



Anesthésie de l'hypertendu

Ce qui a changé en 2017



Emmanuel Samain

Pôle d'Anesthésie Réanimation chirurgicale

CHU de Besançon

Université de Franche-Comté

Liens d'intérêt : laboratoire Takeda, laboratoire Baxter

Définition de l'HTA

Category		SBP (mmHg)		DBP (mmHg)
Optimal		<120	and	<80
Normal		120–129	and/or	80–84
High normal		130–139	and/or	85–89
Grade 1 hypertension		140–159	and/or	90–99
Grade 2 hypertension		160–179	and/or	100–109
Grade 3 hypertension		≥180	and/or	≥110
Isolated systolic hypertension		≥140	and	<90

The highest level defines the blood pressure category, whether SBP or DBP. Isolated systolic hypertension should be graded 1–3 according to systolic values in the range indicated. Adapted with permission from [1].

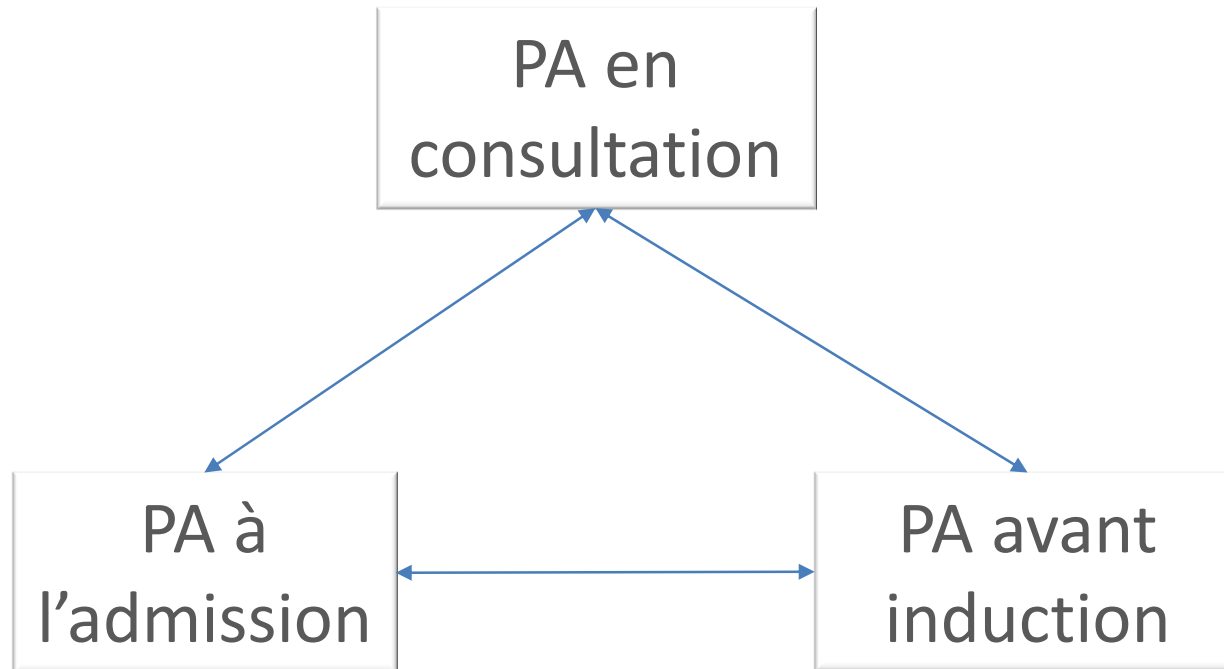
HTA essentielle dans 90% des cas

Mancia G, Fagard R, Zanchetti A, *et al.* 2013 ESH/ESC guidelines for the management of arterial hypertension: the Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). *Eur Heart J* 2013; 34:2159–2219.

Quel traitement ?

HTA isolée	Thiazidique, ICa, IEC/ARA2
Sujet âgé	Thiazidiques, ICa, ARA2
Diabète	
type I ou II et Pu	IEC/ARA2
type II	BB, diurétiques, IEC
Ins. cardiaque	IEC, BB (bisoprolol, carvédilol)
Ins. coronaire	
IDM	BB, IEC/ARA2, vérapamil
angor	BB, ICa
Insuffisance rénale	IEC (bénazépril)/ARA2

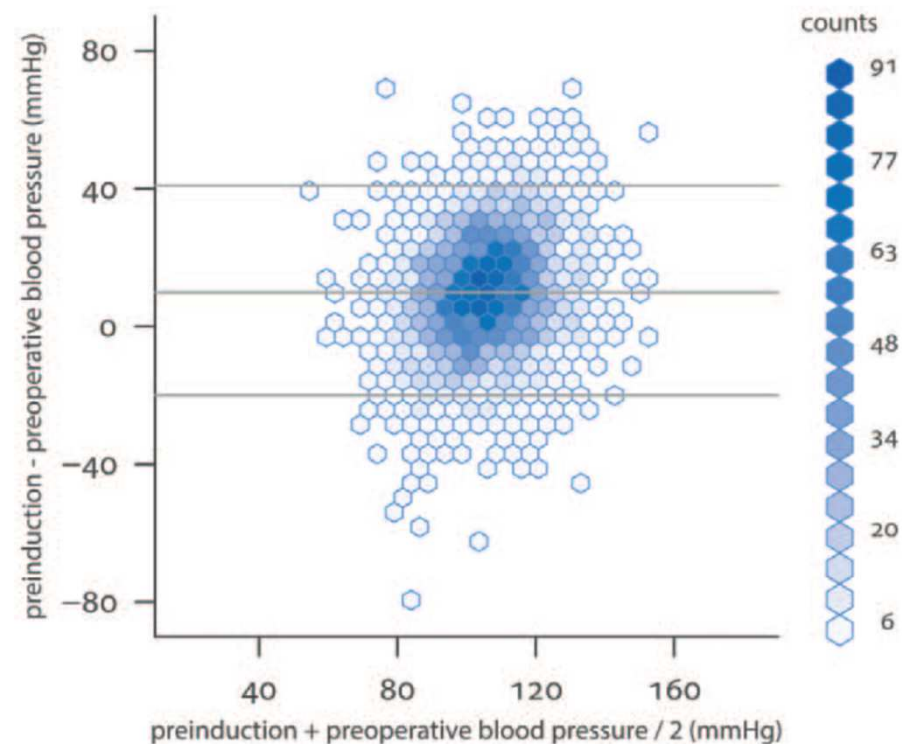
PA élevée en préopératoire



PA à l'induction

4.408 patients, âge > 60 ans

PA mesurée en CS vs PA mesurée en préinduction



Relationship Between Preoperative Evaluation Blood Pressure and Preinduction Blood Pressure: A Cohort Study in Patients Undergoing General Anesthesia

Wilton A. van Klei

Anesth Analg 2017;124:431-7

PA élevée en CS préanesthésique

- HTA isolée de consultation

- Apparaît dans les situations stressantes, sans autre signe clinique
- La PA baisse rapidement après quelques minutes de repos
- Pas de traitement dans l'immédiat car pronostic non modifié et mauvaise tolérance des TT (bêta-bloquants notamment)

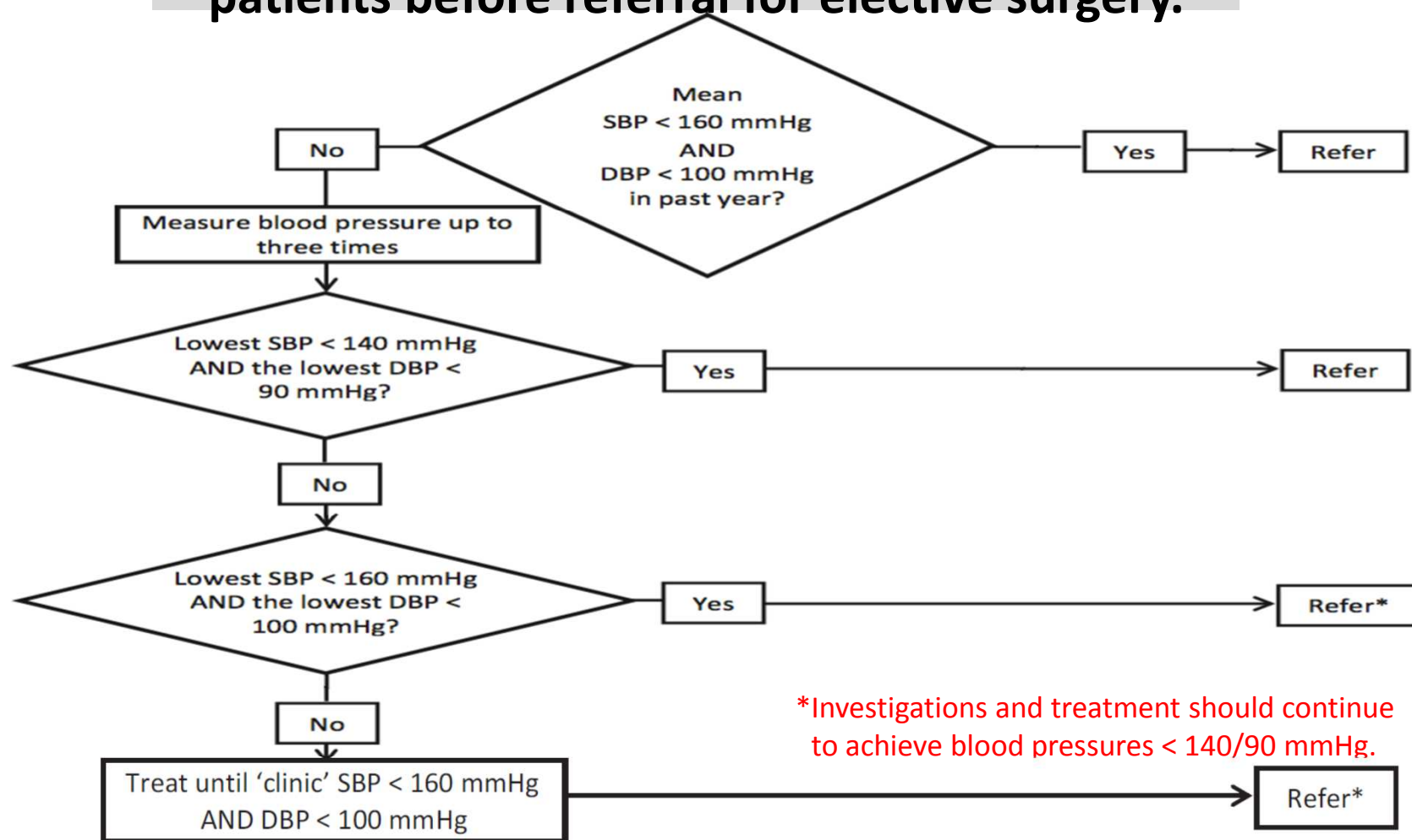
- HTA non diagnostiquée ou mal équilibrée

- 14 millions d'hypertendus
- 20 % des hypertendus connus ne sont pas traités
- 40 % des hypertendus traités ne sont pas contrôlés.

- Urgence hypertensive : PA > 180/110 mmHg, symptomatique

- Exceptionnel en CS
- Traitement - report intervention

Primary care blood pressure assessment of patients before referral for elective surgery.



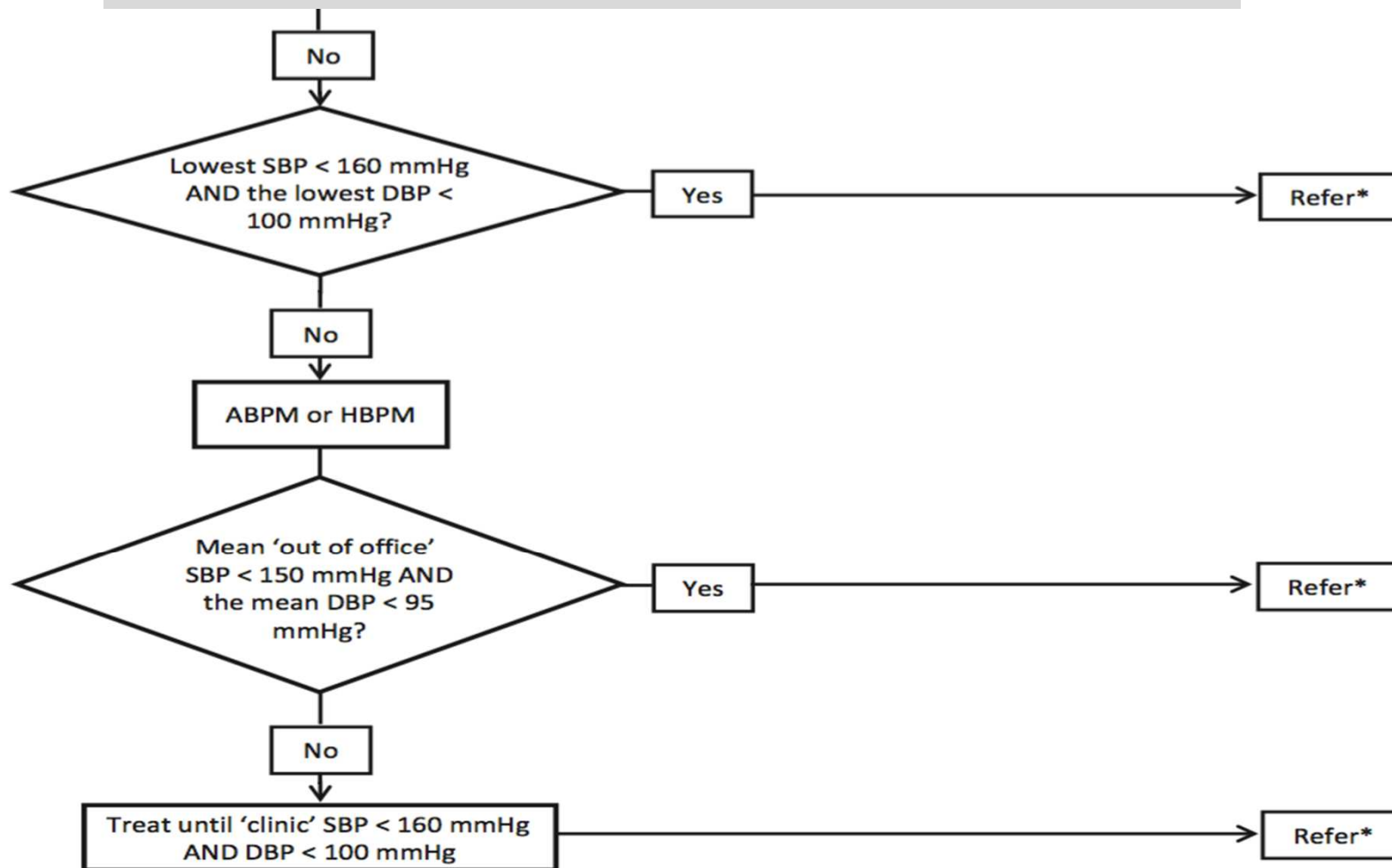
The measurement of adult blood pressure and management of hypertension before elective surgery

A. Hartle

Joint Guidelines from the Association of Anaesthetists of Great Britain and Ireland and the British Hypertension Society

Anaesthesia 2016, 71, 326-337

Primary care blood pressure assessment of patients before referral for elective surgery.



