Network Meta-Analysis

including

Individual Participant Data

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Background

- Network meta-analysis (NMA) often based on aggregate data (AD)
- Concerns regarding validity of indirect comparisons
- About 1/8 of AD-NMA suffer from network inconsistency
- Heterogeneity may also degrade usefulness of NMA
- NMA framework used for inclusion non-randomized studies

What can we gain by obtaining
Individual Participant Data (IPD)?
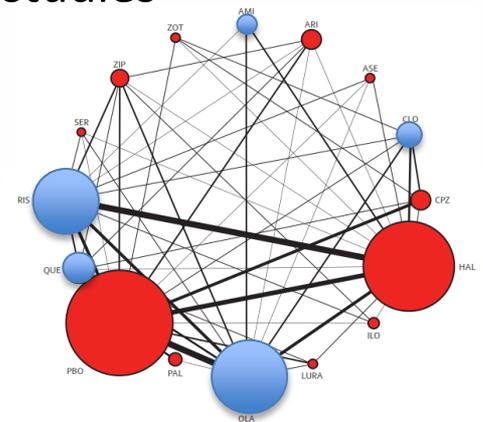
Background

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Tutorial

Get real in individual participant data (IPD) meta-analysis: a review of the methodology

Thomas P. A. Debray ✉, Karel G. M. Moons, Gert van Valkenhoef, Orestis Efthimiou,

Noemi Hummel, Rolf H. H. Groenwold, Johannes B. Reitsma,

on behalf of the GetReal methods review group

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Funding Information

An overview of the members of the GetReal methods review group is given in Supporting Information 1.

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Tutorial

GetReal in network meta-analysis: a review of the methodology

Orestis Efthimiou ✉,Thomas P. A. Debray,Gert van Valkenhoef,Sven Trelle,Klea Panayidou,

Karel G. M. Moons,Johannes B. Reitsma,Aijing Shang,Georgia Salanti,

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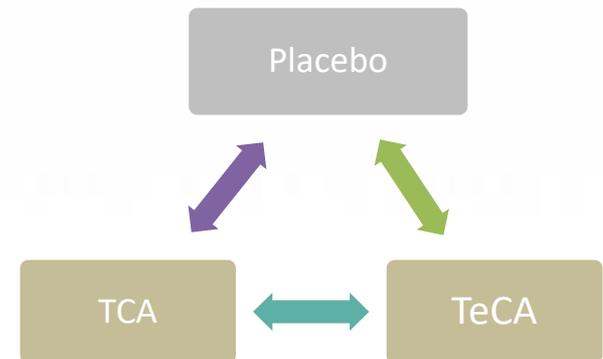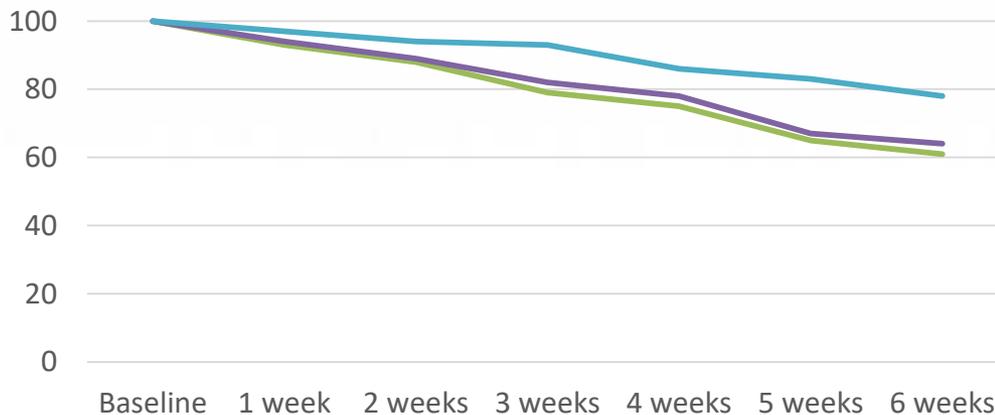**Cited by:** 3 articles   ⚙ Citation tools

Funding Information

Early View

Browse Early View Articles
Online Version of Record
published before inclusion
in an issue

