Network Meta-Analysis: A Practical Approach

January 16th – 18th, 2017

Course description

Faculty	**Prof. Julian Higgins** School of Social and Community Medicine, University of Bristol, UK **Prof. Georgia Salanti** Institute of Social and Preventive Medicine (ISPM), University of Bern, Switzerland
Place	**CH – 3823 Wengen | SWITZERLAND** Room Edelweiss (see map at http://www.epi-winterschool.org/hotels)
Introduction	Standard meta-analysis methods for clinical trials focus on comparisons of two interventions, such as a drug versus a placebo, or a new intervention versus standard practice. Rarely are there only two interventions under consideration in clinical practice. Extensions of meta-analysis to address three or more treatments have been the subject of much methodological research in recent years, and are increasingly being applied. At simplest, indirect comparisons can be performed in ways that respect the randomization within each clinical trial. More complex are so-called network meta-analyses, also known as multiple treatments meta-analyses or mixed treatment comparison meta-analyses. These allow the simultaneous analysis of clinical trials involving different treatments. This course is aimed at statisticians, epidemiologists and other quantitatively-minded researchers who want to understand state-of-the-art statistical syntheses of clinical trials involving multiple interventions. Knowledge of systematic reviews and the fundamentals of meta-analysis is expected of all participants. Participants must be statistically literate, including a good understanding of regression, meta-analysis, random-effects models and matrices. Computer practicals will use Stata®, including

the new *mvmeta* macro for performing multivariate meta-analysis. Participants do not need to be familiar with Stata®.

Course objectives	By the end of this short course participants will have an understanding of:

- The role and potential of indirect comparisons and network meta-analysis in the evaluation of healthcare interventions;
- The principles, steps and statistical methods involved;
- The biases that can distort indirect comparisons and network meta-analysis, including conflict among different different sources of evidence, and ways to address these issues.

Participants will gain practical experience in performing analyses in Stata®.

What you have to bring	Students should bring their own portable computers. A course license for Stata® will be available, to be installed before arrival. University of Bern IT staff onsite can provide help on Sunday night.
Outline of course	The course will run over three days and consist of lectures, group work and computer practicals.

Sunday, January 15th (evening)

Installation of Stata® software on students' laptop computers, and possibility of self-directed session for students wishing to refresh themselves with these packages.

Monday, January 16th

- Welcome and introductions
- Meta-analysis of pairwise comparisons
- An example data set for indirect comparisons
- Computer practical: Pairwise meta-analyses and indirect comparisons
- Assumptions underlying indirect comparisons
- Combining and comparing direct and indirect evidence for a particular pairwise comparison

Tuesday, January 17th

- Summary of Day 1
- An example data set for a star-shaped network
- Computer practical: Drawing network plots, doing multiple pairwise analyses at once
- Computer practical: Network meta-analysis, obtaining results, ranking interventions, and quantifying how direct evidence contributes to the network meta-analysis
- Statistical issues in network meta-analysis
- Understanding how direct evidence contributes to the network meta-analysis

- Practical work: linking study characteristics, network plots and quantified contributions
- Methods for presenting results

Wednesday, January 18th

- Summary of Day 2
- An example data set for full network meta-analysis
- Computer practical: Full network meta-analysis
- Computer practical: Inconsistency models
- Detecting and exploring inconsistency
- Other implementation options: Bayesian network meta-analysis and network meta-analysis using R
- Practical: Reporting standards and quality assessment of network meta-analyses
- Assessing the quality of evidence arising from a network meta-analysis: extensions of GRADE
- Summary of Day 3 and feedback on the course

Credit	1.5 ECTS
Course fee	SSPH+: CHF 0.00 Academic: CHF 900 Industry: CHF 2000
Registration	You can register on the Winter School website www.epi-winterschool.org.
Course hotels	Participants not staying in the group house should book their accommodations themselves (see map and recommendations on www.epi-winterschool.org/hotels).