Quel Niveau de Pression Artérielle au Bloc Opératoire ?

Pr Matthieu Biais

Service d'Anesthésie et de Réanimation

Hôpital Pellegrin, CHU de Bordeaux

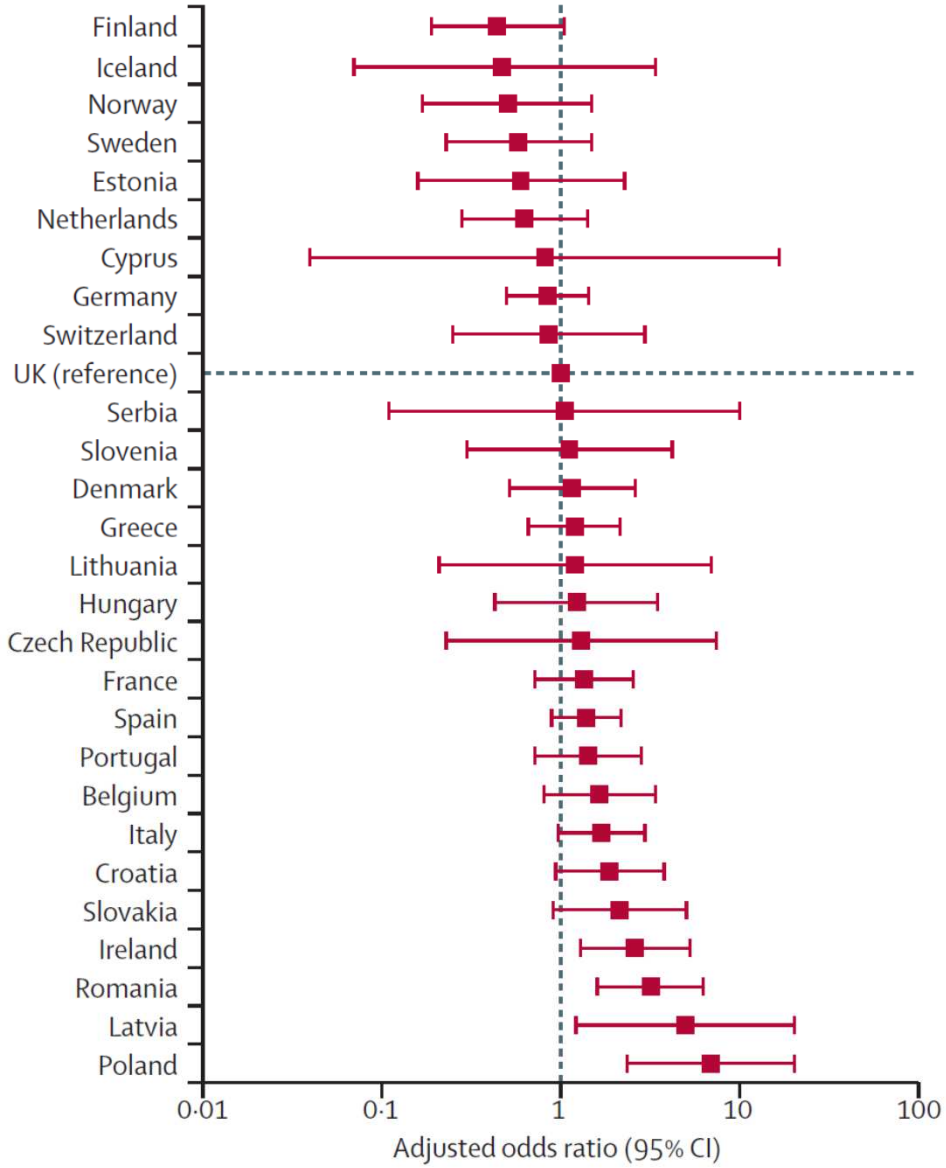
Liens d’Intérêt

- **Conférences**
  - **Edwards Lifesciences**
  - **Maquet Critical Care**

La Pression Artérielle

- **Les enjeux**

Mortality after surgery in Europe: a 7 day cohort study

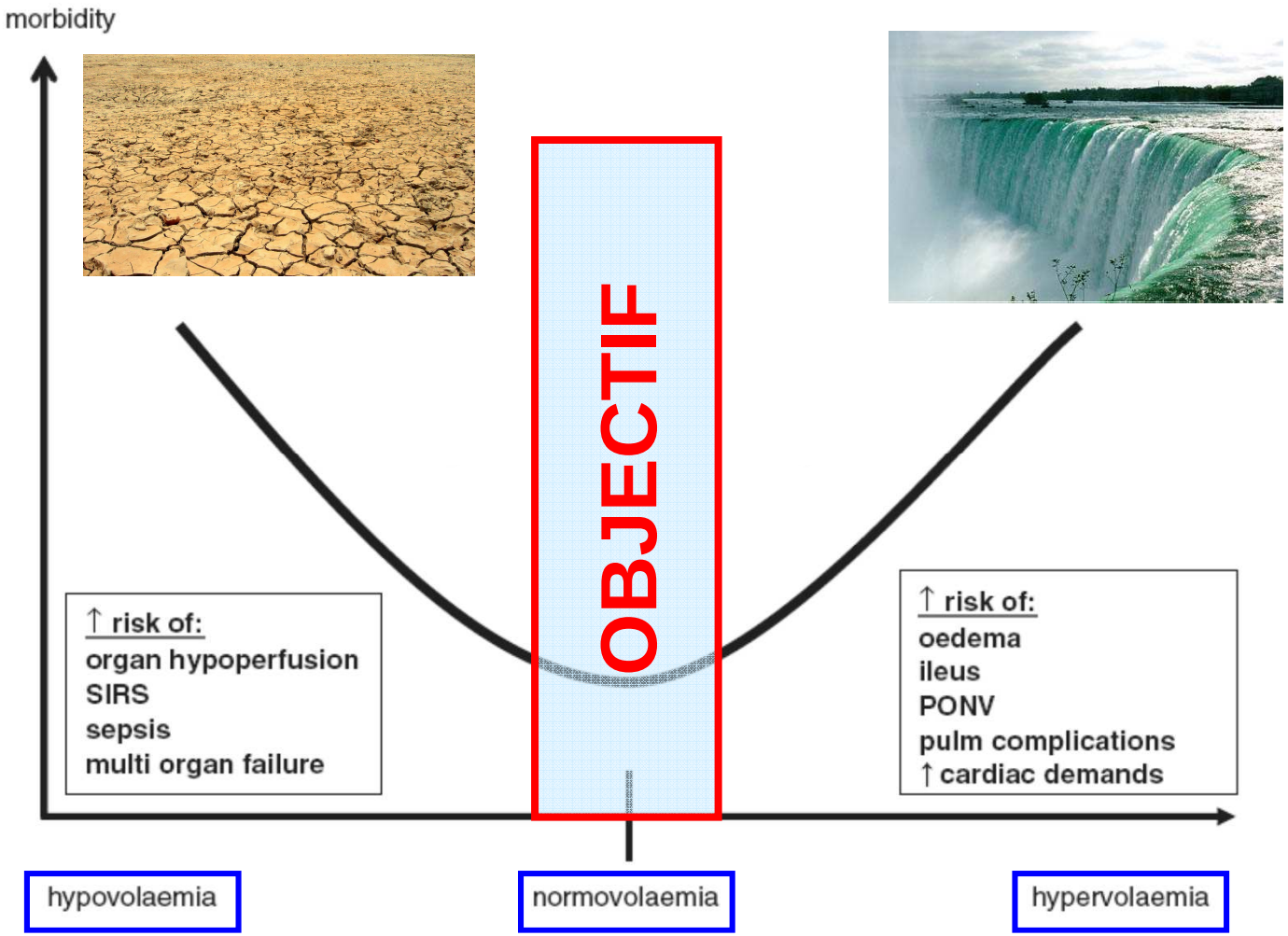


Mortalité postopératoire en Europe

UK : 3.6% [3.2-3.9]
FINLAND : 2.0% [1.1-2.8]
BELGIUM : 3.2% [2.3-4.1]
FRANCE : 3.2% [2.5-3.9]

Pearse et al. Lancet 2012

Relation Volémie-Morbidité



Bellamy M C Br J Anaesth 2006

RFE Sfar-Adarpef

Stratégie du remplissage vasculaire péri-opératoire

Coordinateur - Comité des Référentiels : ***Benoit Vallet***

Comité d'Organisation

Yvonnick Blanloeil, Bernard Cholley, Gilles Orliaguet, Sébastien Pierre, Benoit Tavernier

Experts

Karim Asehnoune, Matthieu Biais, Olivier Collange, Souhayl Dahmani, Olivier Desebbe, Pascale Dewachter, Jacques Duranteau, Jean-Luc Fellahi, Emmanuel Futier, Thomas Geeraerts, Anne Godier, Olivier Joannes-Boyau, Gilles Lebuffe, Corinne Lejus, Dan Longrois, Frederic Mercier, Alexandre Mignon, Yves Ozier, Ivan Philip, Lionel Velly, Eric Wodey

Chargés de bibliographie

Adrien Bouglé, Grégory Dubar, Talna Kortchinsky

Stratégie du remplissage vasculaire périopératoire ☆

Guidelines for perioperative haemodynamic optimization

Recommandation I

Chez les patients chirurgicaux considérés « à haut risque », il est recommandé de titrer le remplissage vasculaire per-opératoire en se guidant sur une mesure du volume d'éjection systolique (VES) dans le but de réduire la morbidité postopératoire, la durée de séjour hospitalier, et le délai de reprise d'une alimentation orale des patients de chirurgie digestive. **GRADE 1+.**

Vallet et al. Ann Fr Anesth Réanim 2013

Stratégie du remplissage vasculaire périopératoire ☆

Guidelines for perioperative haemodyna[illegible]c optimization

Recommandation

Chez les patients chiru[illegible]érés « à haut risque », il est recommandé [illegible]remplissage vasculaire per-opératoire [illegible] sur une mesure du volume d'éjectio[illegible]ES) dans le but de réduire la morbidité postop[illegible] durée de séjour hospitalier, et le délai de reprise [illegible] alimentation orale des patients de chirurgie digestive. **GRADE 1+.**

Et la PAM ????

Vallet et al. Ann Fr Anesth Réanim 2013

Restrictive versus Liberal Fluid Therapy for Major Abdominal Surgery

Chirurgie Abdominale majeure > 2 heures

Patients : 70 ans, Cardioapthie, Diabète, Dysfunction rénale, Obésité

Myles et al. N Engl J Med 2018

Restrictive versus Liberal Fluid Therapy for Major Abdominal Surgery

	Libéral n=1493	Restrictif n=1490
Induction	10 ml/kg	5 ml/kg
Peropératoire	8 ml/kg/h	5 ml/kg/h
Saignement	Compensation par colloïdes et ou CGR	
Postopératoire	1,5 ml/kg/h	0,8 ml/kg/h

Myles et al. N Engl J Med 2018

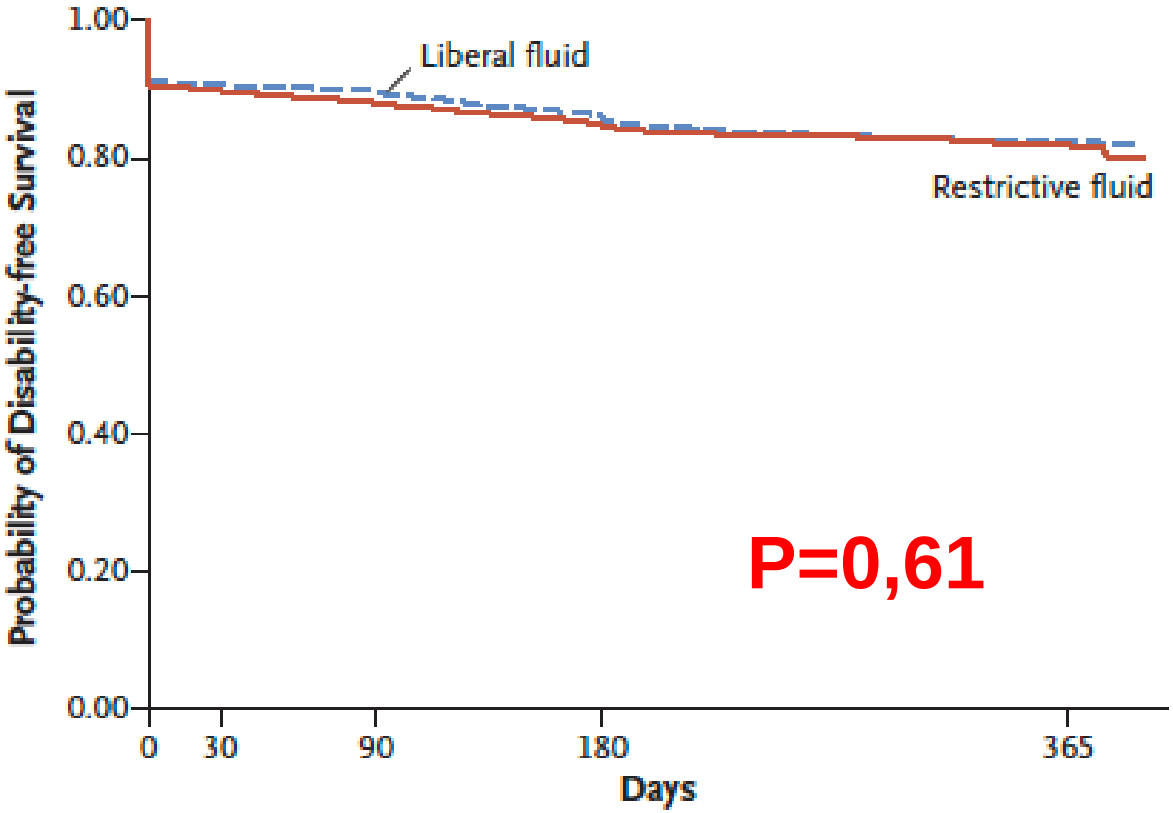
Restrictive versus Liberal Fluid Therapy for Major Abdominal Surgery

	Libéral n=1493	Restrictif n=1490
Ind		
Per		
Sai		R
Postopératoire	1,5 ml/kg/h	0,8 ml/kg/h

Critère de jugement principal
Survie sans incapacité à un an

Myles et al. N Engl J Med 2018

Restrictive versus Liberal Fluid Therapy for Major Abdominal Surgery

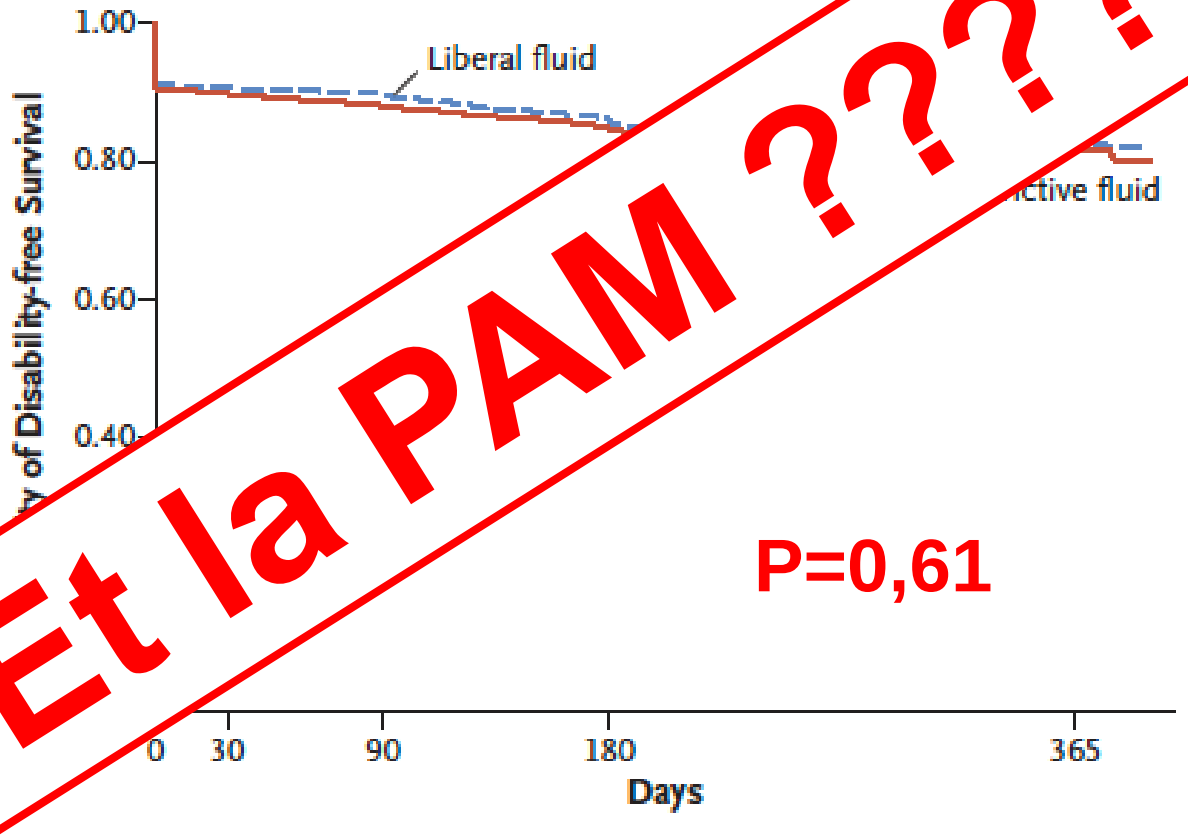


No. at Risk

Liberal fluid	1493	1343	1320	1249	859
Restrictive fluid	1490	1323	1292	1228	835

Myles et al. N Engl J Med 2018

Restrictive versus Liberal Fluid Therapy for Major Abdominal Surgery



Et la PAM ????

