



Hôpital du Valais  
Spital Wallis

# **BÊTA-BLOQUANTS**

## **DANS LA PHASE PÉRI-OPÉRATOIRE**

9<sup>e</sup> Symposium valaisan des Maladies Vasculaires  
6 septembre 2018  
Eric Jaunin, anesthésie et réanimation

## LE PATIENT (POLY)VASCULAIRE

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- **20% des patients de plus de 65 ans**
- **Tabagique**
- **Hypertendu**
- **Sédentaire**
- **Diabétique**
- **Hypercholestérolémie**

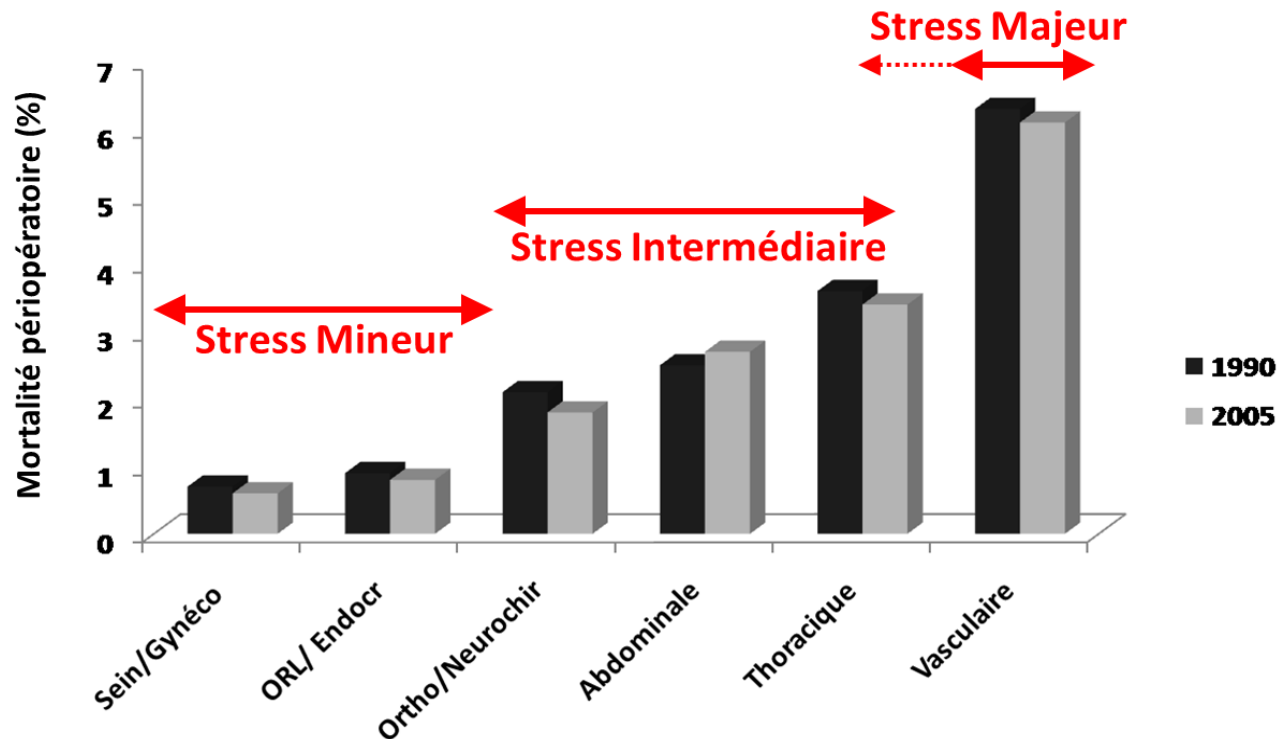
- **CLAUDICATION INTERMITTENTE:**
- **20% d'infarctus du myocarde/AVC à 5 ans**
- **10-15% mortalité à 5 ans**

Weitz. Circulation 1996;94:3026-3049

- **STÉNOSE CAROTIDIENNE >50% ASYMPTOMATIQUE:**
- **Mortalité cardiaque 2.9%/an**