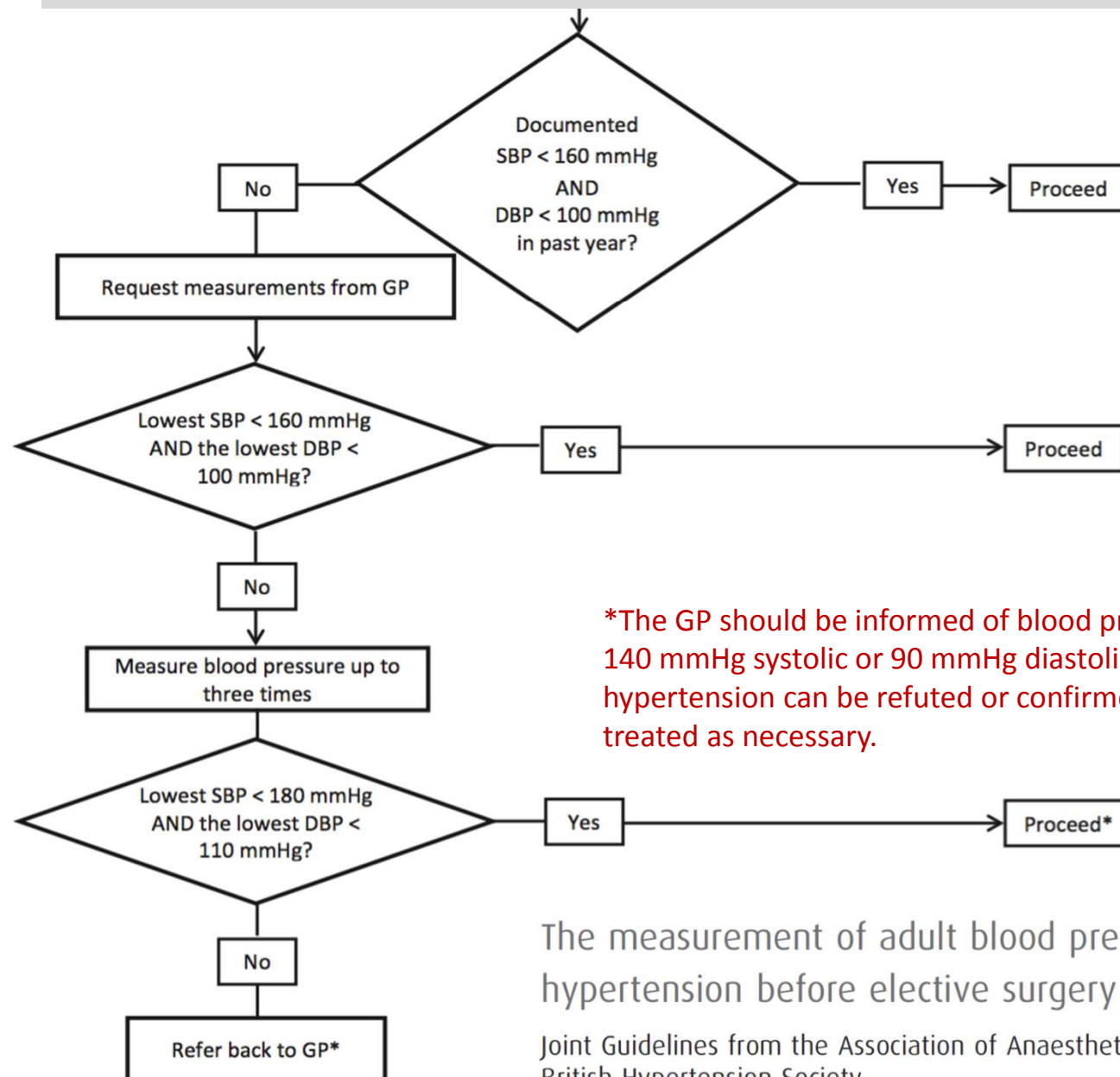
The measurement of adult blood pressure and management of hypertension before elective surgery

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Anaesthesia 2016, 71, 326-337

Secondary care blood pressure assessment of patients after referral for elective surgery.



*The GP should be informed of blood pressure readings in excess of 140 mmHg systolic or 90 mmHg diastolic, so that the diagnosis of hypertension can be refuted or confirmed and investigated and treated as necessary.

The measurement of adult blood pressure and management of hypertension before elective surgery

A. Hartle

Joint Guidelines from the Association of Anaesthetists of Great Britain and Ireland and the British Hypertension Society

Anaesthesia 2016, 71, 326-337

Le risque lié à l'HTA

Risques liés à l'HTA

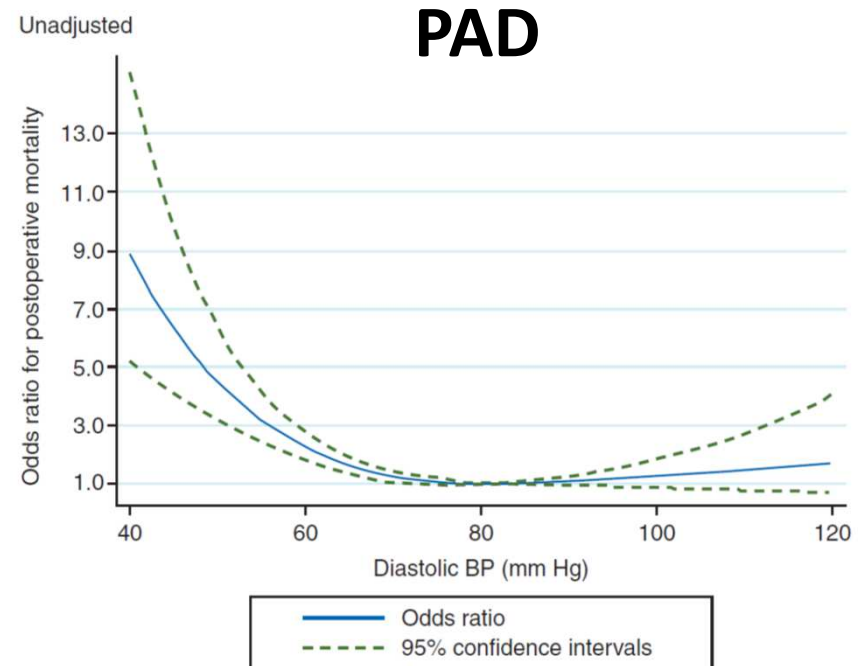
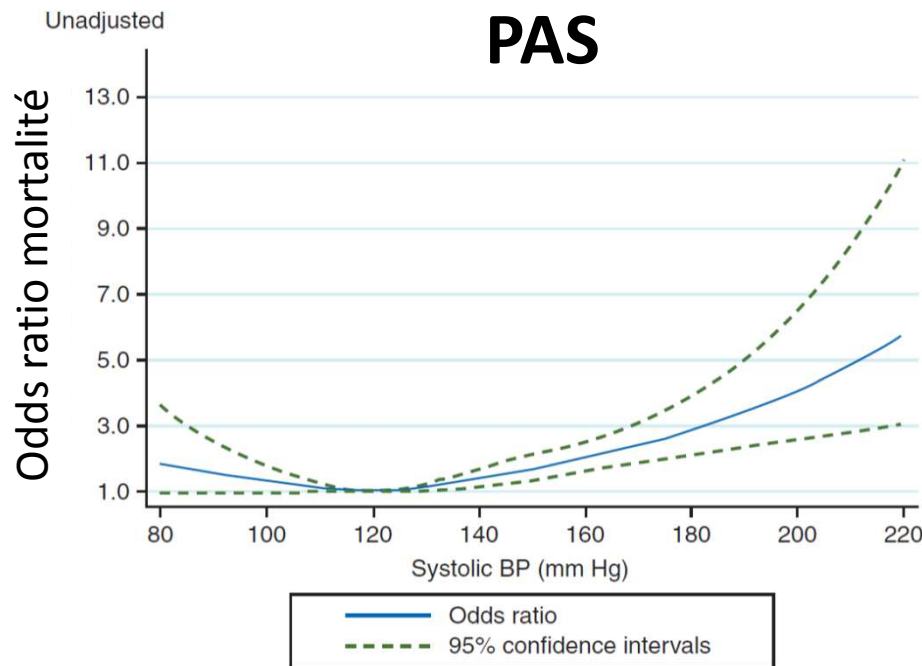
HTA	Grade I	Grade II	Grade III
PAS (mmHg)	140-159	160-179	≥ 180
PAD (mmHg)	90-99	100-109	≥ 110
0 facteur associé	Faible	Moyenne	Elevée
1 ou 2 facteurs	Moyenne	Moyenne	Elevée
3 / DID / organe	Elevée	Elevée	Elevée
Événement CV	Très élevée	Très élevée	Très élevée

Stratification du risque de complication cardiovasculaire

Pas d'évidence en faveur d'un risque périopératoire augmenté

HTA et risque périopératoire

- UK Clinical Practice Data Link register (2004-13)
- 251.567 patients, opérés en chirurgie non cardiaque
- 80.207 patients HTA (PAS > 140)
- Mortalité globale à J30 : 0,23%



Cohort study of preoperative blood pressure and risk of 30-day mortality after elective non-cardiac surgery

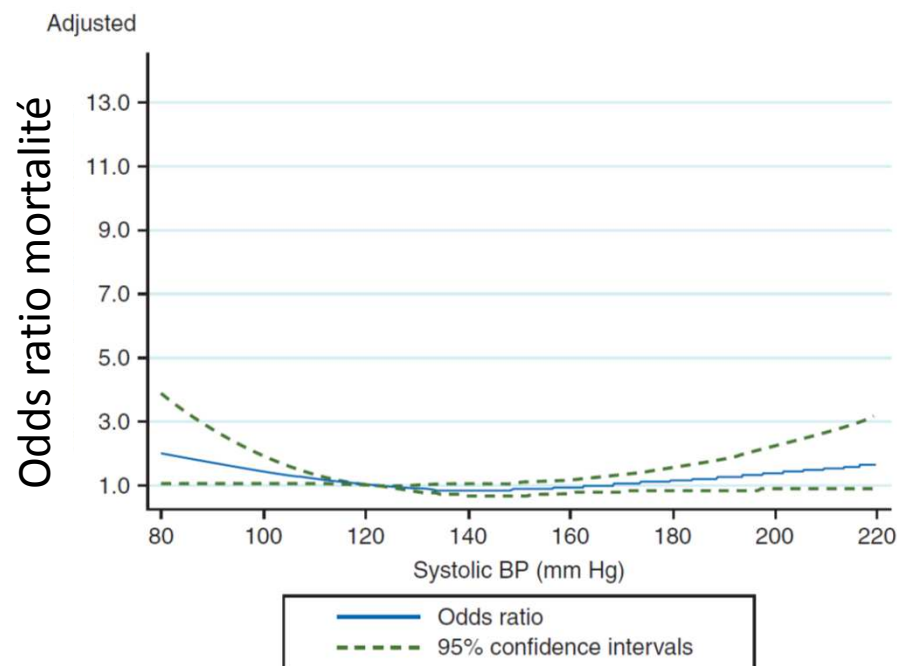
S. Venkatesan

British Journal of Anaesthesia, 119 (1): 65–77 (2017)

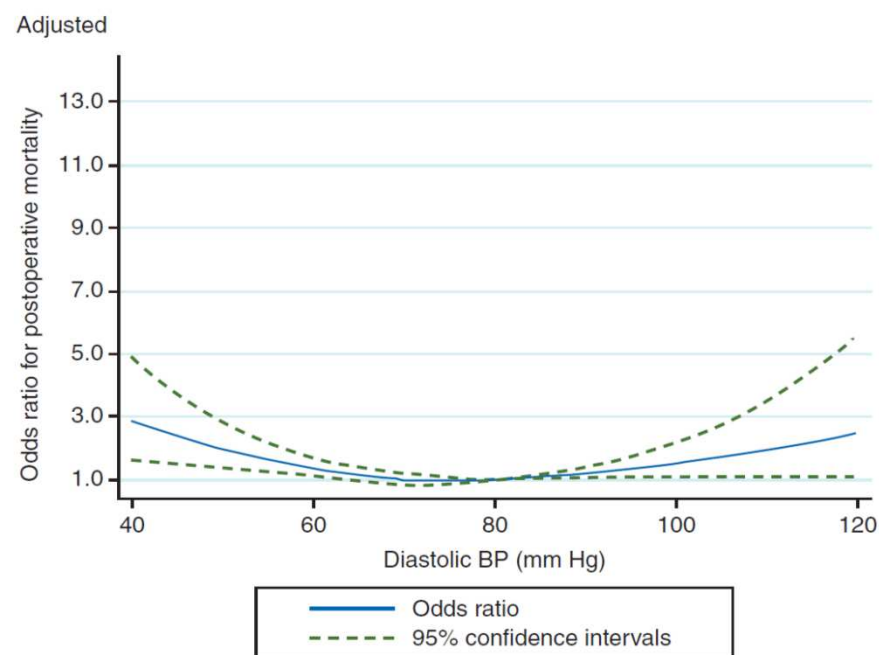
HTA et risque périopératoire

Ajusté sur les co-morbidités

PAS



PAD



adjusted model adjusted for age, gender, atrial fibrillation, unstable angina, valvular heart disease, myocardial infarction, congestive heart failure, peripheral vascular disease, cerebrovascular disease, chronic obstructive pulmonary disease, liver disease, diabetes mellitus, renal disease, cancer, Charlson's comorbidity score, smoking, alcohol, surgical risk scale, socioeconomic status (IMD 2010), number of BP measurements, statins, beta blockers, calcium channel blockers, angiotensin-converting enzyme inhibitors, alpha-2 agonists, loop diuretics, thiazide diuretics, aspirin, other antiplatelet drugs, and selective serotonin re-uptake inhibitors.

