

29<sup>e</sup>  
Congrès Aquitain  
de Médecine  
d'Urgence

**CAMU**  
COLLÈGE AQUITAIN  
DE MÉDECINE D'URGENCE  
**2023**

**5 & 6 AVRIL**  
**PESSAC (33)**

INSTITUT DES MÉTIERS DE LA SANTÉ  
HÔPITAL XAVIER ARNOZAN



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# Les clés de l'hémodynamique

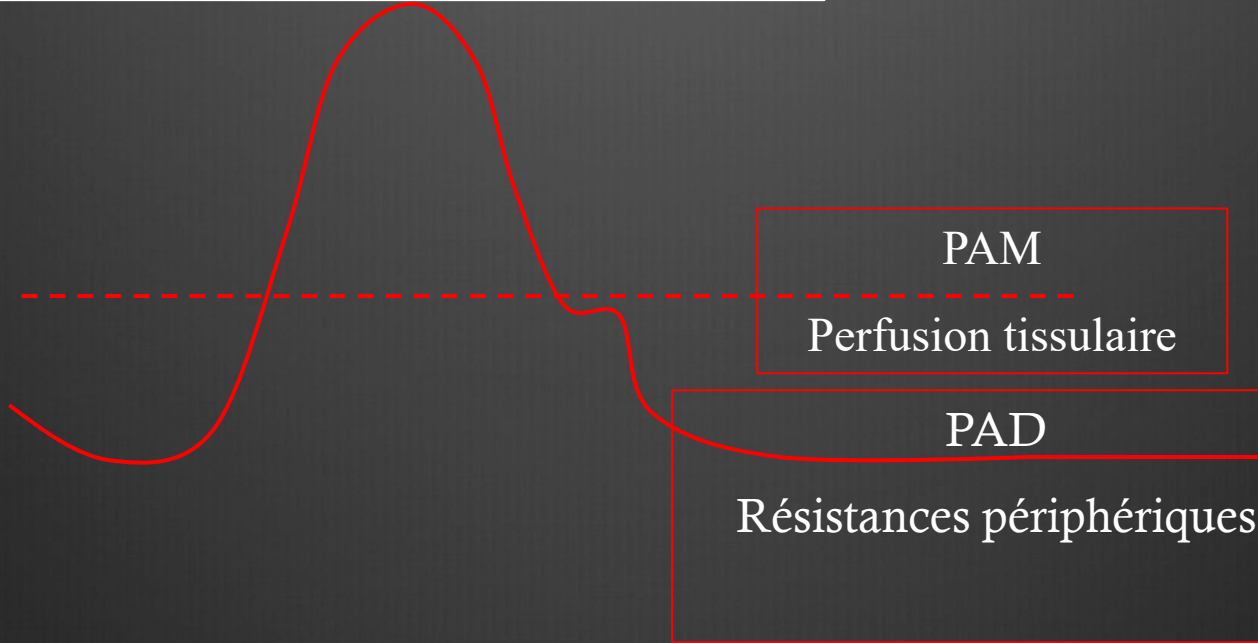
Les valeurs de pression artérielle en urgence :  
comment les interpréter ?