Giannopoulos. Eur J Vasc Endovasc Surg 2015;50:573-582

# STRESS CHIRURGICAL ET MORTALITÉ PÉRI-OPÉRATOIRE



Registre de 3.7 millions d'opérations, 1990 – 2005, Pays-Bas  
1.8% décès en total

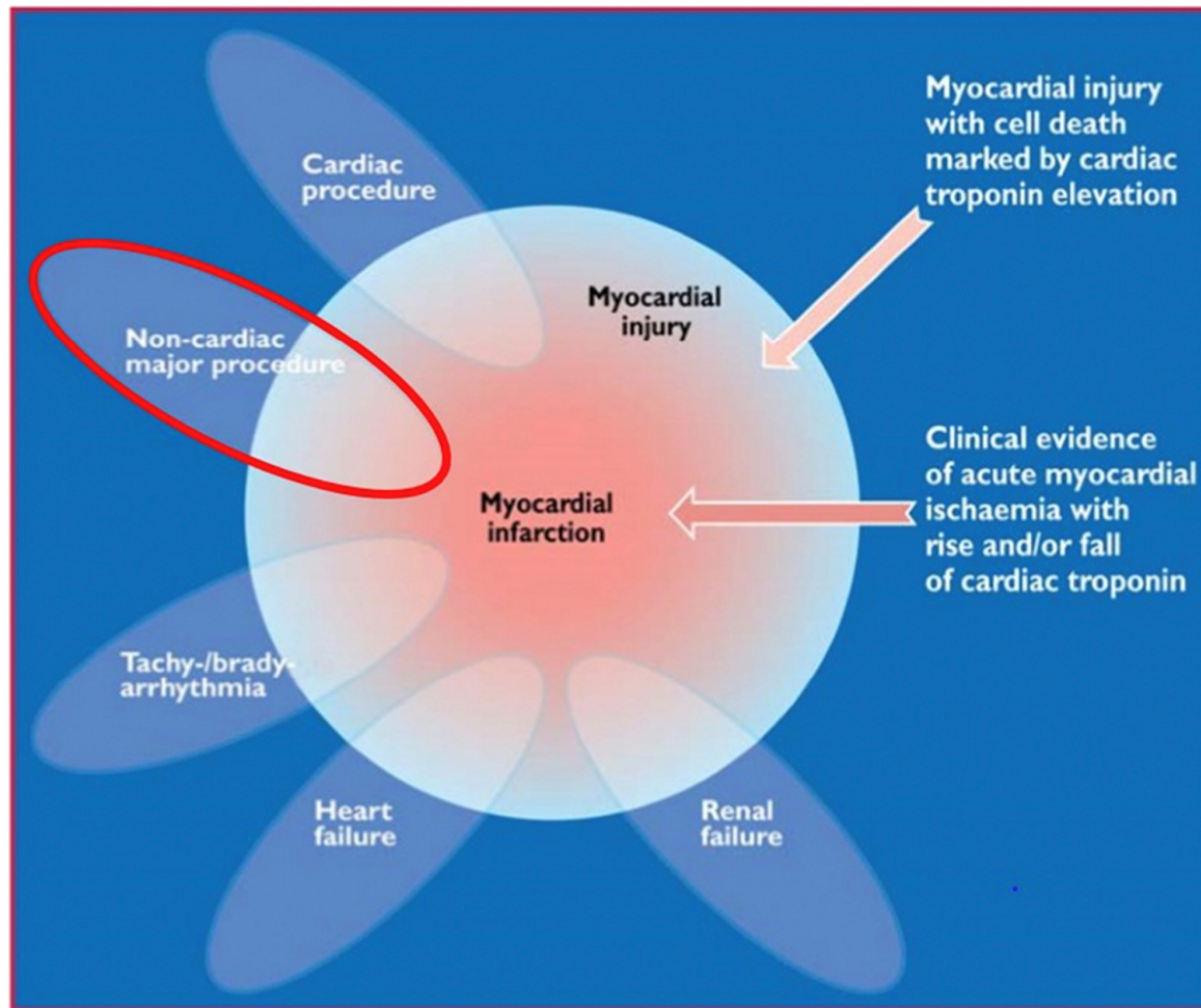
Noordzij PG, et al. *Anesthesiology*. 2010;112:1105-1115