Cohort study of preoperative blood pressure and risk of 30-day mortality after elective non-cardiac surgery

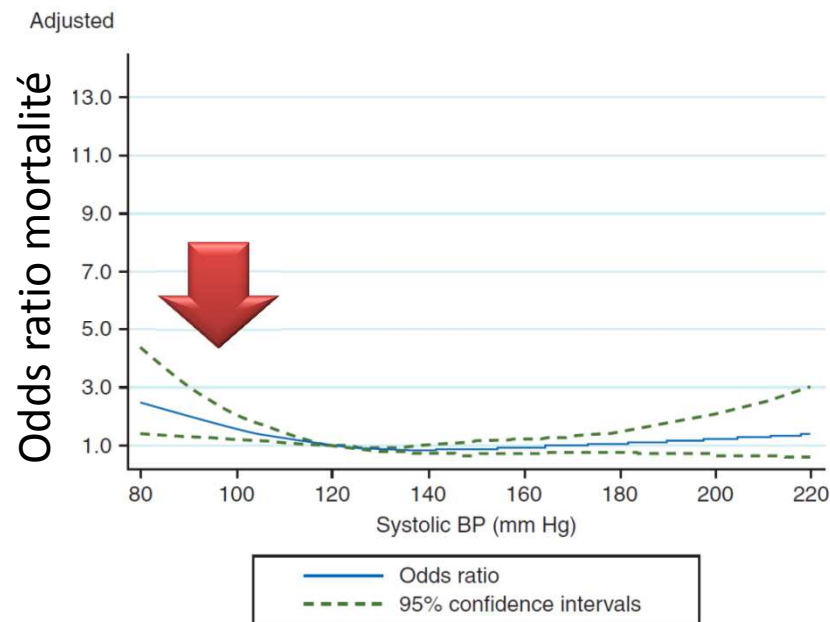
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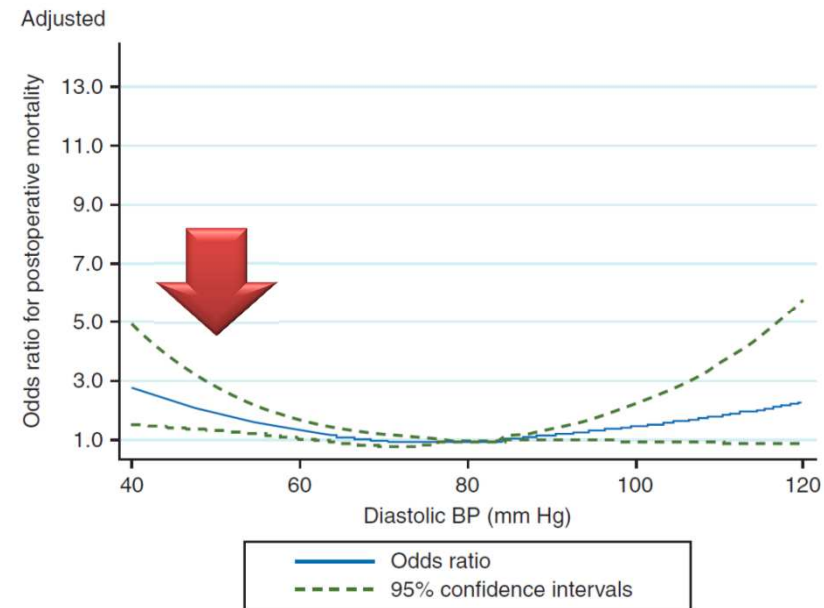
HTA et risque périopératoire

Age > 65 ans, ajusté sur les co-morbidités

PAS



PAD



adjusted model adjusted for age, gender, atrial fibrillation, unstable angina, valvular heart disease, myocardial infarction, congestive heart failure, peripheral vascular disease, cerebrovascular disease, chronic obstructive pulmonary disease, liver disease, diabetes mellitus, renal disease, cancer, Charlson's comorbidity score, smoking, alcohol, surgical risk scale, socioeconomic status (IMD 2010), number of BP measurements, statins, beta blockers, calcium channel blockers, angiotensin-converting enzyme inhibitors, alpha-2 agonists, loop diuretics, thiazide diuretics, aspirin, other antiplatelet drugs, and selective serotonin re-uptake inhibitors.

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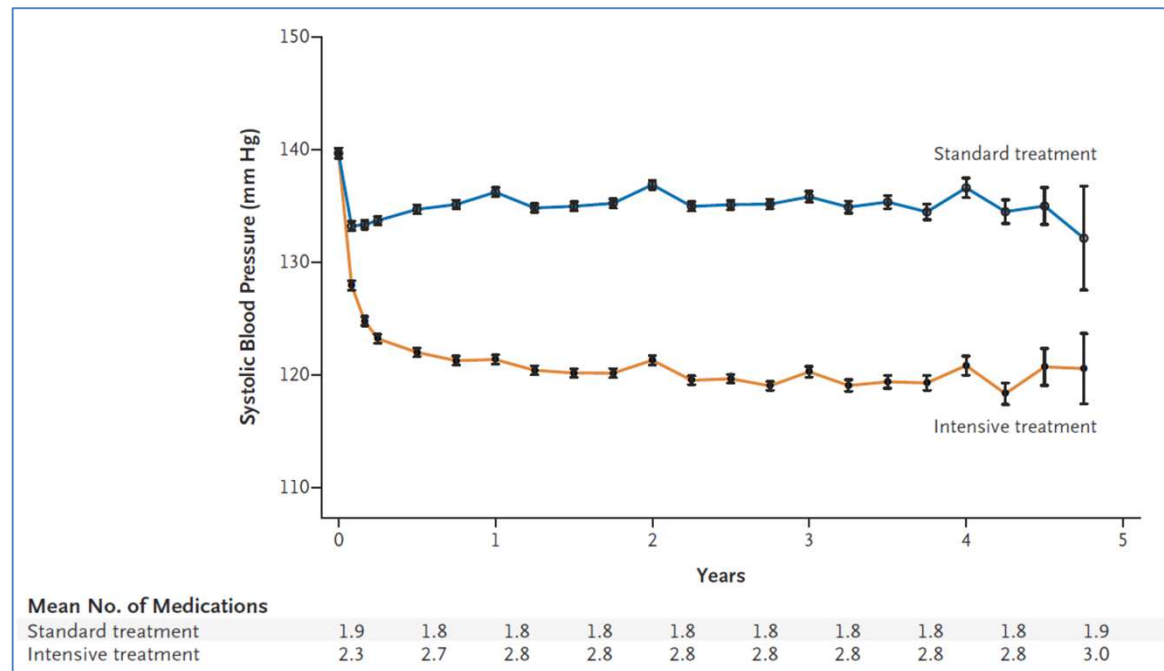
British Journal of Anaesthesia, 119 (1): 65–77 (2017)

Traitement optimal de l'HTA

9.361 patients, PA élevée, non diabétiques

Objectif du traitement :

- PAS < 120 mmHg (intensive) vs
- PAS < 140 mmHg (standard)

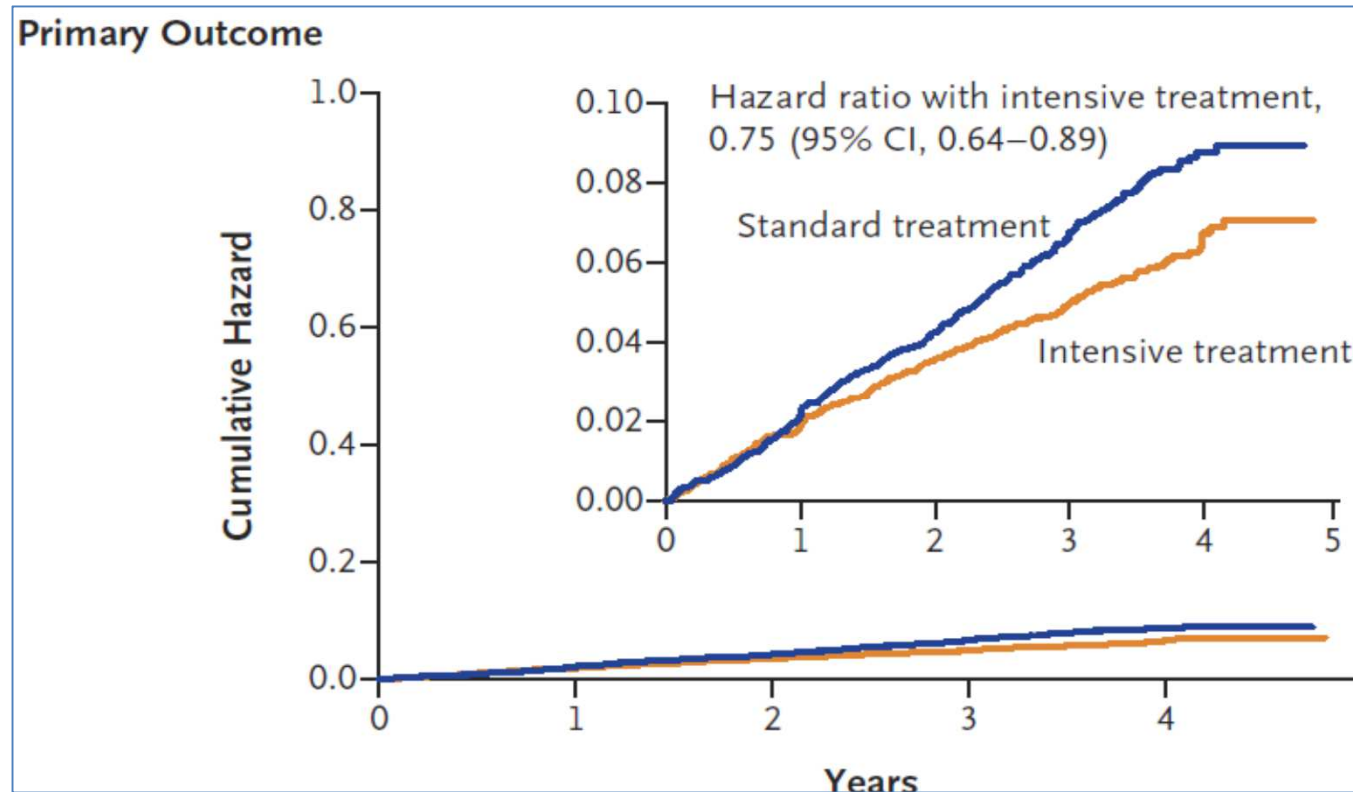


A Randomized Trial of Intensive versus Standard Blood-Pressure Control

N Engl J Med 2015;373:2103-16

The SPRINT Research Group*

Traitement optimal de l'HTA



- Réduction du risque de décès de cause CV et d'insuffisance cardiaque
- Plus d'hypoTA, de tb électrolytiques, insuffisance rénale et syncopes
- Etude interrompue prématurément

A Randomized Trial of Intensive versus Standard Blood-Pressure Control

N Engl J Med 2015;373:2103-16

The SPRINT Research Group*

Pression pulsée

Pression artérielle pulsée (PP) = différentielle entre PAS et PAD

Altération de la compliance artérielle : augmentation de la PP, avec :

Elévation de la PAS

Baisse de la PAD

Facteur de risque d'événements cardiovasculaire dans la population générale

- . Selvaraj S, Steg PG, Elbez Y, et al. Pulse pressure and risk for cardiovascular events in patients with atherothrombosis: from the REACH registry. *J Am Coll Cardiol* 2016; **67**: 392–403
- . Haider AW, Larson MG, Franklin SS, Levy D; Framingham Heart Study. Systolic blood pressure, diastolic blood pressure, and pulse pressure as predictors of risk for congestive heart failure in the Framingham Heart Study. *Ann Intern Med* 2003; **138**: 10–6
- . Franklin SS, Khan SA, Wong ND, Larson MG, Levy D. Is pulse pressure useful in predicting risk for coronary heart disease? The Framingham Heart Study. *Circulation* 1999; **100**: 354–60
- . Assmann G, Cullen P, Evers T, Petzinna D, Schulte H. Importance of arterial pulse pressure as a predictor of coronary heart disease risk in PROCAM. *Eur Heart J* 2005; **26**: 2120–6

Pression pulsée

Pression artérielle pulsée (PP) = différentielle entre PAS et PAD

Altération de la compliance artérielle : augmentation de la PP, avec :

Elévation de la PAS

Baisse de la PAD

Facteur de risque d'événements cardiovasculaire dans la population générale

Mécanismes possibles

Augmentation du stress pariétal myocardique et vasculaire

Baisse de la perfusion coronaire

Découplage ventriculo-aortique

Altération de la fonction baroréflexe par altération vasculaire

Pression pulsée et risque périop

- 9125 patients, 56 (15) ans, 54% ASA 3-4, opérés en chirurgie non cardiaque, sous AG, au Duke University Hospital
- PA et PP baseline (3 groupes > 40, 40-80, > 80 mmHg) : préop immédiat
- Mortalité à J30 : 1,14%
- IRA postop à J3, J10, et /ou sortie (créatinine > 50%) : 19,8%

Predictors	Patients With Postoperative AKI Compared to Patients Without Postoperative AKI		Patients With Different Stages of Postoperative AKI Compared With Patients Without Postoperative AKI					
	Odds Ratio ^a		Stage I, n = 1578		Stage II, n = 151		Stage III, n = 76	
	(95% CI)	P	Odds Ratio ^b	P	Odds Ratio ^b	P	Odds Ratio ^b	P
Baseline pulse pressure, per 20-mm Hg increase	1.17 (1.10–1.25)	<.0001	1.19 (1.11–1.27)	<.0001	1.11 (0.92–1.35)	.28	0.96 (0.73–1.26)	.78

PA et PP non associées à la mortalité
PP non associée à l'IRA postopératoire

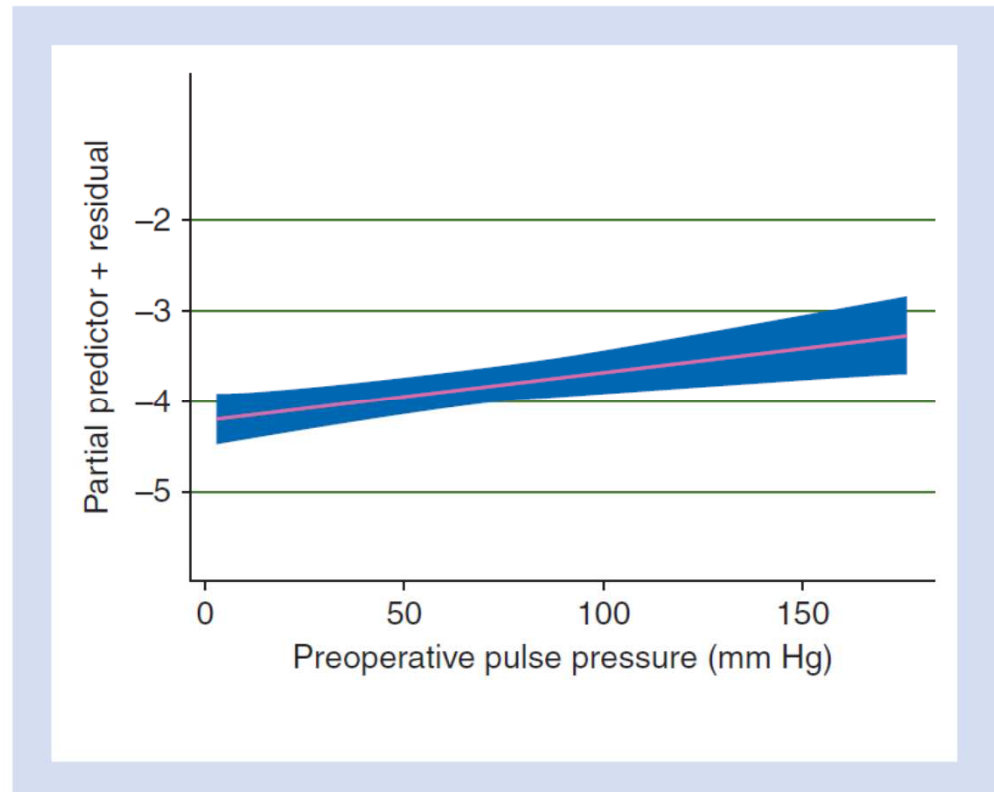
Baseline Pulse Pressure, Acute Kidney Injury, and Mortality After Noncardiac Surgery
Adriana D. Oprea
Anesth Analg 2016;123:1480–9

Pression pulsée et risque périop

- Cohorte VISION : 13.933 patients, 65 (11) ans, 12 centres
- Chirurgie > 1 heure, AG ou ALR, hospitalisation > 1 j
- Dommage myocardique (MINS) (troponine > 0,03 ng/ml) 7,9%

Pression pulsée > 62 mmHg
= FdR indépendant de MINS
Sur risque après correction
pour la valeur de PAS

ATCD HTA = FdR de MINS si
PP > 62 mmHg



Association between preoperative pulse pressure and perioperative myocardial injury: an international observational cohort study of patients undergoing non-cardiac surgery T. E. F. Abbott *British Journal of Anaesthesia*, 119 (1): 78–86 (2017)

Le traitement préopératoire

IEC/ARA₂ To Stop or Not?

