


**SWISS PUBLIC HEALTH CONFERENCE**

**Incorporating single-arm observational evidence in network meta-analysis: an assessment of the available methods**

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**Background**

Pairwise meta-analysis: A — B

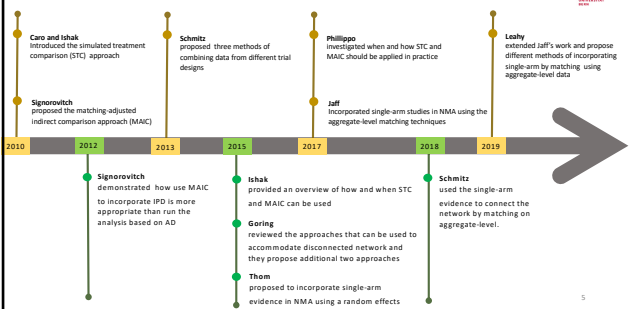
Network meta-analysis: A — B, A — C, C — B, D — B (dotted line)

How to bridge that?

1. Randomised Controlled trials (RCTs)
2. Observational studies
3. Single-arm studies

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**Literature review: incorporating single-arm in NMA**



2010: Caro and Ishak introduced the simulated treatment comparison (STC) approach.

2012: Signorovitch proposed the matching-adjusted indirect comparison approach (MAIC).

2012: Signorovitch demonstrated how use MAIC to incorporate IPD is more appropriate than run the analysis based on AD.

2013: Schmitz proposed three methods of combining data from different trial designs.

2015: Ishak provided an overview of how and when STC and MAIC can be used.

2015: Goring reviewed the approaches that can be used to accommodate disconnected network and they propose additional two approaches.

2015: Thom proposed to incorporate single-arm evidence in NMA using a random effects.

2017: Jaff incorporated single-arm studies in NMA using the aggregate-level matching techniques.

2017: Phillippo investigated when and how STC and MAIC should be applied in practice.

2018: Schmitz used the single-arm evidence to connect the network by matching on aggregate-level.

2019: Leahy extended Jaff's work and propose different methods of incorporating single-arm by matching, using aggregate-level data.

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**Methods to incorporate single-arm studies in NMA?**

Incorporate single-arm in NMA

- IPD and AD:
  - Simulated treatment Comparison (STC) (Ishak 2010) [??]
  - Matching-adjusted indirect comparison (MAIC) (Signorovitch 2010) [maic package in R]
- Only AD:
  - Aggregate-level matching (Jaff 2017, Leahy 2019) [WinBUGS Code is available]
  - random-effect model for the placebo arm (Thom 2015, Goring 2015) [WinBUGS Code is available]

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**Take home messages**

- Incorporation of single-arm evidence is sometimes needed like when the network is disconnected
- choose the appropriate method
- acknowledge the potential bias

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