

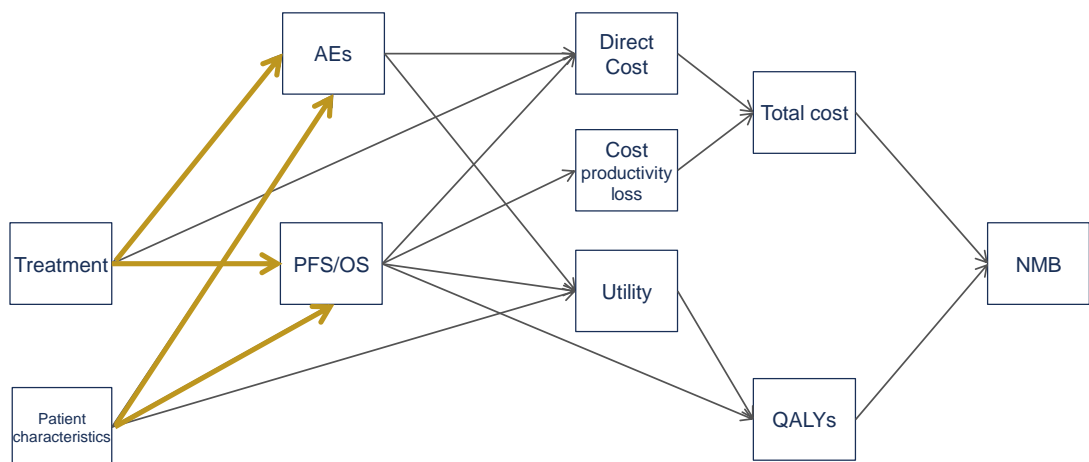
Combine RCT and observational studies in an evidence synthesis

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Quantifying value: RCT and observational evidence in an economic model

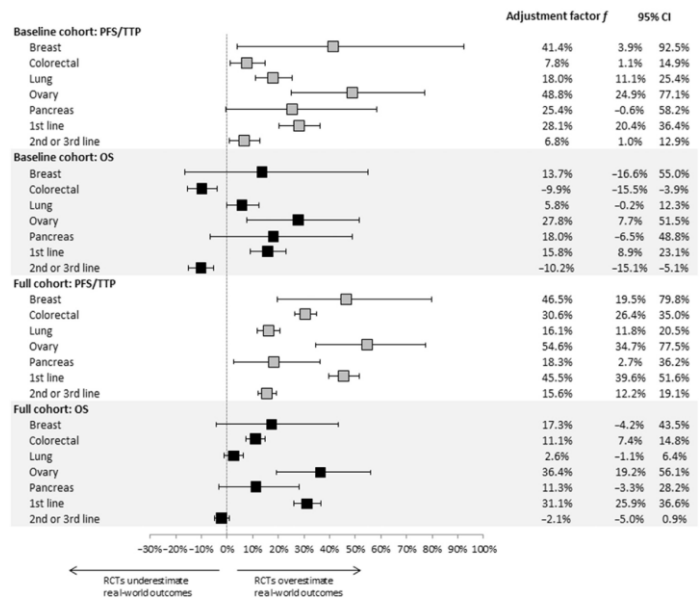


Combining RCT and observational studies with evidence synthesis

- Evaluation of consistency
- Bias adjustment

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Consistency

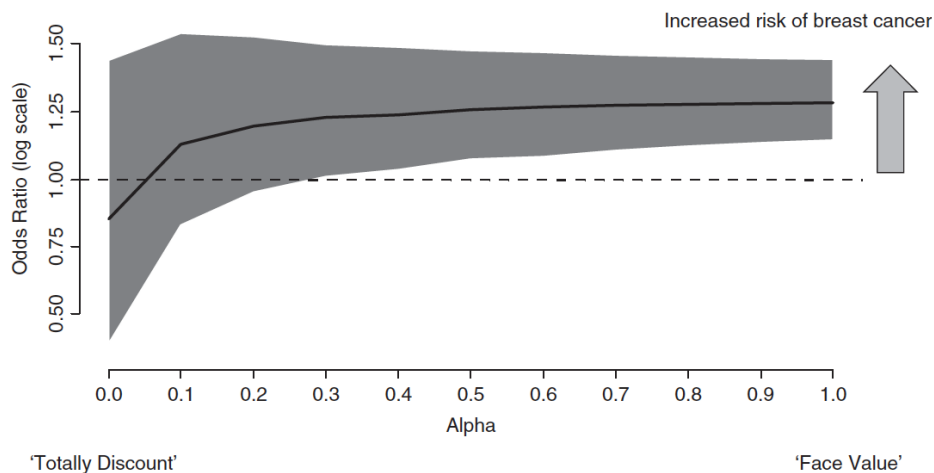


Source: Lakdawalla DN, Shafrin J, Hou N, Peneva D, Vine S, Park J, Zhang J, Brookmeyer R, Figlin RA. Predicting Real-World Effectiveness of Cancer Therapies Using Overall Survival and Progression-Free Survival from Clinical Trials: Empirical Evidence for the ASCO Value Framework. Value Health. 2017;20:866-875.

