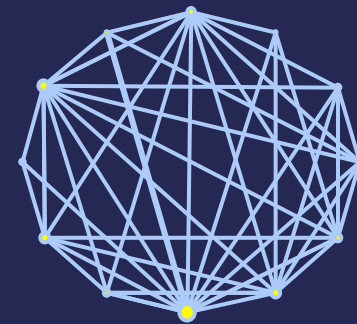


Methods and characteristics of **indirect comparison methods** using individual patient data



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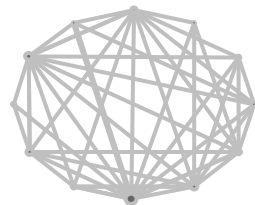
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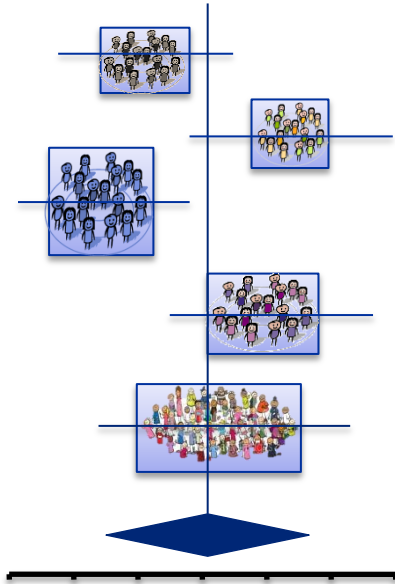
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Individual patient data in indirect comparisons



Aggregate data (AD) vs. Individual patient data (IPD)

AD meta-analyses: use summary point estimates from all patients enrolled in each included trial

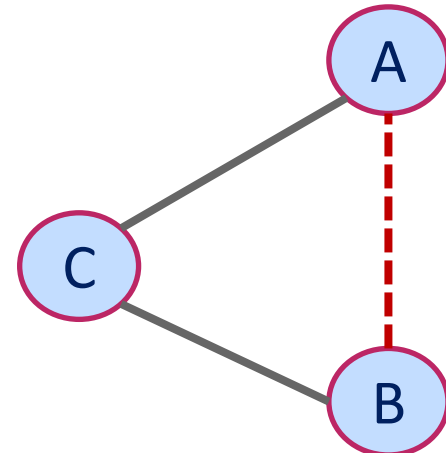
- Data is not available on individual patients

IPD meta-analyses: use data from each individual patient enrolled in each included trial

- Allows similar analysis across all trials
- Allows investigation of patient-level moderators

The use of IPD in indirect comparisons and network meta-analysis (NMA) may:

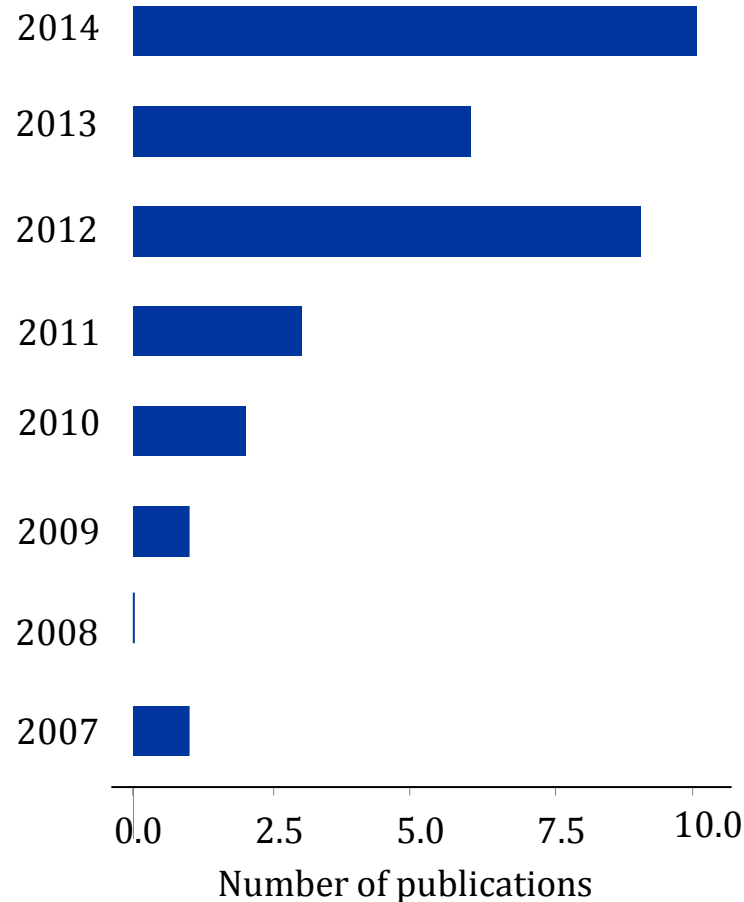
- Increase **confidence** in the results
- Identify **interactions** that are otherwise undetectable
- Reduce both variation in treatment effects between studies within pairwise comparisons (**heterogeneity**) and variation in treatment effects between pairwise comparisons (**inconsistency**)
- Allow estimation of **subgroup effects**, which in turn allows tailoring of results to patient characteristics





Scoping review of indirect comparisons with IPD

IPD indirect comparisons are published with increasing frequency in health care literature – **BUT** no guidance on selecting the appropriate **methodology** or on **reporting** the methods and results



Aim

To examine the **methods** and **reporting** of indirect comparison methods using IPD alone or in combination with AD.