Xavier Bobbia

Liens d'intérêt



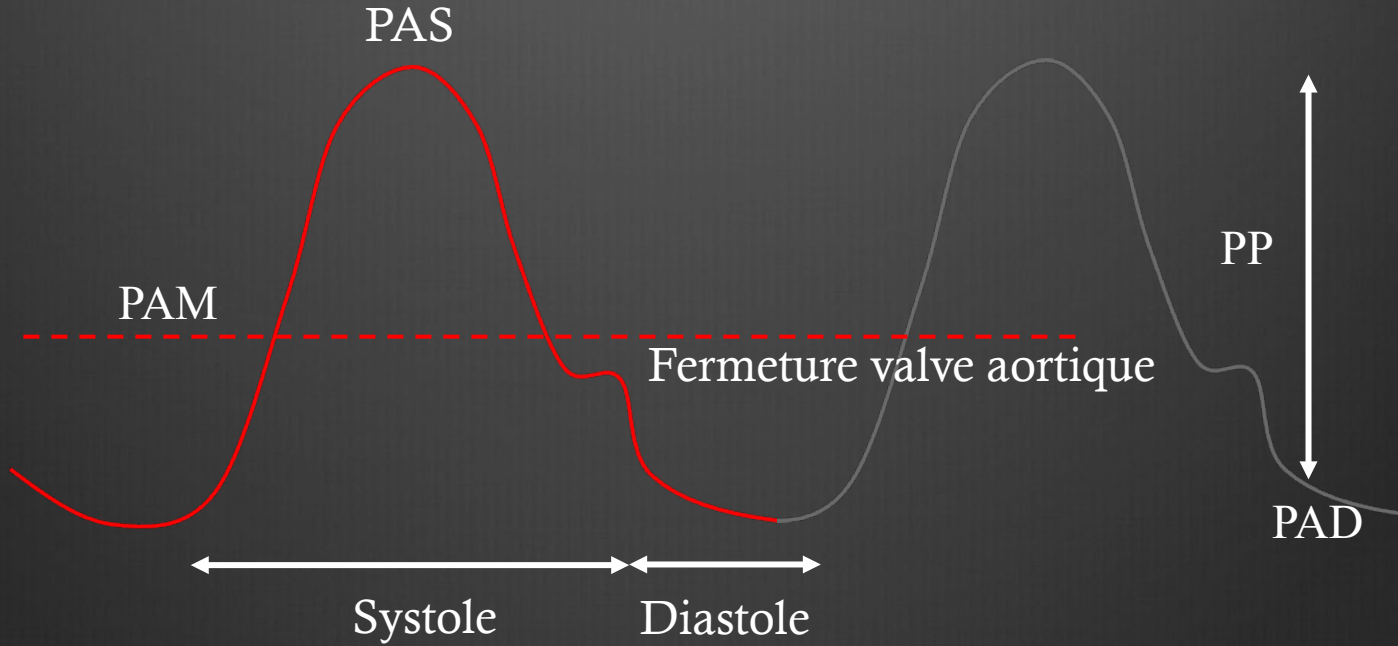
PAS – Pronostic



PP  
VES

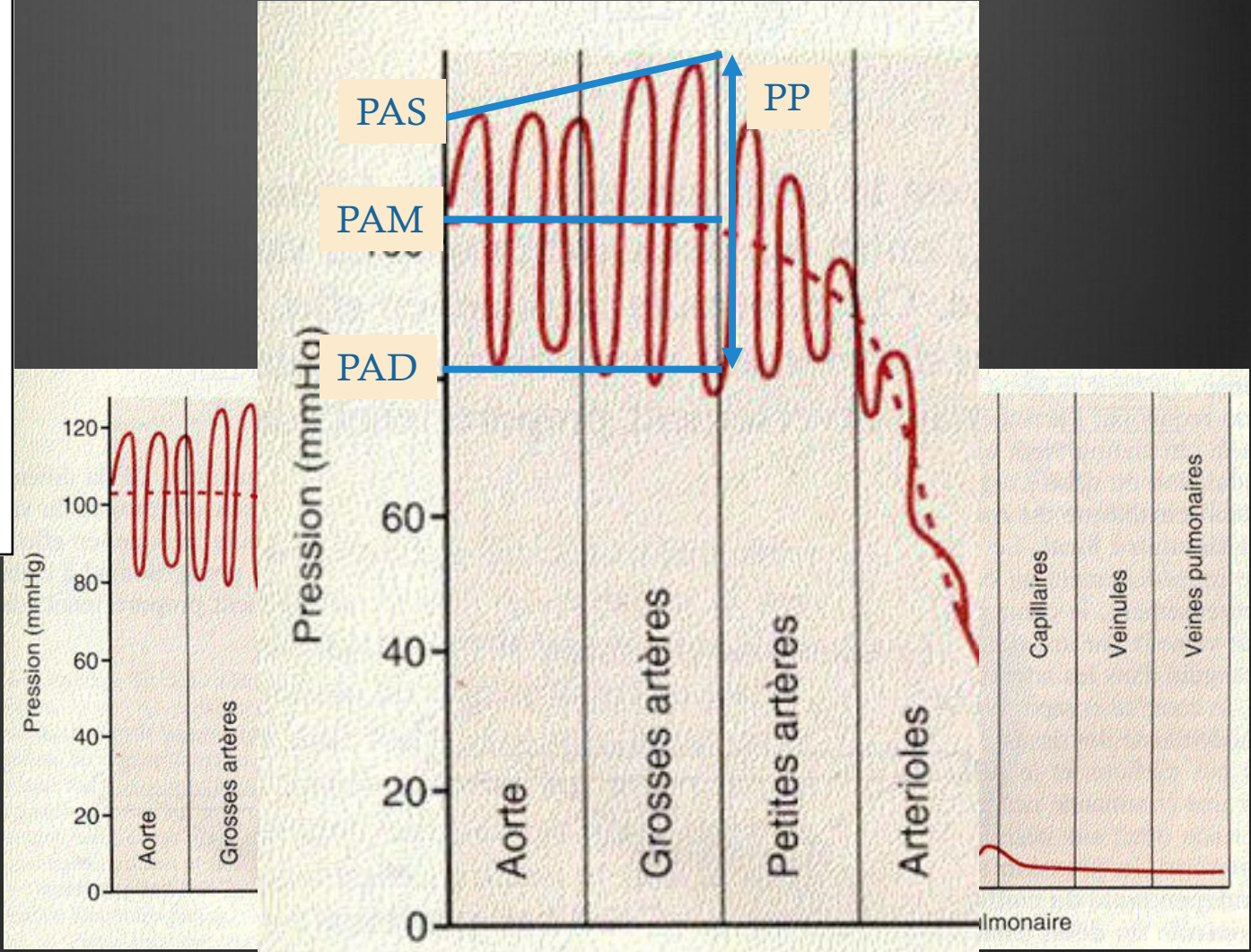


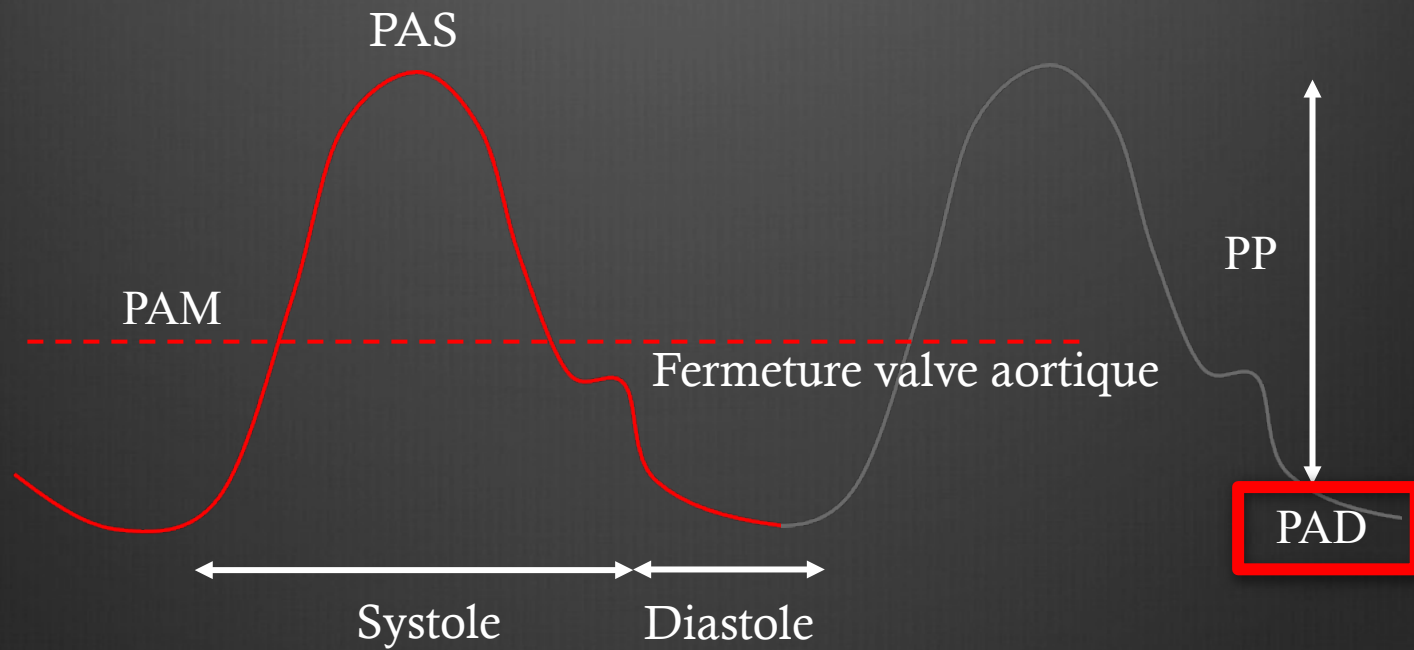
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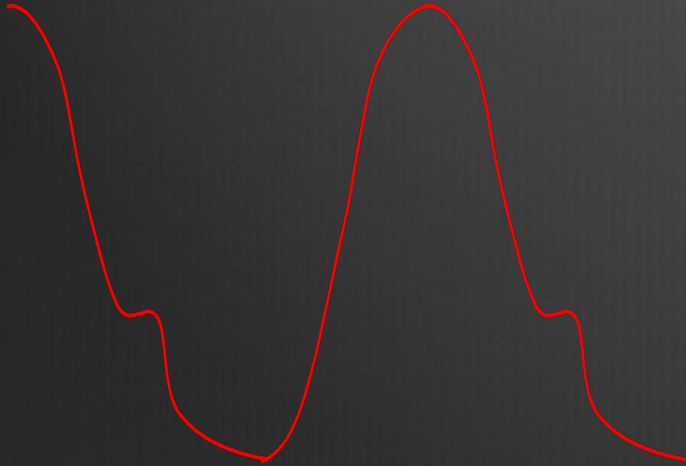
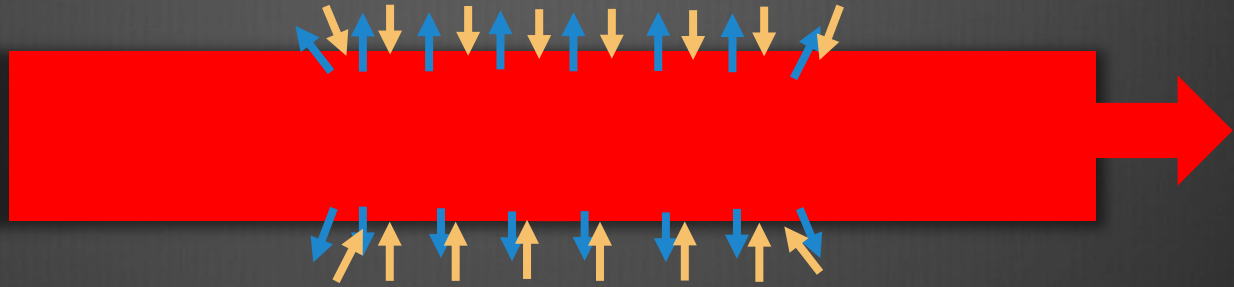


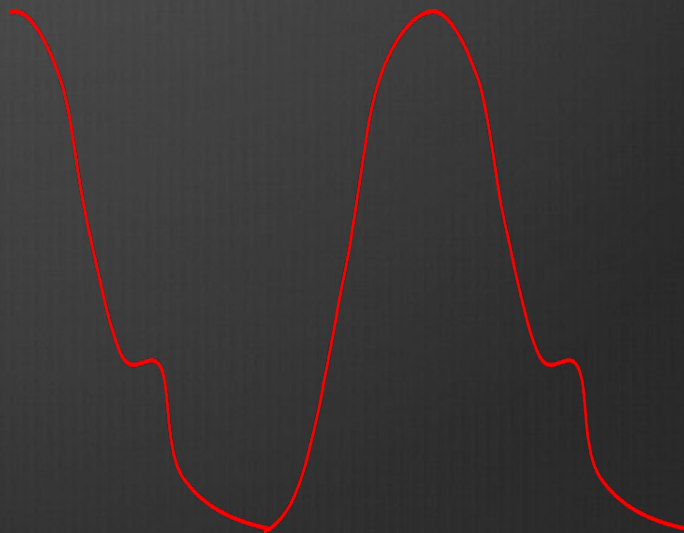
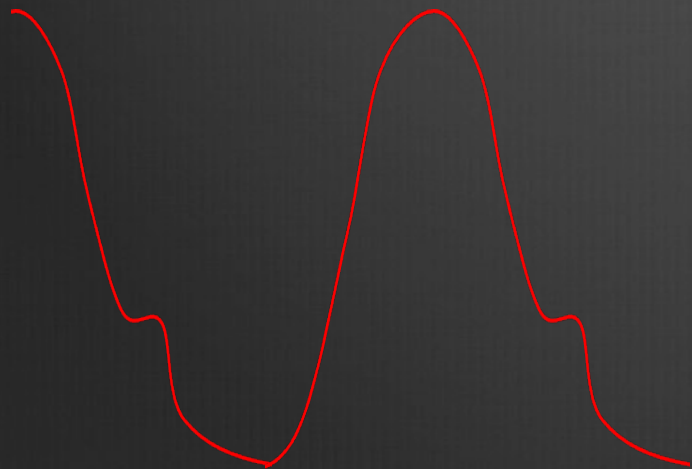
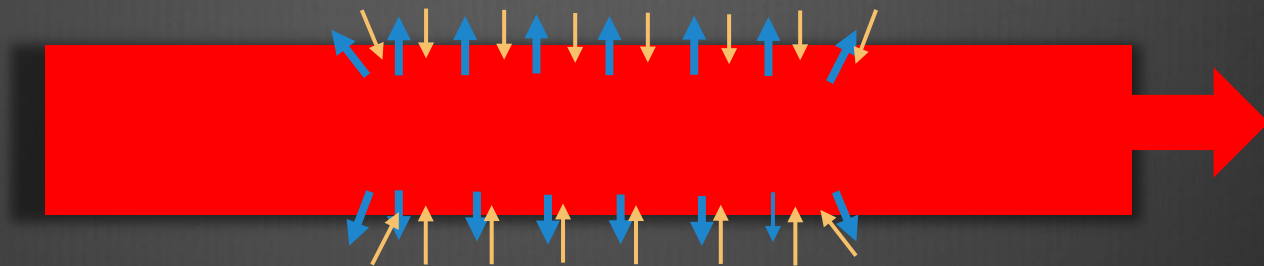