P=0,61

No. at Risk

Liberal fluid	1493	1343	1320	1249	859
Restrictive fluid	1490	1323	1292	1228	835

Myles et al. N Engl J Med 2018

La Pression Artérielle

- **Les enjeux**
- **Impact de l’hypotension artérielle**

Anesthetic Management and One-Year Mortality After Noncardiac Surgery

Etude observationnelle, 1064 patients chirurgie non cardiaque sous AG

Table 4. Multivariate Predictors of 1-yr Postoperative Mortality

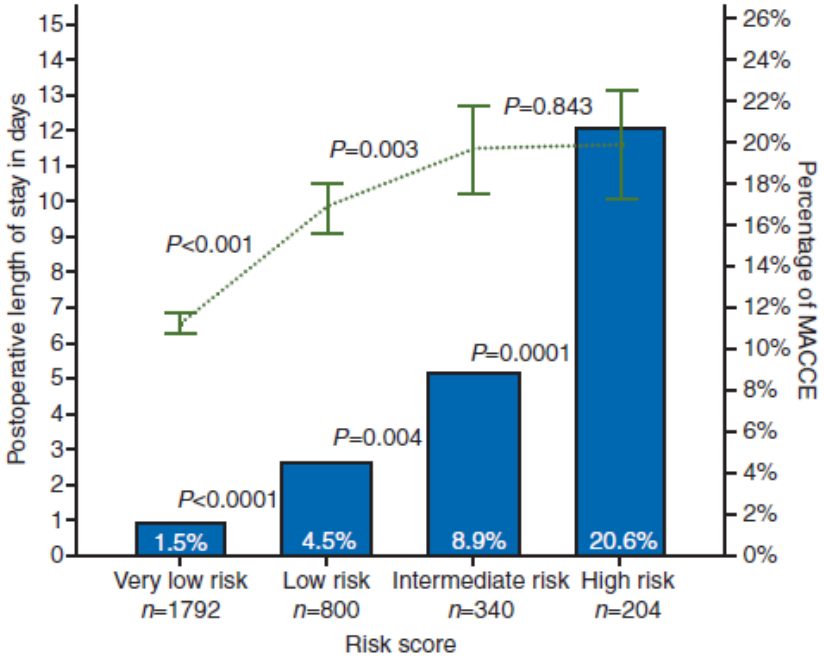
Predictor	Relative risk (odds ratio) [bootstrapped 95% CI]	*P* value
Charlson Comorbidity Score (3+ versus 0–2)	16.116 (10.110–33.717)	<0.0001
Cumulative deep hypnotic time (per h)	1.244 (1.062–1.441)	0.0121
Systolic blood pressure <80 mm Hg (per min)	1.036 (1.006–1.066)	0.0125

Monk et al. Anesth Analg 2005

Incidence and predictors of major perioperative adverse cardiac and cerebrovascular events in non-cardiac surgery

S. Sabaté[1*], A. Mases[2], N. Guilera[3], J. Canet[4], J. Castillo[5], C. Orrego[6], A. Sabaté[7], G. Fita[8], F. Parramón[10], P. Paniagua[11], A. Rodríguez[3] and M. Sabaté[9], on behalf of the ANESCARDIOCAT Group[†]

	Bivariate analysis [OR (95% CI)], *n*=3387
History of coronary artery disease	3.9 (2.6–5.7)
History of chronic congestive heart failure	4.3 (2.8–6.6)
Chronic kidney disease	4.2 (2.8–6.4)
History of cerebrovascular disease	3.2 (2.1–5.02)
Abnormal ECG	3.7 (2.5–5.3)
Intraoperative hypotension	3.4 (2.3–5.01)
RBC transfusion	3.8 (2.7–4.4)



Hypotension artérielle per-opératoire

=

Augmentation du risque rénal, cardiaque et neurologique

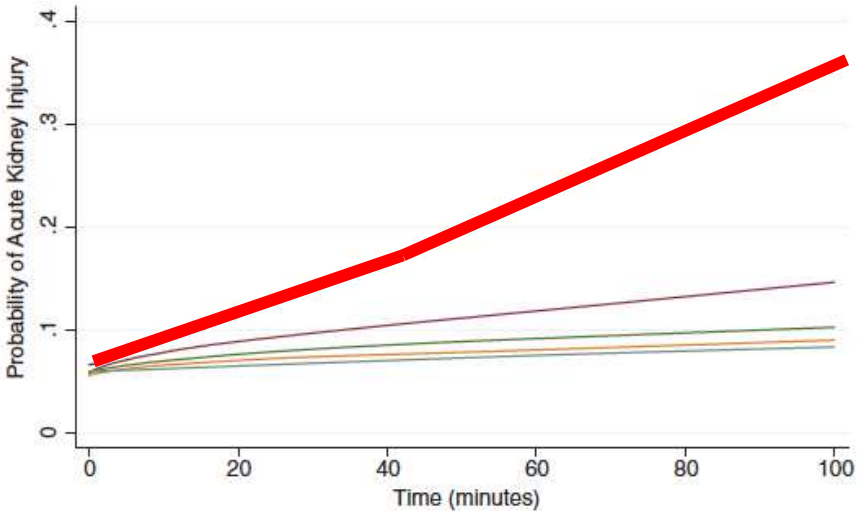
Sabaté et al. Br J Anaesth 2011

Relationship between Intraoperative Mean Arterial Pressure and Clinical Outcomes after Noncardiac Surgery

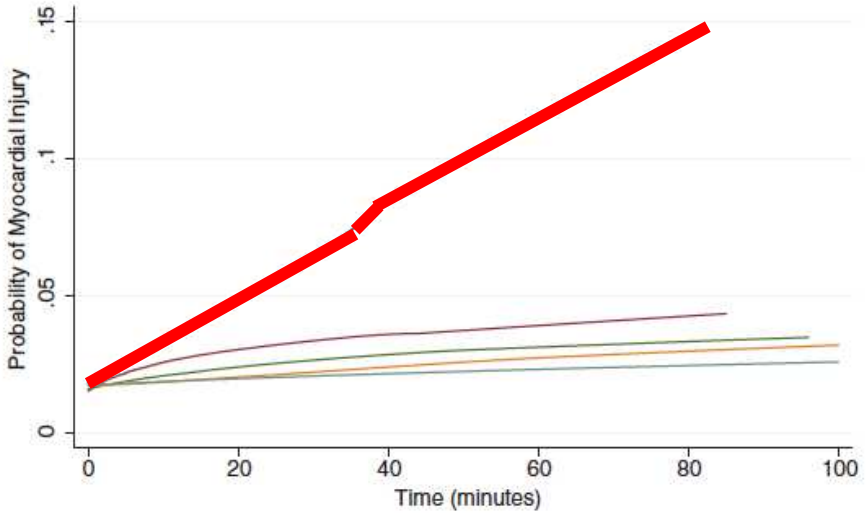
Toward an Empirical Definition of Hypotension

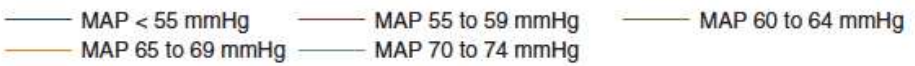
33,330 patients, chirurgie non cardiaque (Cleveland, Ohio)

Probabilité d'IRA



Probabilité d'Ischémie Myocardique





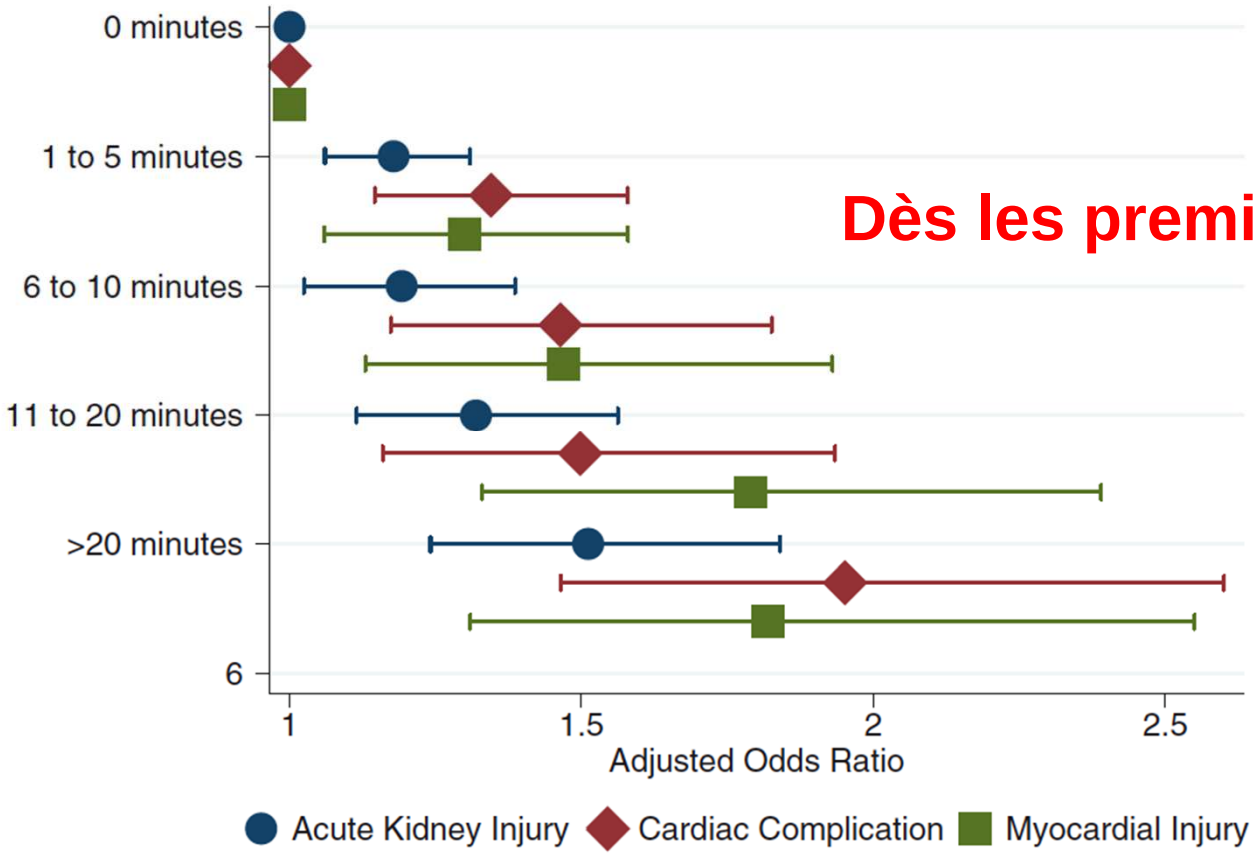
Hypotension artérielle = augmentation risque IRA et IDM

Walsh M et al. Anesthesiology 2013

Relationship between Intraoperative Mean Arterial Pressure and Clinical Outcomes after Noncardiac Surgery

Toward an Empirical Definition of Hypotension

33,330 patients, chirurgie non cardiaque (Cleveland, Ohio)

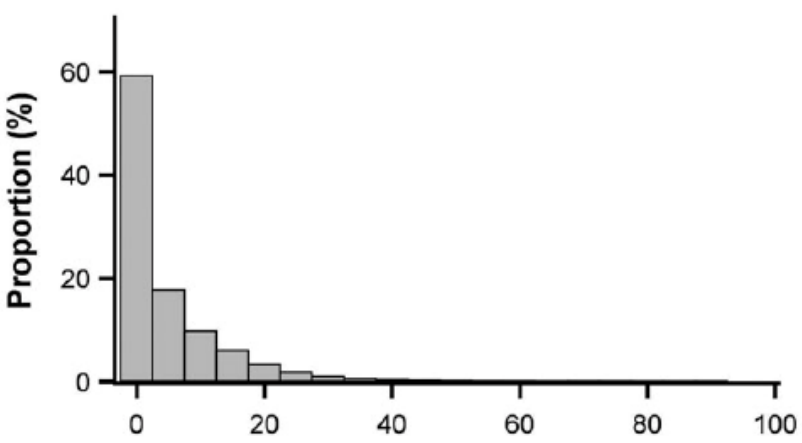


Dès les premières minutes !!!

