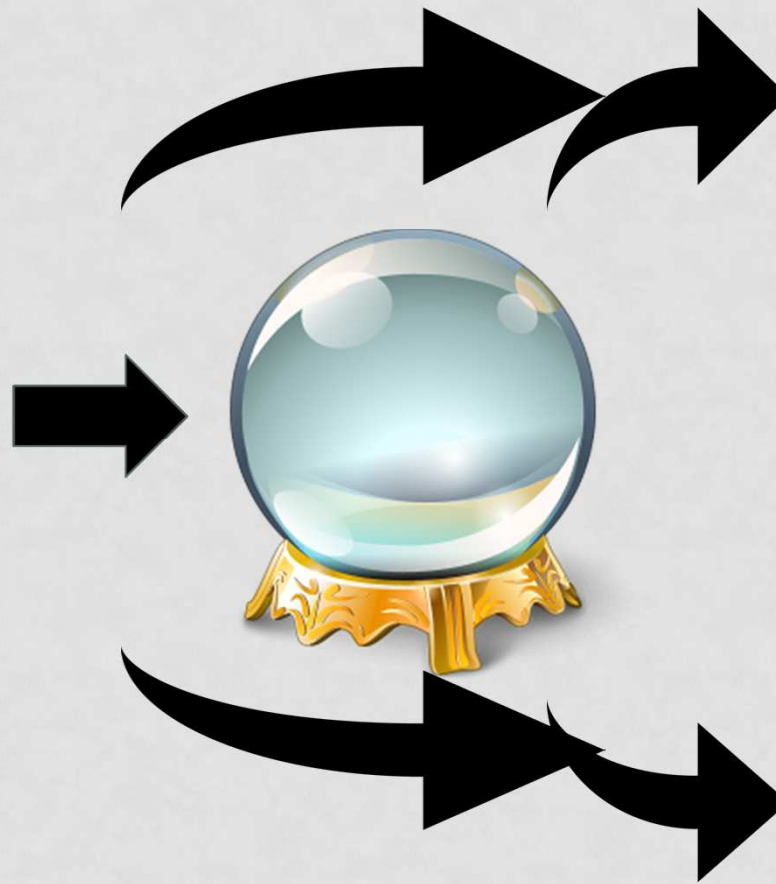
JÉRÉMY ROSMAN – DESC REANIMATION



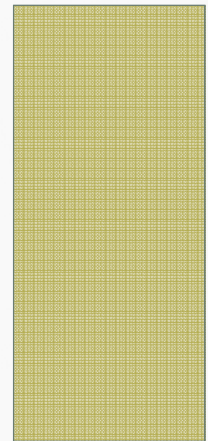
LA PROBLEMATIQUE



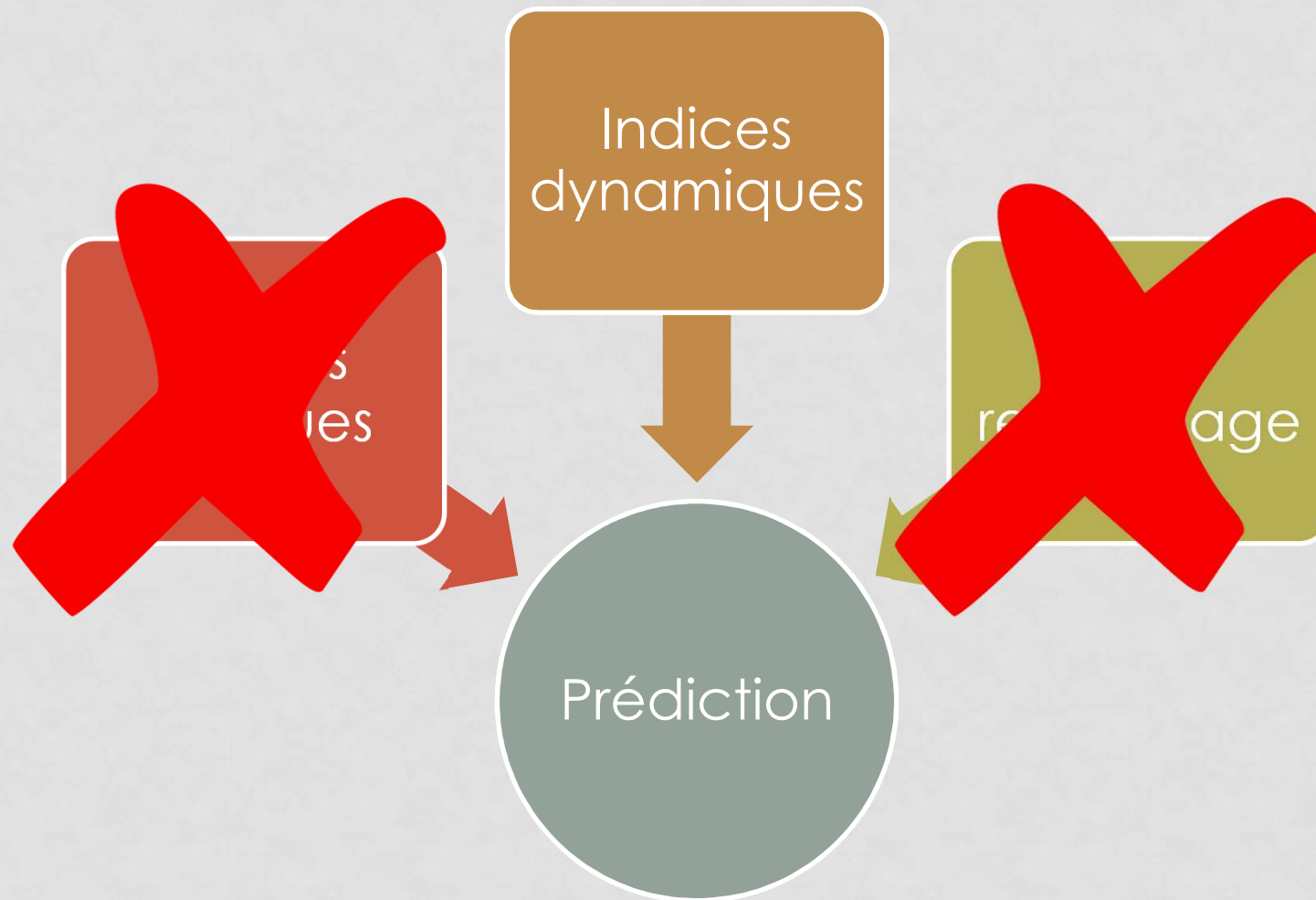
LA PROBLEMATIQUE