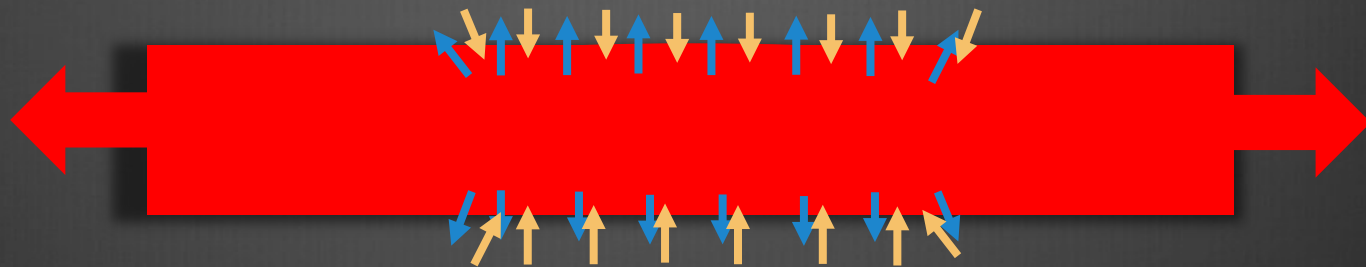
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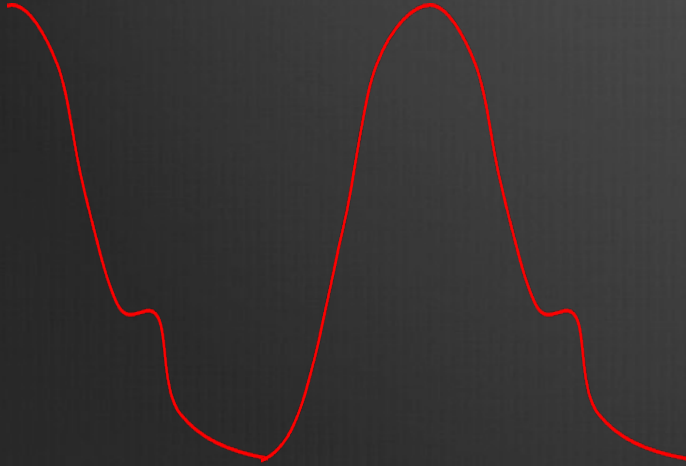
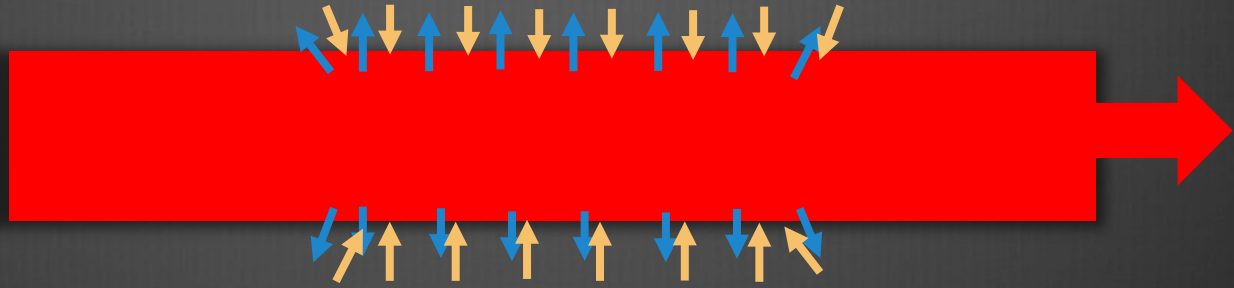
















# PAD

- ⊗ Facteurs constitutifs:

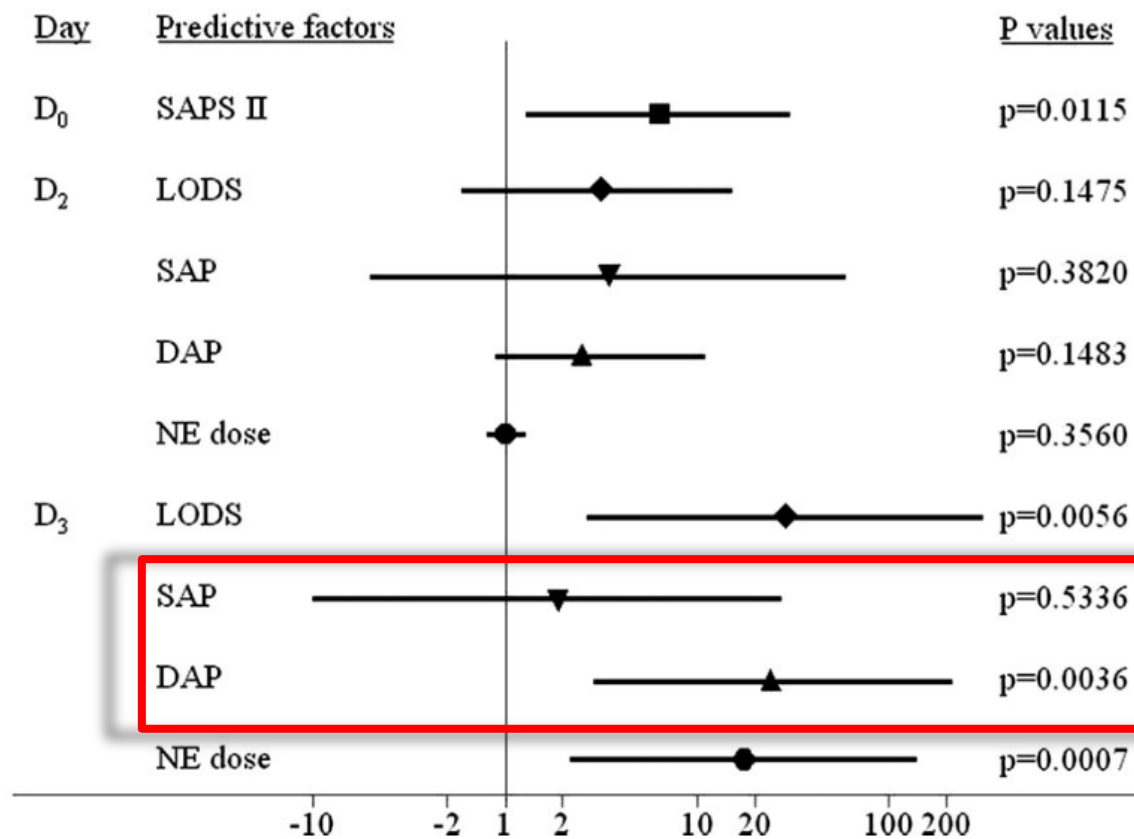
- ⊗ Rigidité artérielle

- ⊗ IAo majeure

- ⊗ Facteurs hémodynamiques:

- ⊗ Fc

- ⊗ Tonus vasculaire



organisée conjointement par  
la Sfar et la SRLF

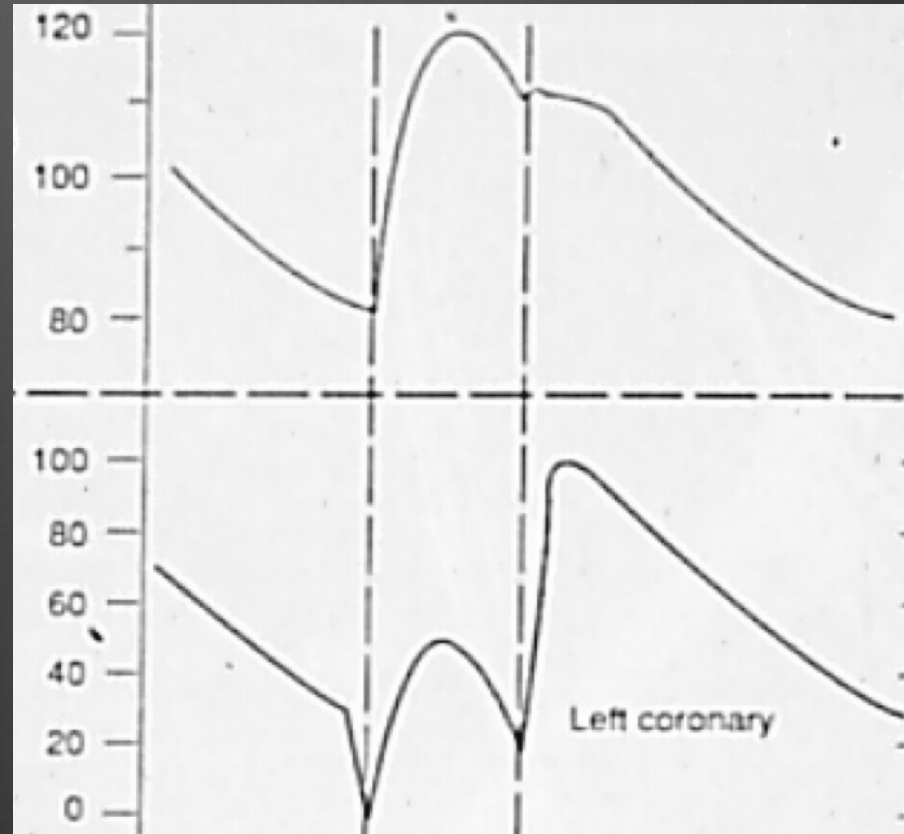
## Prise en charge hémodynamique du sepsis sévère (nouveau-né exclu)