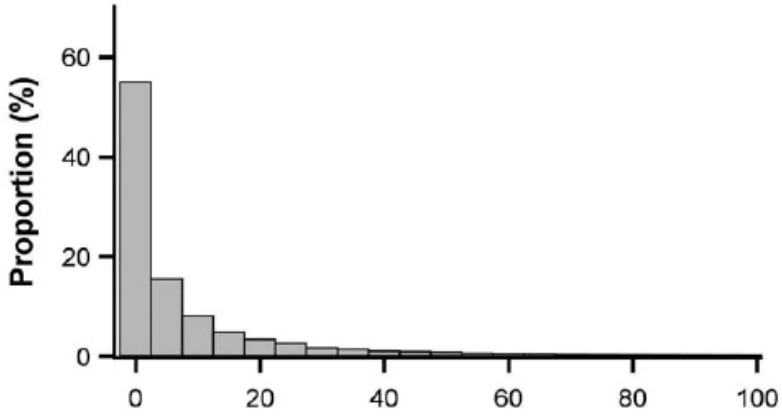
Walsh M et al. Anesthesiology 2013

The association of hypotension during non-cardiac surgery, before and after skin incision, with postoperative acute kidney injury: a retrospective cohort analysis

42825 patients, chirurgie non cardiaque
Relation hTA avant ou après incision et IRA



Avant Incision
22569 patients
53%

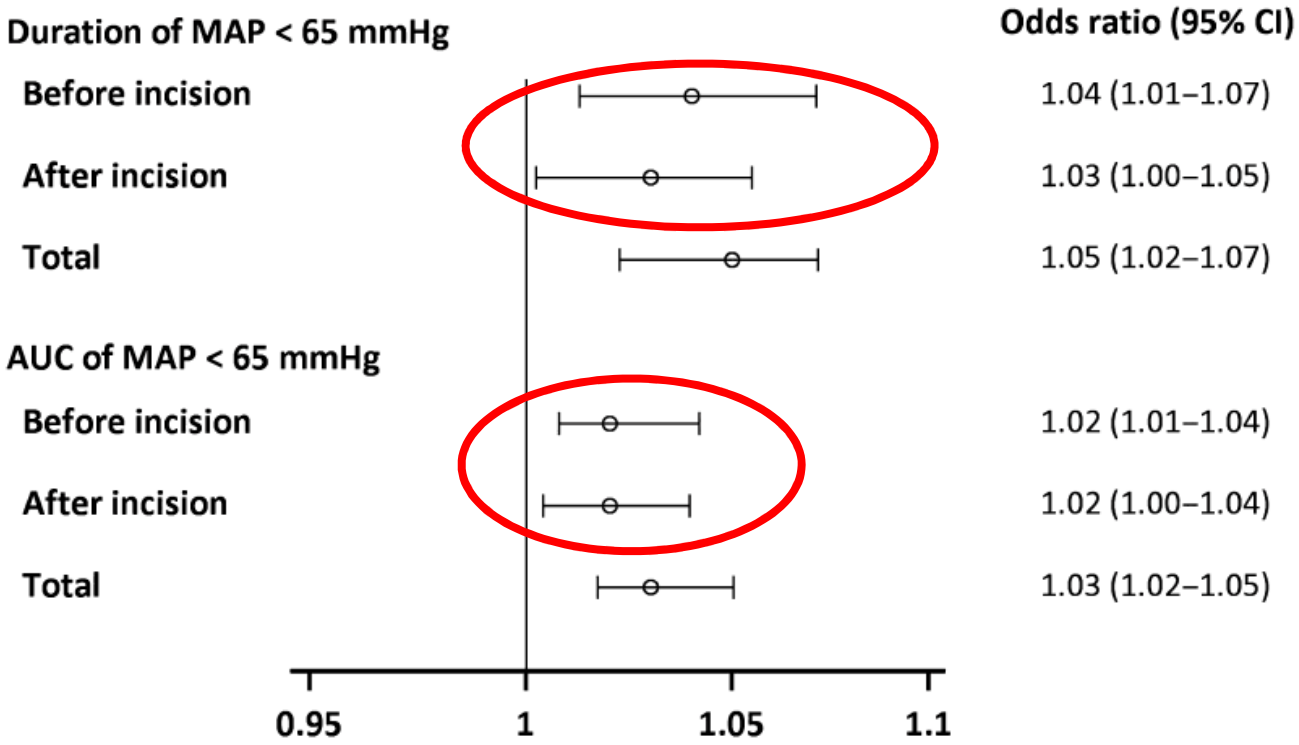


Après Incision
24102 patients
56%

Maheshwari K et al. Anaesthesia 2018

The association of hypotension during non-cardiac surgery, before and after skin incision, with postoperative acute kidney injury: a retrospective cohort analysis

42825 patients, chirurgie non cardiaque
Relation hTA avant ou après incision et IRA



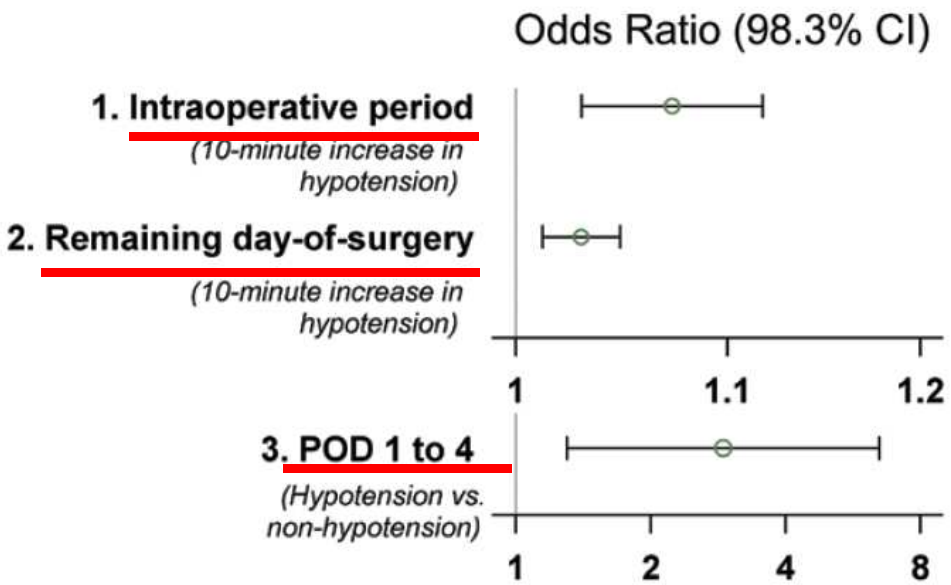
Augmentation du risque d'IRA quelque soit l'origine de l'hypotension artérielle

Maheshwari K et al. Anaesthesia 2018

Period-dependent Associations between Hypotension during and for Four Days after Noncardiac Surgery and a Composite of Myocardial Infarction and Death

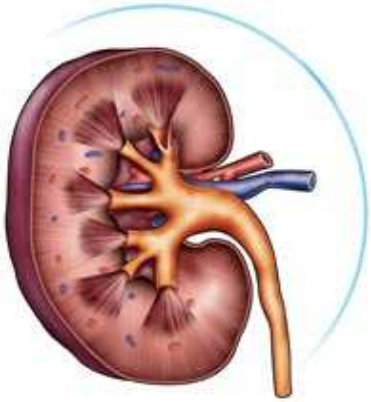
A Substudy of the POISE-2 Trial

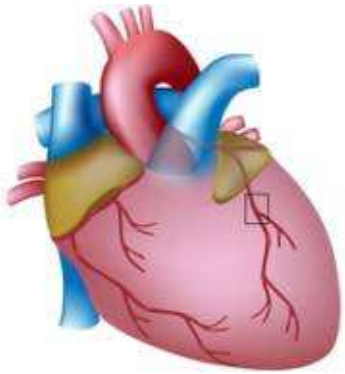
9765 patients, étude ancillaire POISE2



Hypotension artérielle per et postopératoire augmente les complications cardiaques postopératoires

Sessler D et al. Anesthesiology 2018





Hypotension Artérielle = Morbidité

Niveau de PAM

Moment de survenue

Durée de l'hTA

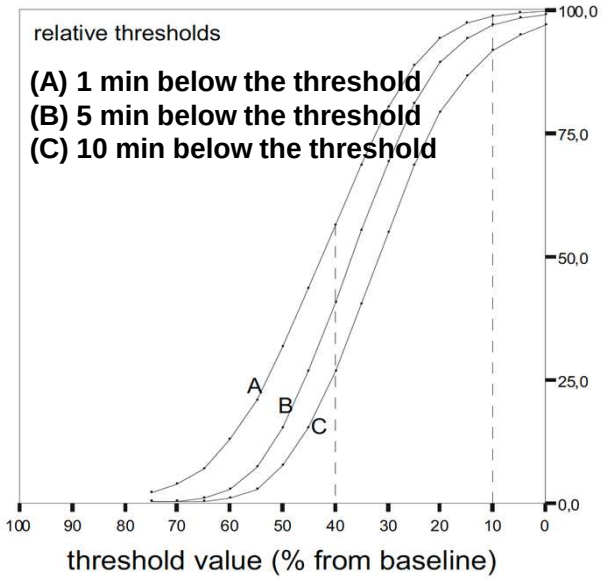
Cause de l'hTA

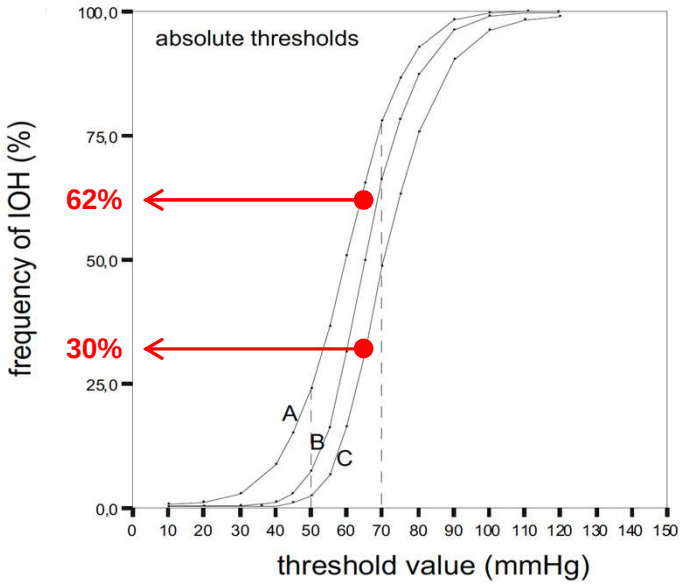
Quelle définition de l’Hypotension Artérielle ?

Incidence of Intraoperative Hypotension as a Function of the Chosen Definition

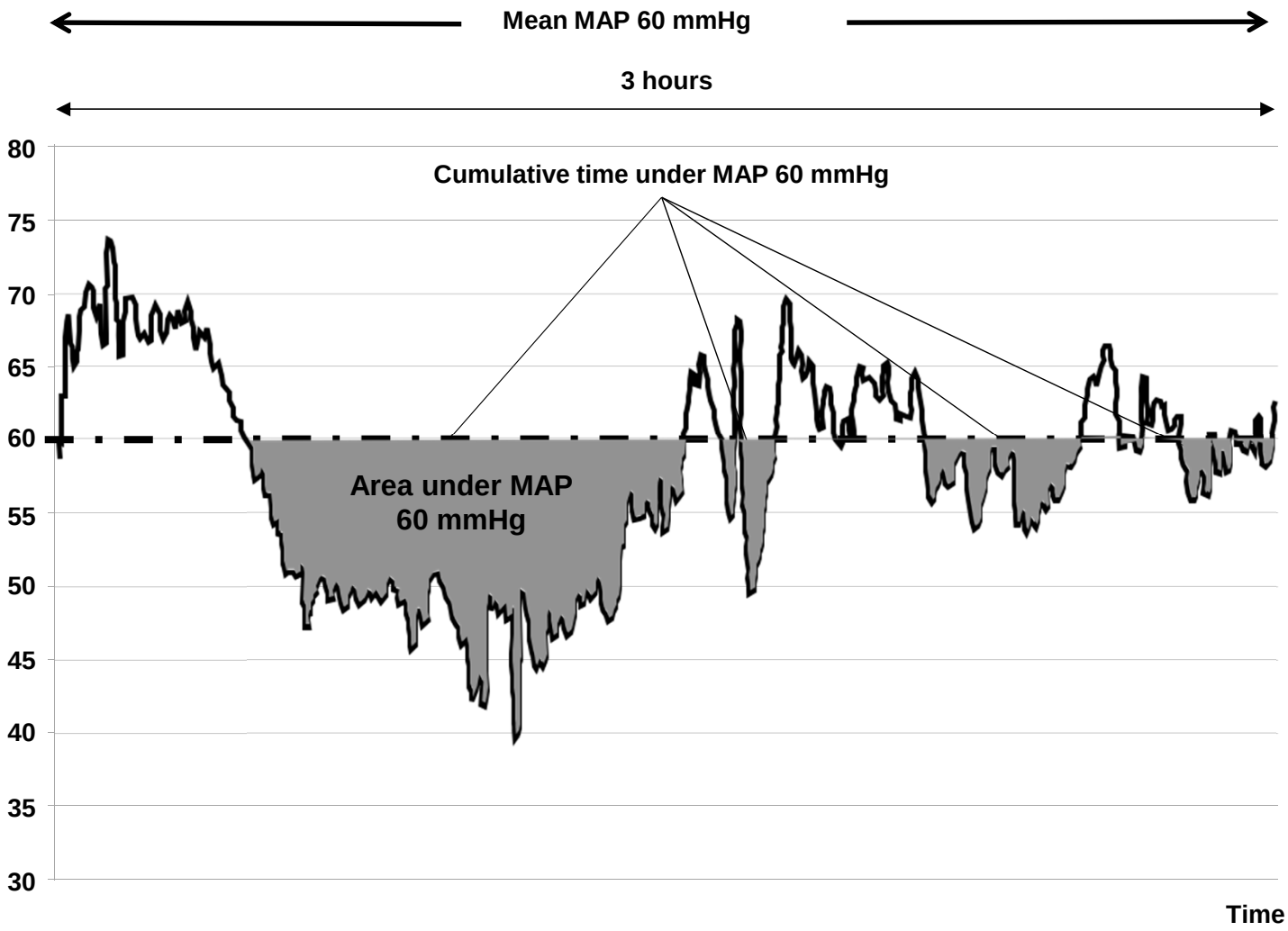
Plus de 140 définitions de l'hypotension artérielle peropératoire

Pression artérielle moyenne



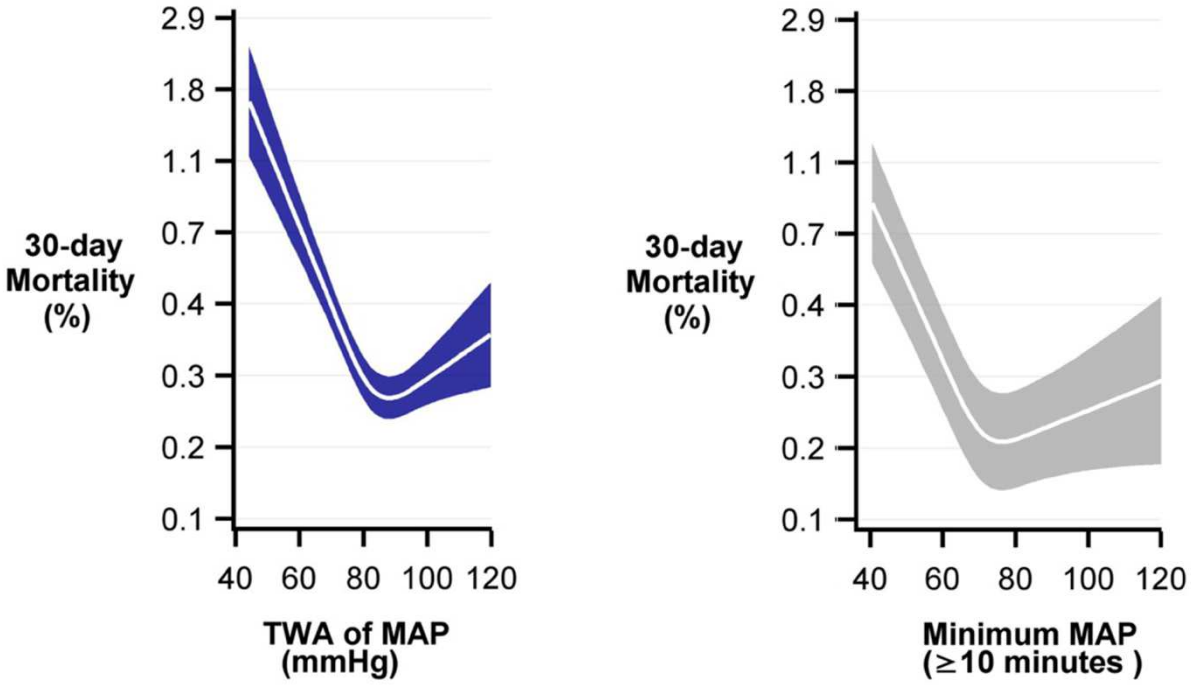


Bijker et al. Anesthesiology 2007


Mean MAP 60 mmHg
3 hours
80
75
70
65
60
55
50
45
40
35
30
Cumulative time under MAP 60 mmHg
Area under MAP
60 mmHg
Time

Intraoperative Mean Arterial Pressure Variability and 30-day Mortality in Patients Having Noncardiac Surgery

104401 patients, chirurgie non cardiaque
Durée > 60 minutes



Augmentation du risque si la DUREE CUMULEE
PAM est < 70 mmHg pendant ≥ 10 min

Mascha et al. Anesthesiology 2015

Intraoperative hypotension and the risk of postoperative adverse outcomes: a systematic review

Revue systématique étudiant l'association entre hypotension artérielle peropératoire et complications post-opératoires
42 études

Augmentation du risque de défaillances d'organes

- PAM < 80 mmHg durée cumulée >10 min
- PAM < 70 mmHg 5 minutes
- PAM <65–60 mmHg quelque soit la durée
- PAM <55–50 mmHg quelque soit la durée

Wesselink EM et al. Br J Anaesth 2018

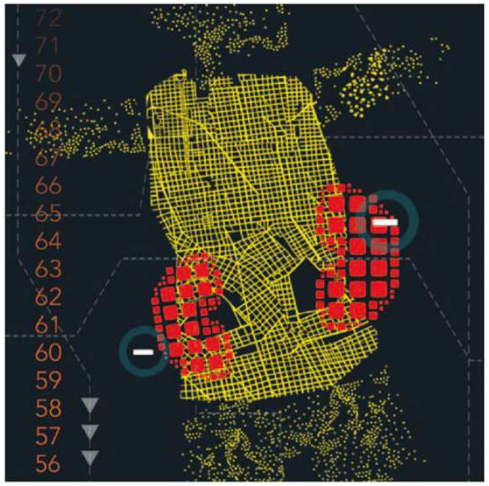
La Pression Artérielle

- **Les enjeux**
- **Impact de l’hypotension artérielle**
- **Vers une approche personnalisée ?**

Intraoperative Hypotension and Patient Outcome

Does "One Size Fit All?"