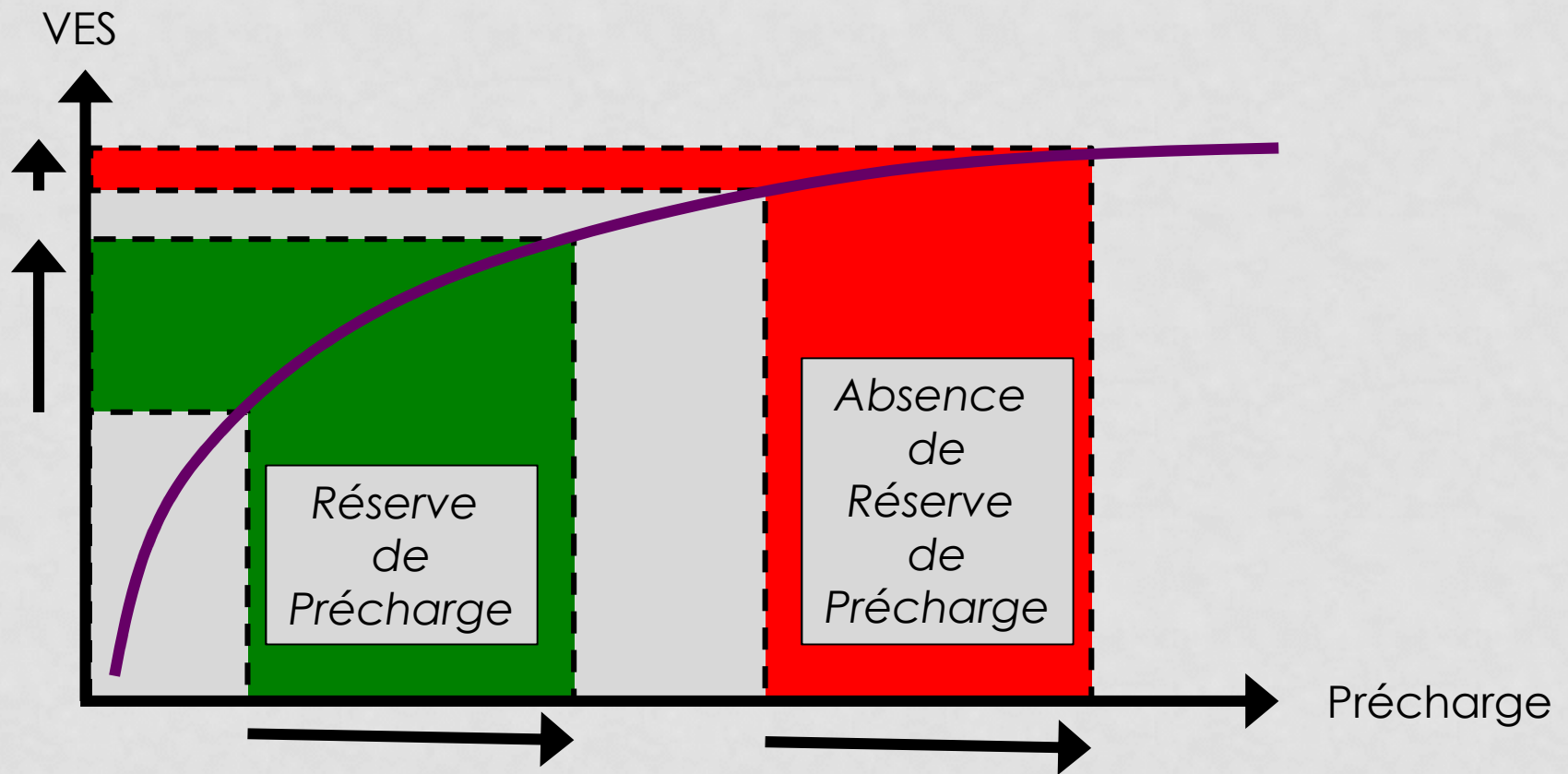
COMMENT PREDIRE LA
REPONSE AU
REEMPLISSAGE?



COMMENT PRÉDIRE ?



COMMENT PRÉDIRE ?



COMMENT PRÉDIRE ?

La **précharge** dépend
du **cycle respiratoire**
(interactions
cœur-poumons)

OR

Le **VES** des patients
répondeurs dépend
de leur **précharge**
(Starling)

Δ Cycle respiratoire



Δ Précharge



Δ VES

COMMENT PRÉDIRE ?

Δ VES ?