Berend Mets, MB, ChB, PhD, FRCA, FFA (SA)

June 2015 • Volume 120 • Number 6

www.anesthesia-analgesia.org 1413

**Arrêt et risque de rebond
hypertensif**

**Poursuite et risque d'hypoTA
périopératoire**

2014 ACC/AHA Guideline on Perioperative Cardiovascular Evaluation and
Management of Patients Undergoing Noncardiac Surgery

Fleisher et al.

J Am Coll Cardiol 2014;64:e77–137

The AHA task force recommends:

- Continuation of ACE-Is or ARBs perioperatively is reasonable (class IIa recommendation, level of evidence: B).
- if AAB therapy is withheld, it should be restarted as soon as feasible (level: C)

526 patients, traité par IEC ou ARA₂
 Prise le matin ou le matin et le soir
 Randomisés en :

- Discontinuation : non pris le matin
- Continuation : pris le matin, > 2h avant chirurgie

Association médicamenteuses

Frequency n, %	(Meds)	(Continue ACEI or ARB)		
		Disc	Cont	Total
	ACEI + (Unk)	6	8	14
		2.29	3.03	
	ACEI + β -blocker	37	25	62
		14.12	9.47	
	ACEI + CCB + β -blocker	9	19	28
		3.44	7.20	
	ACEI + CCB	20	29	49
		7.63	10.98	
	ACEI alone	57	61	118
		21.76	23.11	
	ARB+(Unk)	7	3	10
		2.64	1.14	
	ARB + β -blocker	25	33	58
		9.54	12.50	
	ARB + CCB + β -blocker	10	9	19
		3.82	3.41	
	ARB + CCB	19	18	37
		7.25	6.82	
	ARB alone	72	59	131
		27.48	22.35	
	Total	262	264	526

Période préopératoire immédiate

	DG (N = 262)	CG (N = 264)	P
Systolic blood pressure: median (range)	132 (95–199)	133 (88–207)	0.933
Diastolic blood pressure: median (range)	78 (36–103)	76 (43–109)	0.174
Mean arterial blood pressure: median (range)	96 (68–133)	95 (65–128)	0.452
Stage 1 HTN (>140/90 but not $\geq$ 160/100): n (%)	72 (27.5%) ^a	77 (29.2%)	0.775*
Stage 2 HTN (>160/100): n (%)	26 (9.9%) ^b	22 (8.3%)	0.775*

Période postopératoire (SSPI)

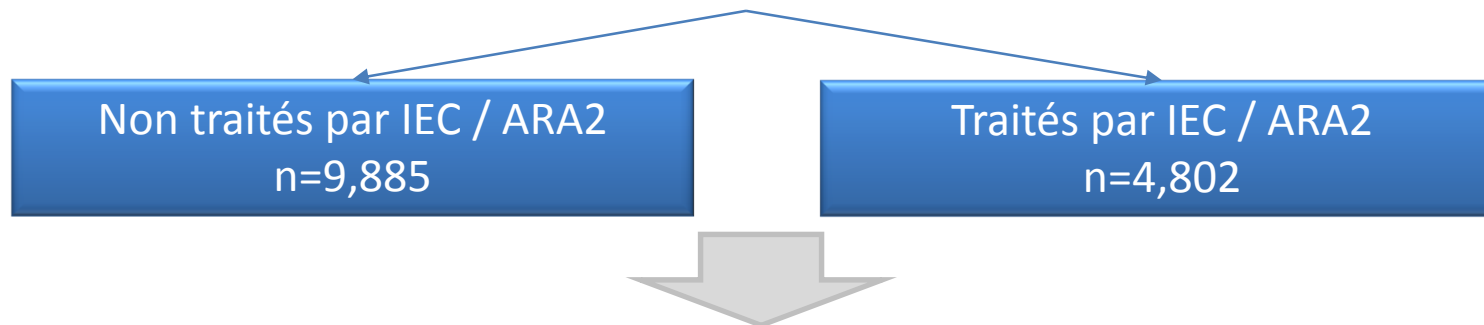
	Continuation	Discontinuation
Stage 1 HTN	41%	42%
Stage 2 HTN	22%	23%

The Risk of Hypertension after Preoperative Discontinuation of Angiotensin-Converting Enzyme Inhibitors or Angiotensin Receptor Antagonists in Ambulatory and Same-Day Admission Patients

Rebecca S. Twersky Anesth Analg 2014;118:938–44

IEC / ARA₂ en préopératoire

Cohorte VISION : 14,687 patients, 65 (11) ans, 12 centres
Chirurgie > 1 heure, AG ou ALR, hospitalisation > 1 j

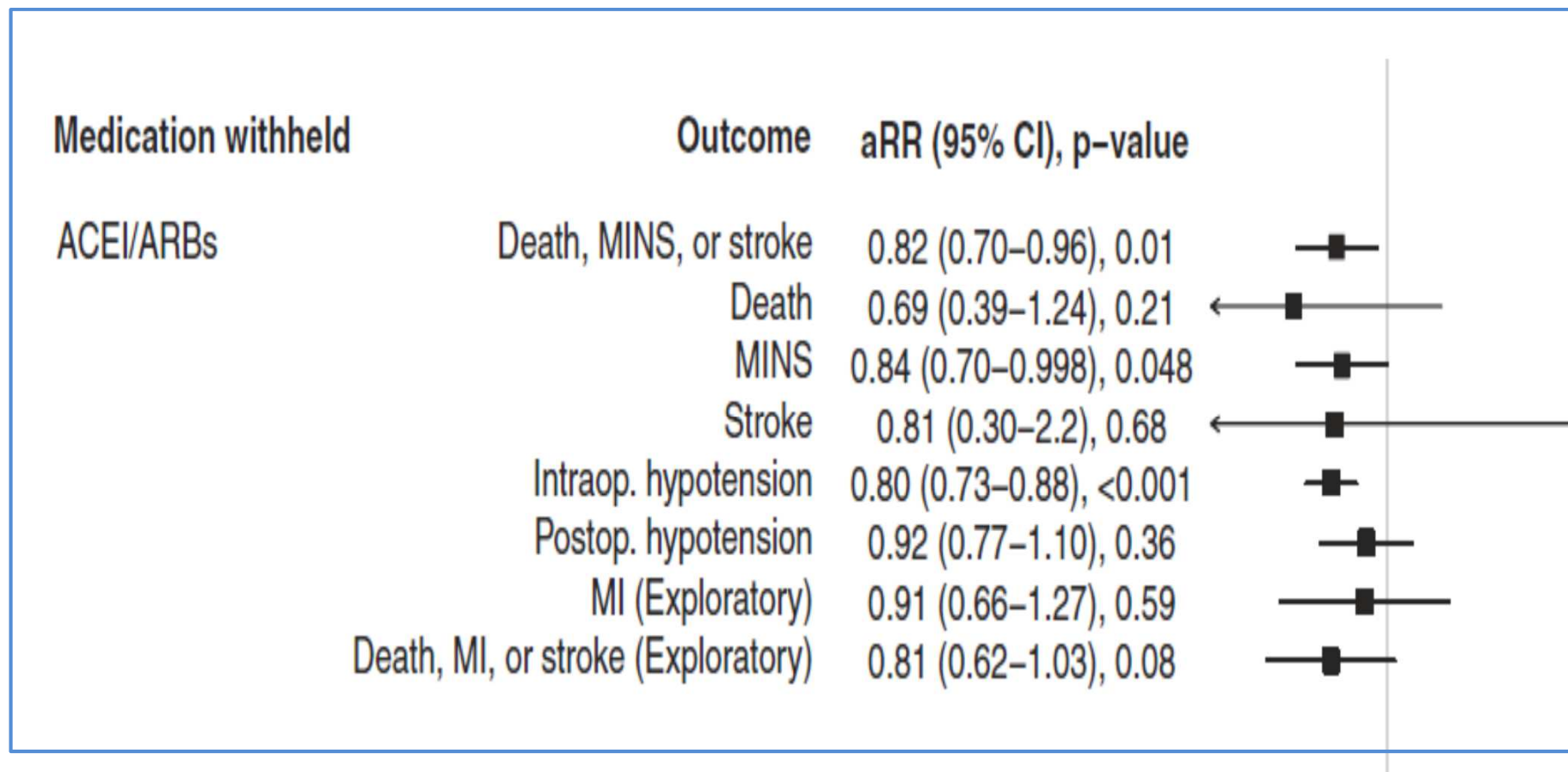


Décès J30, dommage myocardique (MINS), AVC
HoTA (PAS < 90 mmHg, nécessitant un TT) per et J3 postop

No. of Antihypertensive Medications at Baseline	No. of Antihypertensive Medications Withheld on the Day of Surgery (% of Row Total)					Row Total (% of Total)
	0	1	2	3	4	
1	3,176 (77.1%)	944 (22.9%)				4,120 (60.1%)
2	1,507 (70.7%)	353 (16.6%)	271 (12.7%)			2,131 (31.1%)
3 or more	379 (62.6%)	125 (20.7%)	53 (8.8%)	42 (6.9%)	6 (1%)	605 (8.8%)
Column total (% of total)	5,062 (73.8%)	1,422 (20.7%)	324 (4.7%)	42 (0.6%)	6 (0.1%)	6,856

Withholding *versus* Continuing Angiotensin-converting Enzyme Inhibitors or Angiotensin II Receptor Blockers before Noncardiac Surgery Pavel S. Roshanov [ANESTHESIOLOGY 2017; 126:16-27](#)

IEC / ARA₂ en préopératoire



Withholding *versus* Continuing Angiotensin-converting Enzyme Inhibitors or Angiotensin II Receptor Blockers before Noncardiac Surgery Pavel S. Roshanov [ANESTHESIOLOGY 2017; 126:16-27](#)

IEC & ARA₂

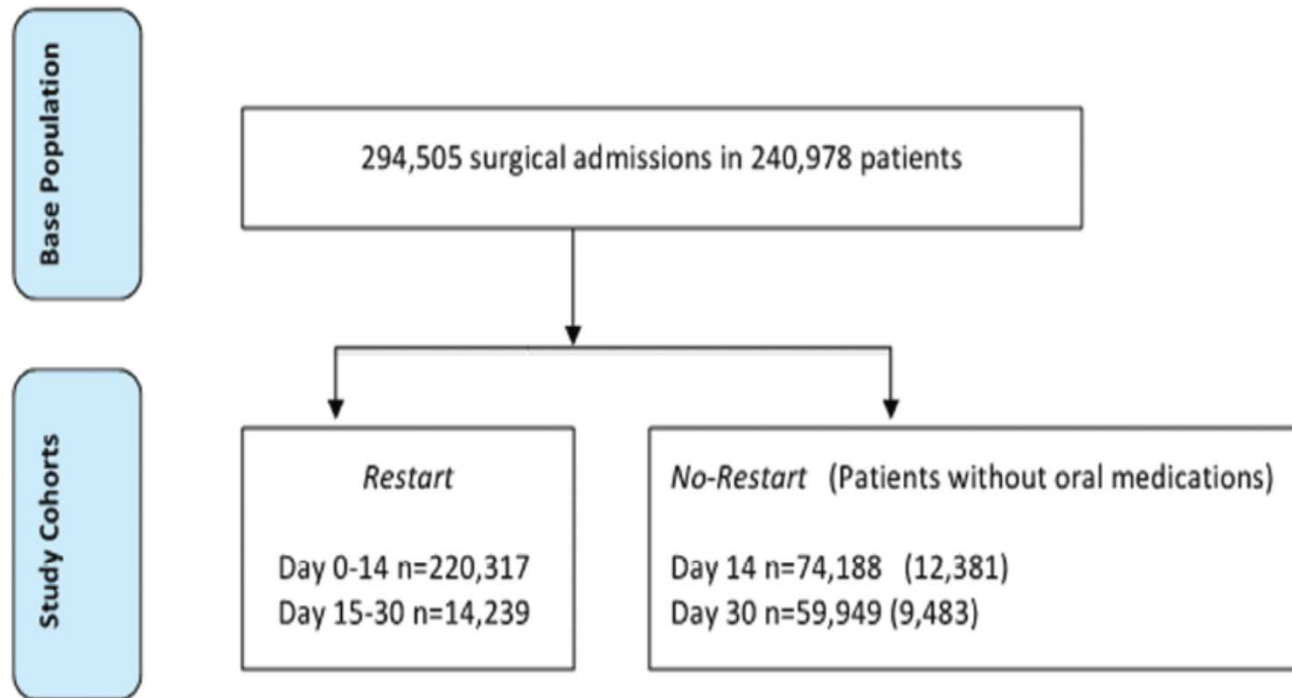
Proposer une stratégie d'arrêt, de maintien et/ou de substitution

Il est recommandé d'interrompre les inhibiteurs du SRAA au moins 12 heures avant une intervention lorsque ceux-ci constituent un traitement de fond de l'hypertension artérielle (accord fort).

