

Lumping versus splitting in meta-analysis

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Figure 1a

One of the most important aspects in the design of systematic reviews and meta-analyses is the eligibility criteria for individual trials. In the previous issue of Hypertension News, we argued that too broad eligibility criteria leads to inclusion of trials with very different characteristics, and that the combination of such trials in meta-analyses may hide important differences in results.¹ On the other hand, as argued by Professor Nadia Khan, too narrow eligibility criteria may lead to the inclusion of too few trials, impairing the statistical power to make conclusions about treatment effect.²

Figure 1 illustrates how lumping versus splitting affects the results of meta-analyses assessing the effect of antihypertensive treatment at different blood pressure levels. If trials are grouped by co-morbidities, separating primary preventive patients from those with established coronary artery disease and heart failure, the primary preventive effect of blood pressure lowering is attenuated at lower blood pressure levels with no effect if systolic blood pressure is below 140 mm Hg (Fig 1a).^{3,4} Because treatment is beneficial in coronary artery disease and highly beneficial in heart failure, lumping trials across co-morbidities results in the appearance of an overall beneficial effect in the lowest blood pressure category (Figure 1b).⁵⁻⁸

Which one of these analytical approaches is more sensible? That depends on whether one thinks that treatment effects ought to be similar in primary prevention, established coronary artery disease and heart failure. If it is not beyond reasonable doubt that effects may differ, trials with different patient co-morbidities should be analyzed separately. This decision, which should be based on pathophysiological and pharmacological knowledge, cannot be substituted by tests for interaction once trials have been combined.

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Primary prevention Coronary artery disease Heart failure

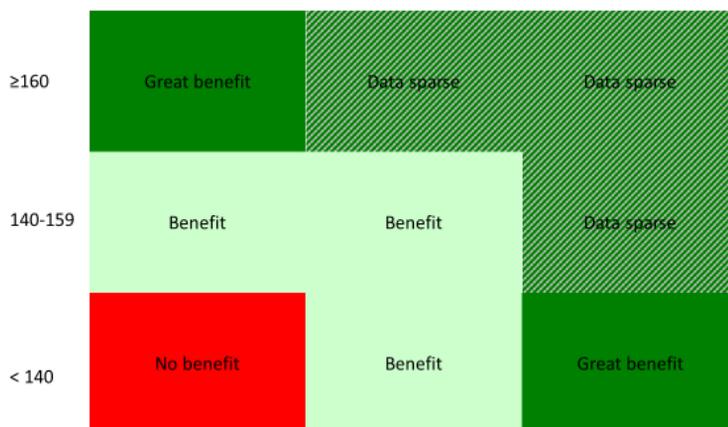


Figure 1b