(mesure directe ou indices corrélés)

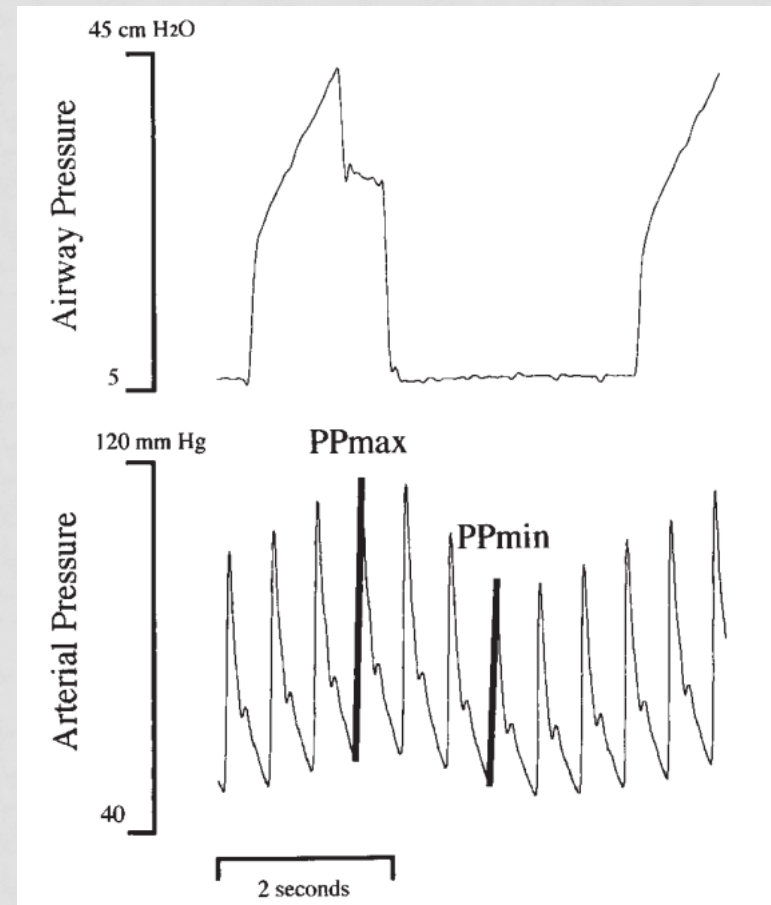
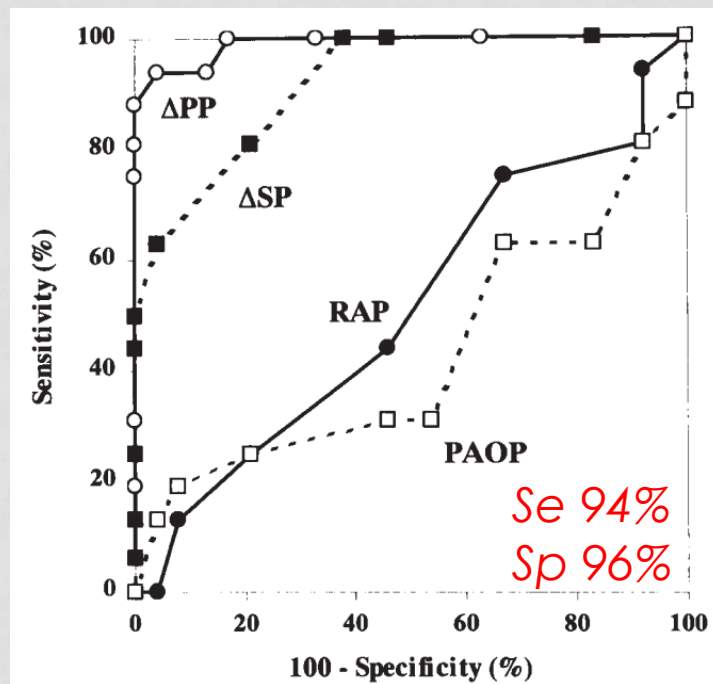


COMMENT PRÉDIRE ?