RECOMMANDATIONS FORMALISÉES D'EXPERTS

Gestion périopératoire des traitements chroniques et dispositifs médicaux. Pathologies cardiovasculaires

Reprise IEC postopératoire



Thirty-Day Mortality Risk Associated With the Postoperative Nonresumption of Angiotensin-Converting Enzyme Inhibitors

Seshadri C. Mudumbai

Journal of Hospital Medicine Vol 9 | No 5 | May 2014

Reprise IEC postopératoire

Parameter	Surgeries, No. (%), Total = 294,505	Died by 30-Days, Total = 9,227	<i>P</i> Value
No restart, 0–14 days*	59,949 (20%)	7.3%	<0.001
Restart, 0–14 days [†]	220,317 (75%)	2.1%	
Restart, 15–30 days [‡]	14,239 (5%)	1.7%	
Unadjusted Hazard for 30-Day Mortality (OR [95% CI])			
Restart (0–14 Days) (Referent)*	No Restart, 0–14 Days [†]	Restart, 15–30 Days [‡]	
1	3.44 (3.30–3.60) [§]	0.23 (0.20–0.26) [§]	
Restart, 0–14 Days (Referent)	No Restart, 0–14 Days	NA	
1	2.92 (2.80–3.05) [§]	NA [¶]	

Thirty-Day Mortality Risk Associated With the Postoperative Nonresumption of Angiotensin-Converting Enzyme Inhibitors

Seshadri C. Mudumbai

Journal of Hospital Medicine Vol 9 | No 5 | May 2014

Bêta-bloquants et HTA

Beta-blockers versus diuretics	
All-cause mortality	1.04 (0.91 to 1.19)
Cardiovascular events	1.13 (0.99 to 1.28)
Stroke	1.17 (0.65 to 2.09)
Coronary heart disease	1.12 (0.82 to 1.54)
Adverse events	1.69 (0.95 to 3.00)

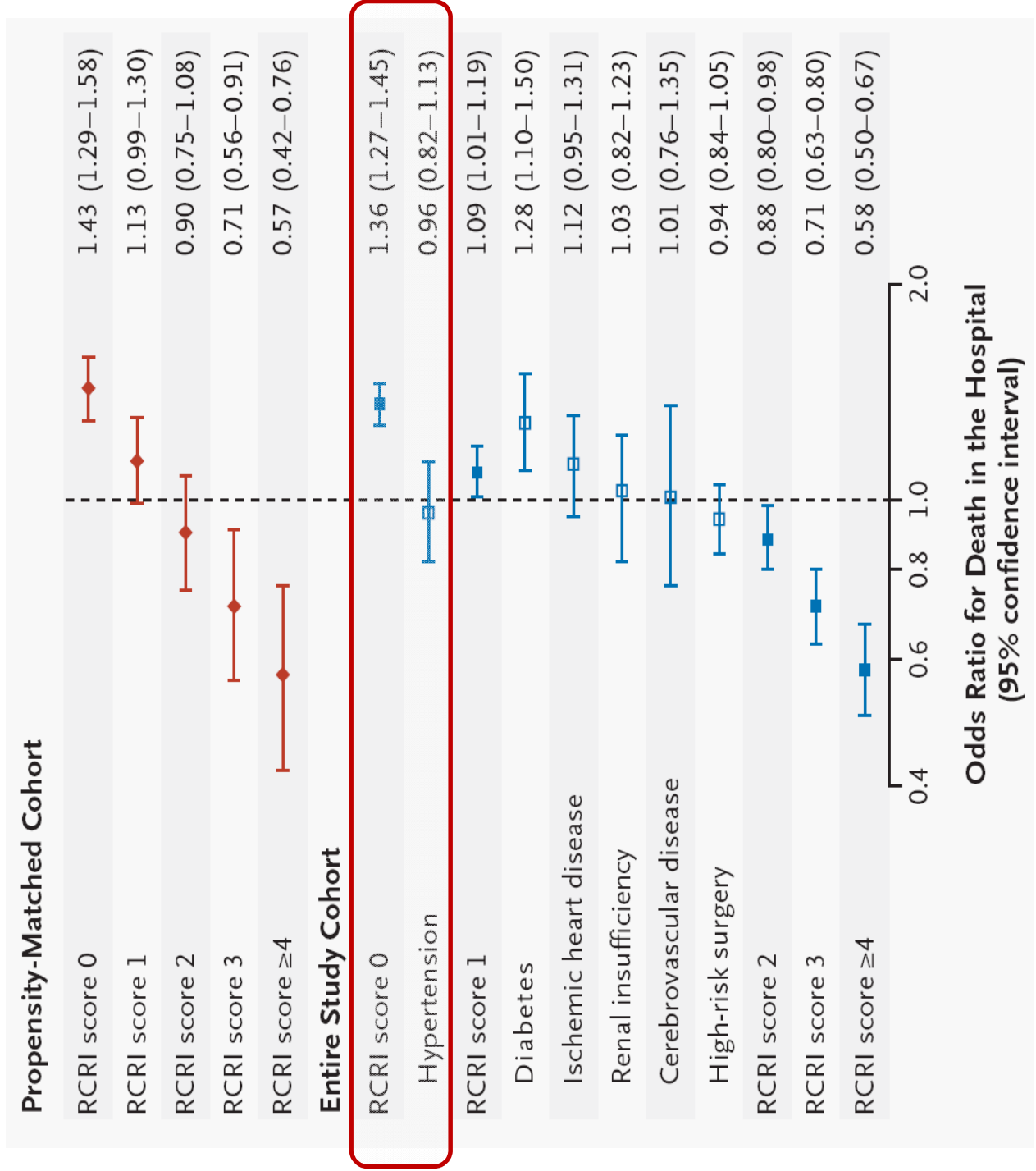
Beta-blockers versus calcium-channel blockers	
All-cause mortality	1.07 (1.0 to 1.14)
Cardiovascular events	1.18 (1.08 to 1.29)
Stroke	1.24 (1.11 to 1.4)
Coronary heart disease	1.05 (0.96 to 1.15)
Adverse events	1.20 (0.71 to 2.04)

Beta-blockers versus renin–angiotensin system inhibitors	
All-cause mortality	1.10 (0.98 to 1.24)
Cardiovascular events	1.0 (0.72 to 1.38)
Stroke	1.30 (1.11 to 1.53)
Coronary heart disease	0.90 (0.76 to 1.06)
Adverse events	1.41 (1.29 to 1.54)

bêta-bloquants périopératoires

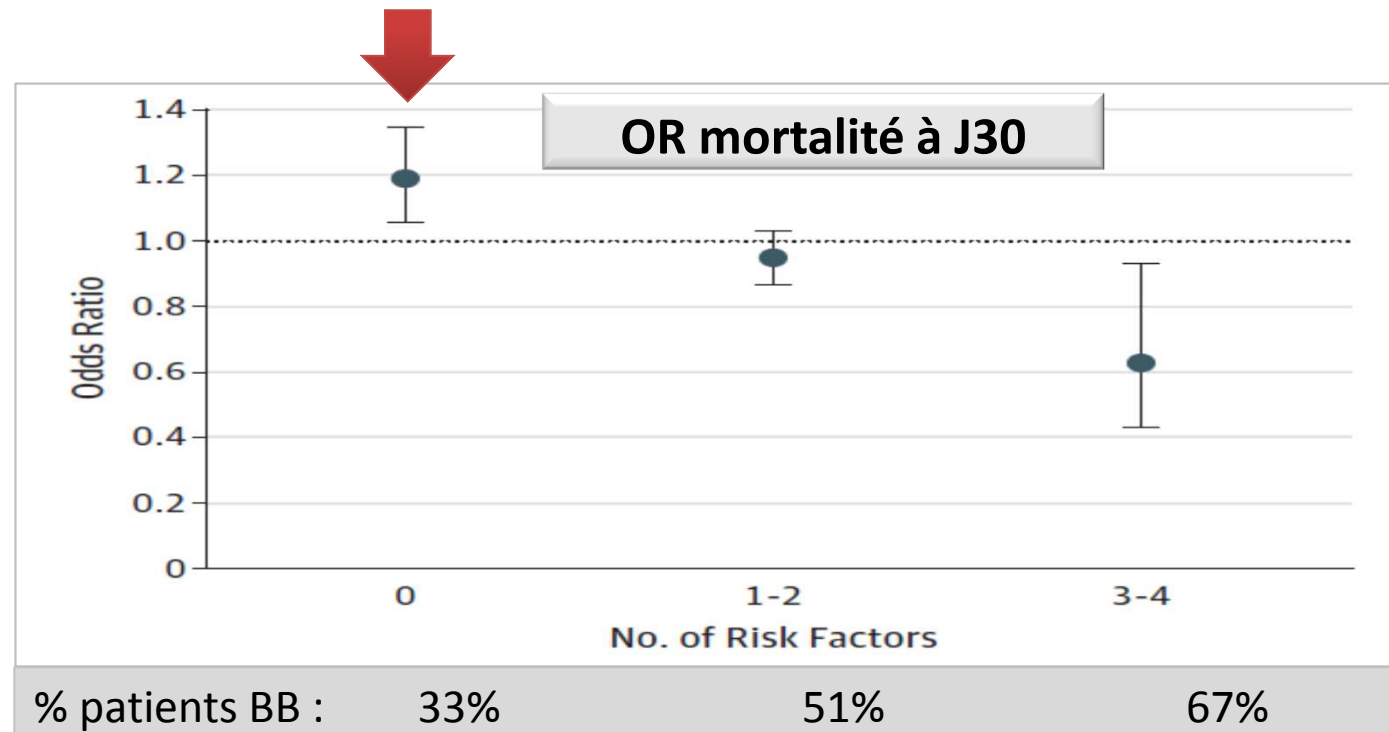
- Cohort study, 329 Institutions, USA, 2000-2001
- 782,969 patients, noncardiac surgery
- 663,635 patients (85%) with non contra-indication to beta-blockers
- 18% of the patients treated with BB





Bêta-bloquants périopératoires

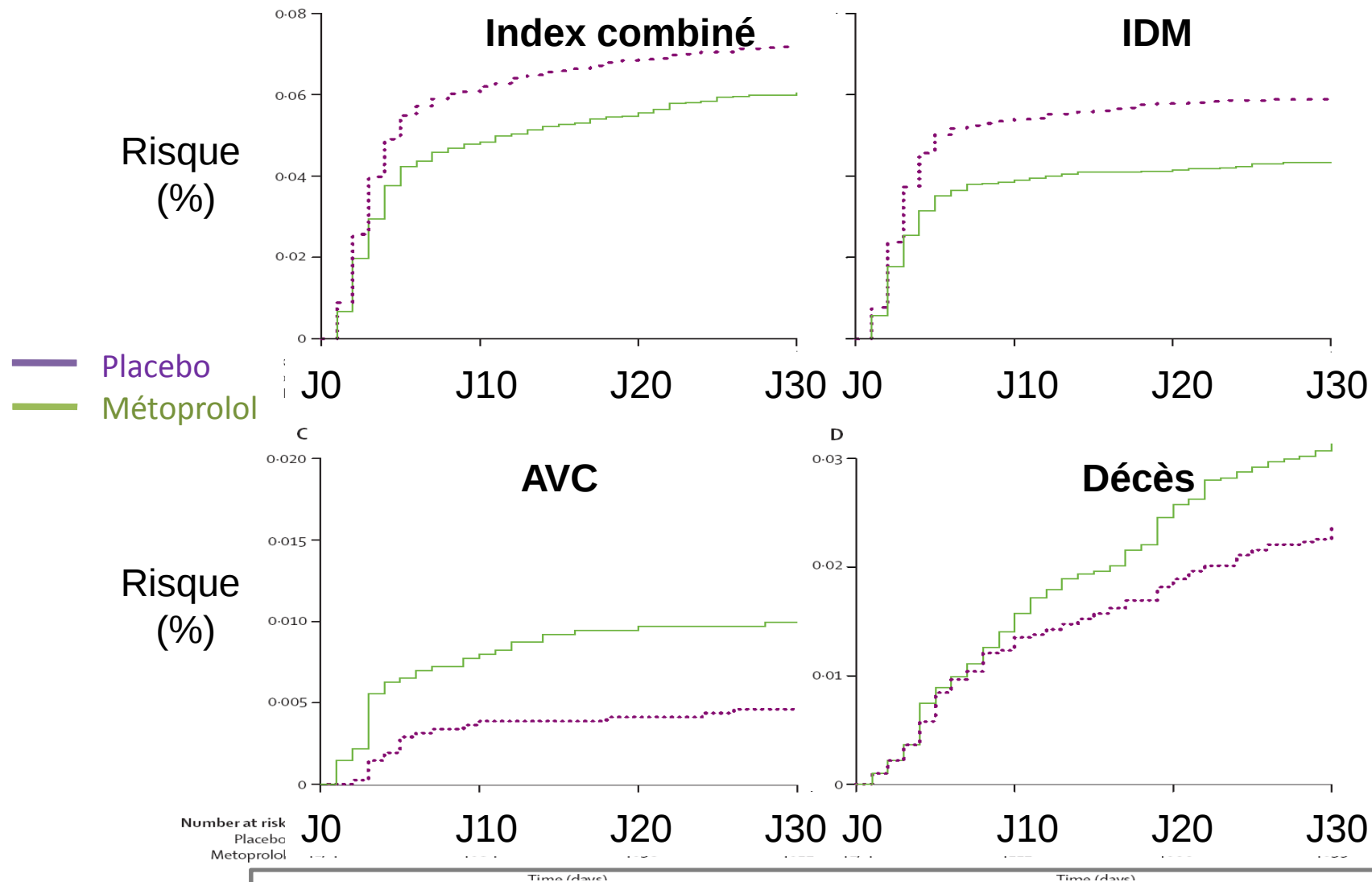
- 314.114 patients (93% hommes), 119 Veterans Affairs Hospitals, 2008-13
- Chirurgie non cardiaque
- Score de risque (0-4) : CAD, IRC, Diabète, Chirurgie intraabdominale



β -Blockade and Operative Mortality in Noncardiac Surgery
Harmful or Helpful? Mark L. Friedell

