# The Truth Behind the Vasodilating Beta-Blockers:

## *Hypertension and related morbidities*

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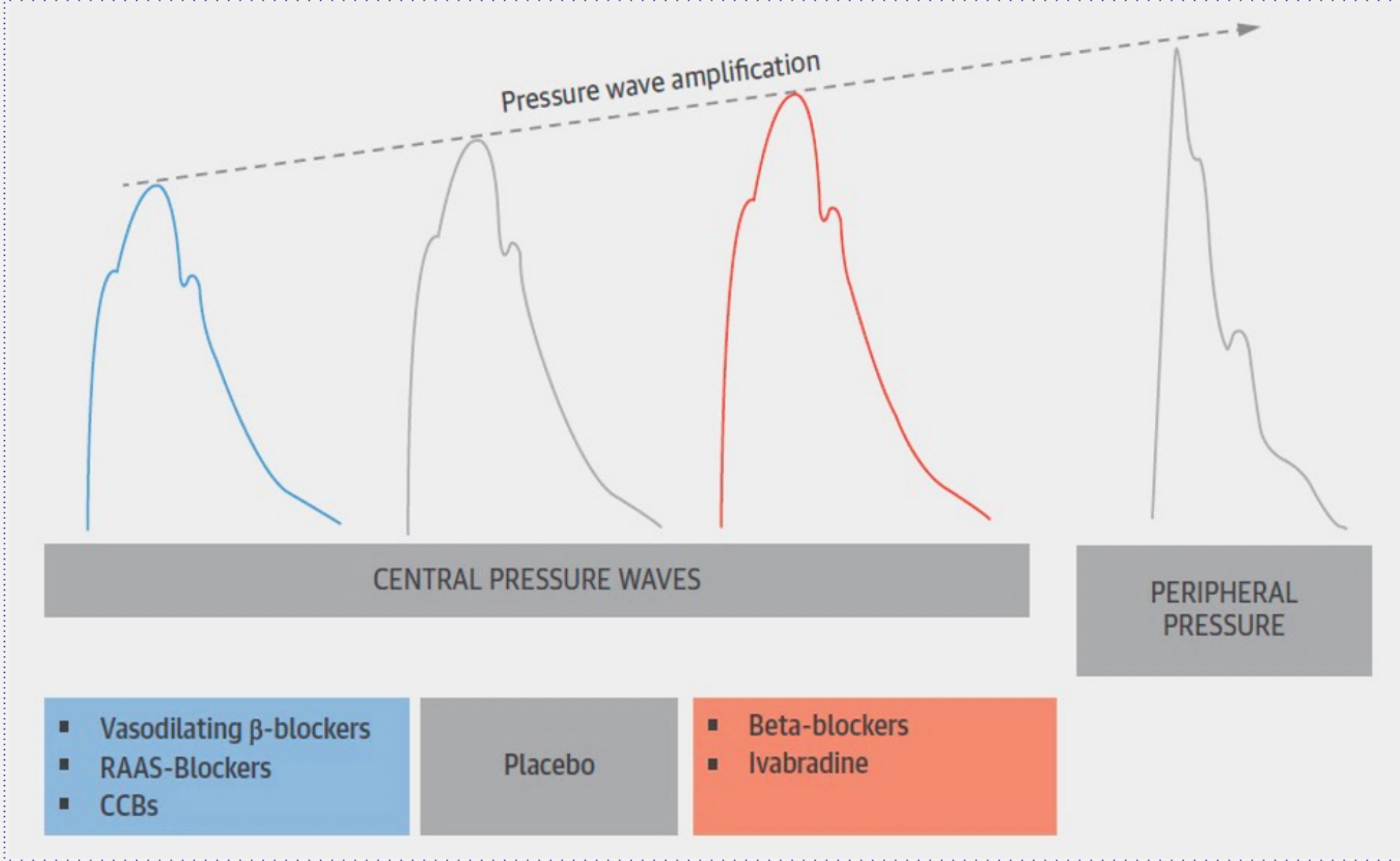
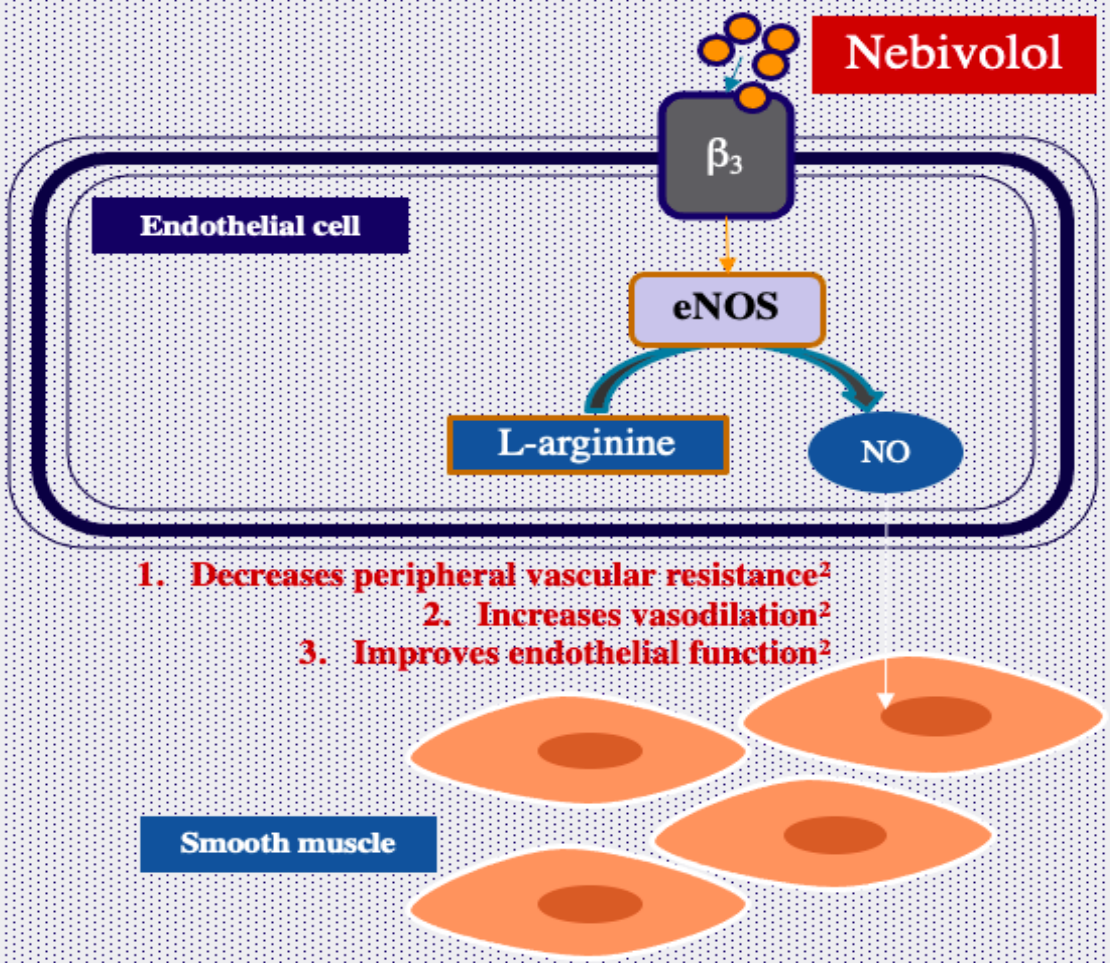
# Effect of CV Drugs on Central Aortic Pressure