- Mesure directe :
 - ΔITV
- Mesure indirecte :
 - ΔPP
 - $\Delta VCI / \Delta VCS$
 - Epreuve de lever de jambes passif
 - Test d'occlusion télé-expiratoire

ΔPP

- $\Delta PP = (PP_{\max} - PP_{\min}) / PP_{\text{moy}}$
- $> 13\%$



Michard and al., AJRCCM 1999
Michard and al., AJRCCM 2000

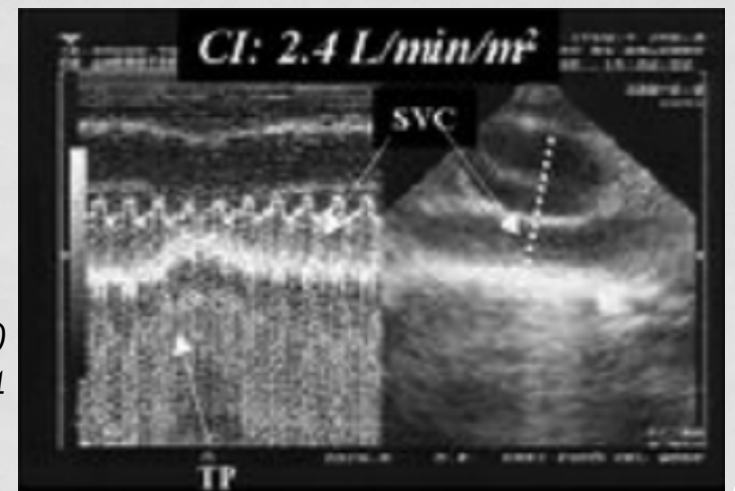
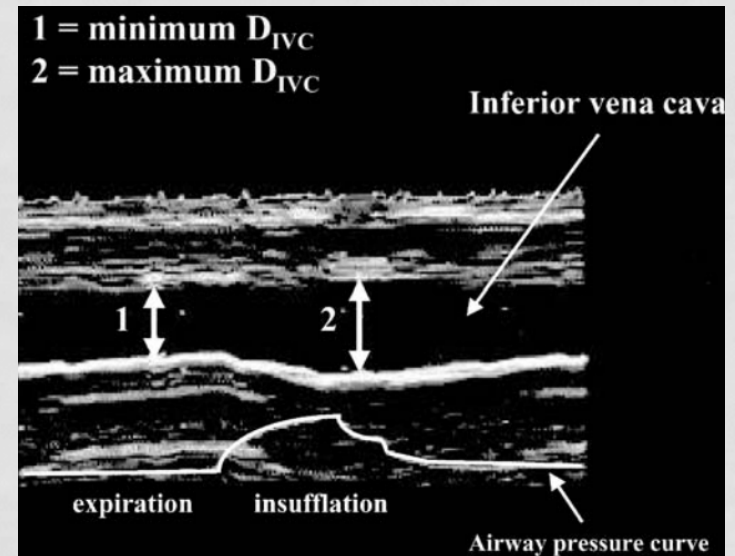
Δ PP

- Avantages :
 - Simple, peu invasif, fiable, non opérateur dépendant
- Inconvénients :
 - Sinusal
 - Absence de ventilation assistée *(Monnet, CCM 2006)*
 - $V_t \geq 8\text{mL/kg}$ *(D de Backer, ICM 2005)*
 - Compliance $>30\text{mL/cmH}_2\text{O}$ *(Monnet, CCM 2012)*
 - Zone grise *(Cannesson, Anesthesiology 2011)*
 - Thorax/péricarde fermés
 - Défaillance VD ? *(Majhoub, CCM 2009)*

