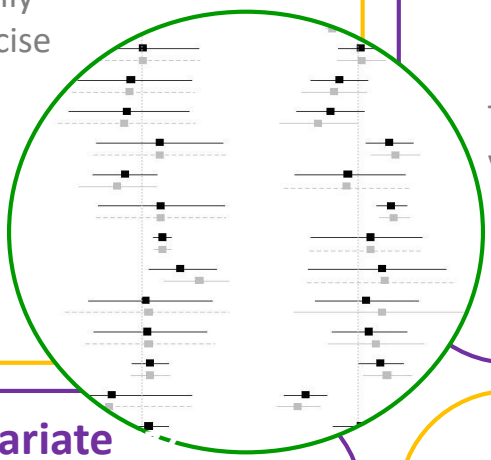
Multivariate meta-analysis of summary data for combining treatment effects on correlated outcomes and evaluating surrogate endpoints

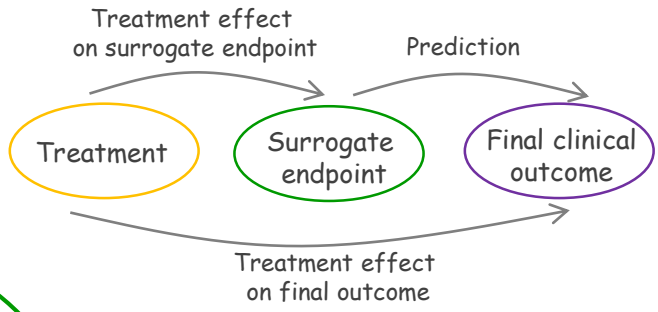
Multivariate meta-analysis

- Simultaneously synthesises treatment effects on multiple outcomes with the aim of including all relevant evidence
- More studies can contribute toward each outcome by including those which do not report main outcome of interest
- Allows for borrowing of information across outcomes
- This can potentially lead to more precise estimates, or less biased estimates in the presence of outcome reporting bias



Surrogate endpoints

They are useful when evaluating new health technologies early when evidence on final clinical outcome is not available

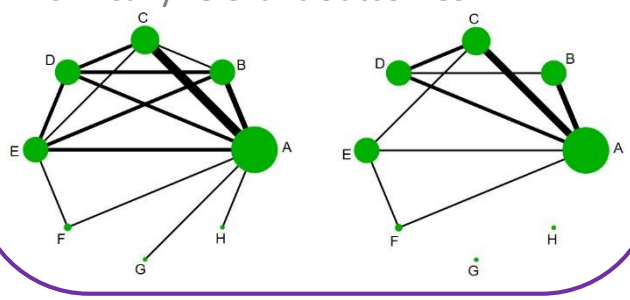


They need to be validated for their value as predictors of clinical benefit

Validation can be carried out using bivariate meta-analytic techniques

Multivariate network meta-analysis (NMA)

- Data from RCTs investigating multiple treatments can be synthesised simultaneously using NMA
- Multivariate NMA can be used to accommodate both multiple outcomes and multiple treatments together, in order to help identify the best treatment across multiple clinically relevant outcomes



Recommendations

- Outcomes of interest need a careful consideration at the scoping stage
- Correlated treatment effects on multiple endpoints should be analysed jointly for robust pooled estimates of the treatment effects
- Multivariate meta-analysis of small number of studies or with missing outcome data is more likely to result in improvement in precision
- Multivariate posterior distribution on correlated outcomes is an appropriate and useful input into economic model
- Surrogate endpoints should be validated using multivariate meta-analytic methods

For further information: Technical Support Document 20 available from: http://nicedsu.org.uk

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