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Combining RCT and observational evidence

Weighing observational evidence relative to RCT evidence



Source: Welton NJ, Sutton AJ, Cooper N, Abrams KR, Ades AE. Generalised Evidence Synthesis. P227-250. In: Evidence Synthesis for Decision Making in Healthcare, Wiley, 2012.

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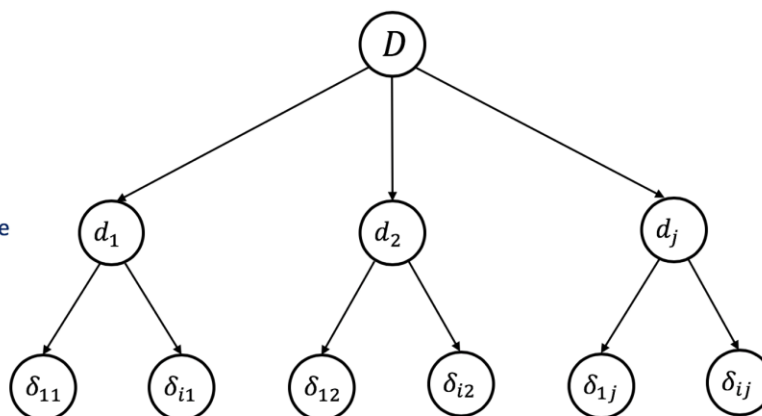
Combining RCT and observational evidence

Hierarchical model

Overall treatment effect

Treatment effect by study type

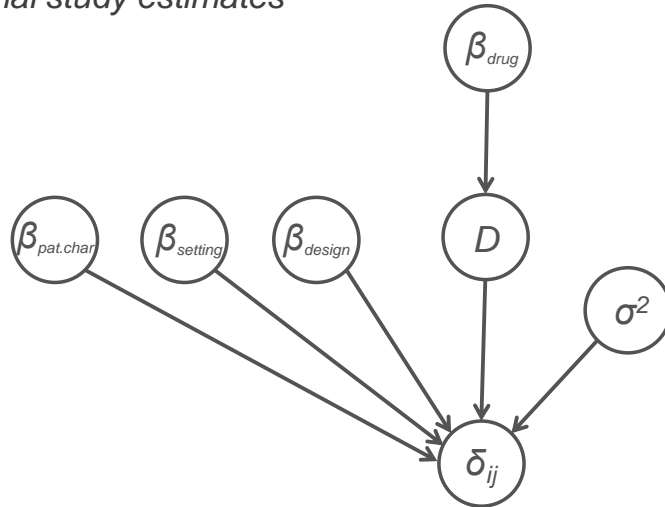
Study specific treatment effects



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Combining RCT and observational evidence

Modeling framework to understand the differences between trial and observational study estimates



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Internal and external bias



Source: Turner RM, Spiegelhalter DJ, Smith GC, Thompson SG. Bias modelling in evidence synthesis. J R Stat Soc Ser A Stat Soc. 2009;172:21-47

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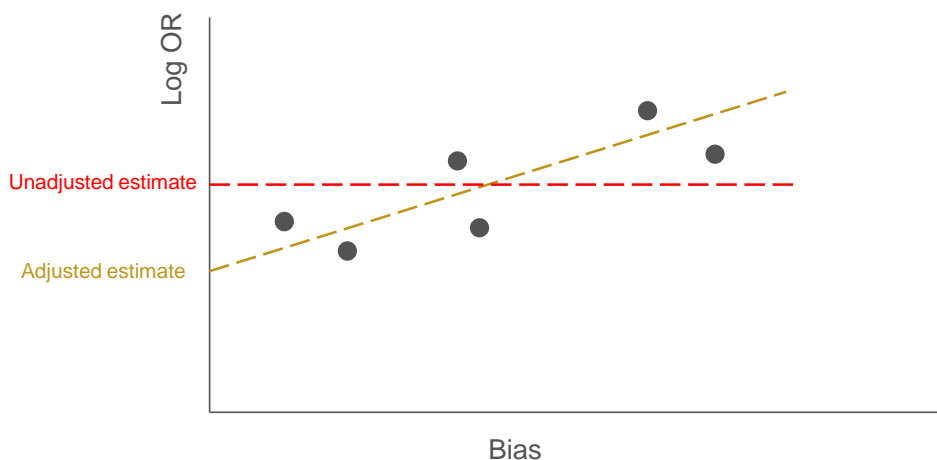
Bias adjustment