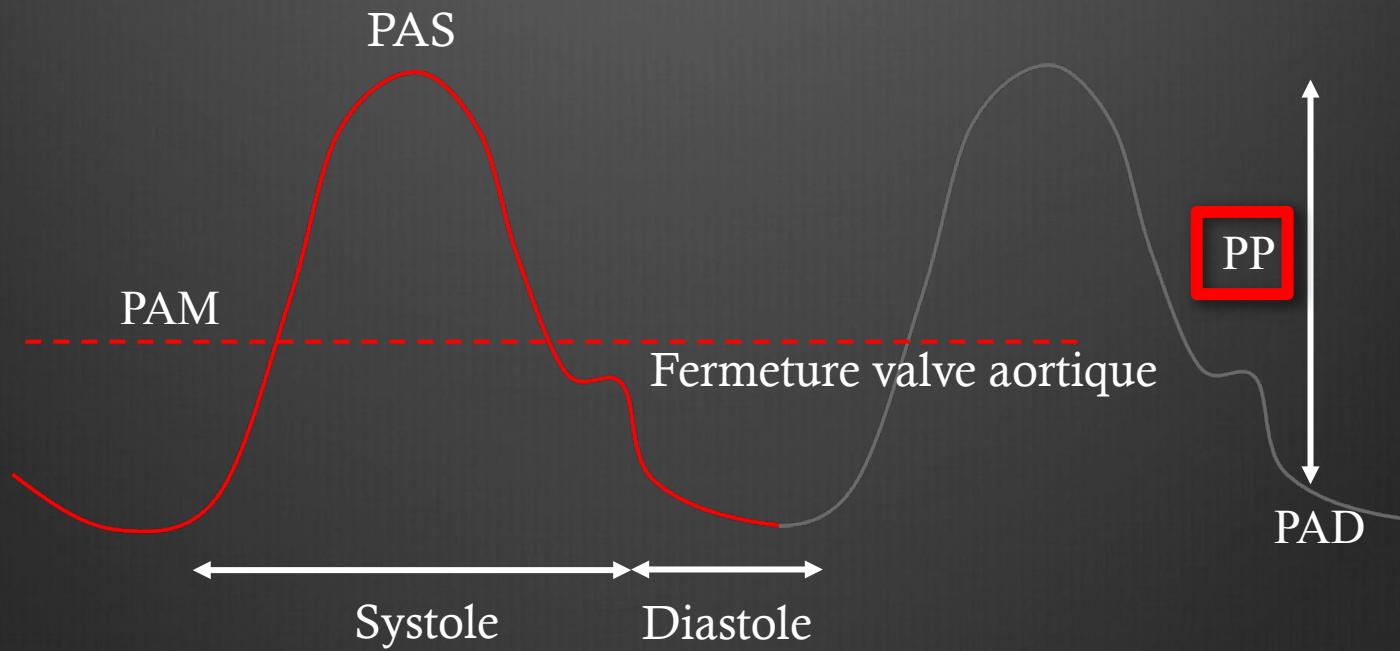
Jeudi 13 octobre 2005

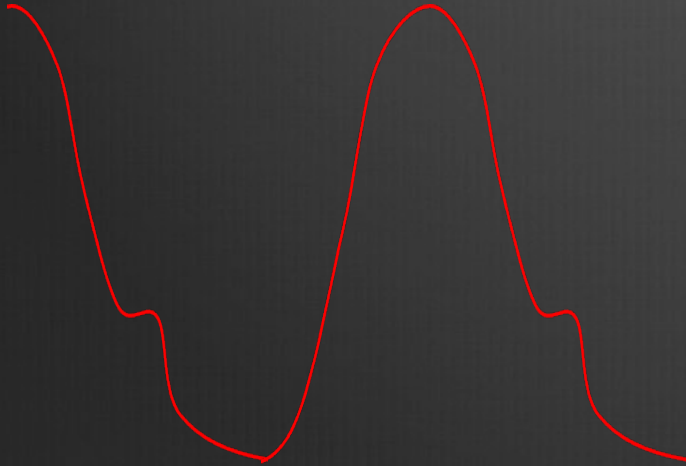
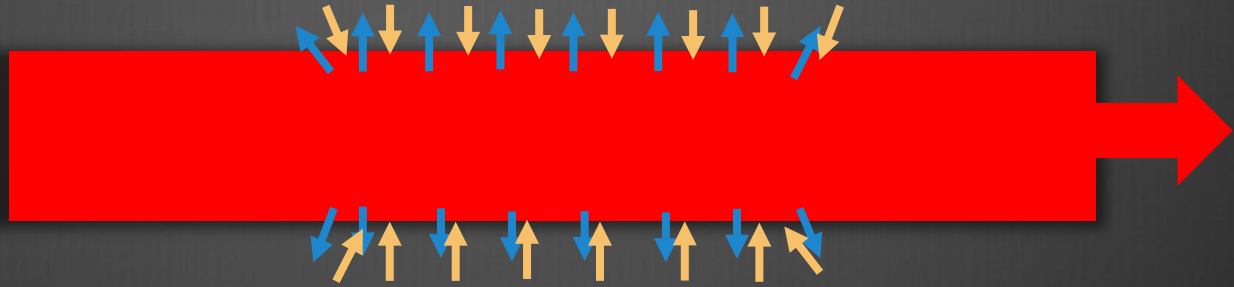
« Lorsque l'hypotension engage le pronostic vital (par exemple lorsque la PAD est  $< 40$  mmHg), le recours aux agents vasopresseurs doit être immédiat, quelle que soit la volémie. »

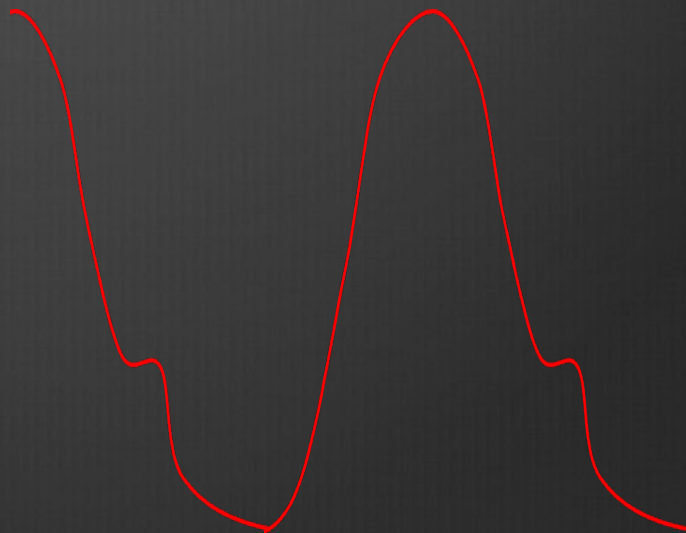
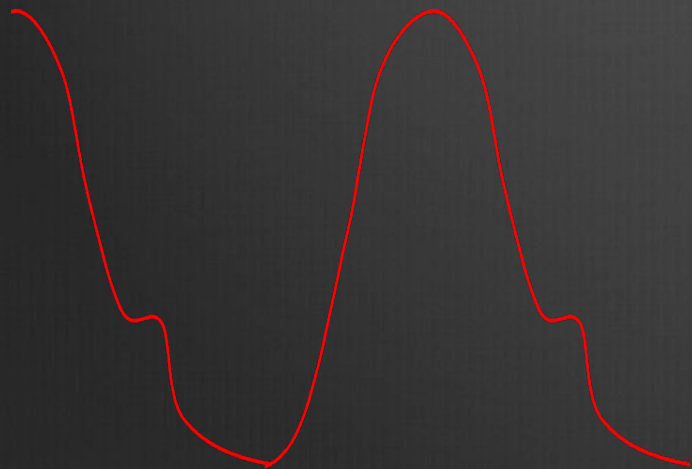
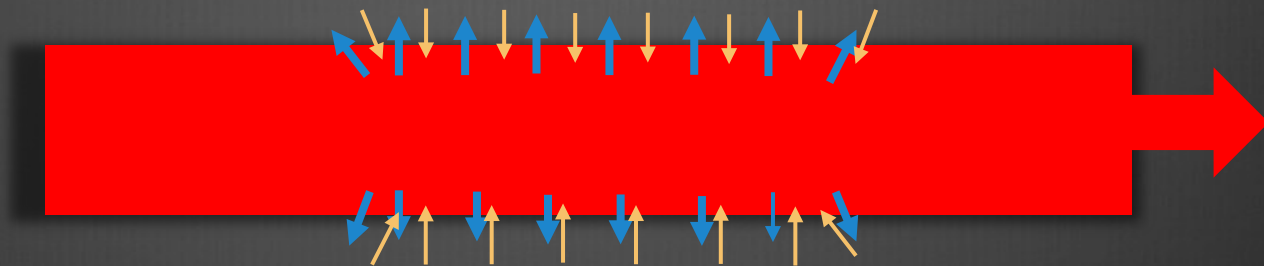
# PAD

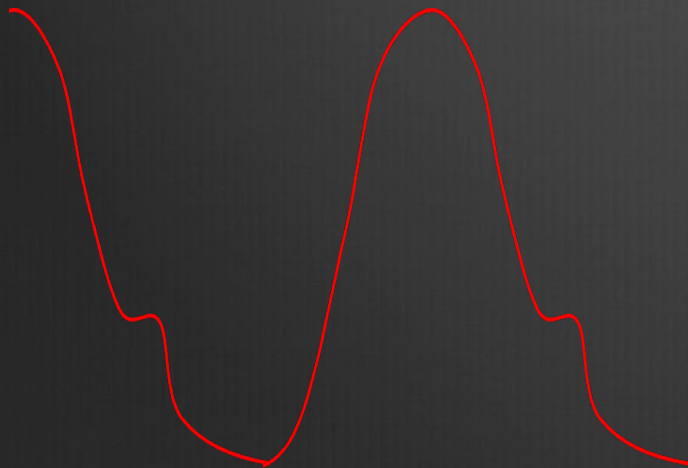
Pression de perfusion  
coronaire gauche

