Evidence Update

Non-Communicable Diseases Series

Do beta-blockers prevent heart disease and strokes in people with high blood pressure?

In people with high blood pressure, there is no evidence that beta-blockers reduce the number of deaths. Beta-blockers reduce the risk of stroke but are less effective than calcium channel blockers (CCBs) or renin-angiotensin system (RAS) inhibitors.

Inclusion criteria

Studies:

Randomized controlled trials.

Participants:

Adults, excluding pregnant women, with hypertension (high blood pressure) as defined by the study authors.

Intervention:

Beta-blockers either alone or as a first-line drug in a stepped care approach.

Control: no treatment, placebo, or alternative antihypertensive drug.

Outcomes:

Primary: death.

Secondary: coronary heart disease; stroke.

Adverse events: any adverse events.

Results

- Thirteen trials including 91,561 participants met the inclusion criteria. Nine used adequate methods to conceal allocation. Atenolol was the beta-blocker used in 75% of the participants in this review.
- Risk of death was no different for beta-blockers compared to no treatment or placebo (23,613 participants, 4 trials), diuretics, or RAS inhibitors, but it was significantly higher compared to CCBs (relative risk 1.07, 95% confidence interval 1.00 to 1.14; 44,825 participants, 4 trials).
- The effect of beta-blockers on coronary heart disease was no different to placebo, diuretics, RAS inhibitors, or CCBs.
- Participants treated with beta-blockers had a lower risk of developing stroke compared with placebo (RR 0.80, 95% CI 0.66 to 0.96; 23,613 participants, 4 trials), but the risk was higher compared to CCBs (RR 1.24, 95% CI 1.11 to 1.40; 44,167 participants, 3 trials) and RAS inhibitors (RR 1.30, 95% CI 1.11 to 1.53; 9951 participants, 2 trials).
- Participants on a beta-blockers were more likely to stop treatment due to adverse events than those on a diuretic (RR 1.86, 95% CI 1.39 to 2.50; 11,566 participants, 3 trials) or a RAS inhibitor (RR 1.41, 95% CI 1.29 to 1.54; 9951 participants, 2 trials), but there was no significant difference with CCBs.

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Adapted from Wiysonge CS, Bradley H, Mayosi BM, Maroney R, Mbewu A, Opie LH, Volmink J. Beta-blockers for hypertension. *Cochrane Database of Systematic Reviews* 2007, Issue 1. Art. No.: CD002003. DOI: 10.1002/14651858.CD002003.pub2. *Evidence Update* published in February 2008.

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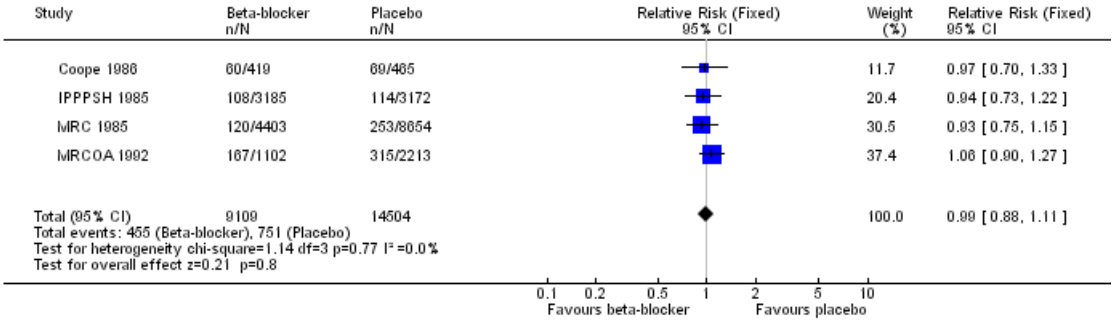
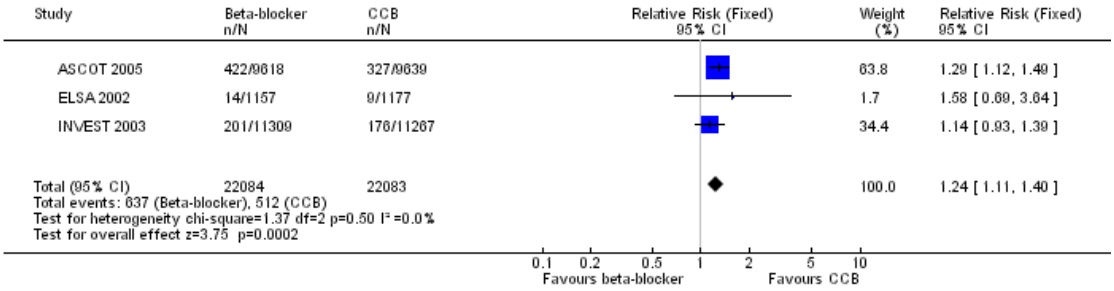
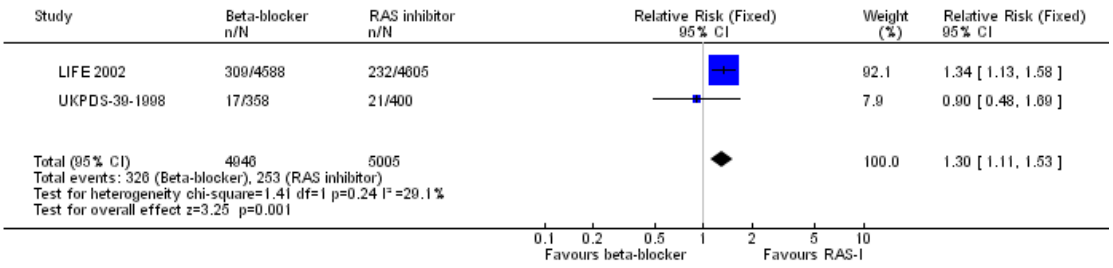
Beta-blocker versus placebo or no treatment: death



Beta-blocker versus calcium channel blocker: stroke



Beta-blocker versus renin-angiotensin system inhibitor: stroke



Authors' conclusions

Implications for practice:

The available evidence does not support the use of beta-blockers as first-line drugs for treating high blood pressure.

Implications for research:

More trials assessing the use of different subclasses of beta-blockers, compared with other antihypertensive drugs, are needed. The possible differential effects of beta-blockers on younger and older people should be assessed.