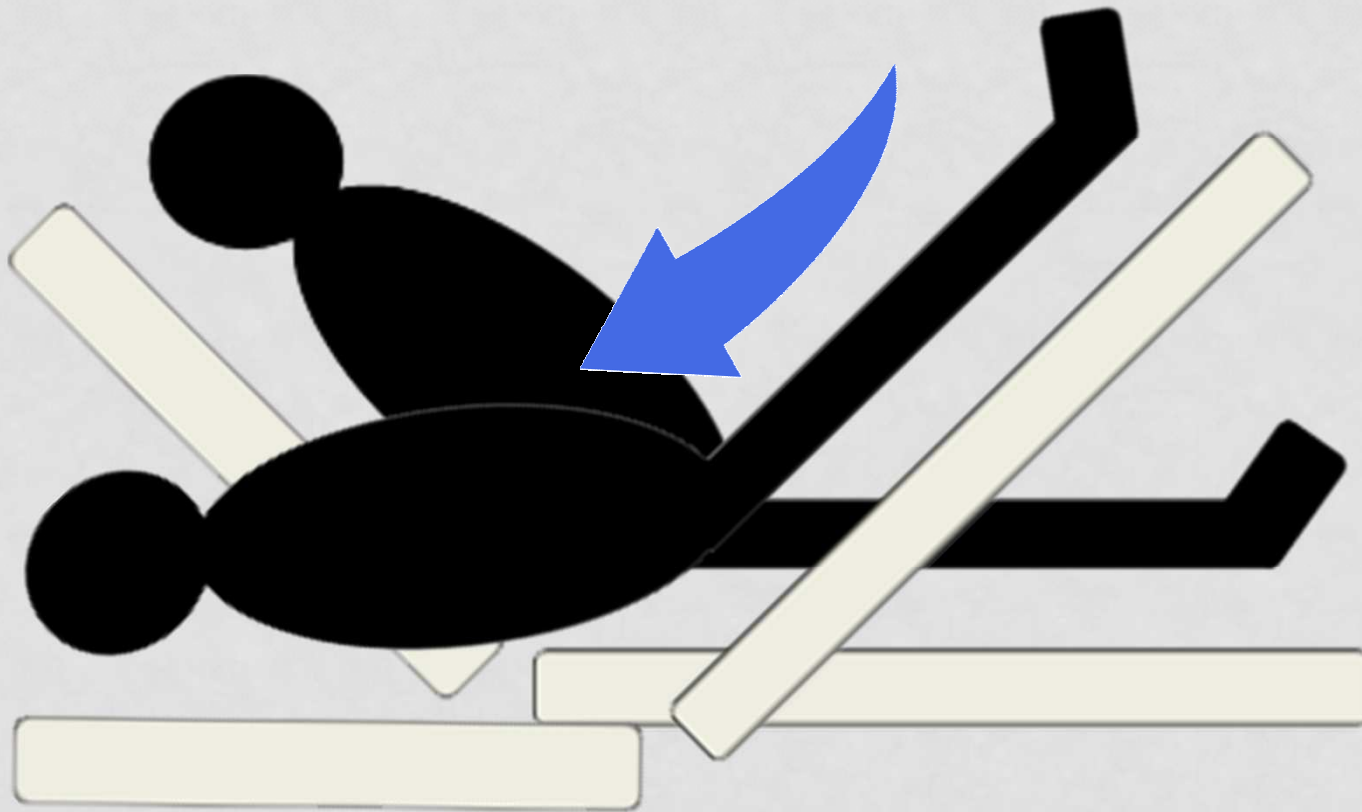
Δ VCI ET Δ VCS

- Δ VCI : En VS : $\geq 50\%$
 - En VS : $(VCI_{\max} - VCI_{\min}) / VCI_{\max}$
 - $\geq 50\%$: VPP 87%, VPN 96% (PVC <8)
 - En VAC : $(VCI_{\max} - VCI_{\min}) / VCI_{\text{moy}}$
 - $\geq 12\%$: VPP 93%, VPN 92%
- Δ VCS : $(VCS_{\max} - VCS_{\min}) / VCS_{\max}$
 - $\geq 36\%$: Se 90%, Sp 100%

- Nagdev and al, Ann Emerg Med 2010
- Feissel and al., ICM 2004
- Vieillard-Baron and al., ICM 2004