JAMA Surg. doi:10.1001/jamasurg.2015.86

Risque des bêta-bloquants

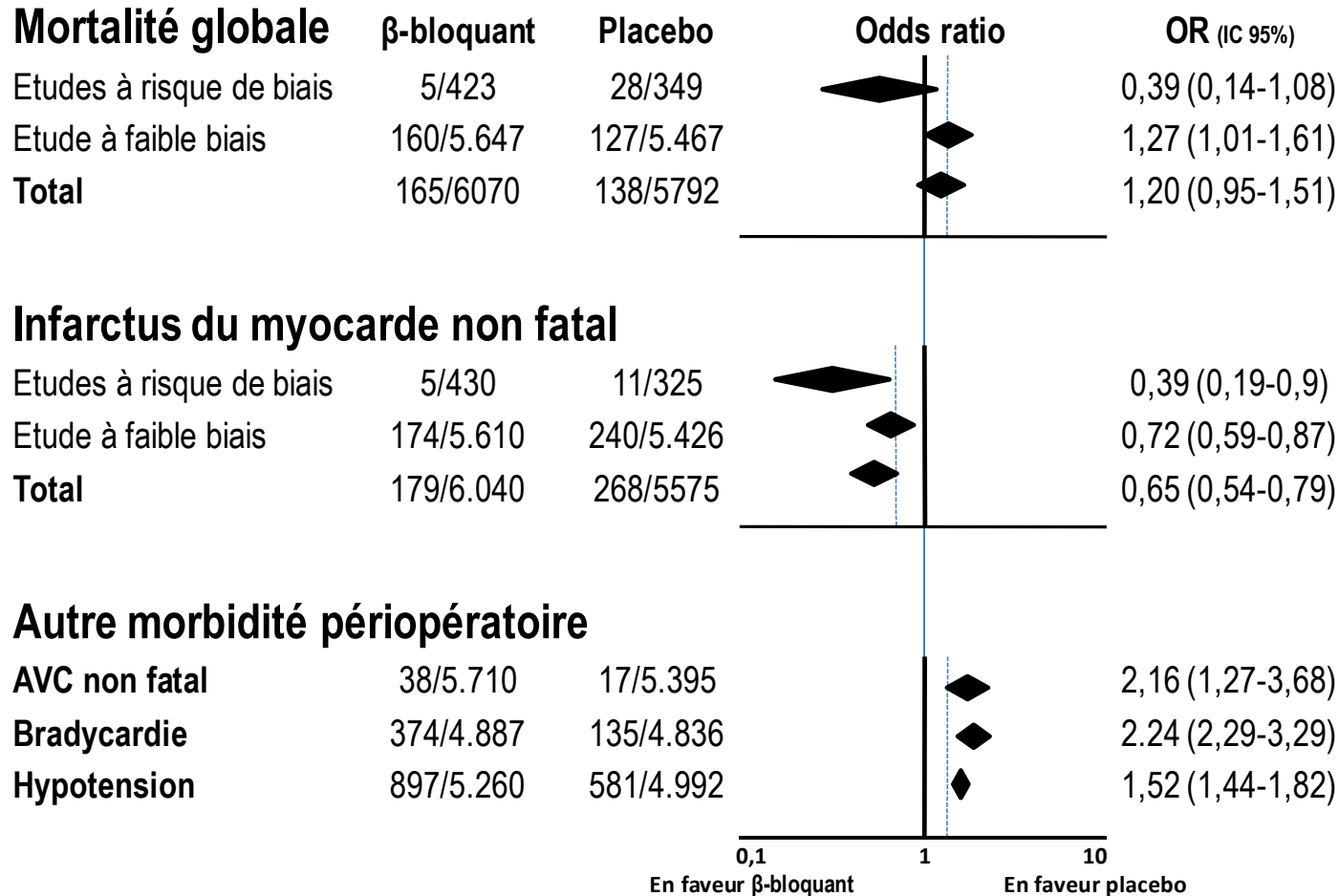


Lancet

Effects of extended-release metoprolol succinate in patients undergoing non-cardiac surgery (POISE trial): a randomised controlled trial

POISE Study Group Lancet 2008; 371: 1839-47

Risque des bêta-bloquants



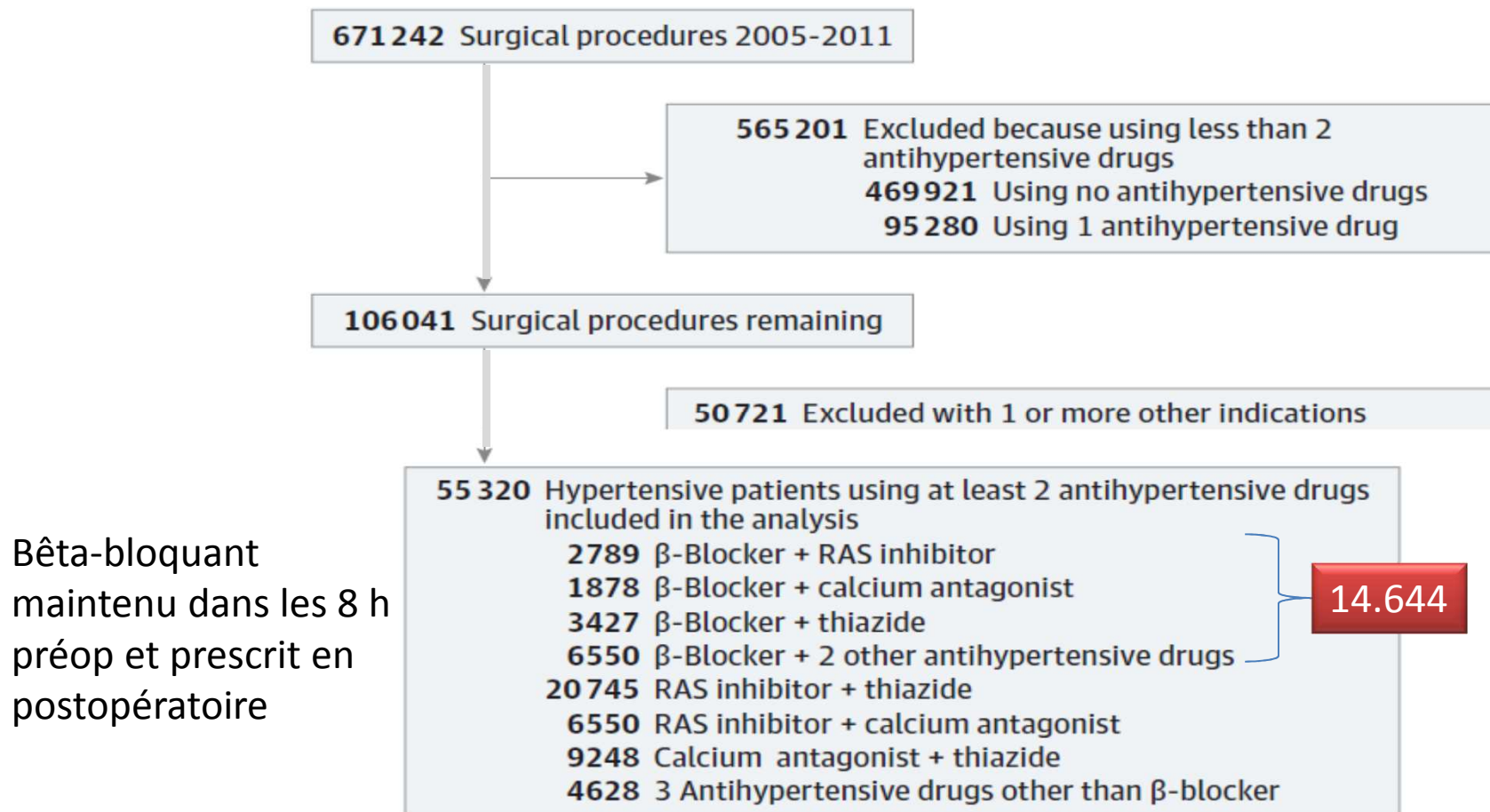
Lancet

Perioperative β blockers in patients having non-cardiac surgery: a meta-analysis

Sripal Bangalore, Lancet 2008

HTA et bêta-bloquants périop

Registre Danois 2005-201, patients 66 ans, opérés en chirurgie générale
Hypertendus, traités par un bêta-bloquant + un autre antiHTA



Bêta-bloquant
maintenu dans les 8 h
préop et prescrit en
postopératoire

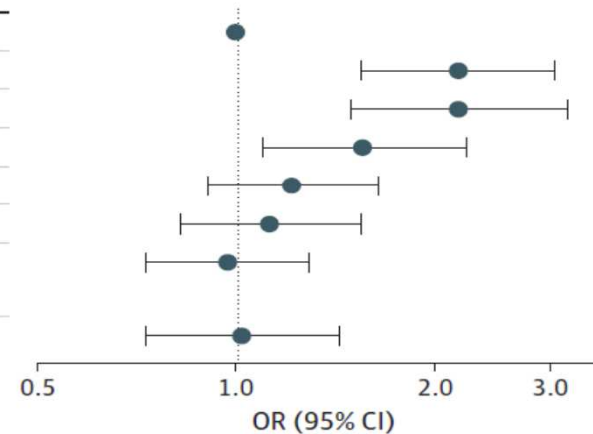
β-Blocker-Associated Risks in Patients With Uncomplicated Hypertension Undergoing Noncardiac Surgery

Mads E. Jørgensen
JAMA Intern Med. 2015

HTA et bêta-bloquants périop

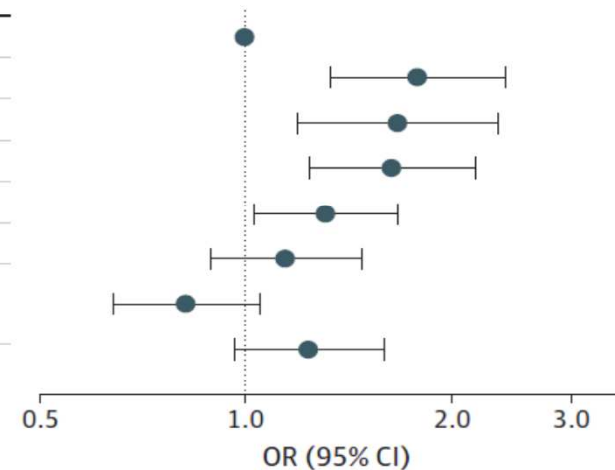
A 30-day MACEs

Subgroups	OR (95% CI)	Events/ Sample Size
RAS inhibitors + thiazides	1 [Reference]	161/20 745
β-blocker + RAS inhibitors	2.16 (1.54-3.04)	46/2789
β-blocker + calcium antagonists	2.17 (1.48-3.17)	35/1878
β-blocker + thiazides	1.56 (1.10-2.22)	41/3427
β-blocker + 2 others	1.22 (0.90-1.64)	71/6550
RAS inhibitors + calcium antagonists	1.12 (0.82-1.54)	55/6055
RAS inhibitors, thiazides, and calcium antagonists	0.97 (0.73-1.29)	77/9248
Calcium antagonists + thiazides	1.02 (0.73-1.44)	49/4628



B 30-day all-cause mortality

Subgroups	OR (95% CI)	Events/ Sample Size
RAS inhibitors + thiazides	1 [Reference]	256/20 745
β-blocker + RAS inhibitors	1.79 (1.33-2.42)	58/2789
β-blocker + calcium antagonists	1.68 (1.20-2.35)	44/1878
β-blocker + thiazides	1.65 (1.24-2.18)	73/3427
β-blocker + 2 others	1.31 (1.03-1.67)	107/6550
RAS inhibitors + calcium antagonists	1.15 (0.89-1.48)	93/6055
RAS inhibitors, thiazides, and calcium antagonists	0.82 (0.64-1.05)	95/9248
Calcium antagonists + thiazides	1.24 (0.96-1.60)	94/4628



β-Blocker-Associated Risks in Patients With Uncomplicated Hypertension Undergoing Noncardiac Surgery

Mads E. Jørgensen

JAMA Intern Med. 2015

bêta-bloquants en pratique

En préopératoire :

Cible : FC = 60 – 70 b/min, PAM > 100 mmHg

Evaluation de la tolérance : ECG

Poursuite du traitement donné avec la prémédication orale

Gestion du risque majoré d'hypotension artérielle peropératoire

Relais précoce postopératoire :

Voie orale possible : reprise du traitement habituel

Voie IV sous surveillance hémodynamique

PA périopératoire

Association between Intraoperative Hypotension and Hypertension and 30-day Postoperative Mortality in Noncardiac Surgery

Terri G. Monk, M.D., M.S., Michael R. Bronsert, Ph.D., M.S., William G. Henderson, M.P.H., Ph.D., Michael P. Mangione, M.D., S. T. John Sum-Ping, M.D., Deyne R. Bentt, M.D., C.P.H.I.M.S., Jennifer D. Nguyen, M.D., Joshua S. Richman, M.D., Ph.D., Robert A. Meguid, M.D., M.P.H., Karl E. Hammermeister, M.D.

Anesthesiology 2015; 123:307-19

What This Article Tells Us That Is New

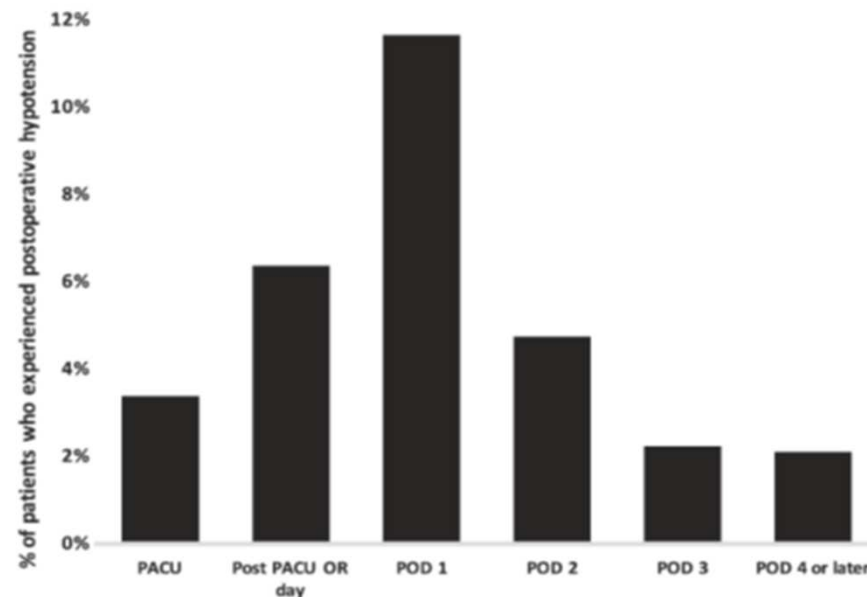
- In a review of more than 18,000 patients undergoing noncardiac surgery within the Veterans Administration Hospital system, application of three definitions of blood pressure deviation based on population and individual patient level data showed that hypotension but not hypertension was associated with increased 30-day mortality

HypoTA périopératoire

- Cohorte VISION : 14,687 patients, 65 (11) ans, 12 centres
- Chirurgie > 1 heure, AG ou ALR, hospitalisation > 1 j