- **Sténose coronarienne**
  - **Tachycardie**
  - Hypoxie
  - Hypotension
  - Pertes sanguines
  - Shifts liquidiens
- **Syndrome coronarien aigu**
  - **Activation facteurs prothrombotiques**

### **« Myocardial Injury is More Common than Deep Venous Thrombosis after Vascular Surgery and is Associated with a High One Year Mortality Risk »**

Górka, J. et al. Eur J Vasc Endovasc Surg. 2018; 56: 264–270

## MINS (MYOCARDIAL INJURY AFTER NONCARDIAC SURGERY)



*European Journal of Vascular and Endovascular Surgery* 2018 56, 161-162 DOI: (10.1016/j.ejvs.2018.06.034)

# OPTIMISATION PRÉ-OPÉRATOIRE

## • Avis cardio?

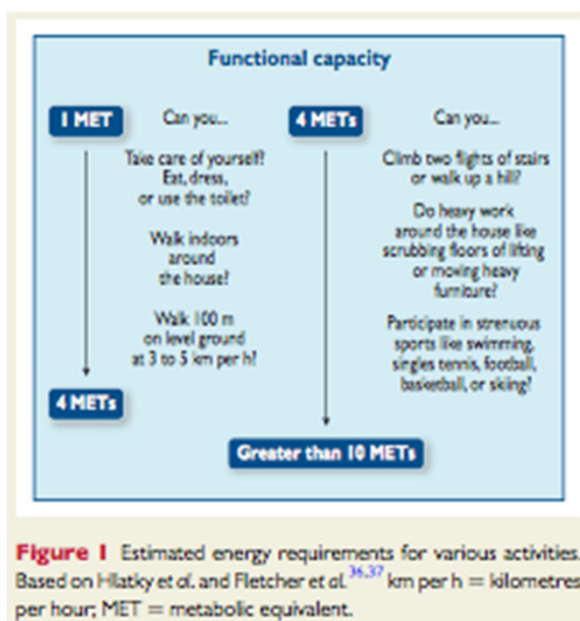


European Heart Journal (2014) 35, 2383–2431  
doi:10.1093/eurheartj/ehu282

ESC/ESA GUIDELINES

European Society of Anaesthesiology **ESA**

## 2014 ESC/ESA Guidelines on non-cardiac surgery: cardiovascular assessment and management



### Recommendations on imaging stress testing before surgery in asymptomatic patients

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>
Imaging stress testing is recommended before high-risk surgery in patients with more than two clinical risk factors and poor functional capacity (<4 METs). <sup>c</sup>	I	C
Imaging stress testing may be considered before high- or intermediate-risk surgery in patients with one or two clinical risk factors and poor functional capacity (<4 METs). <sup>c</sup>	IIb	C
Imaging stress testing is not recommended before low-risk surgery, regardless of the patient's clinical risk.	III	C



- **Chirurgie (endovasculaire, voie ouverte ...)**
- **Capacité d'effort**
- **Traitements ...**

## BÊTA-BLOQUANTS

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- **Antagonistes compétitifs des récepteurs bêta adrénergiques**
- **(+/- effet agoniste partiel = activité sympathique intrinsèque)**

- **Récepteurs Bêta 1 :**
  - Inotrope négatif, chronotrope négatif, dromotrope négatif
- **Diminution de la consommation myocardique en O<sub>2</sub>, augmentation de la perfusion coronarienne (en diastole)**
- **Réduction de la tachycardie per-opératoire**

- **Récepteurs Bêta 2 :**
  - Musculature lisse vasculaire, bronchique, utérine
  
- **Pas de contre-indication dans l'AOMI faible à modérée, pas de réduction du périmètre de marche. Suivi régulier nécessaire.**