Case study

- 18 anti-depressant trials
- Comparison of 3 treatments
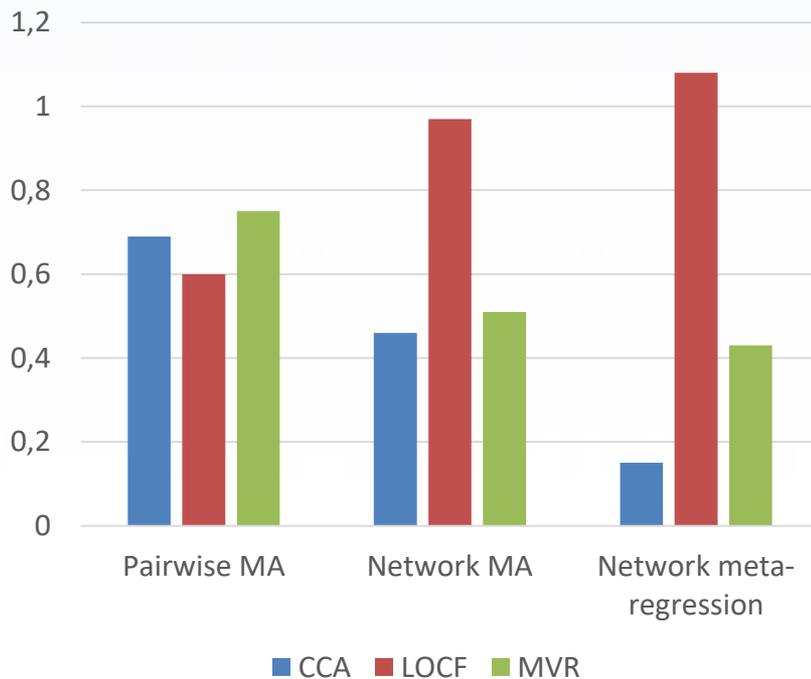- Evaluation of Hamilton Depression score (HAMD)

Available response data

No access to IPD

- Possible types of aggregate data
  - All trials: complete case analysis (CCA)
  - All trials: last observation carried forward (LOCF)
  - All trials: multivariate regression (MVR)
  - Different combinations possible but not evaluated here
- Common methods
  - Pairwise meta-analysis
  - Network meta-analysis
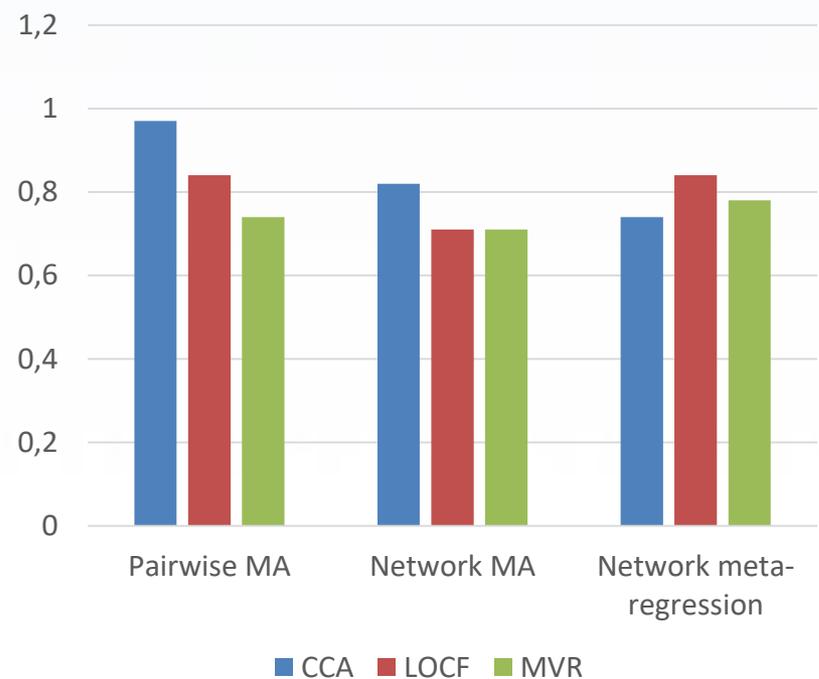 - Network meta-regression

We investigate the relative change in HAMD score between TeCA and TCA after 6 weeks