Kenneth Brady, M.D.,* Charles W. Hogue, M.D.†

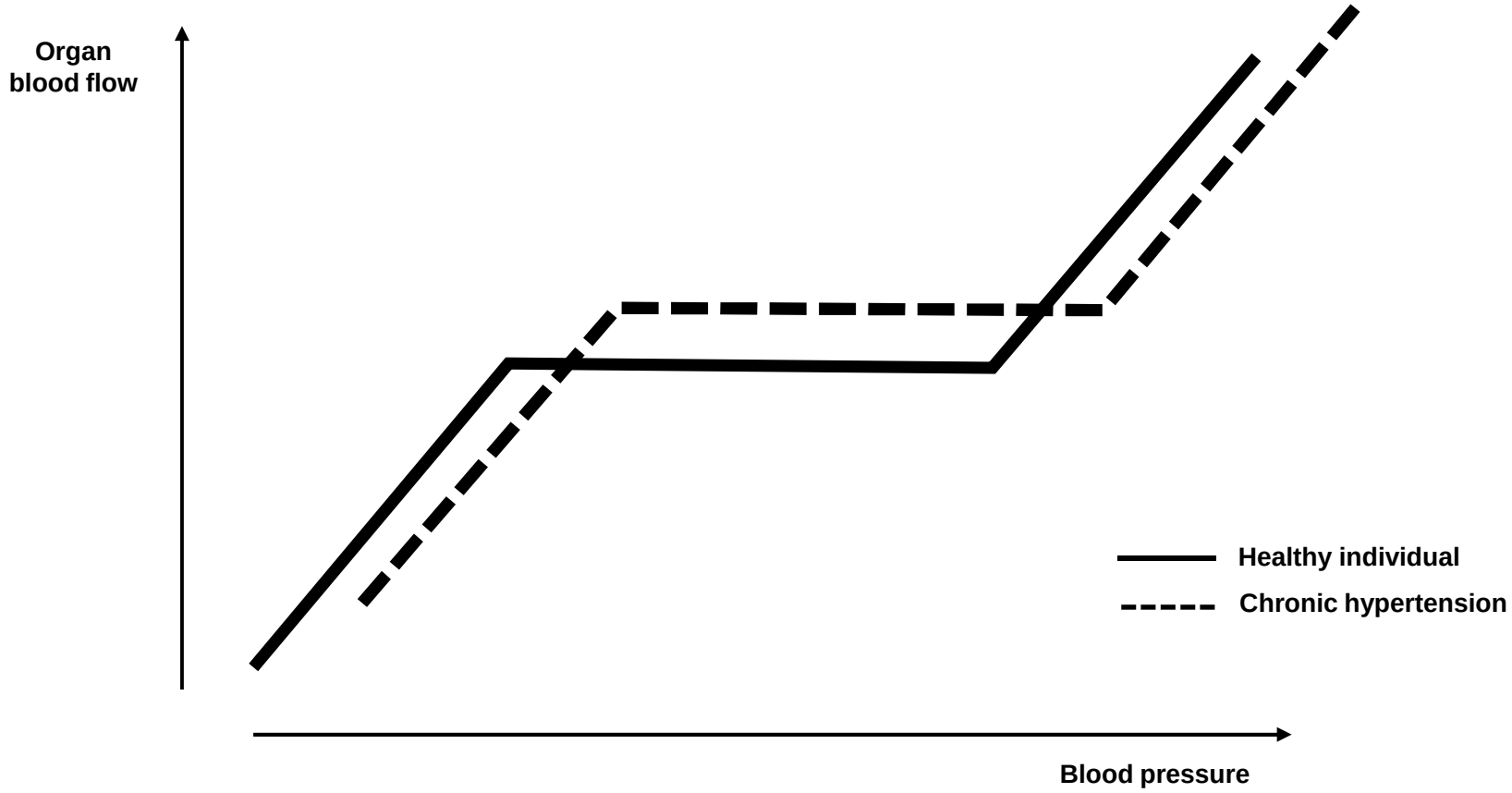


"… we believe that the combined data suggest that a single blood pressure target derived from group summary data cannot be extrapolated to be optimal for all patients, or, 'one size does not fit all.'"

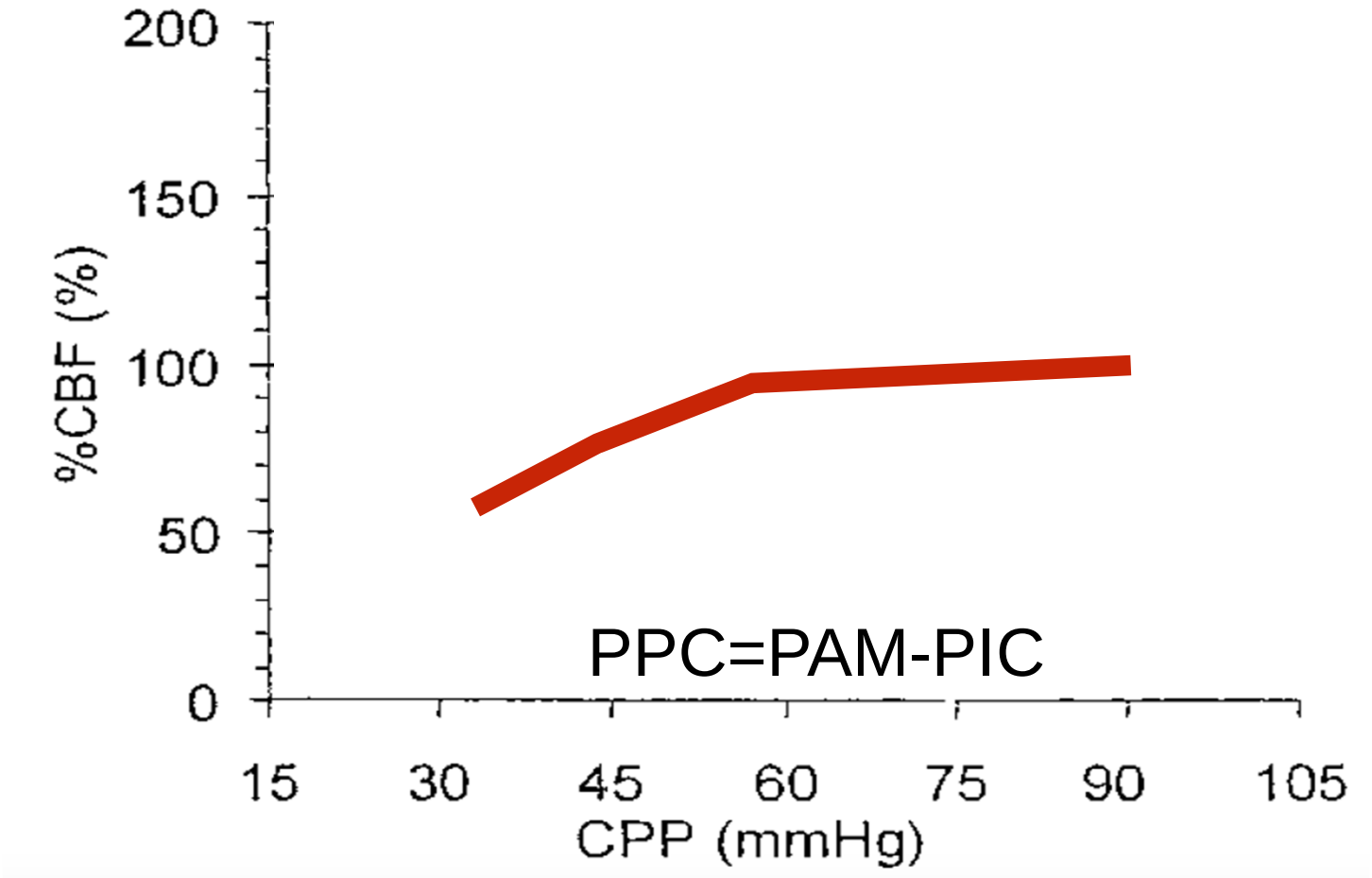
Anesthesiology 2013; 119:495-7

Résultats de databases Nord-américaines
Associations statistiques entre hTA et morbidité (pas de lien de causalité)
Non transposable à des individus

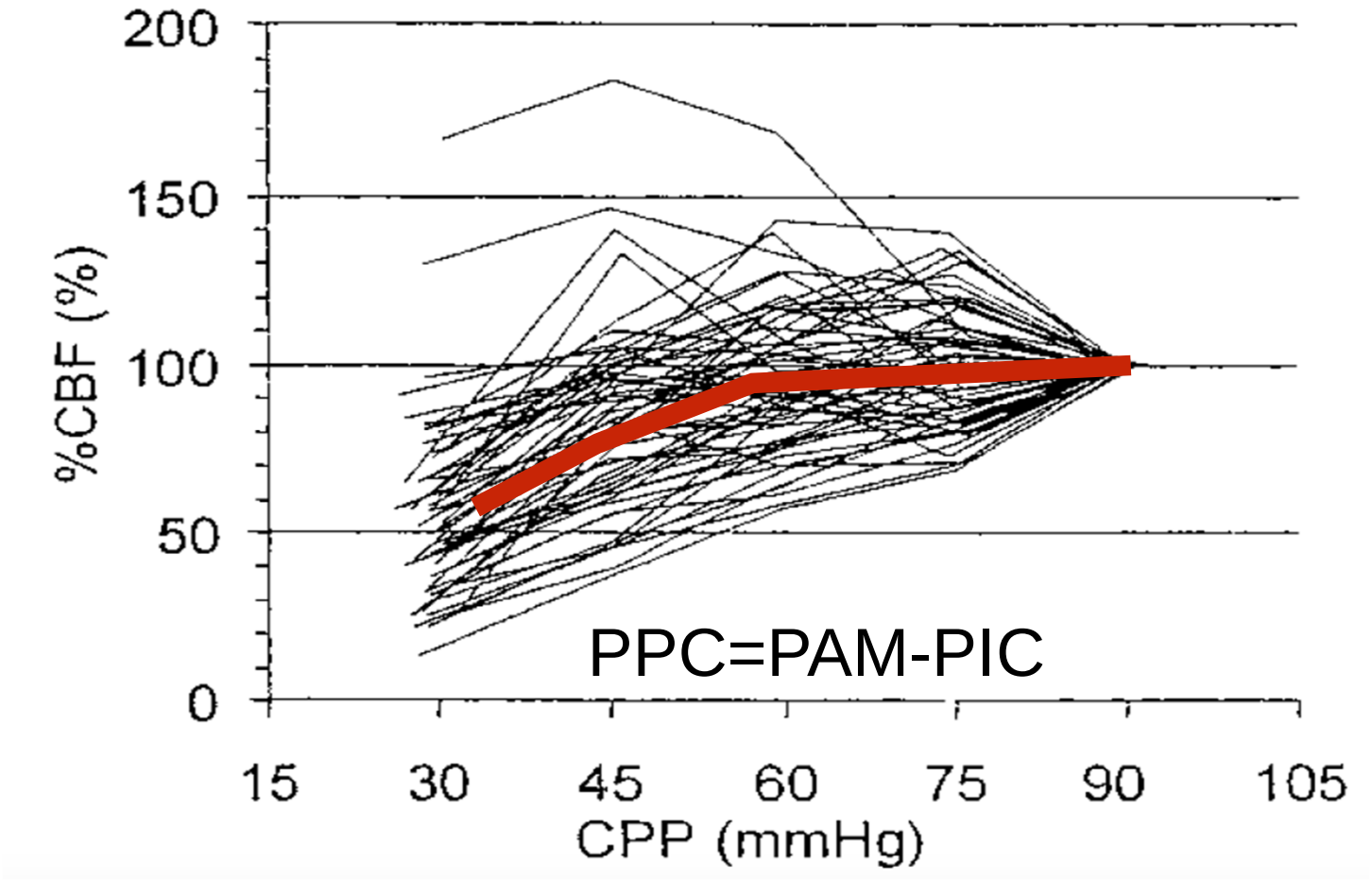
Courbe d’Auto-régulation
Différente d’un patient à un autre



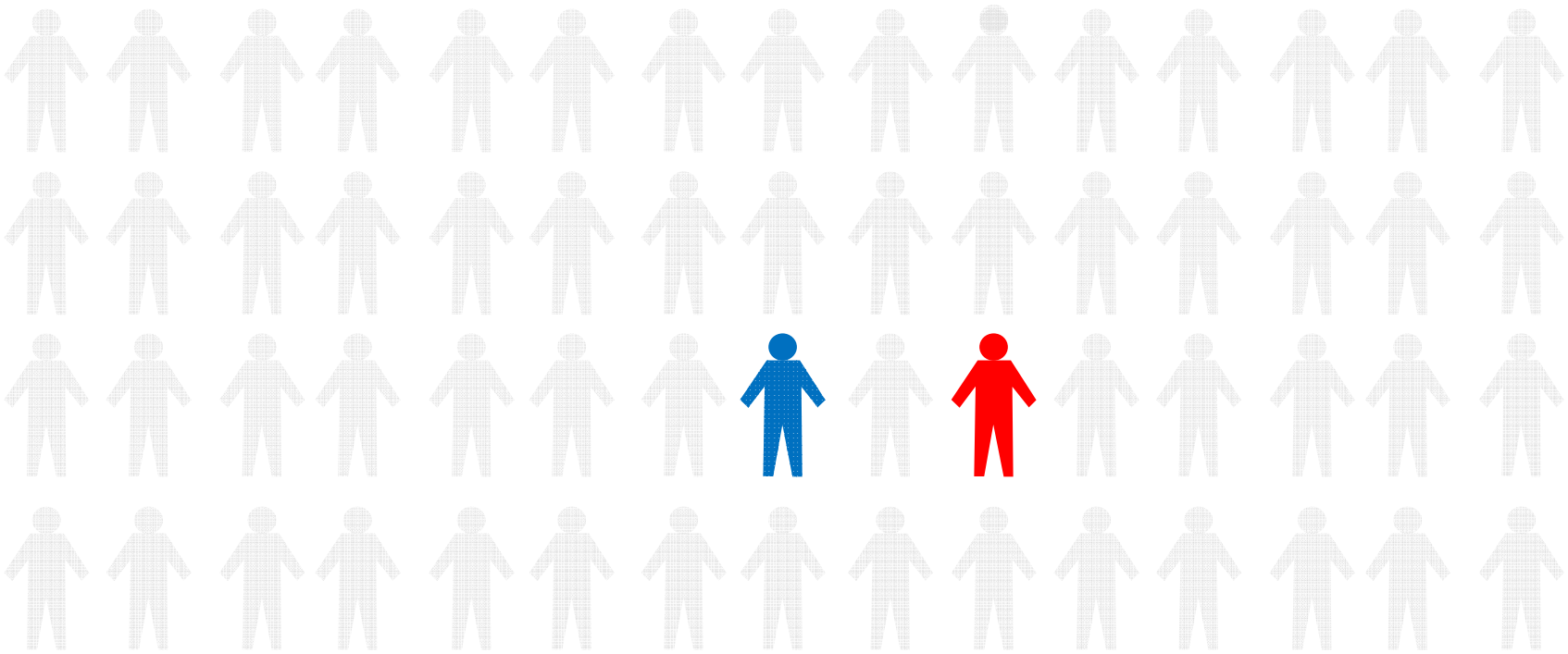
Courbe d'Auto-régulation
Différente d'un organe à un autre