2017 ESC Guidelines on the diagnosis and treatment of PAD

## BÊTA-BLOQUANTS

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- **Effet stabilisant membranaire (doses supra thérapeutiques)**
- **Effet anti-arythmique classe III (sotalol)**
- **Effet alpha-bloquant (labetolol)**
- **Antioxydant? (carvedilol)**
- **Activateur NO synthase endothéliale (nebivolol)**

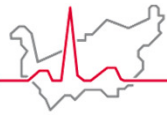
- **CAVE: up-régulation des récepteurs**
  - Effet rebond en cas d'arrêt brusque du traitement
  - **Réponse hyperadrénergique au stress chirurgical et augmentation de la mortalité péri-opératoire**

Shammash et Al. Am Heart J 2001;141:148-53  
Hoeks et Al. Eur J Vasc Endovasc Surg 2007;33:13-9
  - **Récidive d'angor, risque de SCA**

- **Bêta-bloquant: réduction de la mortalité et l'incidence des complication cardiovasculaires péri-opératoires**

Poldermans et Al. The effect of bisoprolol on perioperative mortality and myocardial infarction in high-risk patients undergoing vascular surgery.  
N Eng J Med. 1999;341:1789-94

- **ACA/AHA: recommandation classe II jusqu'en 2002**
  - Hypertendus non traités, coronaropathes, FRCV



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## ANNÉES 2000

### Forbes / Pharma & Healthcare

JAN 15, 2014 @ 12:37 PM 47,308 VIEWS

# Medicine Or Mass Murder? Guideline Based on Discredited Research May Have Caused 800,000 Deaths In Europe Over The Last 5 Years



Larry Husten  
CONTRIBUTOR

I'm a medical journalist  
covering cardiology news.

[FOLLOW ON FORBES \(34\)](#)



**(Updated)**— Last summer British researchers provoked concern when they published a paper raising the possibility that by following an established guideline [UK doctors may have caused as many as 10,000 deaths each year](#). Now they have gone a step further and published an estimate that the same guideline may have led to the deaths of as many as 800,00 people in [Europe](#) over the last five years. The finding, they write, “is so large that the only context in the last 50 years comes from the largest scale professional failures in the political sphere.” The 800,000 deaths are comparable in size to the worst cases of genocide and mass murder in recent history.

### Forbes / Pharma & Healthcare

NOV 17, 2011 @ 03:14 PM 5,999 VIEWS

## Prominent Dutch Cardiovascular Researcher Fired for Scientific Misconduct





- **MaVS study (Metoprolol after Vascular Surgery)**

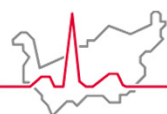
Yang et Al. Am Heart J 2006

- **« Metoprolol was not effective in reducing the 30-day and 6-month postoperative cardiac event rates »**
- **Augmentation de l'incidence de bradycardie et hypotension per opératoire**

- **POISE-1 (PeriOperative Ischemic Evaluation)**

Devervaux et Al. Lancet 2008

- **Réduction 17% de la mortalité cardiaque, IDM, ACR non fatal à 30 jours (5.8% vs 6.9%,  $p=0.04$ )**
- **Augmentation 33% de la mortalité globale (3.1% vs 2.3%,  $p=0.03$ )**
- **Incidence AVC doublée (1% vs 0.5%,  $p=0.005$ )**



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# ÉTUDES CONSÉCUTIVES



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## 2014 ESC/ESA Guidelines on non-cardiac surgery: cardiovascular assessment and management

**Table 5** Summary of randomized, controlled trials evaluating the effect of peri-operative beta-blockade on post-operative mortality and non-fatal myocardial infarction

