Do elderly systolic heart failure patients benefit from beta blockers to the same extent as the non-elderly: meta-analysis of >12,000 patients in large-scale clinical trials

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CRD summary
This review concluded that giving beta-blocker therapy to people with chronic heart failure was effective for both the elderly and the non-elderly. The review was reported very briefly and there was little detail on the review methods used. However, the data presented appear to support the authors' conclusion.

Authors' objectives
The authors' aim was to investigate whether the prognostic benefits of beta-blockers, for people with chronic heart failure, differ with age.

Searching
MEDLINE was searched (dates and search terms not given), and references and other published texts were checked.

Study selection
Study designs of evaluations included in the review
Only double-blind randomised placebo-controlled trials of at least 1,000 people were eligible for inclusion. The studies ranged from 6.5 to 24 months in duration.

Specific interventions included in the review
The intervention of interest was beta-blocker therapy in comparison with placebo. The beta-blockers in the included studies were bucindolol, carvedilol, bisoprolol and metaprolol.

Participants included in the review
The inclusion criteria specified participants with chronic heart failure. The studies had to include elderly and non-elderly people. The definition of 'heart failure' was taken as that for the individual included studies, as was the definition of 'elderly'. The latter ranged from 59 or older to 71 or older, although in one study the definition used was those in the upper age tertile. The participants in the included studies had heart failure, according to New York Heart Association class, ranging from II to IV and an ejection fraction range of <25 to <40. No further information about the participants was given.

Outcomes assessed in the review
The outcome of interest was mortality. To be eligible for inclusion, studies had to report data for the elderly and non-elderly separately.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Risk ratios for mortality were calculated, along with 95% confidence intervals (CIs), for elderly and non-elderly
patients for each study.

**Methods of synthesis**

How were the studies combined?
The results were pooled using a random-effects model. Relative risk estimates and 95% CIs were calculated. A z-test was used to compare the results for the two age groups.

How were differences between studies investigated?
The authors did not state a method for assessing any differences between the studies.

**Results of the review**

Five trials (12,729 participants, of which 4,617 were classified as 'elderly') were included.

Elderly people had reduced survival over the non-elderly: the relative risk of mortality for elderly versus non-elderly was 1.49 (95% CI: 1.38, 1.61, P<0.001). Beta-blockers prolonged survival in both age groups: the relative risk was 0.76 (95% CI: 0.64, 0.90, P=0.002) for the elderly and 0.66 (95% CI: 0.52, 0.85, P=0.001) for the non-elderly. There was no statistically significant difference in the relative risk reduction in mortality between the elderly and the non-elderly (P=0.3808).

**Authors’ conclusions**

Both elderly and non-elderly people with chronic heart failure benefit from beta-blocker therapy.

**CRD commentary**

This was a very brief report of a review. The aims were clearly stated. Only one database was searched, the search strategy was not described, and there was no mention of whether any language restrictions were applied. It is possible that studies were missed, although this is less likely as only large studies were eligible for inclusion. The methods of the review (study selection, data extraction, validity assessment) were not described. It is possible for studies to be affected by reviewer bias or error if the methods are not appropriate. Although only large double-blind randomised controlled trials were eligible for inclusion in the review, the internal validity of the trials was not assessed. There were few details of the participants in the included studies (e.g. age ranges, severity of illness, co-morbidities, other medications), which may make the generalisability of these results problematic. Bearing in mind these comments, the data presented support the authors’ conclusions.

**Implications of the review for practice and research**

Practice: The authors stated that all people with systolic chronic heart failure should receive beta-blockers, regardless of age, unless absolutely contraindicated or the patient is unable to tolerate them.

Research: The authors did not state any implications for further research.

**Bibliographic details**

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