Methods

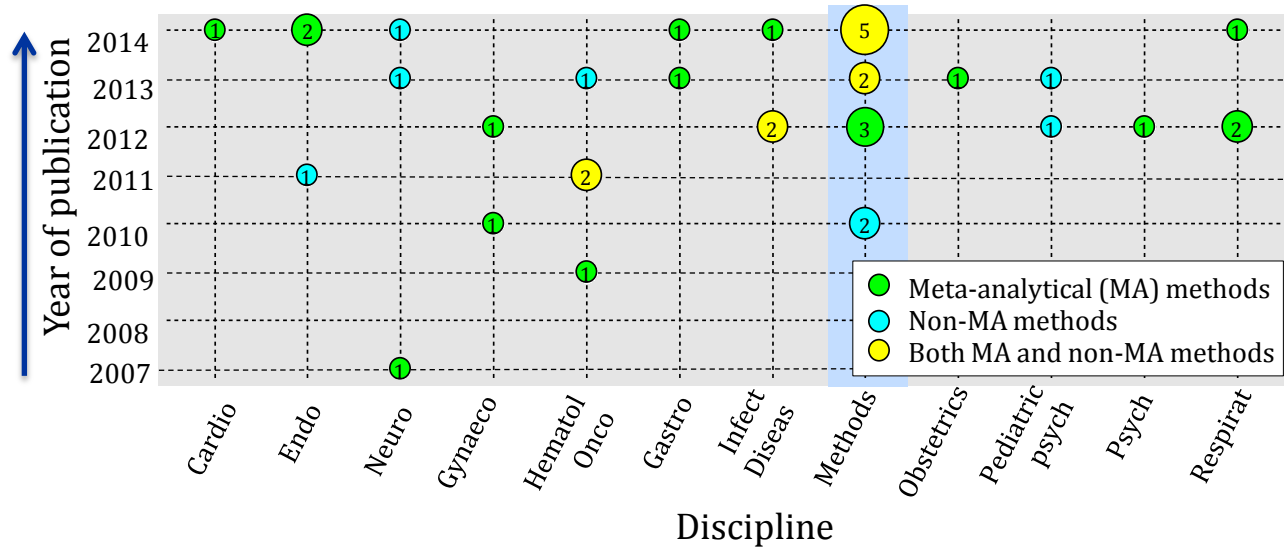
- We searched MEDLINE, Embase, the Cochrane Library, and CINAHL from inception to October 2014.
- We included:
 - published and unpublished studies
 - reporting a method, application, or review
 - any type of indirect comparisons using IPD
 - with at least 3 interventions.



Results

We identified 37 papers:

- 23 (62%) application articles
- 11 (30%) methodological articles
- 2 (5%) reviews, and
- 1 (3%) protocol.



Of the 33 empirical networks

(including examples identified in methodological and review articles):

- 24 (73%) IPD-NMAs & 9 (27%) the **non-meta-analytical** indirect comparison method matching adjusted indirect comparison (MAIC)
- **Included RCTs only:** 21 (64%) IPD-NMAs and 9 (27%) MAICs
- Only 9 (27%) IPD-NMAs reported the existence of a **study protocol**
- 15 (45%) IPD-NMAs applied a **random-effects** model (this model is not applicable for MAIC)
- 16 (52%) applied a **Bayesian hierarchical model** (using WinBUGS [14; 43%], OpenBUGS [2; 6%], or JAGS [1; 3%] software)
- Only 3 (9%) IPD-NMAs provided their **code** in the manuscript



Results

- Of the **33 empirical networks**
 - 21 (64%) networks with **at least one closed loop**:
 - 19 (90%) were IPD-NMAs, 13 (68%) of which evaluated the **consistency** assumption
 - Only 5 (38%) of the 13 IPD-NMAs used **appropriate** statistical approaches.
 - 10 (30%) used **IPD only**
 - 22 (67%) studies identified IPD from a **collaborative group**
- 17 (46%) studies of the **total 37 articles**, were **industry sponsored**
- For IPD alone or IPD+AD, **models** have been developed for dichotomous and continuous outcomes, whereas for IPD+AD, models also exist for time-to-event data.
- **Typical IPD network**: dichotomous, objective primary outcome, compared pharmacological and placebo/control interventions, and involved 5 interventions and 10 trials.

In summary...

- ❑ **One in three** approaches used to model IPD was non-meta-analytical; **ignoring** trial randomization and considering only information from treatments of interest.
- ❑ Key methodological and reporting elements are often **missing**, even for NMAs published in high impact journals.