Meta-analysis using published aggregate data

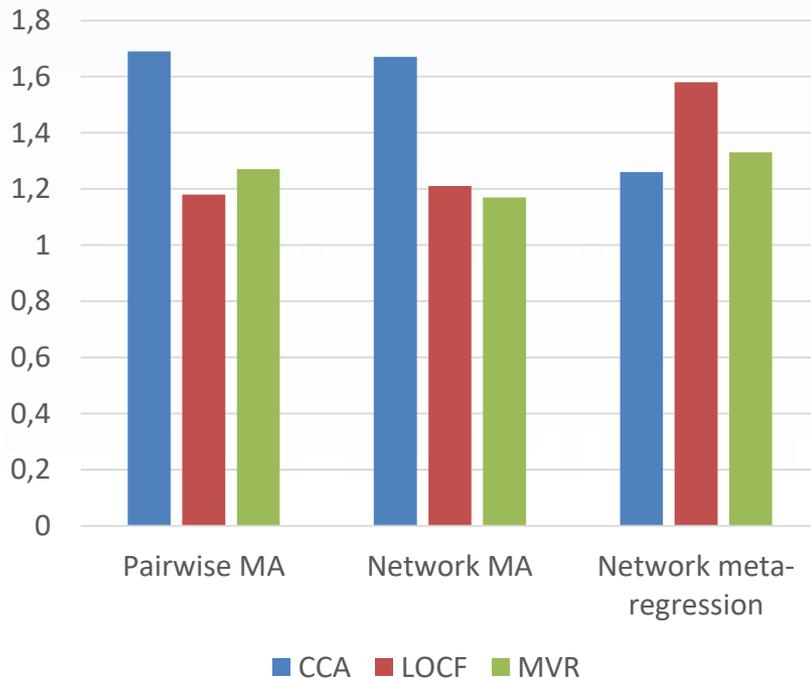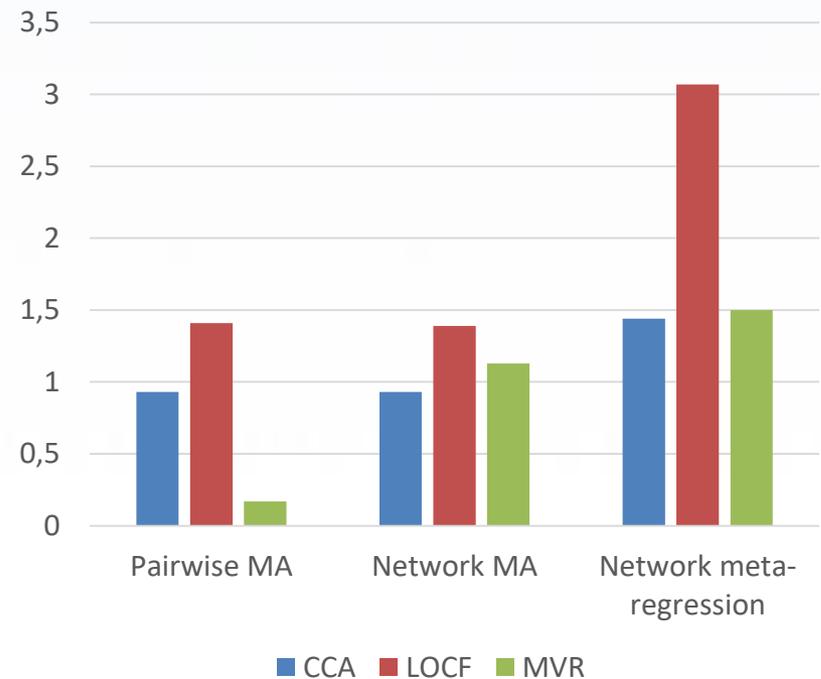# Meta-analysis using published aggregate data

# IPD are available for all trials

- Extensions of AD-NMA methods
  - Adjust for confounders & prognostic factors (NMA-PF)
  - Adjust for effect modifiers (NMA-TX)
  - Use information from trials with limited follow-up (MNMA)

- Questions
  - Can we improve precision?
  - Can we reduce/explain heterogeneity and network inconsistency?