Courbe d'Auto-regulation
Différente d'un patient à un autre



Médecine personalisée



BJA
British Journal of Anaesthesia
Volume 121, Number 4, October 2018

EDITORIALS

Making sense of the impact of intraoperative hypotension: from populations to the individual patient

J. X. C. Ke[1], R. B. George[1,2] and W. S. Beattie[3,*]

Guidelines

Acute kidney injury in the perioperative period and in intensive care units (excluding renal replacement therapies)

Carole Ichai[a,*], Christophe Vinsonneau[b,*], Bertrand Souweine[c], Fabien Armando[d], Emmanuel Canet[e], Christophe Clec'h[f], Jean-Michel Constantin[g], Michaël Darmon[h], Jacques Duranteau[i], Théophille Gaillot[j], Arnaud Garnier[k], Laurent Jacob[l], Olivier Joannes-Boyau[m], Laurent Juillard[n], Didier Journois[o], Alexandre Lautrette[p], Laurent Muller[q], Matthieu Legrand[l], Nicolas Lerolle[r], Thomas Rimmelé[s], Eric Rondeau[t], Fabienne Tamion[u], Yannick Walrave[c], Lionel Velly[v] Société française d'anesthésie et de réanimation (Sfar), Société de réanimation de langue française (SRLF), Groupe francophone de réanimation et urgences pédiatriques (GFRUP), Société française de néphrologie (SFN)

R4.4 – We recommend maintaining a minimal level of mean arterial pressure (MAP) between 60 and 70 mmHg to prevent and treat AKI. (Grade 1+, strong agreement)

R4.5 – We suggest considering that patients with chronic arterial hypertension require a MAP target > 70 mmHg. (Grade 2+, strong agreement)

Anaesth Crit Care Pain Med 35 (2016) 151–165

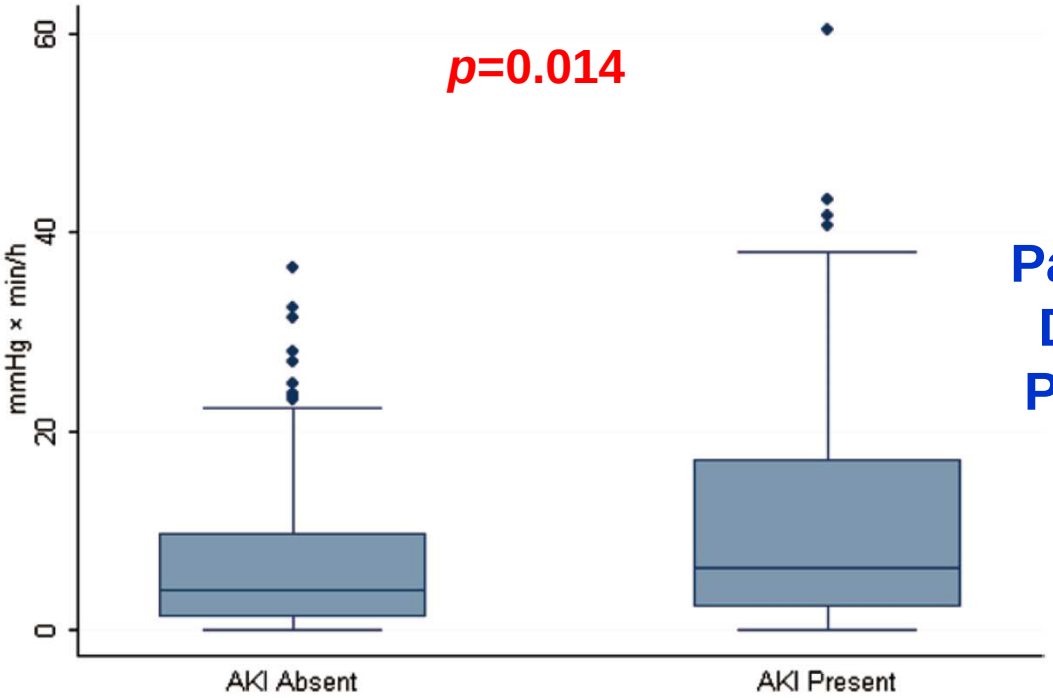
Des Datas ???

Blood Pressure Excursions Below the Cerebral Autoregulation Threshold During Cardiac Surgery are Associated With Acute Kidney Injury*

N=410 patients chirurgie cardiaque et vasculaire

Seuile d'autorégulation determiné chez 348 patients (COx, NIRS)

Critère de jugement: AKI (RIFLE criteria)



Patients présentant une IRA
Durée plus importance de
PA < seuil d'autorégulation

Ono et al. Crit Care Med 2013

High versus Low Blood-Pressure Target in Patients with Septic Shock

SEPSISPAM

Essai contrôlé, randomisé

Randomisation High PAM (80-85 mmHg) versus Low PAM (65-70 mmHg)

Randomisation stratifiée sur l'atcd d'HTA

Asfar et al. N Engl J Med 2014

High versus Low Blood-Pressure Target in Patients with Septic Shock

SEPSISPAM

Essai contrôlé, randomisé

Randomisation High PAM (80-85 mmHg) versus Low PAM (65-70 mmHg)

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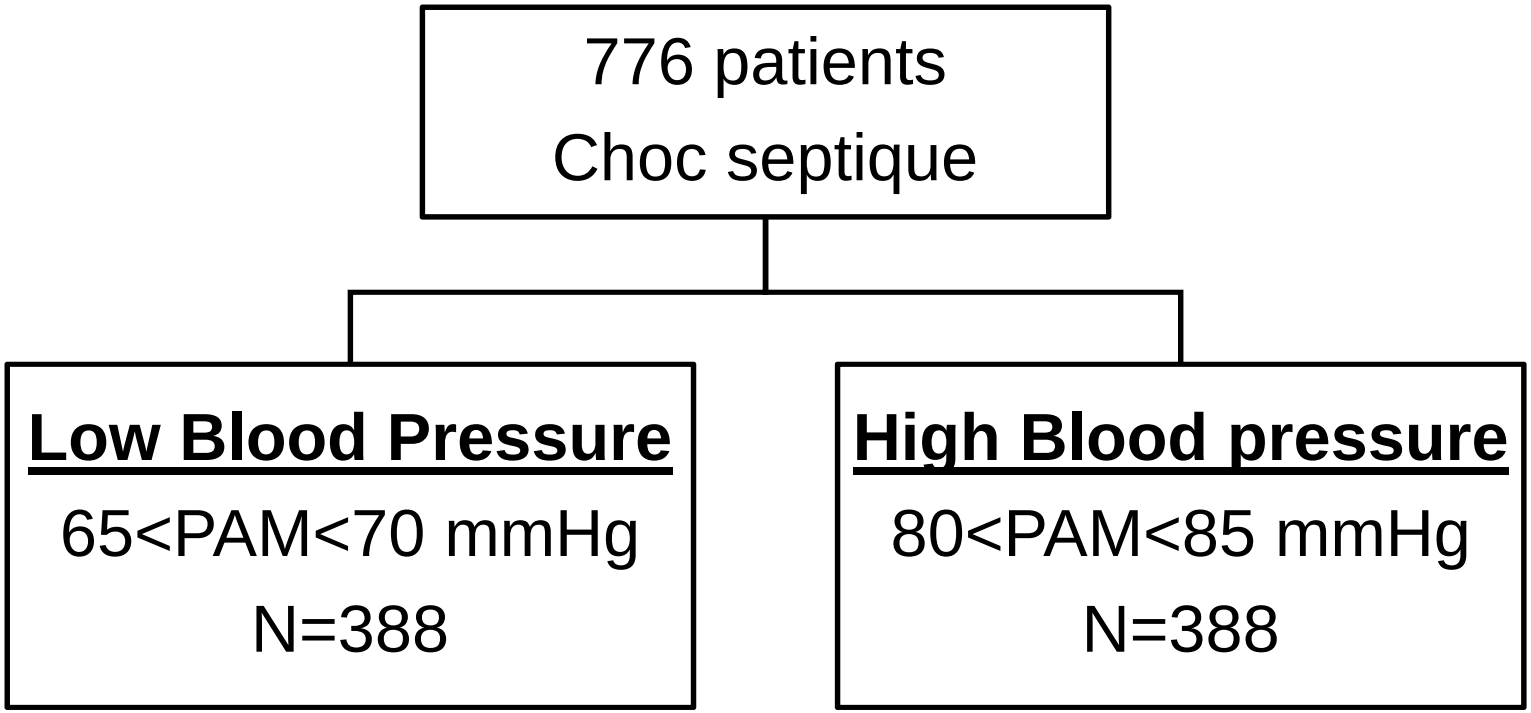


Asfar et al. N Engl J Med 2014

High versus Low Blood-Pressure Target in Patients with Septic Shock

SEPSISPAM

Essai contrôlé, randomisé

Randomisation High PAM (80-85 mmHg) versus Low PAM (65-70 mmHg)

Randomisation stratifiée sur l'atcd d'HTA

776 patients

Choc septique

Low Blood Pressure

65<PAM<70 mmHg

N=388

High Blood pressure

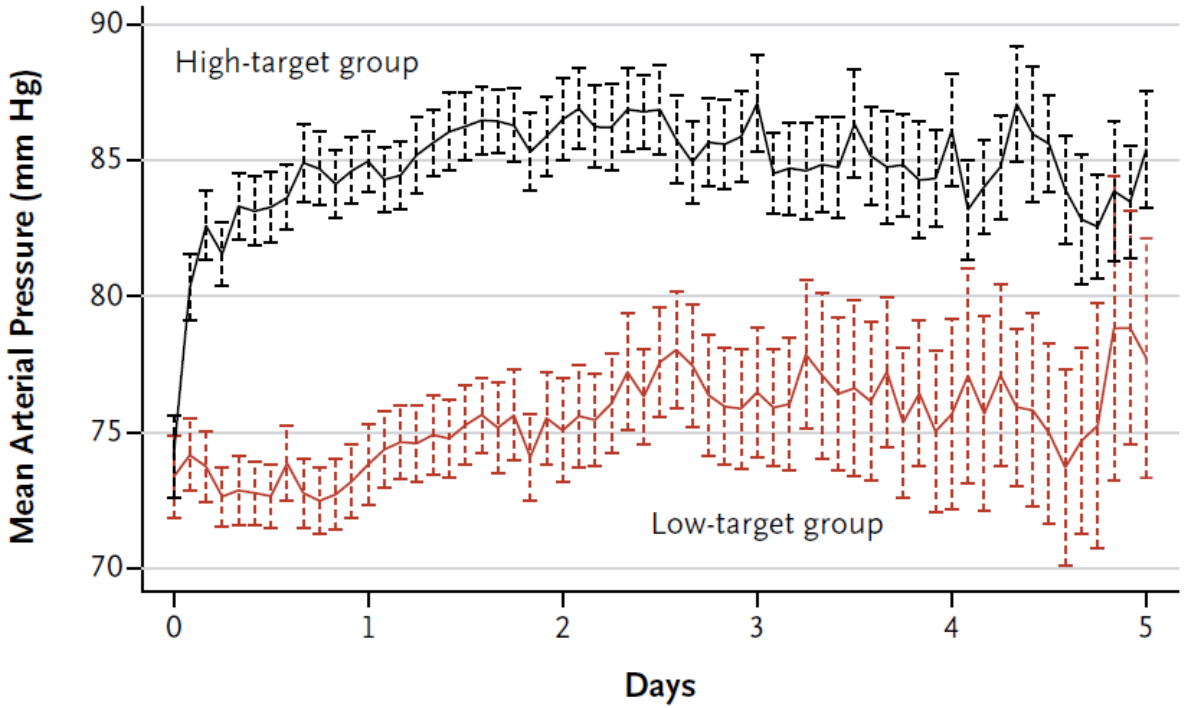
80<PAM<85 mmHg

N=388

Mortalité à J28

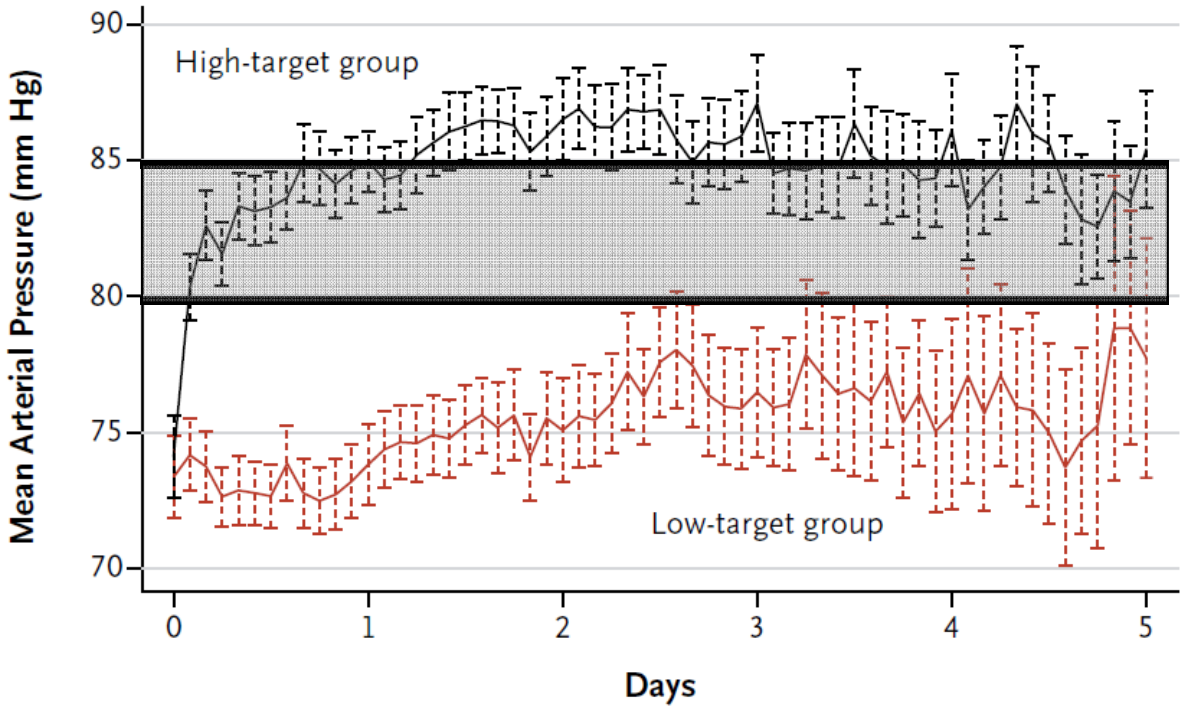
Asfar et al. N Engl J Med 2014

High versus Low Blood-Pressure Target in Patients with Septic Shock



Asfar et al. N Engl J Med 2014

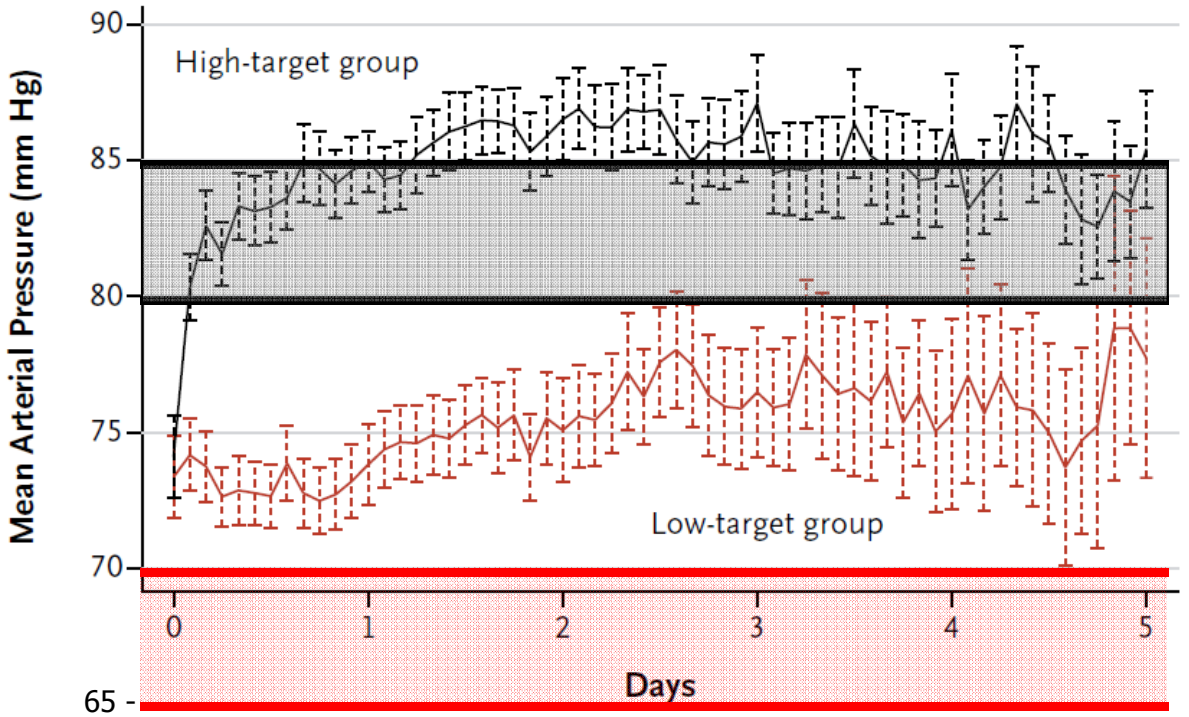
High versus Low Blood-Pressure Target in Patients with Septic Shock