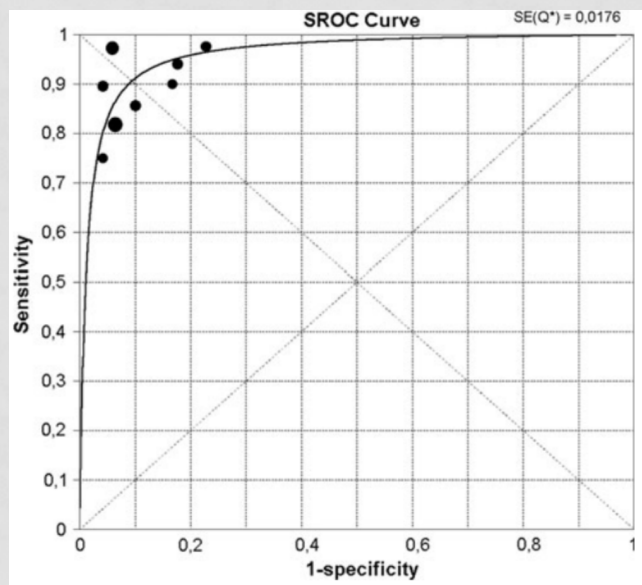
EPREUVE DE LEVER DE JAMBES PASSIF



EPREUVE DE LEVER DE JAMBES PASSIF

- $\Delta\text{ABF} \geq 10\%$: Se 97%, Sp 94%
- $\Delta\text{ITV} \geq 15\%$: Se 81%, Sp 93%
- $\text{PP}_{\text{fin}} - \text{PP}_{\text{début}} \geq 12\%$: Se 60%, Sp 86%

Attention si bas de contention ou SCA



| Subgroup | Correlation r | p^* | AUC | p^* |
|--------------------------|------------------|-------|------------------|-------|
| Ventilation | | | | |
| Adapted | 0.81 (0.53–0.93) | 0.97 | 0.94 (0.87–1.00) | 0.74 |
| Inspiratory efforts | 0.81 (0.74–0.87) | | 0.95 (0.91–0.99) | |
| Cardiac rhythm | | | | |
| Sinus rhythm | 0.73 (0.58–0.84) | 0.15 | 0.96 (0.92–0.99) | 0.94 |
| Arrhythmias | 0.83 (0.75–0.89) | | 0.96 (0.89–1.03) | |
| Starting position | | | | |
| Supine | 0.78 (0.64–0.87) | 0.39 | 0.93 (0.87–1.00) | 0.62 |
| Semirecumbent | 0.83 (0.75–0.89) | | 0.95 (0.92–0.97) | |