Study	n	Vascular Surgery (%)	Beta-blocker				Patient selection according to cardiac risk	30-day mortality, n/N (%)		30-day rate of non-fatal MI, n/N (%)	
			Type	Onset (before Surgery)	Duration (days after surgery)	Dose Titration		Beta-blocker	Control	Beta-blocker	Control
Mangano et al. <sup>41</sup>	200	40	Atenolol	30 min	7	No	IHD or ≥2 risk factors	5/99 (5.1) <sup>a</sup>	10/101 (9.9) <sup>a</sup>	-	-
POBBLE <sup>42</sup>	103	100	Metoprolol tartrate	<24 h	7	No	No	3/55 (5.4)	1/48 (2.1)	3/55 (5.5)	5/48 (10.4)
MaVS <sup>43</sup>	496	100	Metoprolol succinate	2 h	5	No	No	0/246 (0)	4/250 (1.6)	19/246 (7.7)	21/250 (8.4)
DIPOM <sup>44</sup>	921	7	Metoprolol succinate	12 h	8	No	Diabetes	74/462 (16.0)	72/459 (15.7)	3/462 (0.6)	4/459 (0.9)
BBSA <sup>45</sup>	219	5	Bisoprolol	>3 h	10	Yes	IHD or ≥2 risk factors	1/110 (0.9)	0/109 (0)	0/110 (0)	0/109 (0)
POISE <sup>46</sup>	8351	41	Metoprolol succinate	2–4 h	30	No	IHD or atherosclerosis or major vascular surgery or ≥3 risk factors	129/4174 (3.1) <sup>a</sup>	97/4177 (2.3)	152/4174 (3.6) <sup>a</sup>	215/4177 (5.1)

BBSA = Beta-Blocker in Spinal Anesthesia; DIPOM = Diabetic Postoperative Mortality and Morbidity; IHD = ischaemic heart disease; MaVS = Metoprolol after Vascular Surgery; MI = myocardial infarction; POBBLE = Peri/Operative Beta-Blockade; POISE = Peri/Operative Ischemic Evaluation.

<sup>a</sup>At 6 months and including in-hospital deaths.

<sup>b</sup>P = 0.0317.

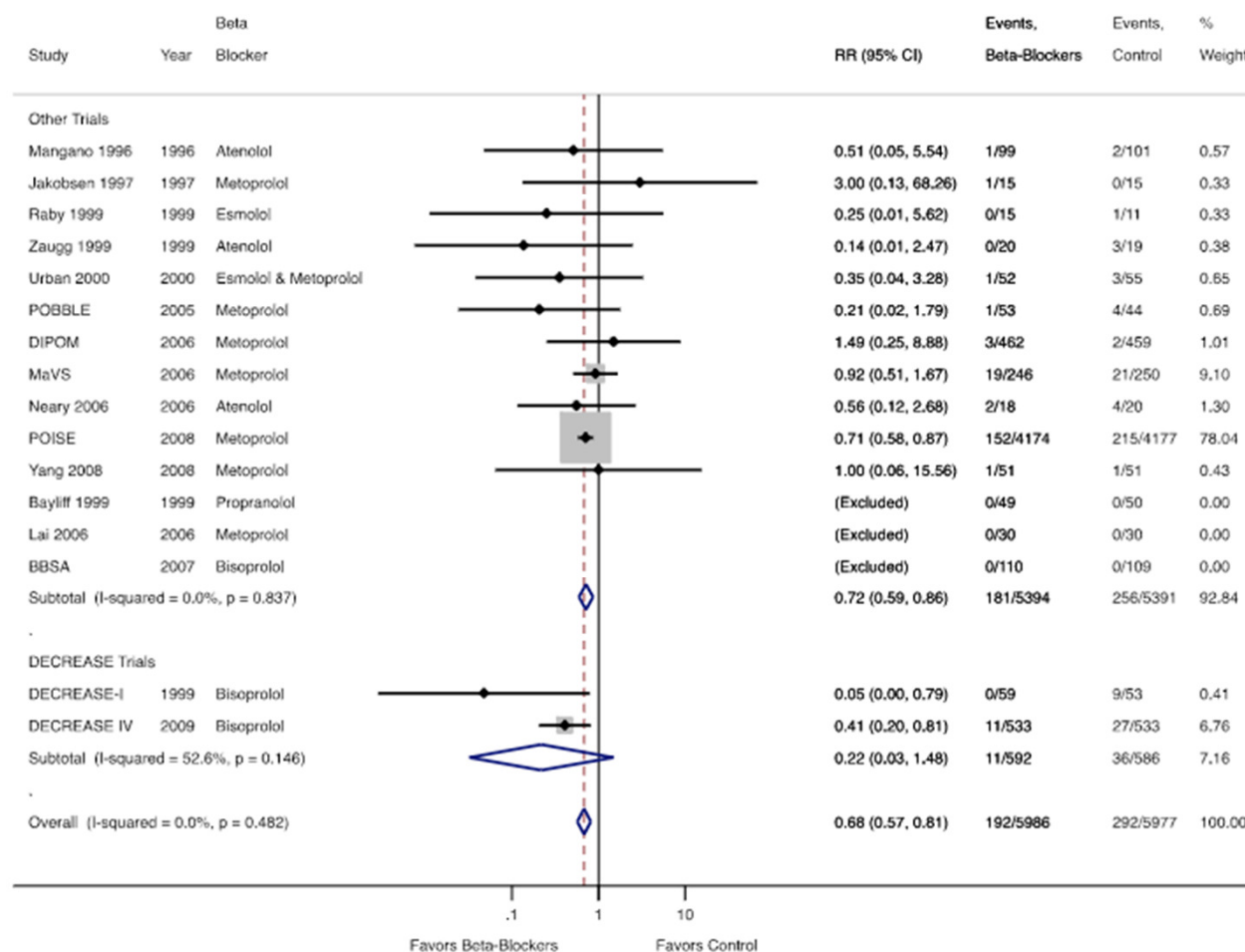
<sup>c</sup>P = 0.0008.