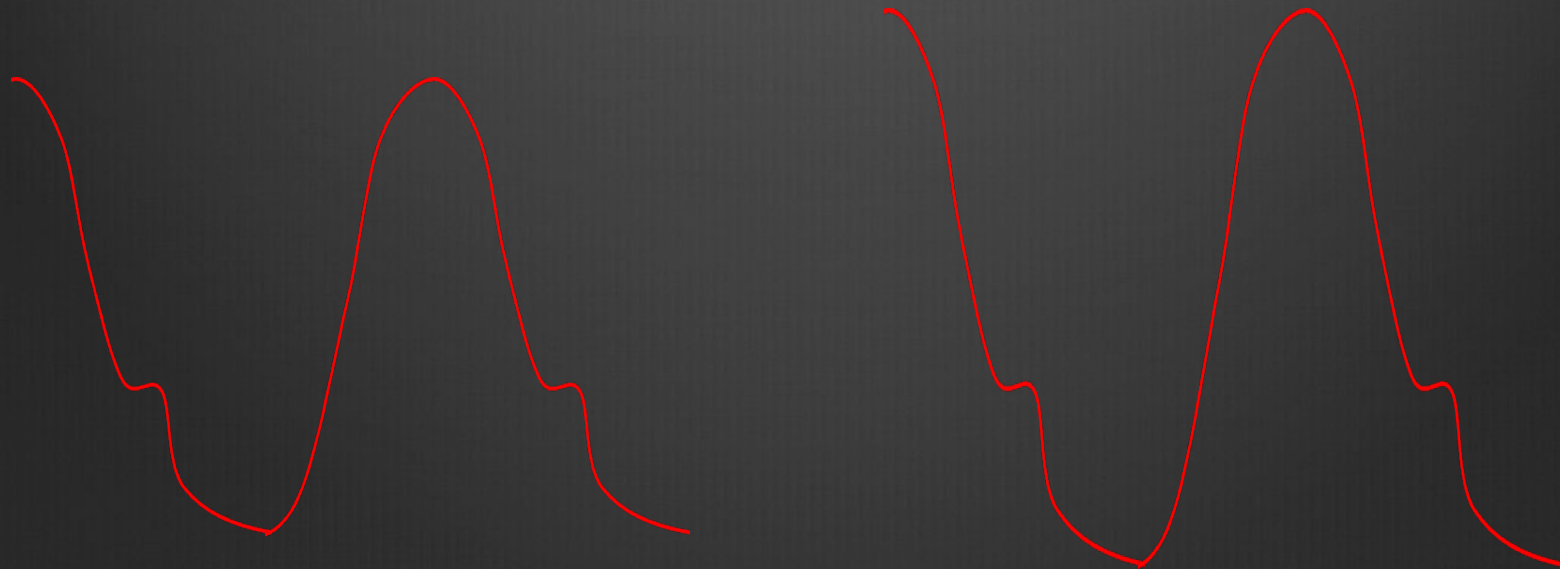












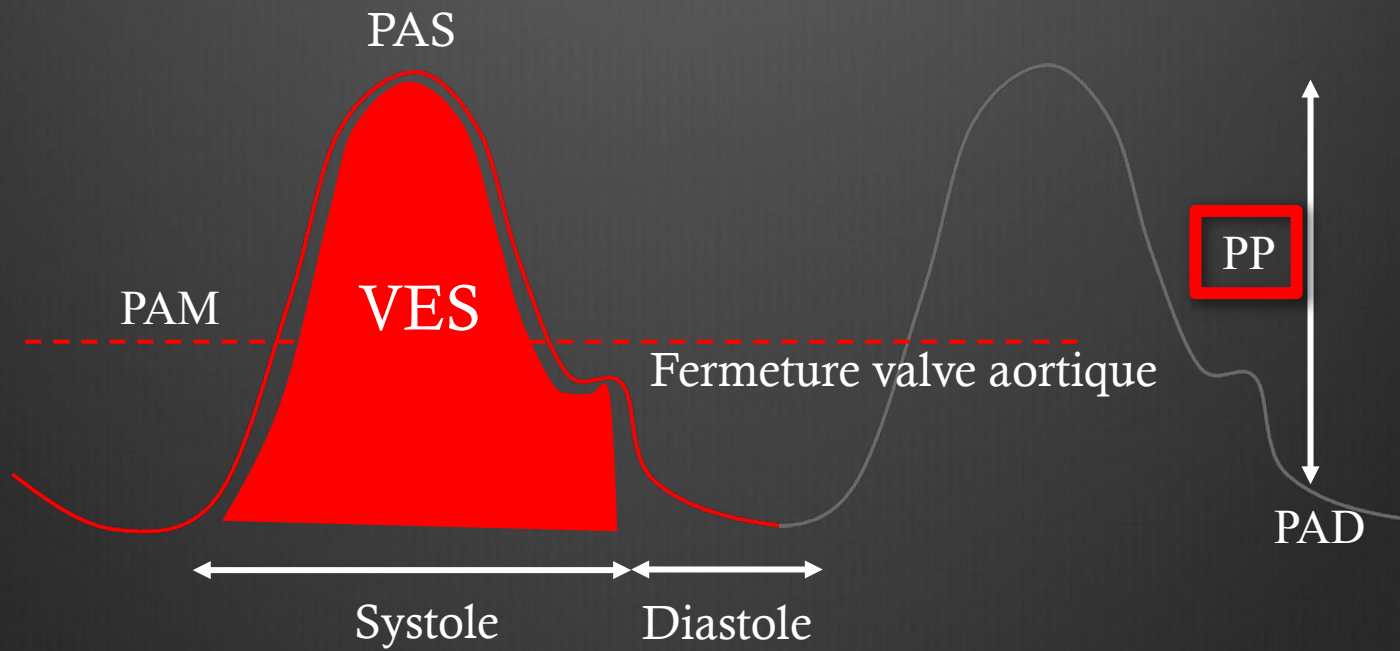
# PP

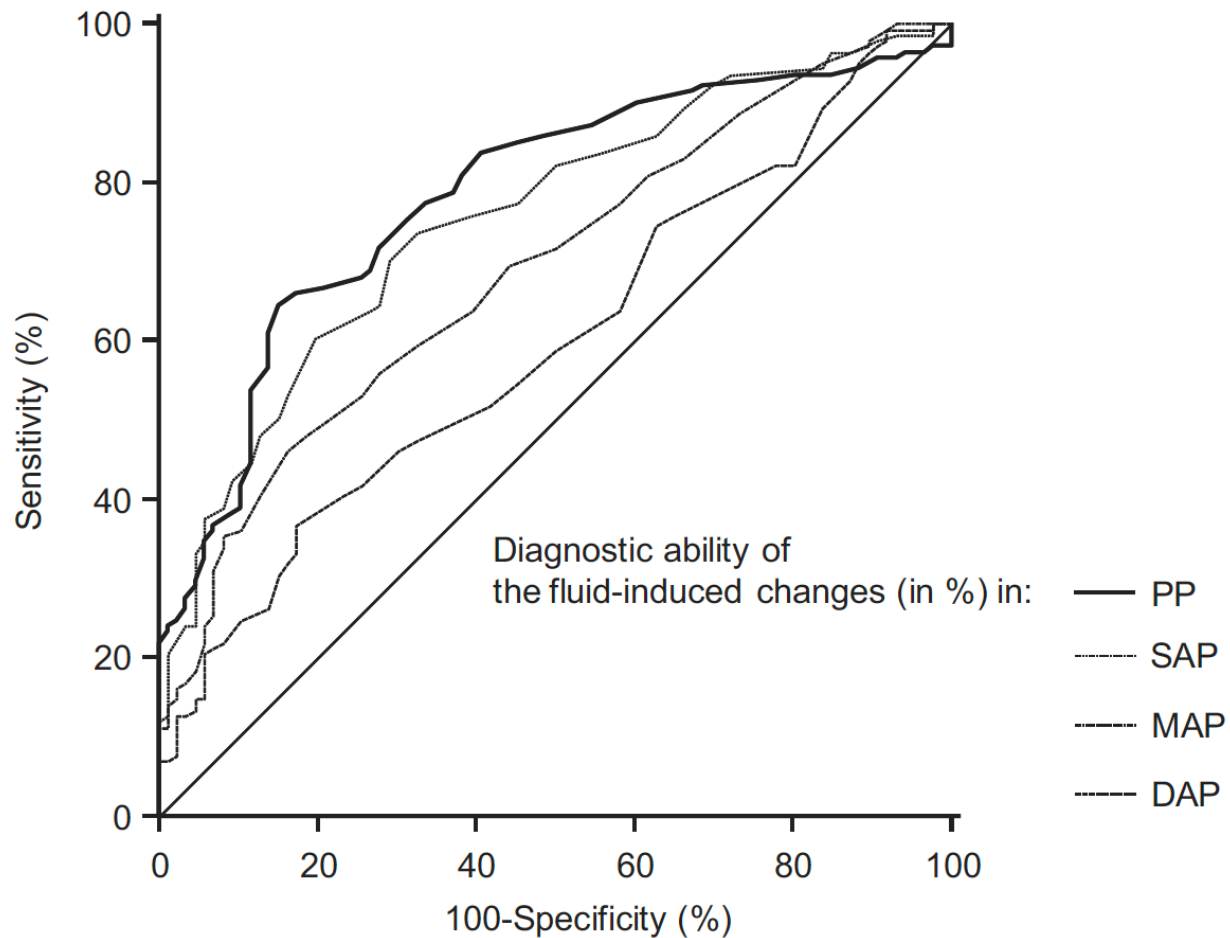
- ⊗ Facteur constitutif:

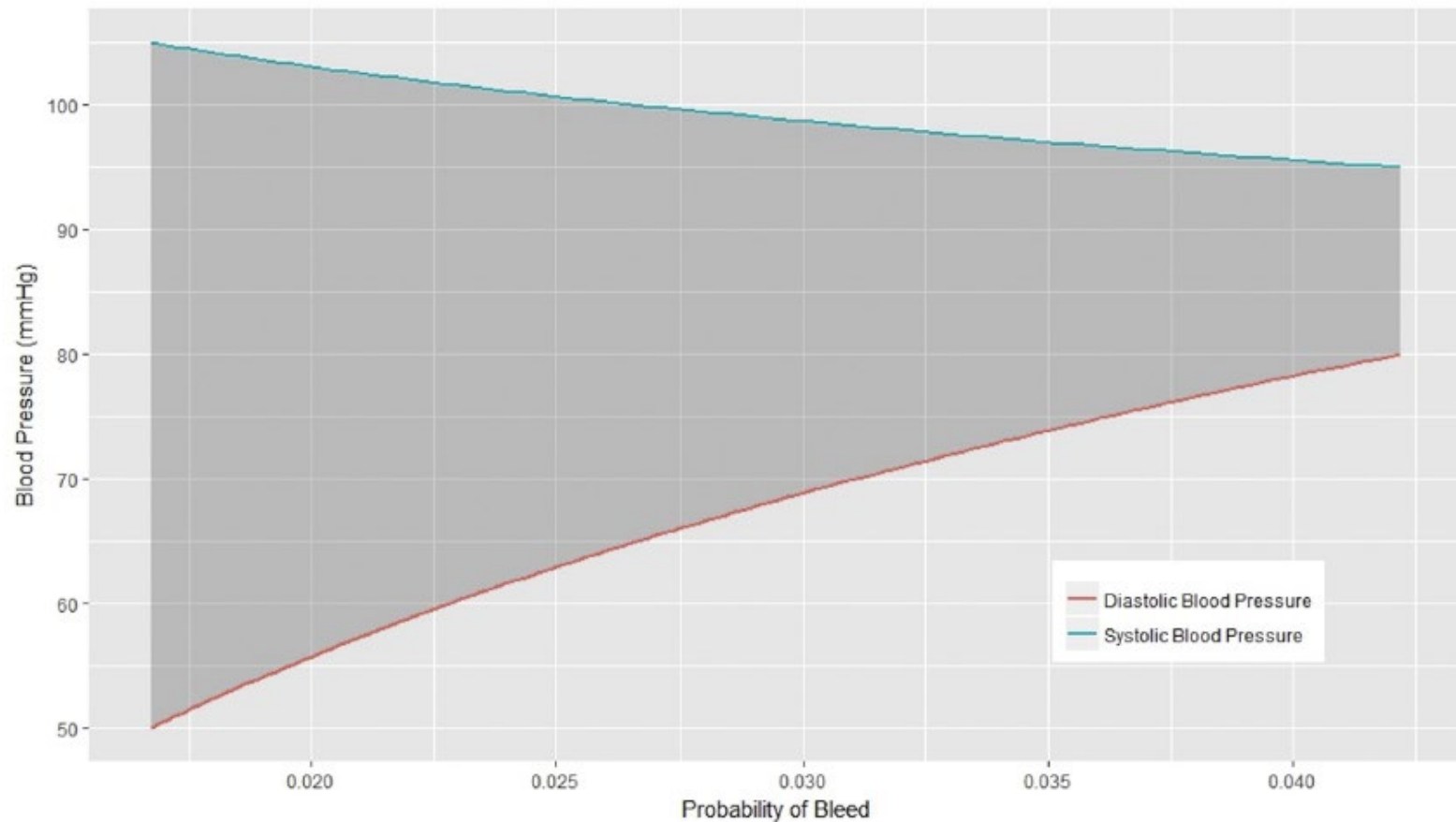
- ⊗ Rigidité artérielle

- ⊗ Facteur hémodynamique:

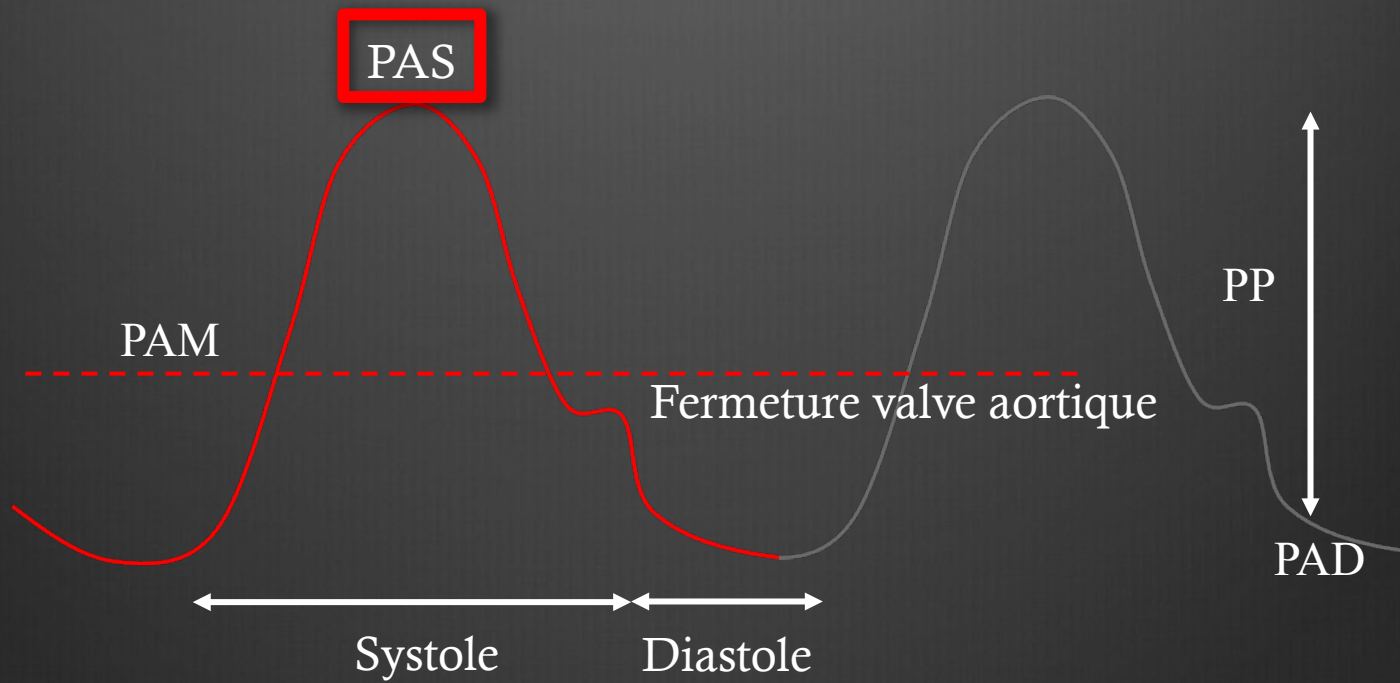
- ⊗ VES







**Figure 1.** Predicted probability of bleeding as a function of pulse pressure in all patients.



## Box 4. qSOFA (Quick SOFA) Criteria

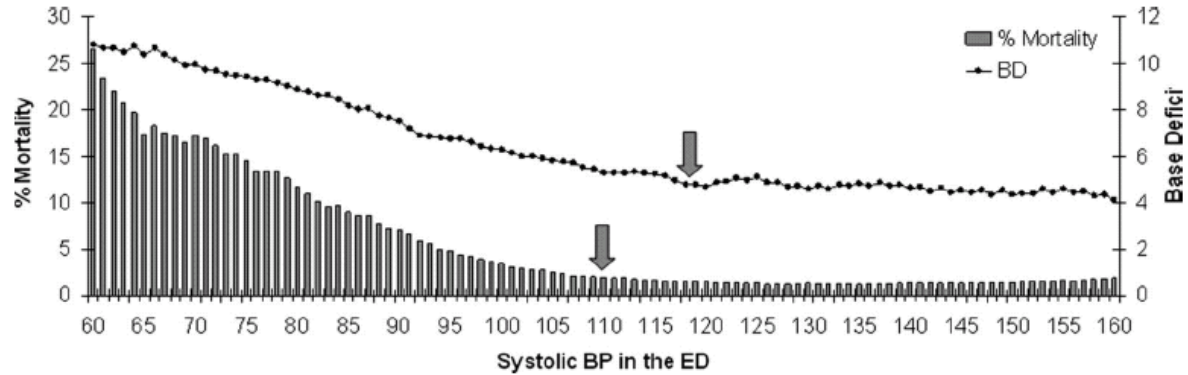
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Respiratory rate  $\geq 22/\text{min}$

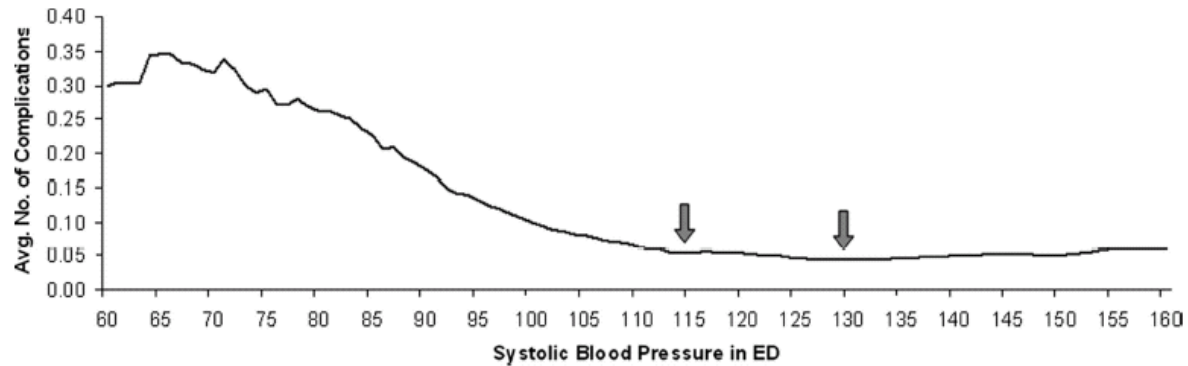
Altered mentation

Systolic blood pressure  $\leq 100$  mm Hg

# PAS - Pronostic



**Fig. 2.** SBP analysis (excluding traumatic brain injury).



**Fig. 3.** SBP analysis for complications.

| Pre-hospital criteria           | Coefficient | OR   | 95% CI    | <i>P</i> |
|---------------------------------|-------------|------|-----------|----------|
| Shock Index > 1                 | 1.32        | 3.76 | 2.96–4.78 | < 0.001  |
| Pelvic trauma                   | 1.32        | 3.76 | 2.68–5.28 | < 0.001  |
| Pre-hospital intubation         | 0.98        | 2.67 | 2.17–3.28 | < 0.001  |
| Capillary haemoglobin ≤ 13 g/dl | 0.92        | 2.51 | 2.05–3.08 | < 0.001  |
| MBP ≤ 70 mmHg                   | 0.87        | 2.38 | 1.88–3.02 | < 0.001  |
| Oxygen saturation minimal ≤ 90% | 0.59        | 1.79 | 1.35–2.39 | < 0.001  |
| Age > 50 years                  | 0.42        | 1.52 | 1.21–1.92 | < 0.001  |

