

Pneumococcal vaccination in adults at very high risk or with established cardiovascular disease: systematic review and meta-analysis

European Heart Journal - Quality of Care and Clinical Outcomes, Volume 7, Issue 1, January 2021, Pages 97–106

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Abstract

Aims

There are several guidelines that recommend pneumococcal vaccination (PPSV23 and/or PCV13) in adults with a history of cardiovascular disease (established heart failure, coronary disease, and cerebrovascular disease) or at a very high risk of cardiovascular disease. However, there is no randomized controlled trial (RCT) systematic review that evaluates the impact of vaccination on all-cause mortality compared to no vaccination in this particular population. Our objective is to conduct a systematic review and meta-analysis of the impact of pneumococcal vaccination in the referred population.

Methods and results

We searched CENTRAL and MEDLINE for relevant RCTs and observational studies. Data were screened, extracted, and appraised by two independent reviewers. We pooled results using a random effects model, and used hazard ratios (HRs) with 95% confidence intervals (CIs) to assess measure of effect. The primary outcome was all-cause mortality and we assessed the confidence in the evidence using the GRADE framework. No RCTs were found. Seven observational studies were included for analyses. Pooled results from five studies enrolling a total of 163 756 participants showed a significant decrease in all-cause mortality (HR 0.78, 95% CI 0.73–0.83, very low confidence), without statistically significant heterogeneity (χ^2 test $P = 0.21$; $I^2 = 32\%$).

Conclusions

Pneumococcal vaccination was associated with a 22% decrease of all-cause mortality in patients with cardiovascular disease or at a very high cardiovascular risk. However, limitations due to study design and the serious risk of bias in three of the included studies leads to a decreased level of result confidence.

Keywords: Pneumococcal vaccine, Myocardial infarction, Stroke, Diabetes, Dialysis, Prevention