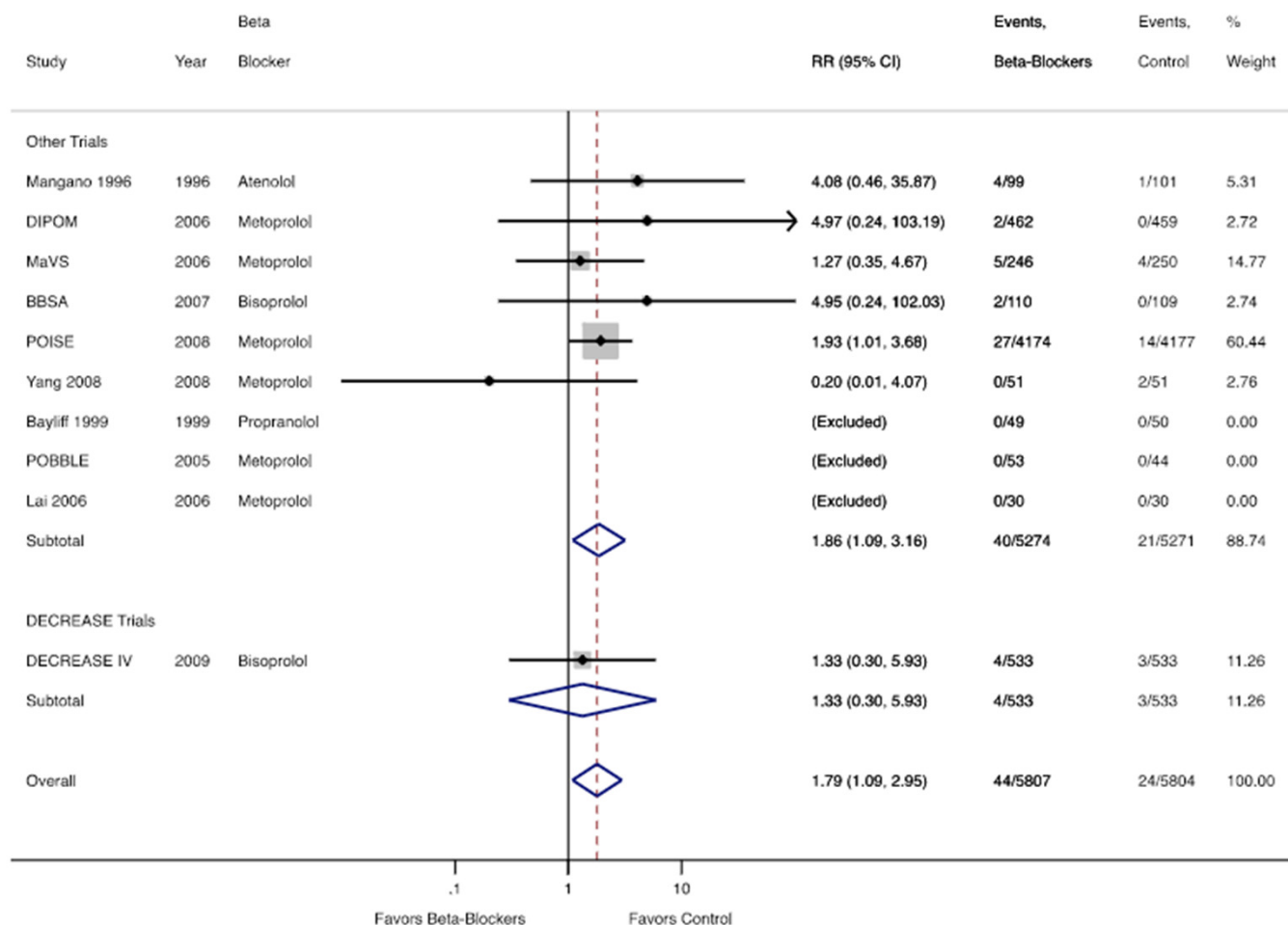
**Perioperative Beta Blockade in Noncardiac Surgery: A Systematic Review for the 2014 ACC/AHA Guideline on Perioperative Cardiovascular Evaluation and Management of Patients Undergoing Noncardiac Surgery: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines**  
Duminda N. Wijeyesundera, Dallas Duncan, Chileshe Nkonde-Price, Salim S. Virani, Jeffrey B. Washam, Kirsten E. Fleischmann and Lee A. Fleisher