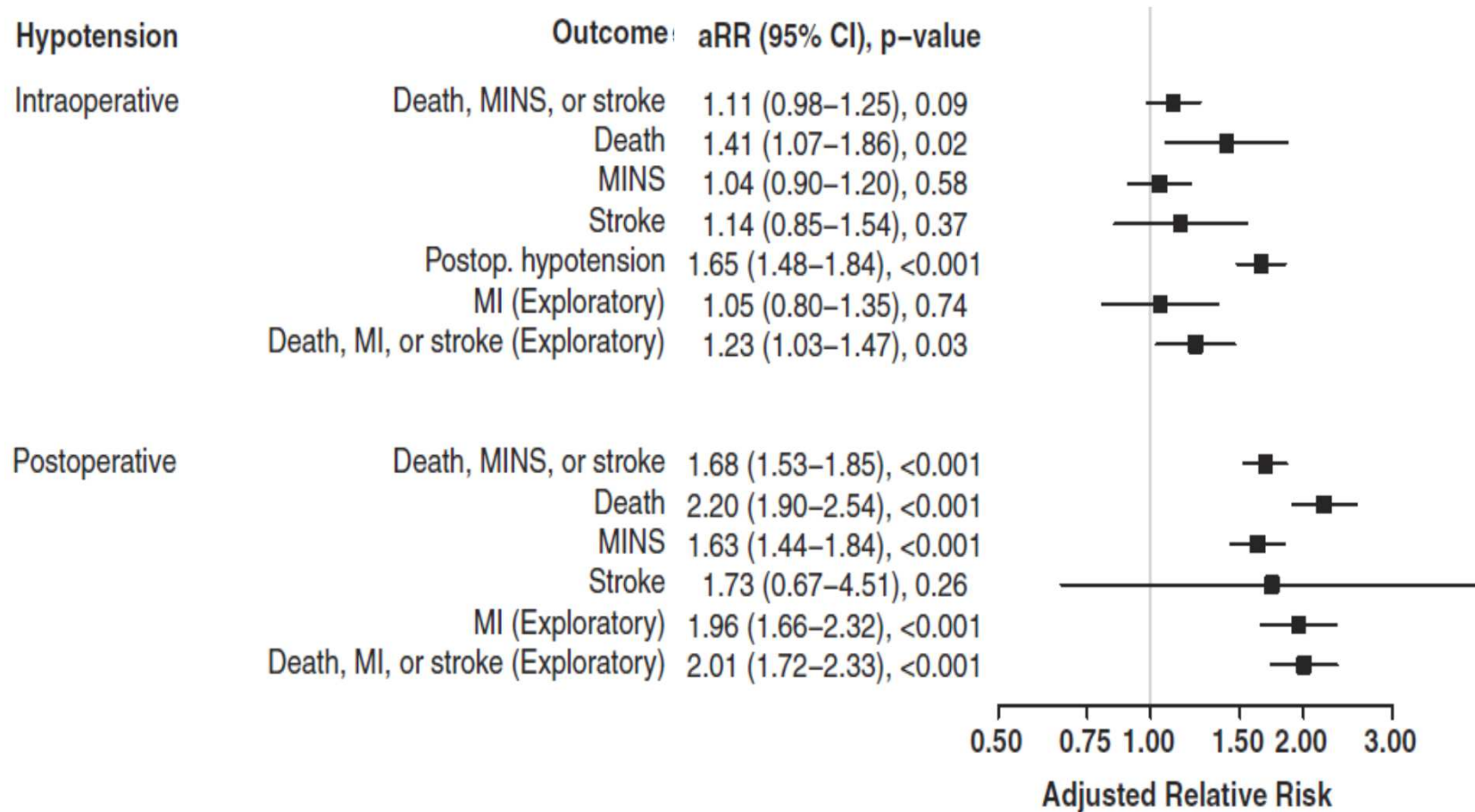


- Décès J30, dommage myocardique (MINS), AVC
- HoTA (PAS < 90 mmHg, nécessitant un TT) per et J3 postop



Withholding *versus* Continuing Angiotensin-converting Enzyme Inhibitors or Angiotensin II Receptor Blockers before Noncardiac Surgery Pavel S. Roshanov [ANESTHESIOLOGY 2017; 126:16-27](#)

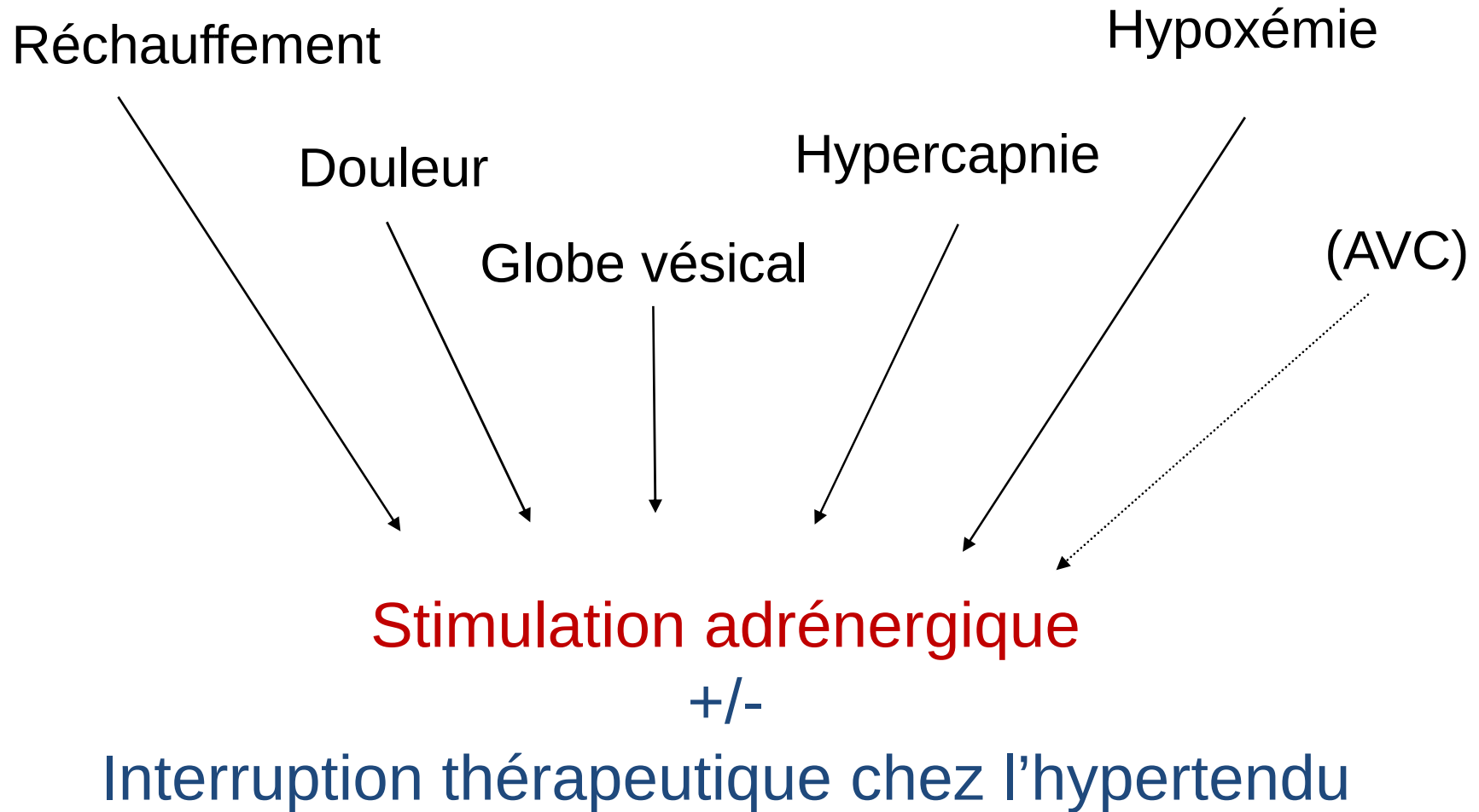
HypoTA périopératoire



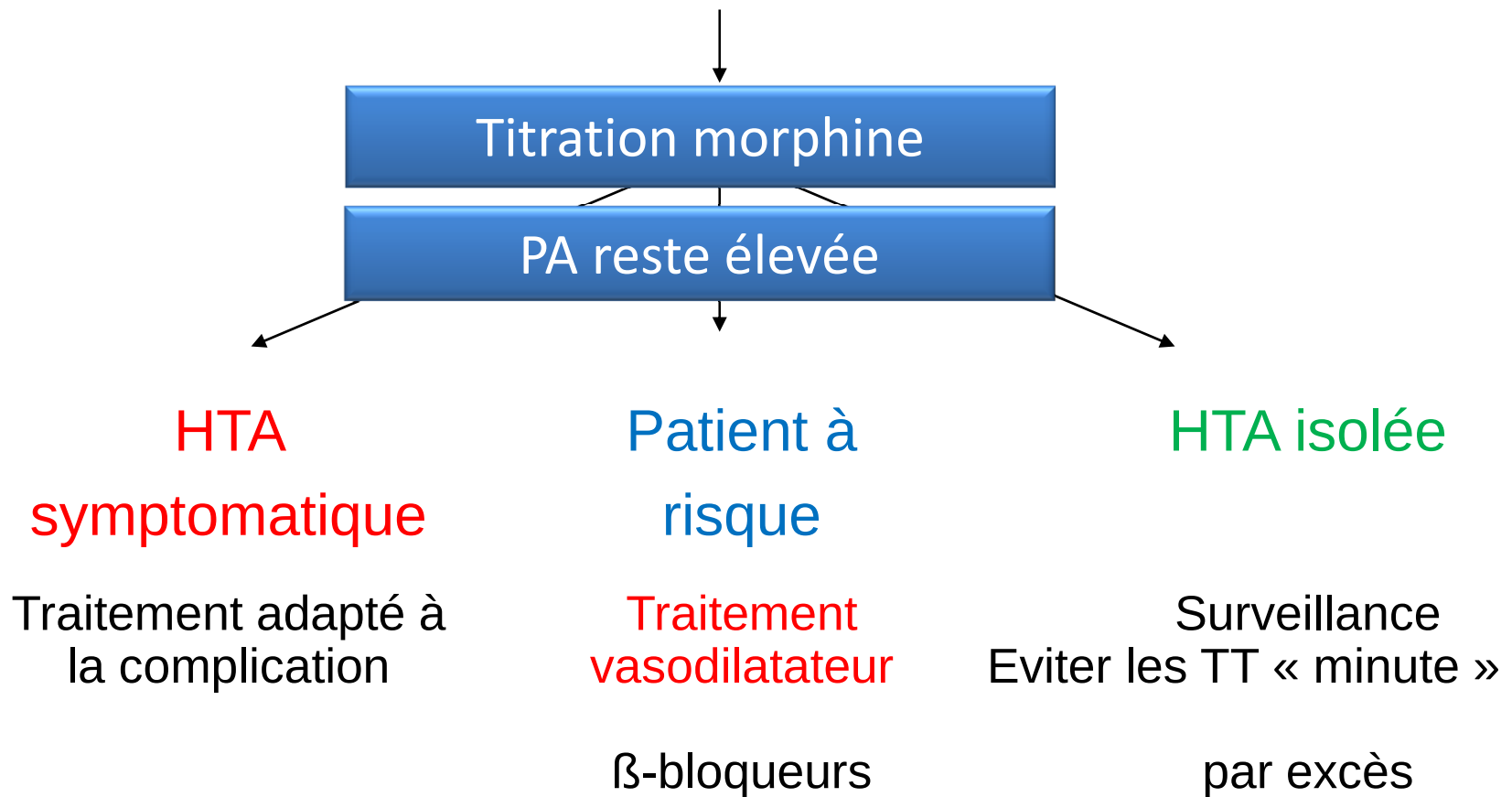
Withholding *versus* Continuing Angiotensin-converting Enzyme Inhibitors or Angiotensin II Receptor Blockers before Noncardiac Surgery Pavel S. Roshanov [ANESTHESIOLOGY 2017; 126:16-27](#)

Elévation PA postopératoire

Quelle(s) cause(s) ?



Critères de décision



Titrer et réévaluer l'effet du traitement

Reprise TT anti-HTA en l'absence d'hypoTA

Urgence hypertensive?

Variables	All patients (N = 791)	Enrolment setting	
		ICU (n = 382)	Perioperative (n = 229)
Median age, years (IQR)	69 (58 to 77)	69 (59 to 76)	66 (53 to 76)
Females, n (%)	295 (37)	107 (28)	94 (41)
Predisposing factors, n (%)			
Medication nonadherence (ED)	-	-	-
Medications withheld > 12 hours (ICU and perioperative)	-	39 (10)	21 (9.2)
Median blood pressure, mmHg (IQR)			
Qualifying SBP	166 (141 to 190)	160 (138 to 180)	160 (140-180)
Qualifying DBP	80 (68 to 95)	73 (64 to 85)	80 (68 to 90)
Median time before treatment	5.0 (2.0 to 17)	5.0 (1.0 to 15)	5 min
Median time from IV initiation to 10% decrease in SBP, minutes (IQR)	28 (11 to 60)	30 (12 to 70)	18 (8.0 to 43)

Characteristics, practice patterns, and outcomes in patients with acute hypertension: European registry for Studying the Treatment of Acute hyperTension (Euro-STAT) Vuylsteke *et al. Critical Care* 2011, **15**:R271

Anti-hypertenseur

- ✓ Baisse progressive, dose-dépendante de la PA
- ✓ Contrôle prévisible du niveau de PA (risque limité d'hypoTA)
- ✓ Effet artériolaire > effet veineux
- ✓ Effets adverses modérés, pas de rebond
- ✓ Durée d'action brève

Urapidil

Inhibiteur Ca

Esmolol

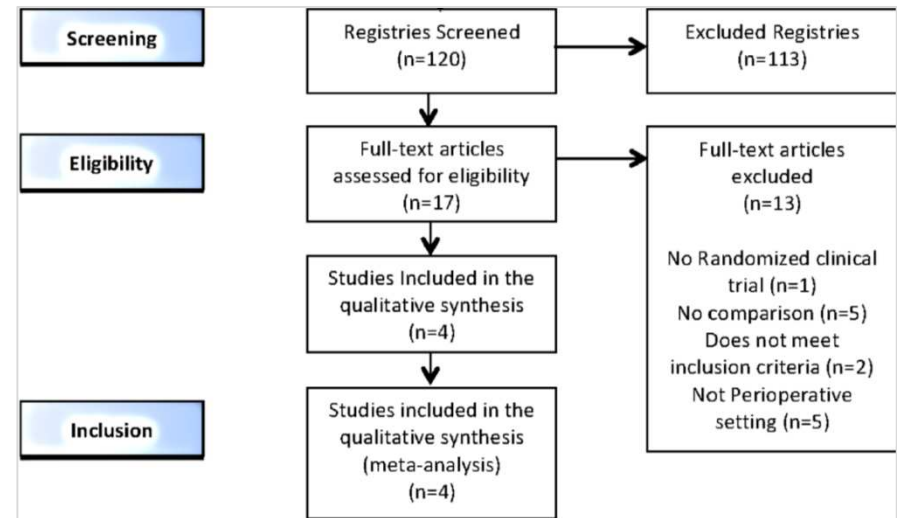
Nicardipine : retrait AMM
Clevidipine : chir cardiaque