Groupe HIGH

Asfar et al. N Engl J Med 2014

High versus Low Blood-Pressure Target in Patients with Septic Shock



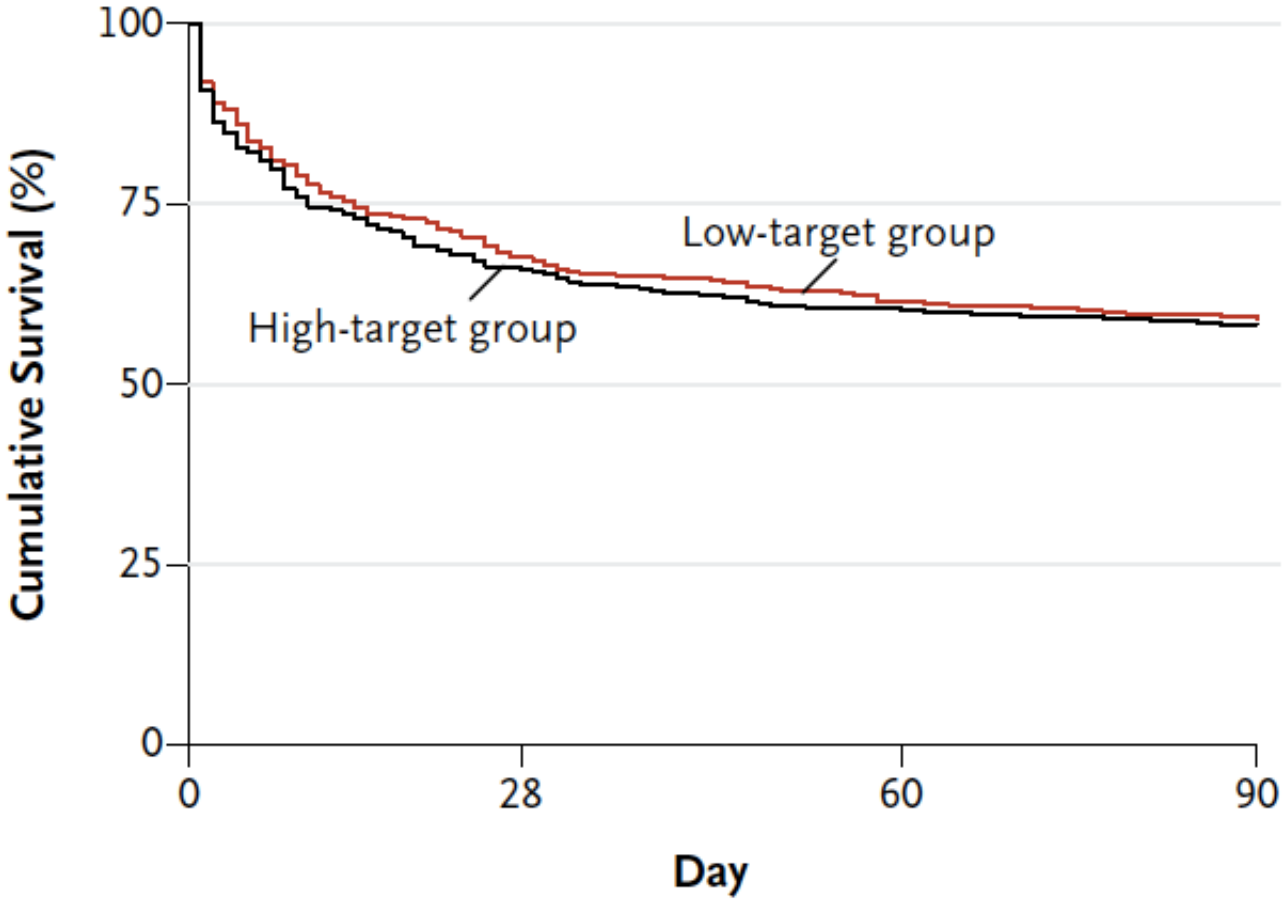
Groupe HIGH

Groupe LOW

Valeurs de PAM souvent plus élevées
dans le groupe Low (70-75 mmHg)
Comparaison 80-85 mmHg versus 70-75 mmHg

Asfar et al. N Engl J Med 2014

High versus Low Blood-Pressure Target in Patients with Septic Shock



Pas de différence de Mortalité à J28 ou à J90

Asfar et al. N Engl J Med 2014

High versus Low Blood-Pressure Target in Patients with Septic Shock

Variable	Low-Target Group (N = 388)	High-Target Group (N = 388)	P Value
Primary outcome: death at day 28 — no. (%)*	132 (34.0)	142 (36.6)	0.57
Secondary outcomes — no./total no. (%)			
Death at day 90†	164 (42.3)	170 (43.8)	0.74
Survival at day 28 without organ support‡	241 (62.1)	235 (60.6)	0.66
Doubling of plasma creatinine	161 (41.5)	150 (38.7)	0.42
No chronic hypertension	71/215 (33.0)	85/221 (38.5)	0.32
Chronic hypertension	90/173 (52.0)	65/167 (38.9)	0.02
Renal-replacement therapy from day 1 to day 7	139 (35.8)	130 (33.5)	0.50
No chronic hypertension	66/215 (30.7)	77/221 (34.8)	0.36
Chronic hypertension	73/173 (42.2)	53/167 (31.7)	0.046

Moins de d'insuffisance rénale dans le groupe HIGH si atcd d'HTA

Asfar et al. N Engl J Med 2014

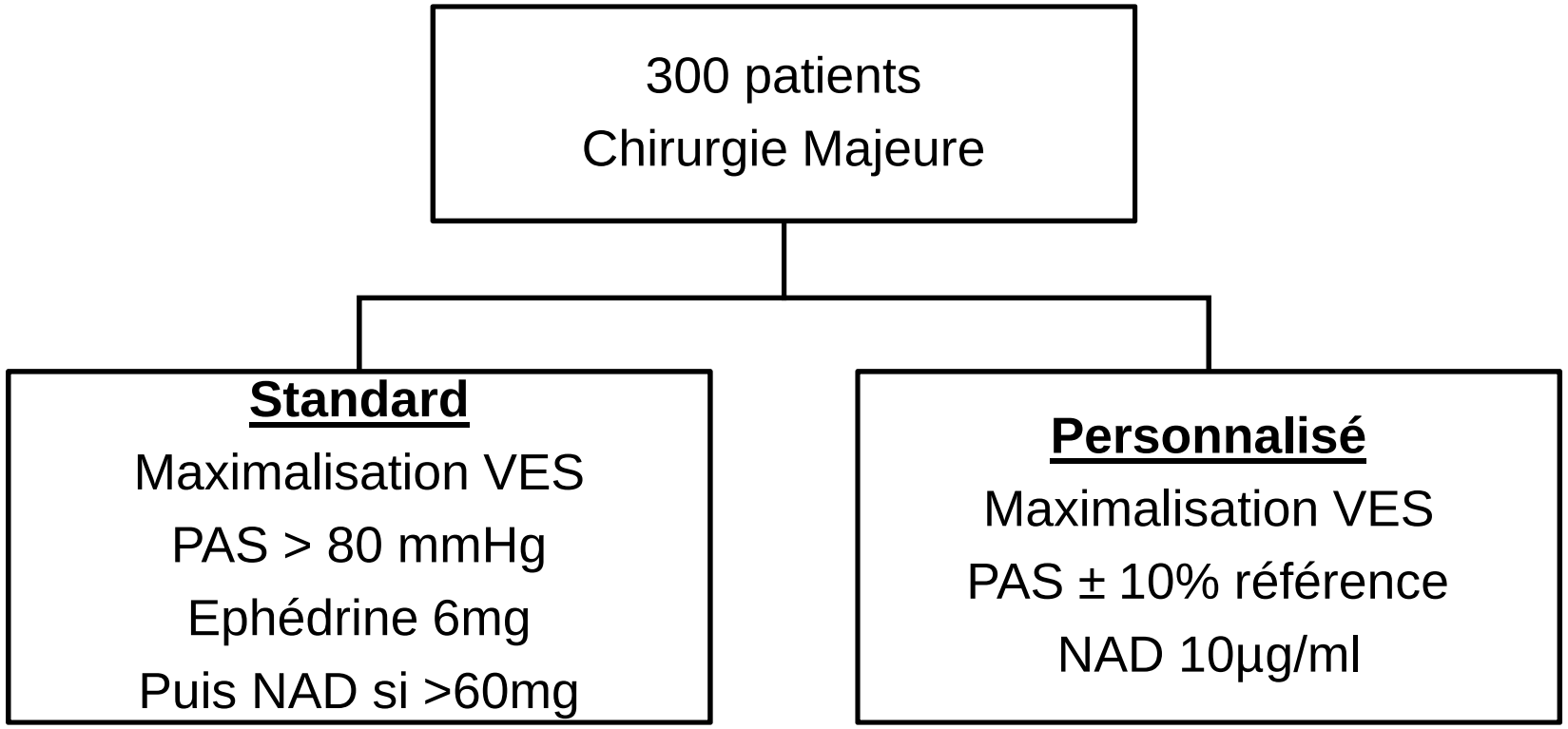
Effect of Individualized vs Standard Blood Pressure Management Strategies on Postoperative Organ Dysfunction Among High-Risk Patients Undergoing Major Surgery

A Randomized Clinical Trial

Futier et al. JAMA 2017

Effect of Individualized vs Standard Blood Pressure Management Strategies on Postoperative Organ Dysfunction Among High-Risk Patients Undergoing Major Surgery

A Randomized Clinical Trial



Futier et al. JAMA 2017

Effect of Individualized vs Standard Blood Pressure Management Strategies on Postoperative Organ Dysfunction Among High-Risk Patients Undergoing Major Surgery
A Randomized Clinical Trial

Characteristic	Individualized Treatment (n = 147)	Standard Treatment (n = 145)
Reference blood pressure, mean (SD), mm Hg[d]		
Systolic	135.4 (20.2)	135.3 (17.1)
Diastolic	75.1 (11.6)	77.4 (12.1)
Preexisting conditions, No. (%)		
Chronic arterial hypertension	120 (81.6)	120 (82.8)
Chronic heart failure	26 (17.7)	38 (26.2)
Ischemic heart disease	20 (13.6)	32 (22.1)
Renal impairment	28 (19.1)	17 (11.7)
Diabetes mellitus	77 (52.4)	73 (50.3)
Type of surgery, No. (%)		
Abdominal	138 (93.9)	140 (96.6)
Nonabdominal	9 (6.1)	5 (3.4)
Urgency of surgical procedure, No. (%)		
Elective	124 (84.4)	123 (84.8)
Emergency	23 (15.6)	22 (15.2)

Futier et al. JAMA 2017

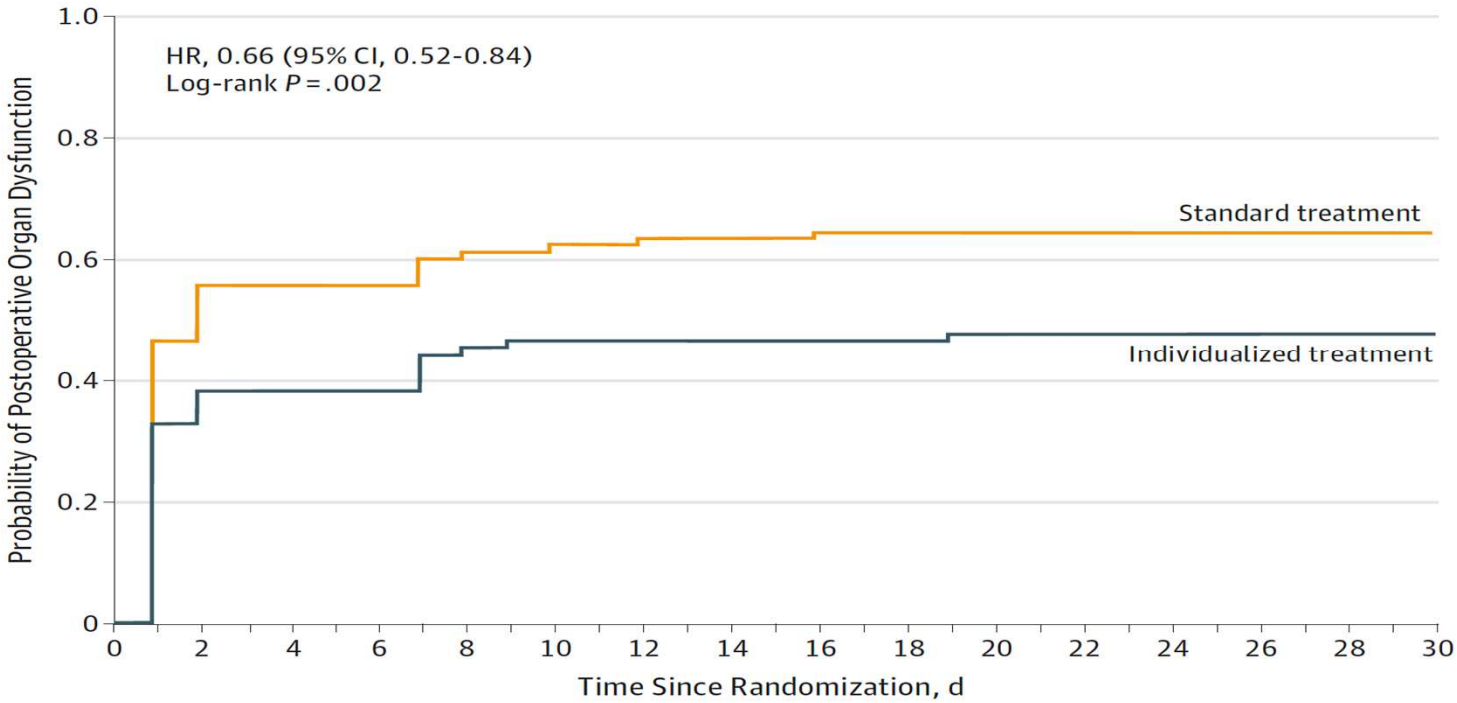
Effect of Individualized vs Standard Blood Pressure Management Strategies on Postoperative Organ Dysfunction Among High-Risk Patients Undergoing Major Surgery
A Randomized Clinical Trial