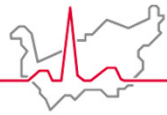
- **Revue systématique**
- **17 études (16 RCT, 1 étude cohorte, >12'000 patients)**
- **« Available data consistently show increased risks of stroke, hypotension and bradycardia with perioperative beta blockade »**

**Figure 1. Effect of Perioperative Beta Blockade on In-Hospital or 30-Day Nonfatal MI in RCTs**



**Figure 3. Effect of Perioperative Beta Blockade on In-Hospital or 30-Day Nonfatal Stroke in RCTs**





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### Recommendations on beta-blockers

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>	Ref. <sup>c</sup>
Peri-operative continuation of beta-blockers is recommended in patients currently receiving this medication.	I	B	96–99
Pre-operative initiation of beta-blockers may be considered in patients scheduled for high-risk surgery and who have ≥2 clinical risk factors or ASA status ≥3. <sup>d</sup>	IIb	B	86,95, 97
Pre-operative initiation of beta-blockers may be considered in patients who have known IHD or myocardial ischaemia. <sup>d</sup>	IIb	B	83,88, 106
When oral beta-blockade is initiated in patients who undergo non-cardiac surgery, the use of atenolol or bisoprolol as a first choice may be considered.	IIb	B	97,100–102
Initiation of peri-operative high-dose beta-blockers without titration is not recommended.	III	B	78
Pre-operative initiation of beta-blockers is not recommended in patients scheduled for low-risk surgery.	III	B	86,97

- Pas d'arrêt d'un traitement bêta-bloquant au long cours
- Possible bénéfice chez les patients à haut risque
- Favoriser bêta 1 sélectif
- Non recommandé pour une chirurgie à faible risque

- **Indiqués dans l'arsenal thérapeutique pour la prise en charge de l'hypertension, de la cardiopathie ischémique ou de l'insuffisance cardiaque chez le patient vasculaire**
- **Probable bénéfice sur la mortalité cardiaque péri-opératoire chez le patient à haut risque**
- **Timing idéal ???**
- **Augmentation de la mortalité globale et du risque d'AVC en cas d'introduction de « dernière minute »**