# Définition hypotension artérielle

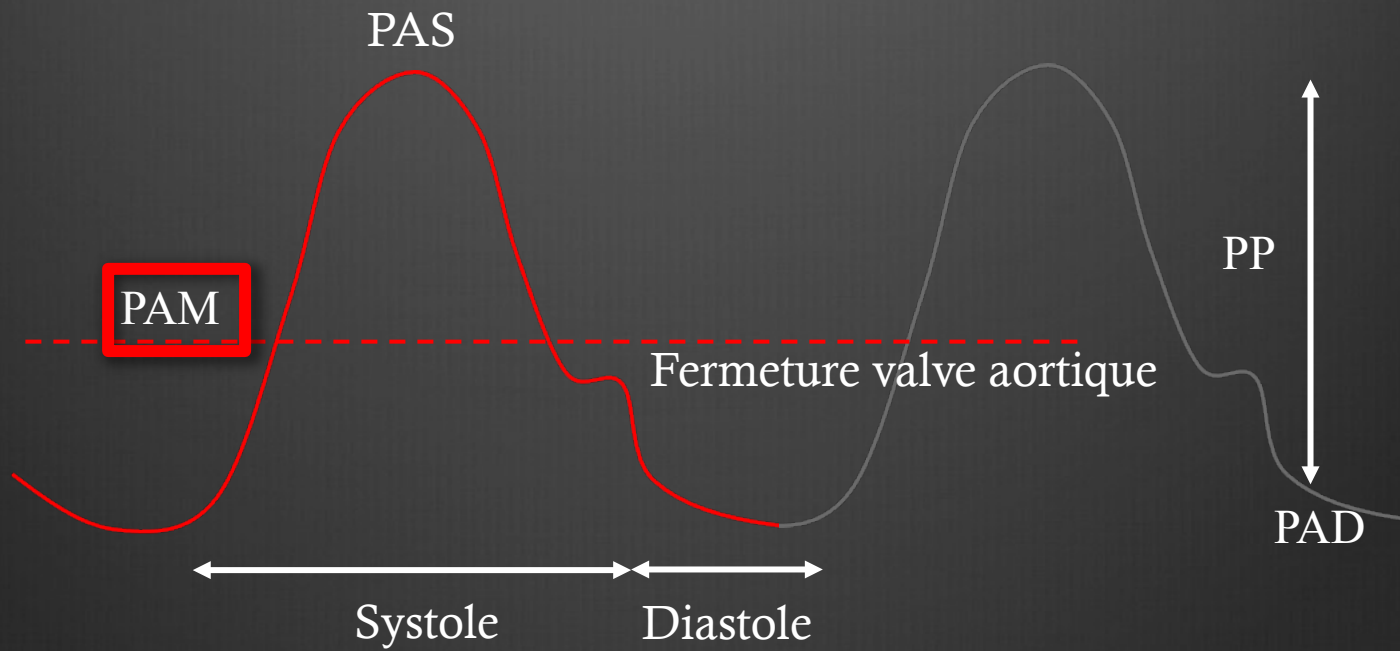
PAS < 90 mmHg

ou

PAM < 60 mmHg

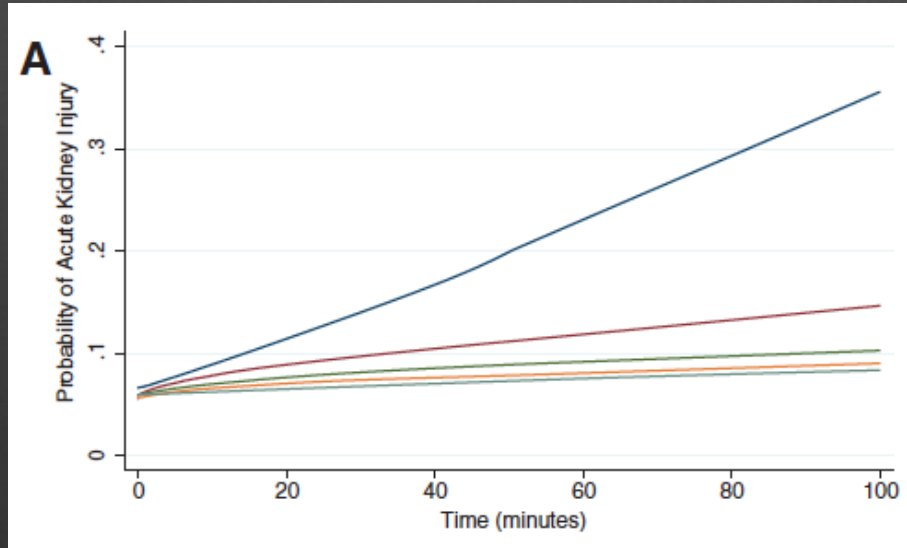
ou

Diminution de 40 mmHg de PAS



# PAM – Perfusion d'organe

## Insuffisance rénale



— MAP < 55 mmHg      — MAP 55 to 59 mmHg      — MAP 60 to 64 mmHg  
— MAP 65 to 69 mmHg      — MAP 70 to 74 mmHg

# Définition hypotension artérielle

PAS < 90 mmHg

ou

PAM < 60 mmHg

ou

Diminution de 40 mmHg de PAS

Maurizio Cecconi  
Daniel De Backer  
Massimo Antonelli  
Richard Beale  
Jan Bakker  
Christoph Hofer  
Roman Jaeschke  
Alexandre Mebazaa  
Michael R. Pinsky  
Jean Louis Teboul  
Jean Louis Vincent  
Andrew Rhodes

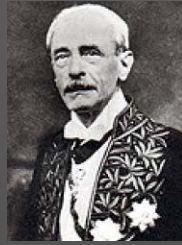
## **Consensus on circulatory shock and hemodynamic monitoring. Task force of the European Society of Intensive Care Medicine**

22. We recommend to initially target a MAP of  $\geq 65$  mmHg

## Recommendation

9. For adults with septic shock on vasopressors, we **recommend** an initial target mean arterial pressure (MAP) of 65 mm Hg over higher MAP targets

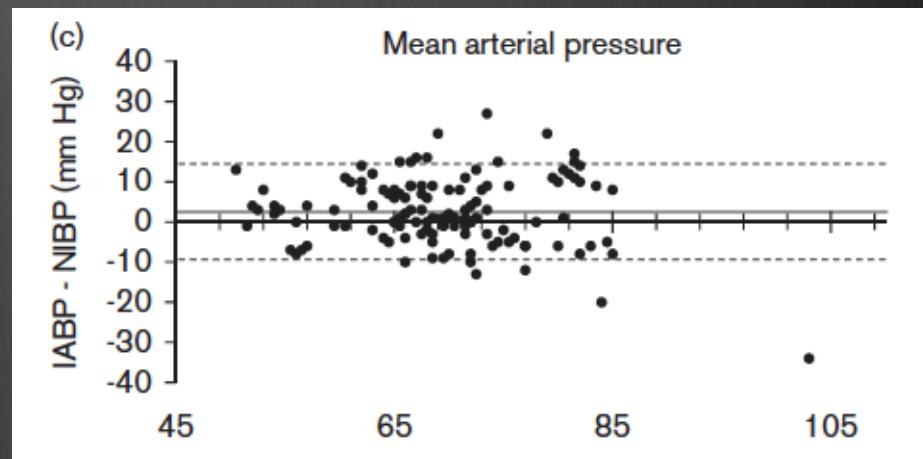
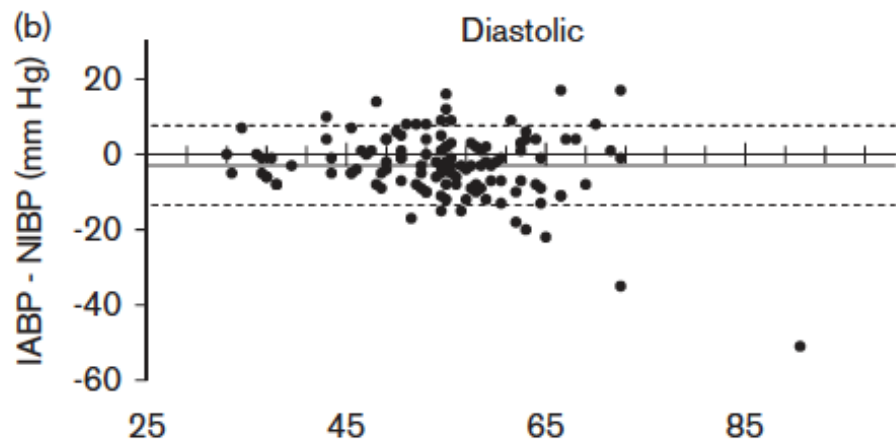
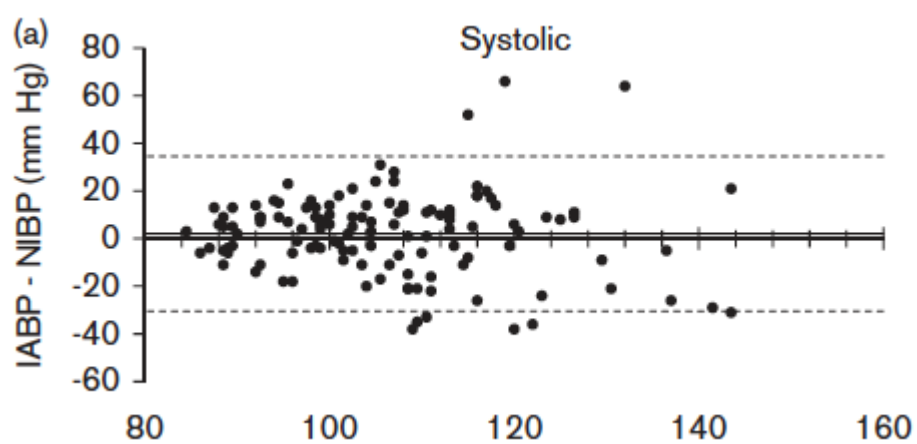
*Strong recommendation, moderate-quality evidence*