Transform estimates of treatment effect that are thought to be biased relative to the desired effect in the target population, into unbiased estimates

- Meta-regression
- Adjustment for bias associated with trial-level markers based on data from other studies (and current studies)
- Elicitation of internal and external bias distributions from experts

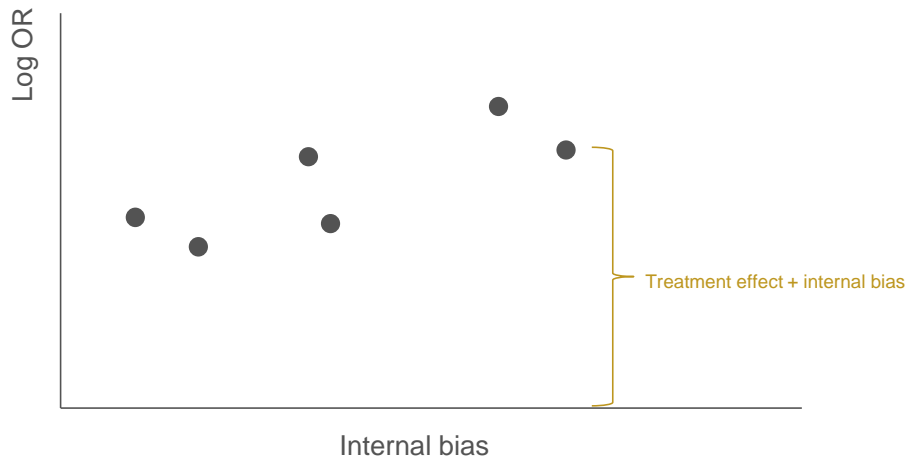
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Bias adjustment with meta-regression



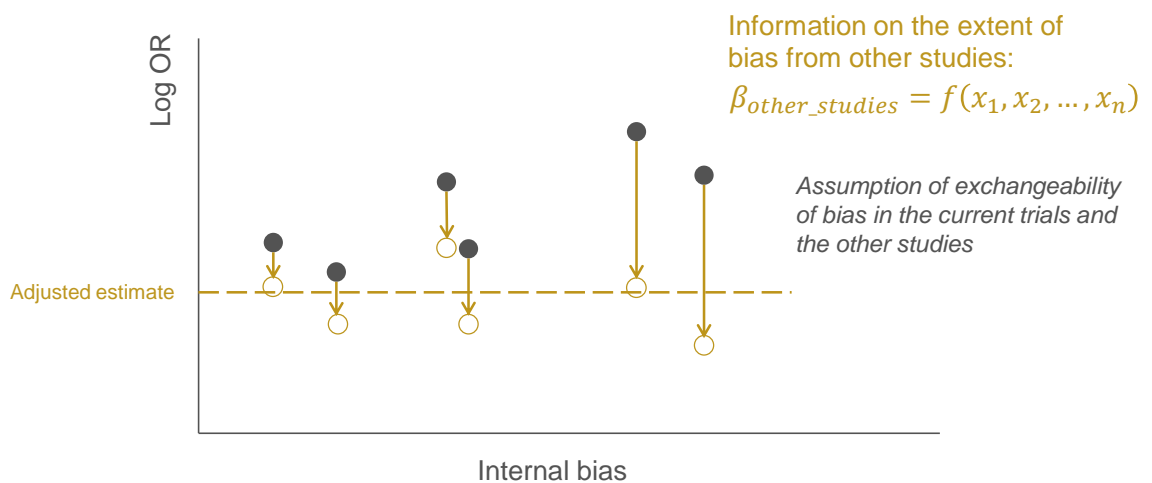
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Estimation and adjustment of bias associated with trial-level markers



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Estimation and adjustment of bias associated with trial-level markers



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Summary

- Formal integration of trial and observational evidence with evidence synthesis methods to estimate a specific parameter: the relative treatment effect
- Evaluation of consistency between RCT and observational study results
- Bias adjustment with evidence synthesis
 - Use of information from external studies
- Internal AND external bias

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Thank you

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Final Polling Question

Live Content Slide

When playing as a slideshow, this slide will display live content

Poll: Do we still need RCTs?