Monnet and al, CCM 2006

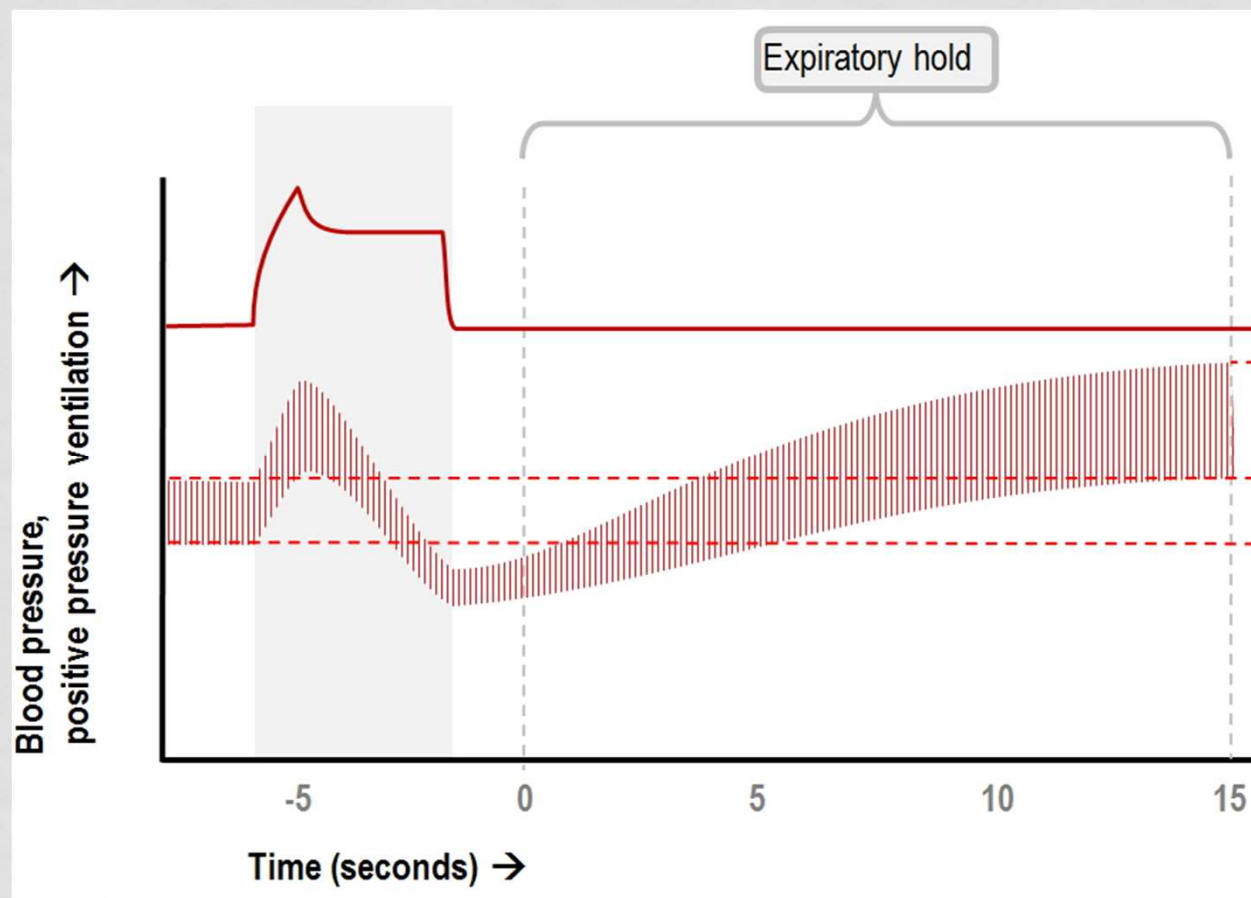
Thiel, Crit Care 2009

Cavallaro and al., ICM 2010

ΔETCO_2

- Pendant ELJP :
 - $\Delta\text{EtCO}_2 > 5\%$: Se 95% et Sp 94%
Se 71% et Sp 100%

TEST D'OCCLUSION TELE-EXPIRATOIRE



Monnet, CCM 2009
Monnet, CCM 2012
Silva, CCM 2013

TEST D'OCCLUSION TELE-EXPIRATOIRE

- 15s de pause télé-expiratoire
 - Variation de PP >5% (Se 87%, Sp 100%)
 - Variation d'IC_{picco} >5% (Se 91%, Sp 100%)
- Utilisable si compliance <30 mL/cmH₂O et bas Vt
- Non utilisable si VS

RESUME

| Test | Seuil | VPP | VPN | VS ? | ACFA ? | Vt <8 |
|------------------------|-----------------------|-----|-----|------------|------------|------------|
| dPP | IC >13% | 94 | 96 | non | non | non |
| ΔVCl_{VS} | 50% | 87 | 96 | oui | | |
| ΔVCl_{VA} C | 12% | 93 | 92 | non | | |
| ELJP | $\Delta ITV > 15\%$ | 91 | 85 | oui | oui | oui |
| | $\Delta EtCO_2 > 5\%$ | 95 | 94 | non | oui | |
| TOTE | $\Delta IC > 5\%$ | ? | ? | non | oui | oui |
| | vPP >5% | ? | ? | non | oui | oui |