Characteristic	Individualized Treatment (n = 147)	Standard Treatment (n = 145)
Medication use, No. (%)		
Antihypertensive		
Overall	100 (68.0)	97 (66.9)
Angiotensin-converting enzyme inhibitor or angiotensin II receptor blocker	71 (48.2)	72 (49.6)
Medications not taken within 24 h prior to surgery	61 (61.0)	58 (59.8)
Diuretic	24 (16.3)	20 (13.8)
Antidiabetic	72 (49.0)	68 (46.9)
Serum creatinine at inclusion, mean (SD), mg/dL	0.93 (0.30)	0.93 (0.34)
Estimated GFR[e]		
Overall, median (IQR), mL/min/1.73 m^2	88.0 (71.6-105.1)	87.8 (71.0-103.3)
Among those with estimated GFR <60 mL/min/1.73 m^2, median (IQR), mL/min/1.73 m^2	46.1 (43.6-54.6)	50.8 (43.8-55.6)
Estimated GFR <60 mL/min/1.73 m^2, No. (%)	20 (13.7)	17 (11.9)
Digit Symbol Substitution Test score at inclusion, mean (SD)[f]	30.4 (13.1)	29.3 (12.4)

Futier et al. JAMA 2017

Effect of Individualized vs Standard Blood Pressure Management Strategies on Postoperative Organ Dysfunction Among High-Risk Patients Undergoing Major Surgery

A Randomized Clinical Trial



Futier et al. JAMA 2017

Effect of Individualized vs Standard Blood Pressure Management Strategies on Postoperative Organ Dysfunction Among High-Risk Patients Undergoing Major Surgery

A Randomized Clinical Trial

Variable	Individualized Treatment (n = 147)	Standard Treatment (n = 145)	*P* Value
Cumulative volume of crystalloid, median (IQR), mL	2275 (1600-3000)	2500 (1825-3225)	.09
During surgery	1500 (1000-2000)	2000 (1500-2500)	<.001
During 4 h following surgery	750 (500-1000)	600 (500-1000)	.54
Cumulative volume of colloid, median (IQR), mL	1000 (500-1500)	1000 (500-1750)	.25
During surgery	875 (500-1500)	1000 (500-1500)	.12
During 4 h following surgery	500 (300-500)	500 (400-1500)	.43
Cardiac index, mean (SD), mL/min/m^2			
Baseline	2.5 (0.6)	2.5 (0.7)	.48
End of intervention period	3.0 (0.8)	3.1 (0.8)	.39

Futier et al. JAMA 2017

Effect of Individualized vs Standard Blood Pressure Management Strategies on Postoperative Organ Dysfunction Among High-Risk Patients Undergoing Major Surgery
A Randomized Clinical Trial

Table 3. Primary and Secondary Outcomes and Adverse Events

Variable	Individualized Treatment (n = 147)	Standard Treatment (n = 145)	Between-Group Absolute Difference, % (95% CI)	Unadjusted Relative Risk (95% CI)	*P* Value	Adjusted Relative Risk (95% CI)[a]	*P* Value
Primary Outcome							
Primary composite outcome No. (%)[b]						0.94)	.02
Secondary Outcomes							
Complications within 7 d							
Acute kidney injury accord to RIFLE criteria, No. (%)[d]							
Risk						1.14)	.17
Injury	16 (10.9)	26 (17.9)	−7 (−15 to 1)	0.61 (0.34 to 1.08)	.09	0.61 (0.34 to 1.08)	.09
Failure	9 (6.1)	9 (6.2)	0 (−6 to 5)	0.99 (0.40 to 2.41)	.98	0.97 (0.40 to 2.34)	.95
Use of renal replacement therapy, No. (%)	4 (2.7)	5 (3.5)	0 (−5 to 3)	0.79 (0.22 to 2.88)	.72	0.81 (0.22 to 2.97)	.76

Risque Rénal
Adjusted Relative Risk
0.70; 95% CI, 0.53 to 0.92; P = .01

Futier et al. JAMA 2017

La Pression Artérielle

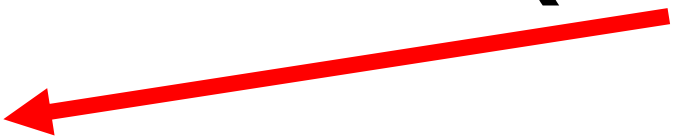
- **Signification**
- **Impact de l’hypotension artérielle**
- **Quelles thérapeutiques pour traiter une hypotension artérielle ?**

Traitement de l’Hypotension

$$PAM = (DC \times RVS) + PVC$$

Traitement de l’Hypotension

$$PAM = (DC \times RVS) + PVC$$



$$DC = VES \times FC$$

Traitement de l’Hypotension

PAM = (DC × RVS) + PVC

DC = VES x FC

Contractilité
Précharge
Postcharge

Traitement de l’Hypotension

PAM = (DC × RVS) + PVC

DC = VES x FC

RVS

Contractilité
Précharge
Postcharge

Traitement de l'Hypotension

PAM = (DC × RVS) + PVC

DC = VES x FC

CHRONOTROPES +

Contractilité — **INOTROPES**

Précharge — **REMPLISSAGE**

Postcharge — **VASODILATATEURS**

RVS

VASOCONSTRICTEURS

Hypotension : Quel traitement ?

Hypotension : Quel traitement ?

Cause “évidente”

Post-induction :
vasoconstricteurs

Saignement majeur :
remplissage

Surdosage agents anesthésiques:
vasoconstricteurs

Stimulation chirurgicale :
méso, luxation foie …

Hypotension : Quel traitement ?

Cause “évidente”

Post-induction :
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Surdosage agents anesthésiques:
vasoconstricteurs

Stimulation chirurgicale :
méso, luxation foie …

Pas de cause évidente

Remplissage Vasculaire
VES /VPP
Augmentation VES +/- PAM

Hypotension : Quel traitement ?

Cause “évidente”

Post-induction :
vasoconstricteurs

Saignement majeur :
remplissage

Surdosage agents anesthésiques:
vasoconstricteurs

Stimulation chirurgicale :
méso, luxation foie …

Pas de cause évidente

Remplissage Vasculaire
VES /VPP
Augmentation
VES +/- PAM

Vasopresseurs
Augmentation
PAM +/- baisse
du VES

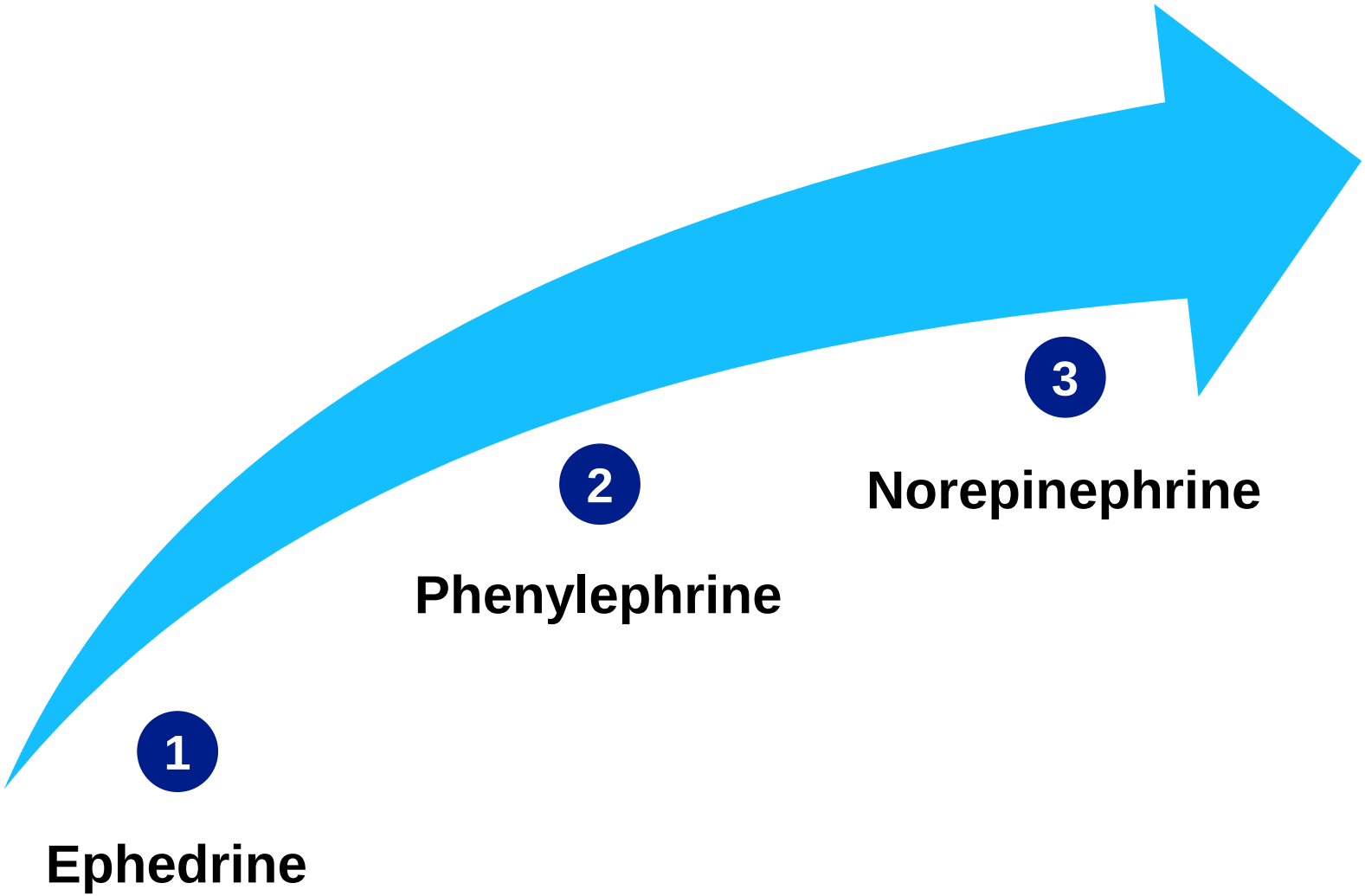
Hypotension : Quel traitement ?

Remplissage vasculaire

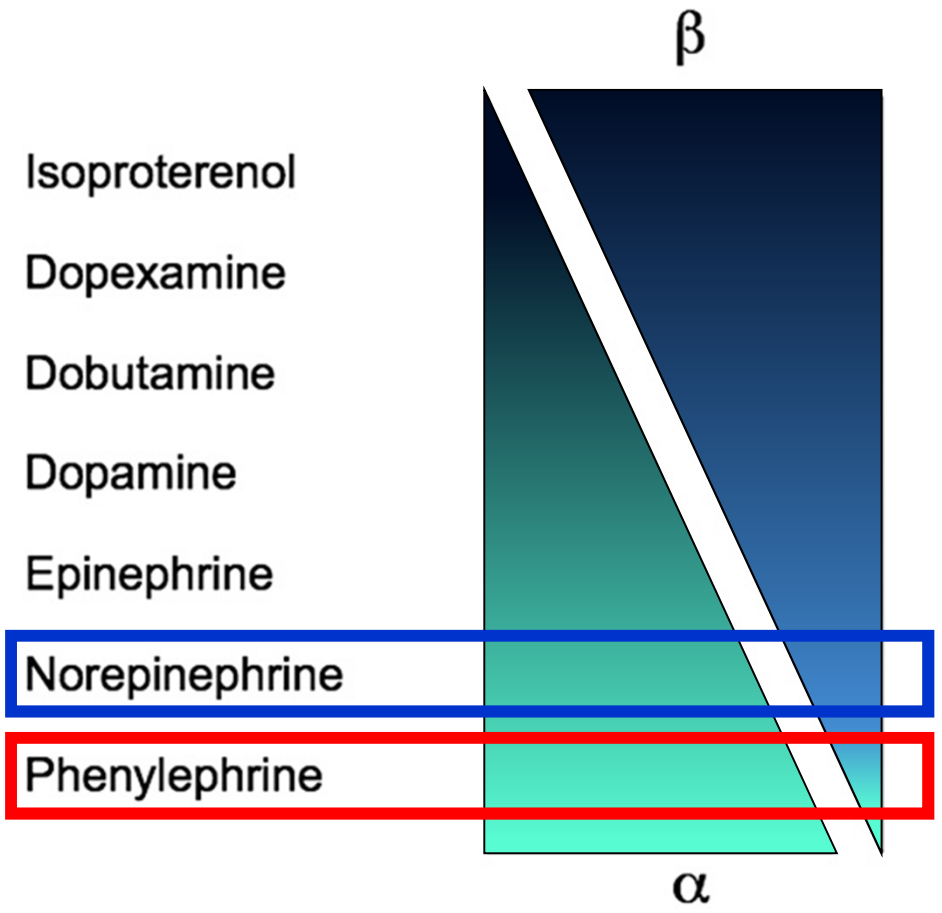
$$PAM = (DC \times RVS) + PVC$$

Vasopresseurs

Quel Vasopresseur ?



Vasoactive Drugs in Circulatory Shock



Action α et β

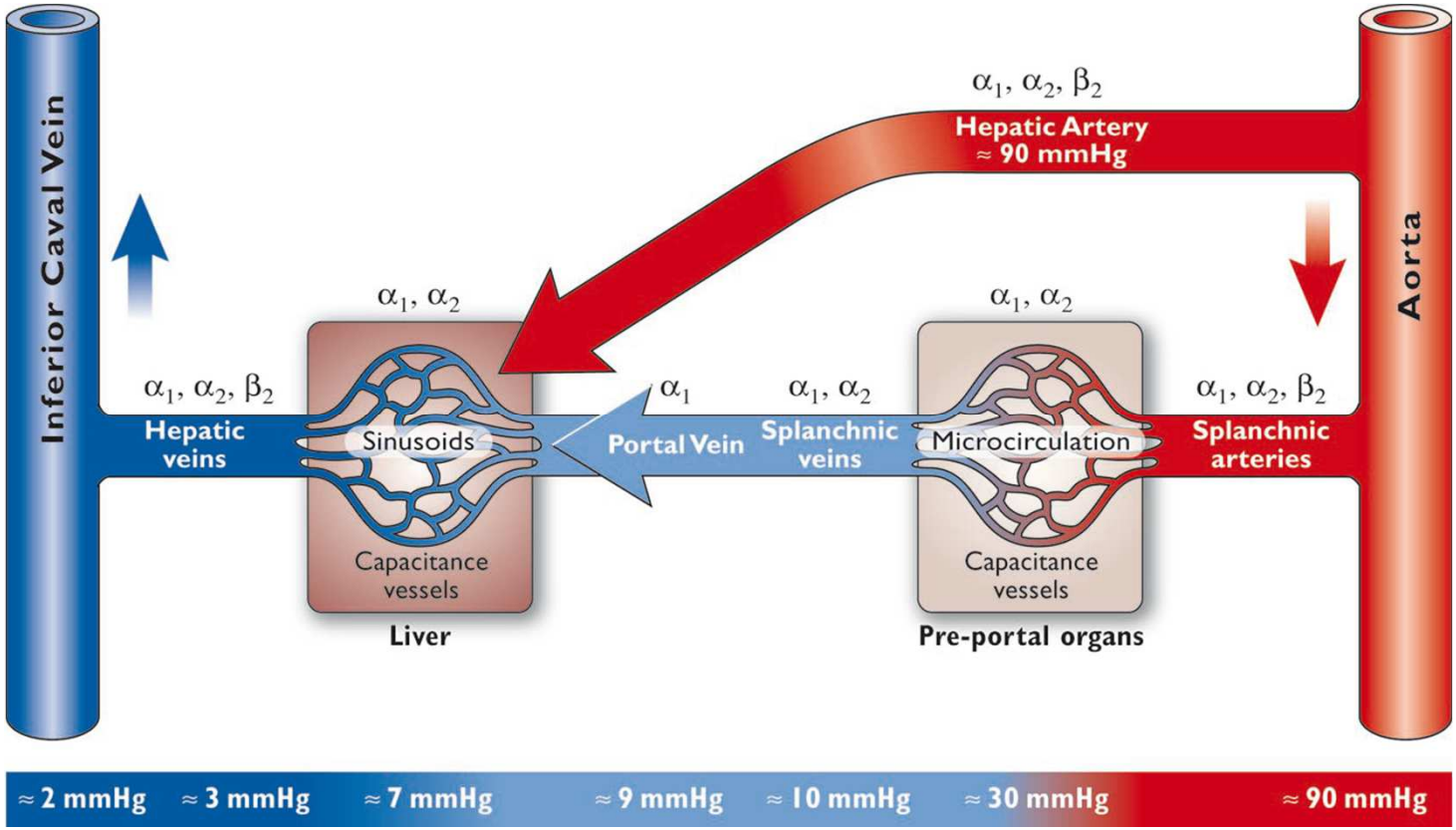
Action α

Hellenberg et al. Am J Respir Crit Care Med 2011

Catecholamine-induced Changes in the Splanchnic Circulation Affecting Systemic Hemodynamics