Meta-analysis using IPD
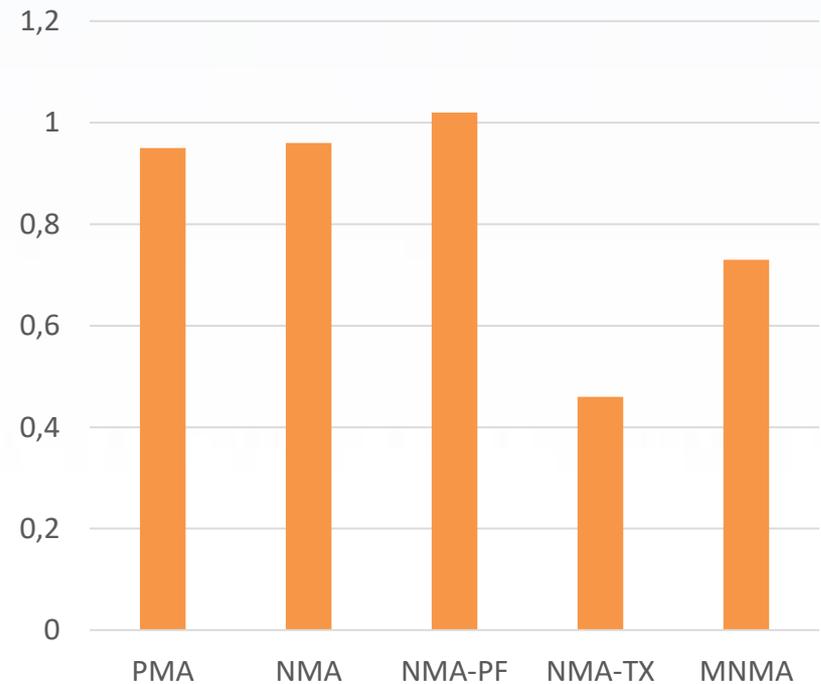
Effect size
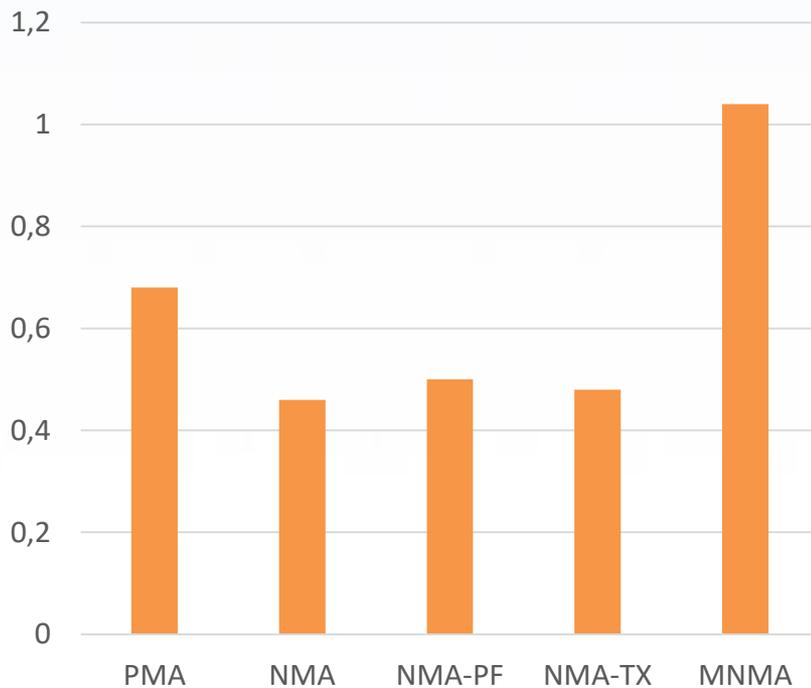
Standard error of effect size
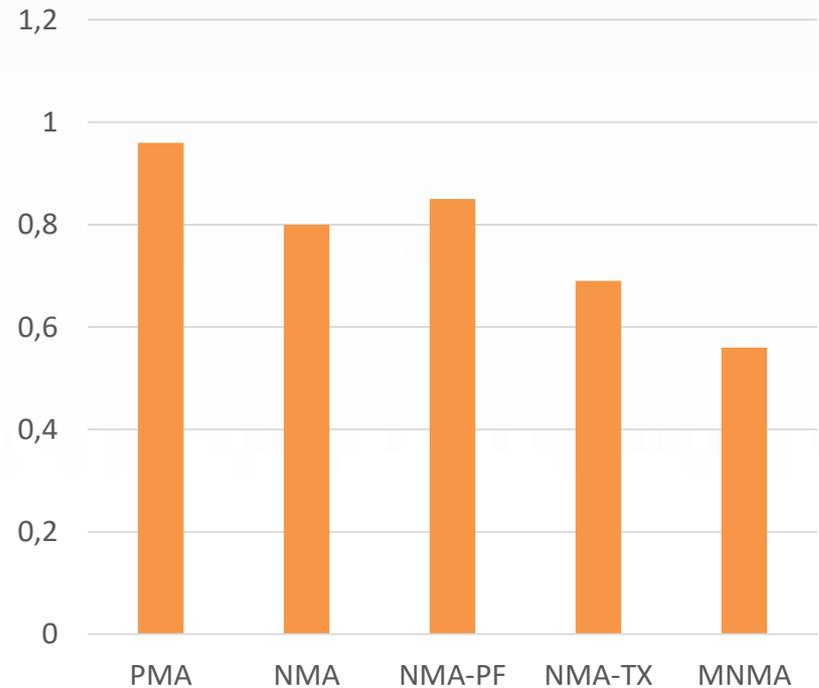
Meta-analysis using IPD

Overview of statistical methods & source code

Article

SMMR
STATISTICAL METHODS IN MEDICAL RESEARCH

An overview of methods for network meta-analysis using individual participant data: when do benefits arise?

Thomas PA Debray,[1,2] Ewoud Schuit,[1,2,3] Orestis Efthimiou,[4,5] Johannes B Reitsma,[1,2] John PA Ioannidis,[3] Georgia Salanti,[4,5,6] and Karel GM Moons[1,2] on behalf of GetReal Workpackage4

Recommendations

Prioritization of IPD retrieval

- Presence of network inconsistency

- Presence of heterogeneity

- Publications with inappropriate summary statistics