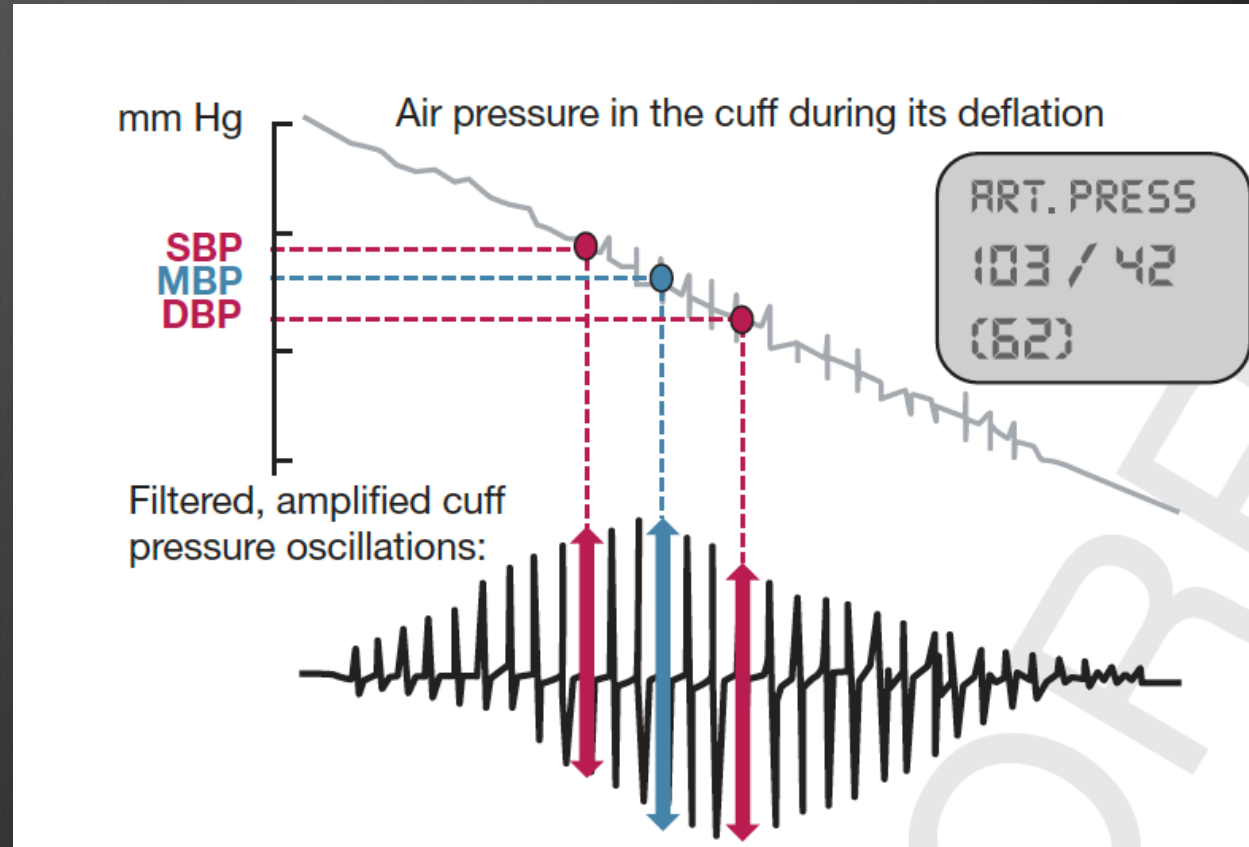
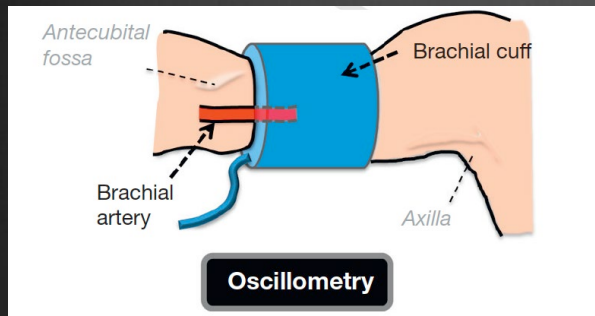


Un fait mal observé est plus perfide  
qu'un mauvais raisonnement

Paul Valéry







Mean and diastolic BP measurements are often accurate and precise with modern NIBP devices. Mean BP readings should be preferred over systolic BP to guide therapy.

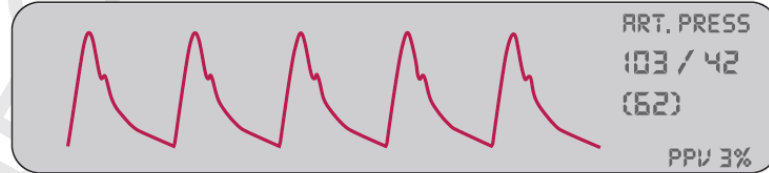
NIBP reliably identifies hypotensive (mean BP <65 mm Hg or systolic BP <90 mm Hg) and hypertensive patients (mean BP >140 mm Hg).

Arm NIBP reliably tracks therapy-induced changes in BP (>10% increase in mean BP).

Even in specific circumstances such as arrhythmia (provided that triplicates are averaged), hypotension, vasopressor infusion and possibly in obese patients (provided that the cuff is carefully selected), arm NIBP could be useful.

NIBP measurements are less accurate if the cuff is placed at the ankle or the thigh rather than at the arm.

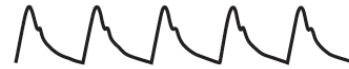




Reconstruction of the brachial or radial BP waveform

Algorithm using arm cuff calibration (CNAP) or not (Nexfin ClearSight)

Algorithm without external calibration (T-line)



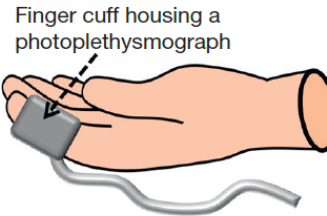
Finger BP waveform



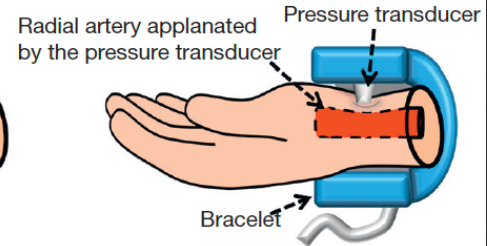
Unscaled radial BP waveform

Pressure in the finger cuff (keeping the photoplethysmograph signal and thus finger volume constant)

Arterial wall tension signal attenuated by the surrounding tissue



Volume-clamp



Applanation tonometry

# Etats de choc: 4 modèles

**Bas débit**

Cardiogénique

Hypovolémique

Obstructif

PP < 40 mmHg

**Haut débit**

Distributif

PAD < 40 mmHg



# Etats de choc: 4 modèles

**Bas débit**

Cardiogénique

Hypovolémique

Obstructif

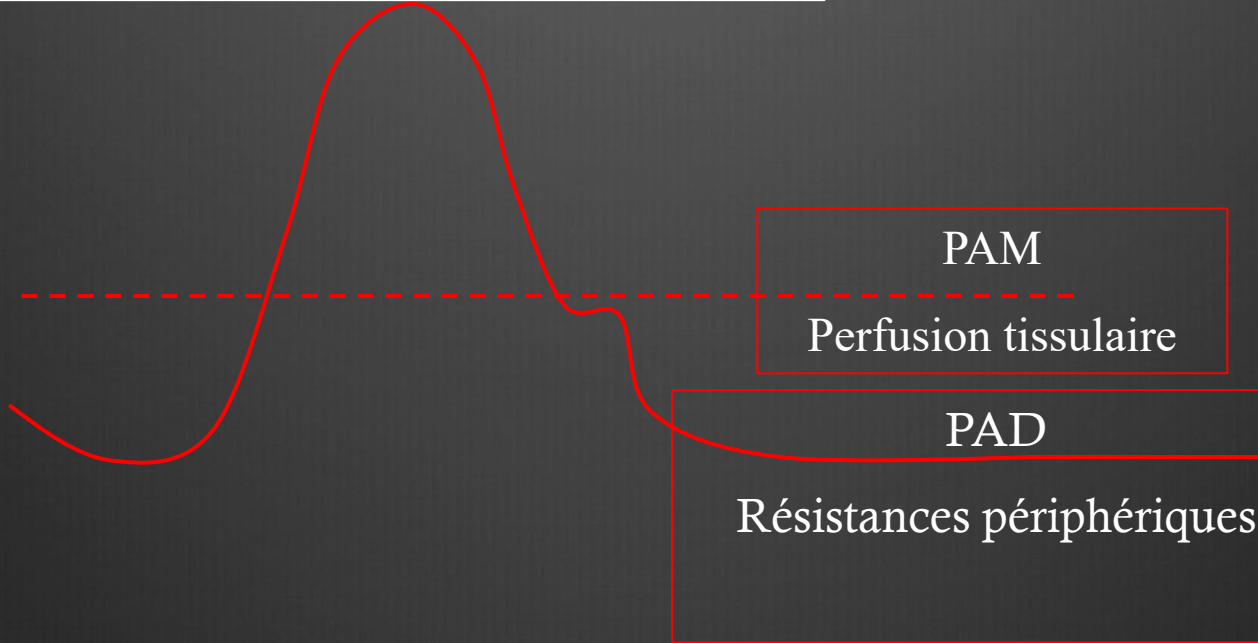
PP < 40 mmHg

**Haut débit**

Distributif

PAD < 40 mmHg

PAS – Pronostic



PP  
VES

