

# PRiMHE

Programme in the Methods of Health Economics

## ‘Innovative methods of evidence synthesis: a primer on network meta-analysis.’

### Professor Andrea Cipriani

Andrea Cipriani is Professor of Psychiatry and NIHR Research Professor at the Department of Psychiatry, University of Oxford, and Honorary Consultant Psychiatrist at Oxford Health NHS Foundation Trust. His main interest in psychiatry is evidence-based mental health and his research focuses on the evaluation of treatments in psychiatry, mainly major depression, bipolar disorder and schizophrenia. His research in the methodology of evidence synthesis has now a specific focus on individual patient data network meta-analysis and data science, trying to assess the validity, breadth, structure and interpretation of innovative statistical and machine learning approaches to better inform the decision-making process between patients and clinicians and personalise treatment indications in routine clinical care. Prof Cipriani is currently the Director of the NIHR Oxford cognitive health Clinical Research Facility, Lead of the Digital and Informatics Theme of the Oxford Health Biomedical Research Centre and the Editor in Chief of Evidence-Based Mental Health (<https://ebmh.bmj.com/>). Twitter account: @And\_Cipriani

**Date: 26 January 2021/12:30 – 13:30**

**Virtual Webex Event ([login details on page 2](#))**

### Summary

**Background:** A quantitative synthesis of evidence via standard pair-wise meta-analysis lies on the top of the hierarchy for evaluating the relative effectiveness or safety between two interventions. In most healthcare problems, however, there is a plethora of competing interventions. Network meta-analysis allows to rank competing interventions and evaluate their relative effectiveness even if they have not been compared in an individual trial.

**Aim:** The aim of this presentation is to explain and discuss the main features of this statistical technique (key assumptions underlying network meta-analysis and graphical methods to visualise results and information in the network).

**Methods:** We will use one illustrative example that compared the relative effectiveness of 21 antidepressants and placebo in major depression.

**Results:** A network plot allows to visualise how information flows in the network and reveals important information about network geometry. Discrepancies between direct and indirect evidence can be detected using inconsistency plots. Relative effectiveness or safety of competing interventions can be presented in a league table. A contribution plot reveals the contribution of each direct comparison to each network estimate. A comparison-adjusted funnel plot is an extension of simple funnel plot to network meta-analysis. A rank probability matrix can be estimated to present the probabilities of all interventions assuming each rank and can be represented using rankograms and cumulative probability plots.

**Conclusions:** Network meta-analysis is very helpful in comparing the relative effectiveness and acceptability of competing treatments. Several issues, however, still need to be addressed when conducting a network meta-analysis for the results to be valid and correctly interpreted.

*This lecture is accredited with 1 DFP-point for members of the Austrian Medical Chamber.*



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## Webex Login

**Date and time:** Tuesday, January 26, 2021 12:30 pm

*Europe Time (Berlin, GMT+01:00)*

### Event address for attendees:

<https://meduniwien.webex.com/meduniwien/onstage/g.php?MTID=ed163e58db6ca5eb8c0bc22e3d883a9c7>

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