Système Veineux Capacitif
70% VSC

Système Artériel
Resistif



Gelman et al. Anesthesiology 2004

Catecholamine-induced Changes in the Splanchnic Circulation Affecting Systemic Hemodynamics

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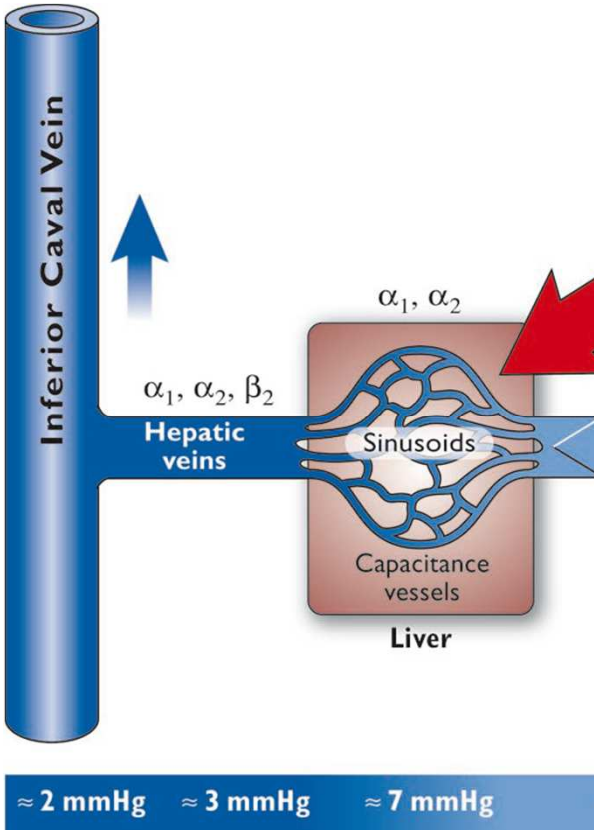
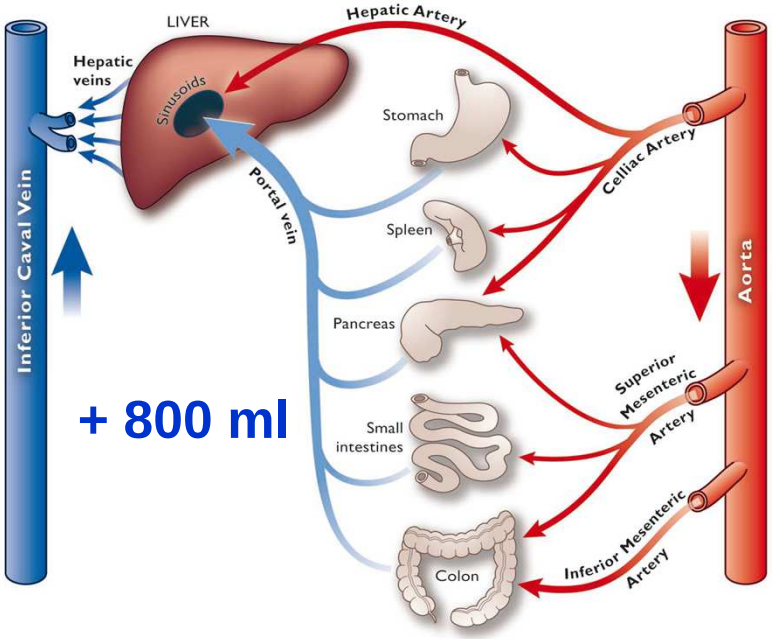
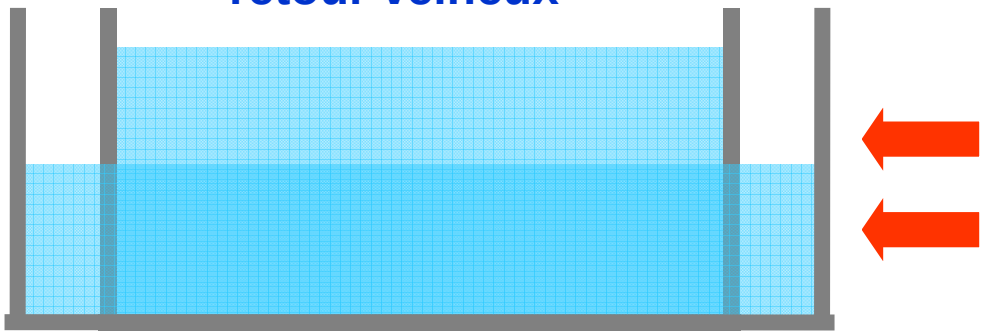


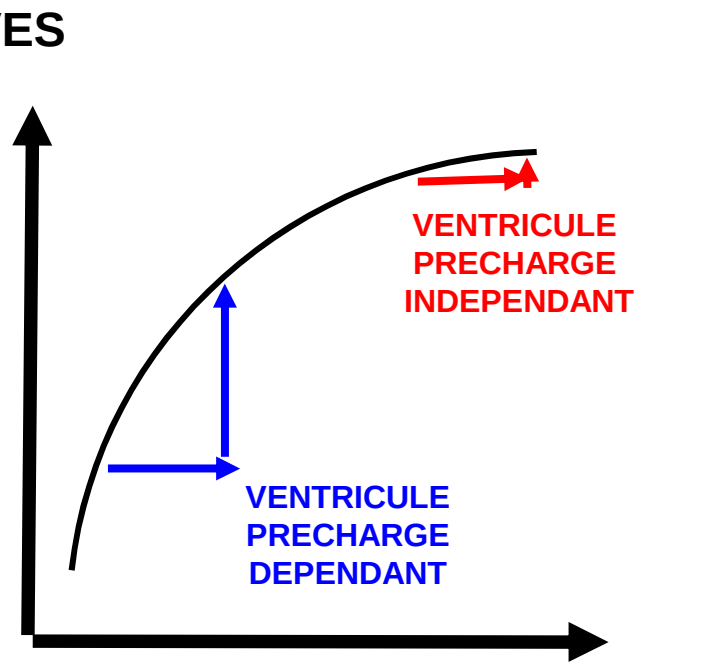
Gelman et al. Anesthesiology 2004

Catecholamine-induced Changes in the Splanchnic Circulation Affecting Systemic Hemodynamics



Augmentation du retour veineux





Gelman et al. Anesthesiology 2004

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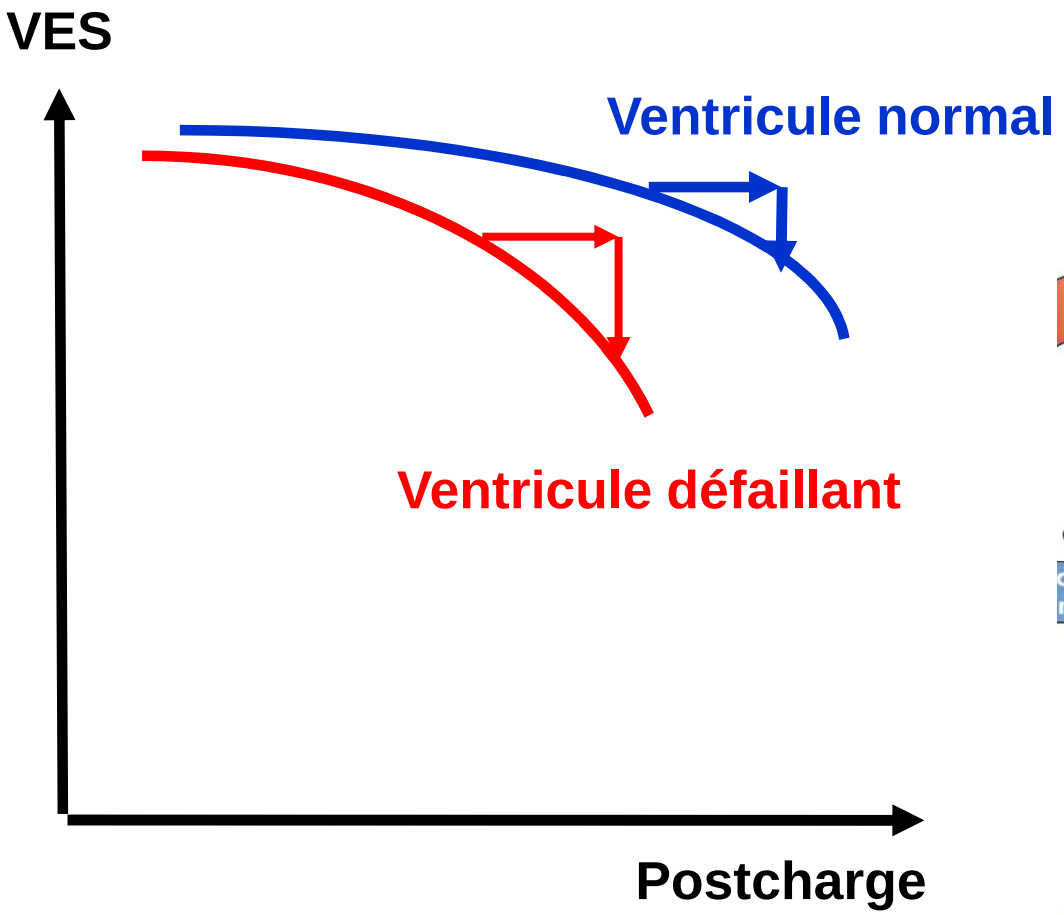
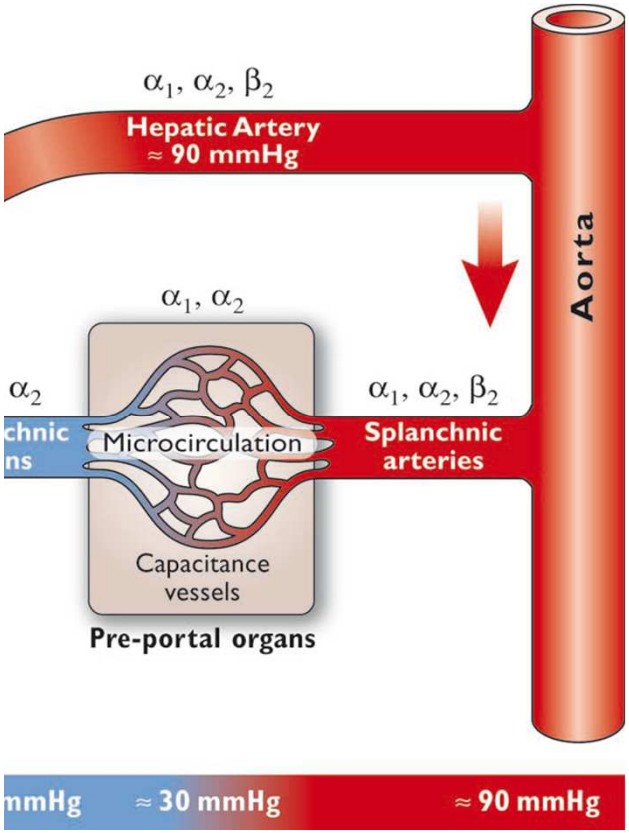


Système Artériel Resistif



Gelman et al. Anesthesiology 2004

The Effect of Phenylephrine Bolus Administration on Left Ventricular Function During Isoflurane-Induced Hypotension

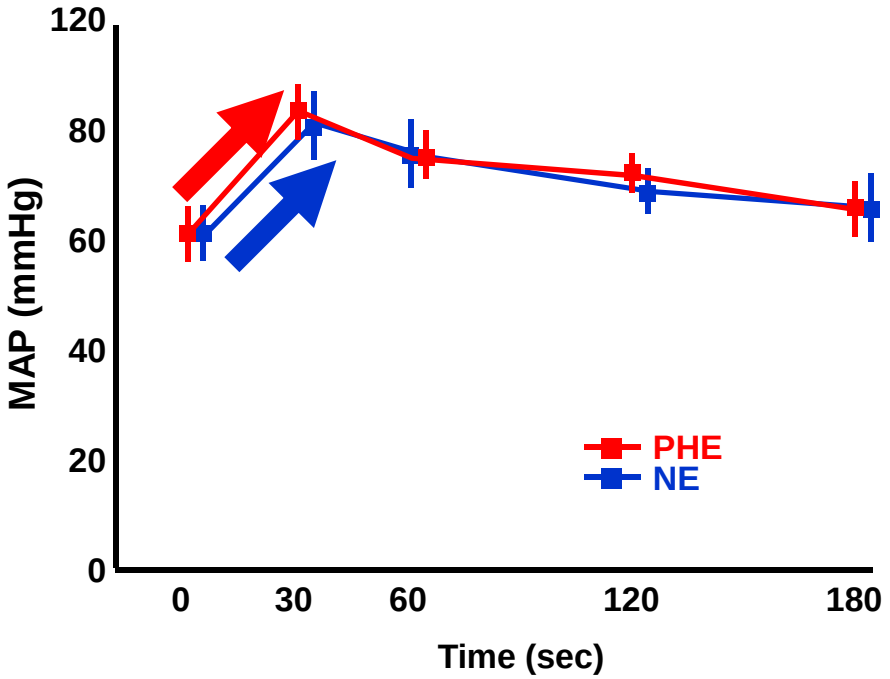
16 patients, pas d’antécédent cardiaque
Hypotension artérielle liée à l’Isoflurane

Goertz et al. Aneth Analg 1993

The Effect of Phenylephrine Bolus Administration on Left Ventricular Function During Isoflurane-Induced Hypotension

16 patients, pas d'antécédent cardiaque
Hypotension artérielle liée à l'Isoflurane

Phényléphrine (α): baisse de la FAC
Noradrénaline (α et β): amélioration FAC



Goertz et al. Aneth Analg 1993

Preload dependency determines the effects of phenylephrine on cardiac output in anaesthetised patients

50 patients chirurgie, hypotendus
Injection de Néosynéphrine

	Preload-dependent ($n = 27$)	Preload-independent ($n = 23$)	*P* value

Rebet et al. Eur J Anaesth 2016

Preload dependency determines the effects of phenylephrine on cardiac output in anaesthetised patients

50 patients chirurgie, hypotendus
Injection de Néosynéphrine

	Preload-dependent ($n = 27$)	Preload-independent ($n = 23$)	*P* value
HR (%)	−8 (8)	−9 (10)	0.863
SAP (%)	38 (18)	35 (18)	0.511
MAP (%)	38 (18)	33 (15)	0.282
DAP (%)	36 (20)	36 (25)	0.559
PPV (%)	−20 (22)	4 (40)	0.01
SVRI (%)	45 (29)	70 (38)	0.013
CI (%)	−3 (17)	−19 (12)	0.0002
SV (%)	5 (13)	−12 (12)	<0.0001
FTc (%)	5 (−0.5; 7.5)	−3.3 (−9.6; −0.6)	0.0004
Peak velocity (%)	−6 (9)	−18 (12)	0.0003

Précharge-indépendants = baisse du débit cardiaque

Rebet et al. Eur J Anaesth 2016

TAKE HOME MESSAGES

Quelles cibles de pression artérielle ?

- **L'hypotension artérielle est associée à un risque accru de morbidité et de mortalité en réanimation comme au bloc opératoire**
- **Il n'existe pas de valeur cible universelle de PA**
  - **Valeur seuil « critique » : PAM 65-70 mmHg**
  - **Pas de durée minimale acceptable**
- **Une stratégie individualisée visant à personnaliser la cible de PA en fonction du terrain (HTA O/N, …) et du contexte clinique est probablement raisonnable**
- **Tous les vasopresseurs ne sont pas équivalents**

Merci