Messerli FH, et.al. J Am Coll Cardiol 2016: 68(7).

# Nebivolol: Endothelial-dependent NO release

- Nebivolol induces NO production via activation of β3-adrenergic receptors and eNOS[1]
- NO production leads to the relaxation of smooth muscle cells within vessel walls and subsequently, the blood vessel vasodilates[1,2]




NO, nitric oxide; eNOS, endothelial nitric oxide synthase.

1. Maffei A, *et al*. *Ther Adv Cardiovasc Dis* 2009;3:317–27; 2. Toblli JE, *et al*. *Vasc Health Risk Manag* 2012;8:151–60.

# Beta-blockers vs placebo as first-line in HTN

**Participants:** people with hypertension
**Settings:** high-income countries, mainly Western Europe and North America
**Intervention:** beta-blockers
**Comparison:** placebo

| Outcomes | Illustrative comparative risks* (95% CI) | | Relative effect (95% CI) | No of participants (studies) | Certainty of the evidence (GRADE) |
|---|---|---|---|---|---|
| | Assumed risk | Corresponding risk | | | |
| | Placebo | Beta-blockers | | | |
| Total mortality | 52 per 1000 | 51 per 1000 (46 to 57) | RR 0.99 (0.88 to 1.11) | 23613 (4 studies) | ⊕⊕⊕◯ Moderate[1] |
| Total cardiovascular disease | 64 per 1000 | 57 per 1000 (51 to 63) | RR 0.88 (0.79 to 0.97) | 23613 (4 studies) | ⊕⊕◯◯ Low[1,2] |
| Total stroke | 23 per 1000 | 18 per 1000 (15 to 22) | RR 0.80 (0.66 to 0.96) | 23613 (4 studies) | ⊕⊕◯◯ Low[1,2] |
| Total coronary heart disease | 37 per 1000 | 34 per 1000 (30 to 40) | RR 0.93 (0.81 to 1.07) | 23613 (4 studies) | ⊕⊕⊕◯ Moderate[1] |
| Withdrawal due to adverse effect | 74 per 1000 | 249 per 1000 (60 to 1000) | RR 3.38 (0.82 to 13.95) | 22729 (3 studies) | ⊕⊕◯◯ Low[3] |

Wiysonge CS, et al. Cochrane Database of Systematic Reviews 2017: 1. DOI: 10.1002/14651858.CD002003.pub5.

# SUMMARY

- Life-style management (exercise, diet and stress management) are only applied in small proportion of subjects

- Pharmacological treatment and life-style management should be done in considering *'10-year CV risk assessment'*

- Treatment such as: RAS inhibitors, *vasodilating beta-blocker (nebivolol)* and calcium channel blockers are clinically effective in reducing central aortic pressure as well as peripheral pressure.