Clévidipine

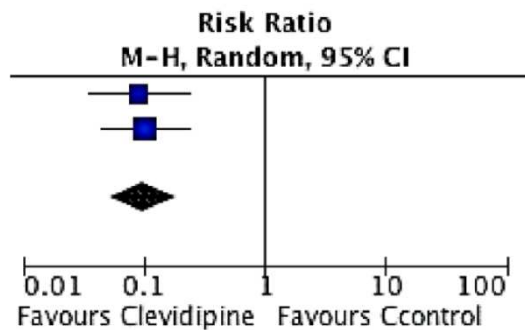
Recherche : Clevidipine / Surgery / RCT



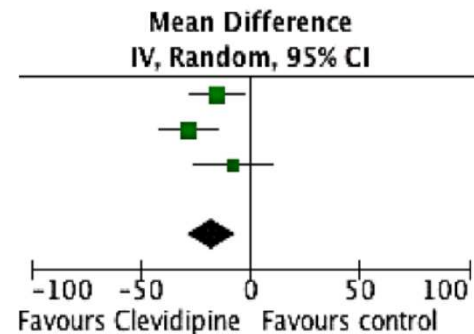
4 études en chirurgie cardiaque



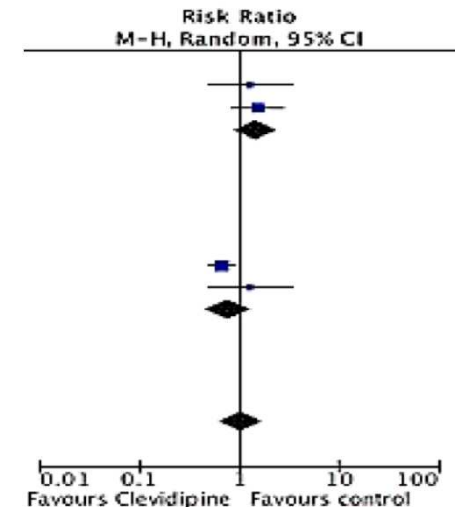
Efficacité vs Placebo



Efficacité vs TNT ou NPS



Sécurité



Perioperative Use of Clevidipine: A Systematic Review and Meta-Analysis

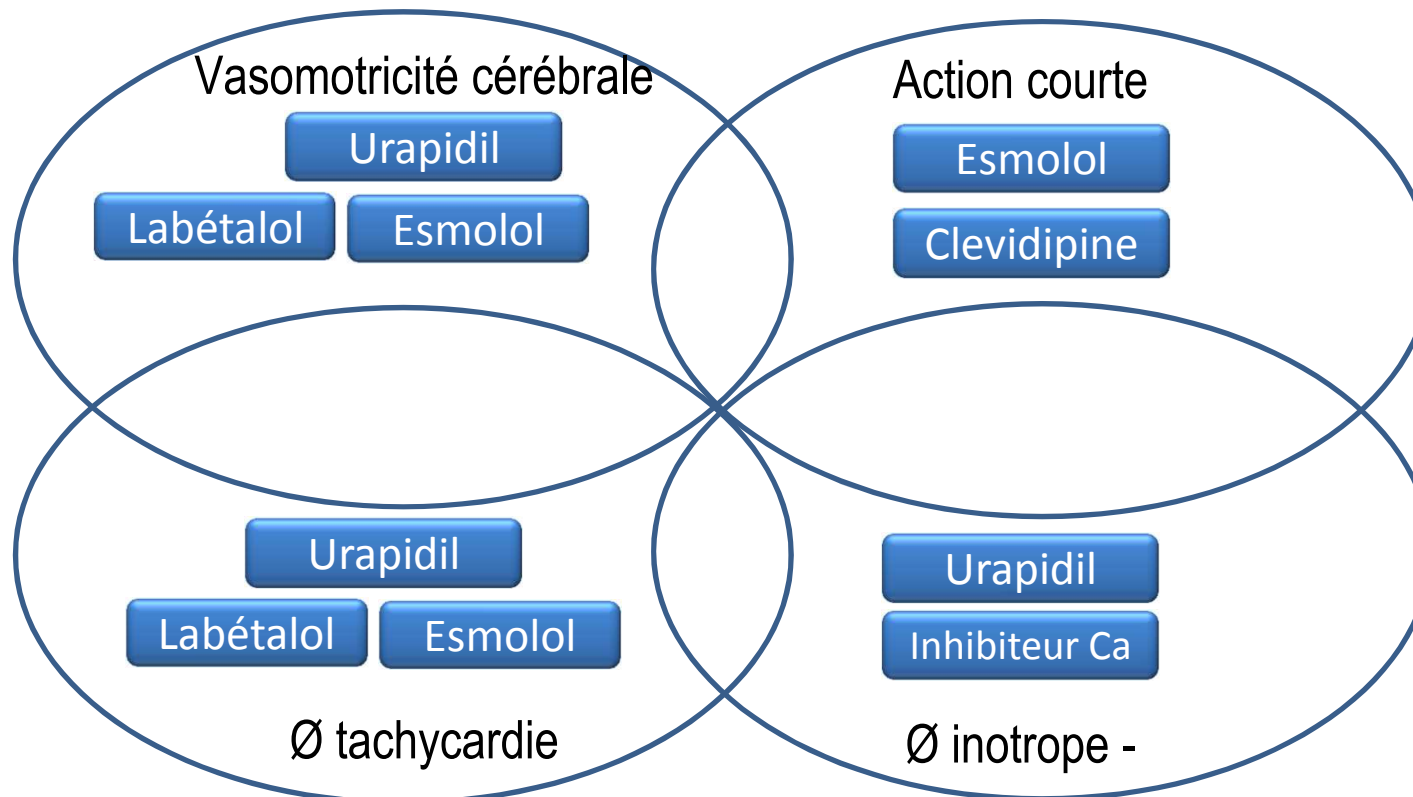
Angel Espinosa

PLOS ONE | DOI:10.1371/journal.pone.0150625

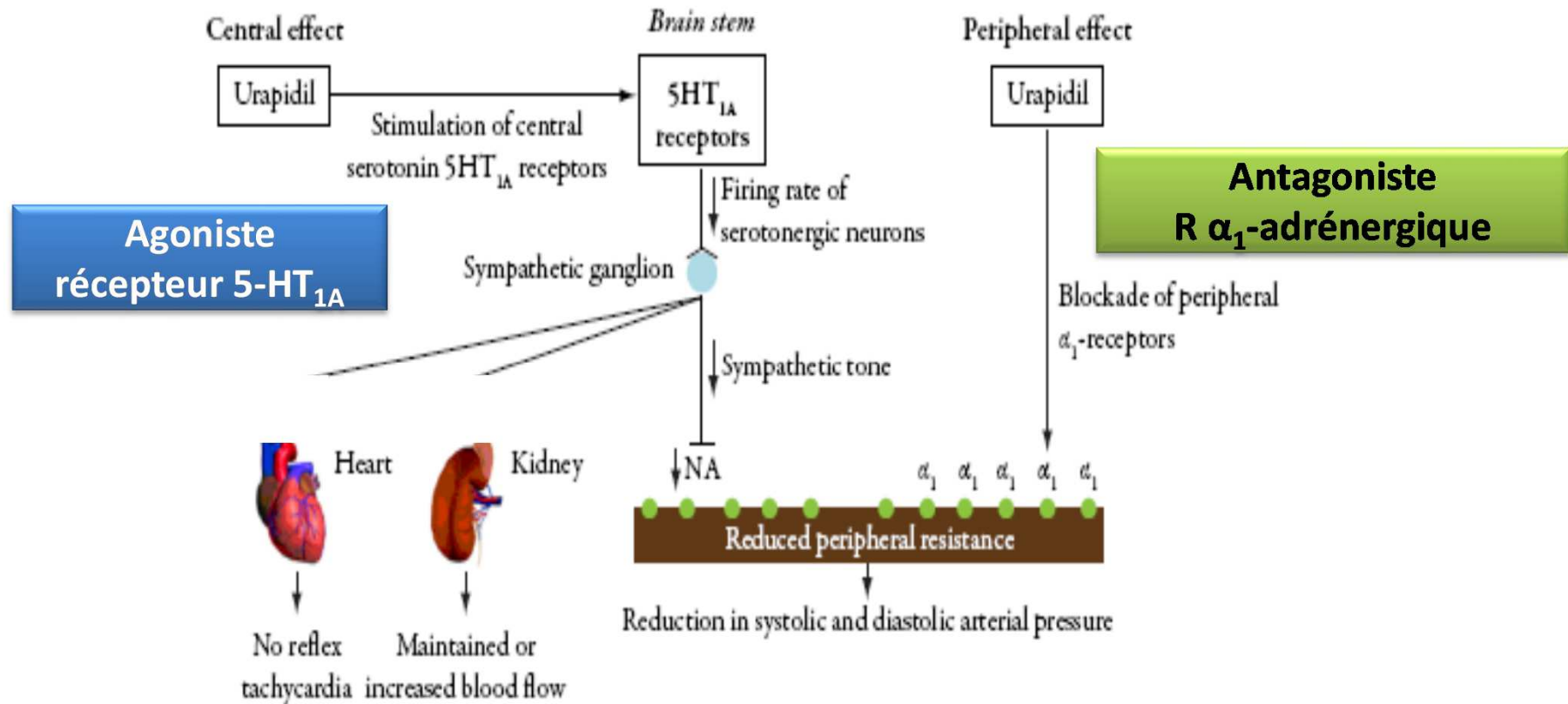
March 28, 2016

Autres propriétés

- ✓ Baisse progressive, dose-dépendante de la PA
- ✓ Contrôle prévisible du niveau de PA (risque limité d'hypoTA)
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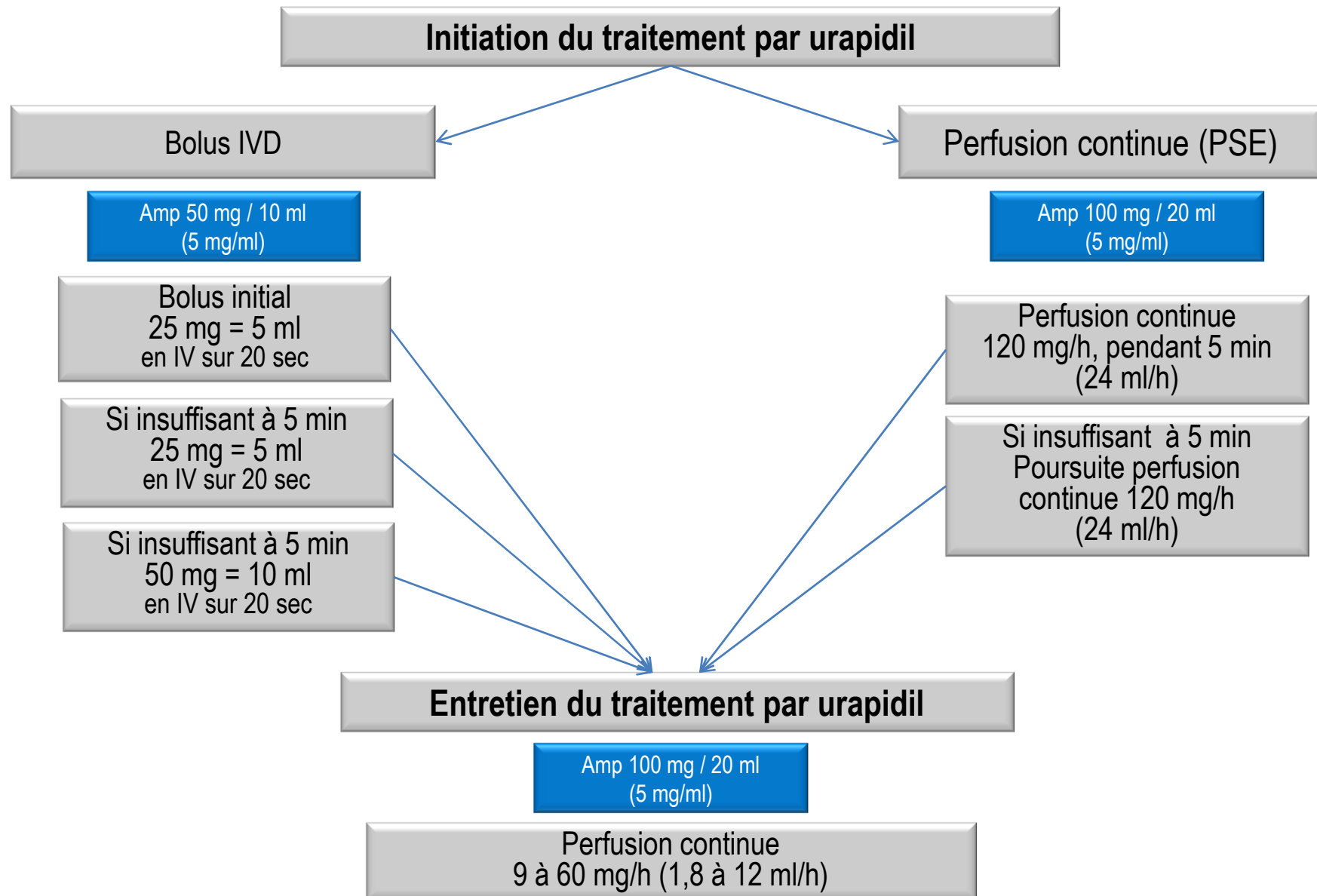
Urapidil



Dérivé phenylpiperazinique **demi-vie de 2,7 heures**

Differential effects of urapidil and doxazosin on heart rate

Schémas d'administration



Conclusions

- HTA souvent mal équilibrée
- Signification de la pression pulsée ?
- Gestion des traitements
- Hypotension artérielle
- Elévation tensionnelle $\neq$ urgence hypertensive
- Regain d'intérêt pour l'urapidil, à confirmer

Inhibiteurs calciques

- Nicardipine :
 - Retrait AMM pour la période périopératoire
- Clévidipine
 - Métabolisme par estérases plasmatiques et tissulaires
 - Demi vie : 1 minute
 - ANSM : ASM V en périopératoire

Autres propriétés

- ✓ Baisse progressive, dose-dépendante de la PA
- ✓ Contrôle prévisible du niveau de PA (risque limité d'hypoTA)
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