Indirect comparisons and network meta-analysis: Evidence synthesis with multiple treatments (ws14-2)

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Faculty

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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®. Participants already familiar with WinBUGS will be able to follow parallel practicals using Bayesian techniques.

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 sources of evidence, and ways to address these issues.

Participants will gain practical experience in performing analyses in either Stata® or WinBUGS.

What you have to bring

Students will bring their own portable computers. A course license of Stata® will be available if required, to be installed by University of Bern IT staff on arrival.

Outline of course

The course will run over three days and consist of lectures, group work and computer practicals. We start early in the morning with a review of the previous day. During the extended break in the afternoon participants review course materials, catch up on emails or go skiing. We reconvene at 5 pm for the computer sessions.

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

Monday
- Brief review of systematic reviews and meta-analysis
- Frequentist meta-analysis methods for direct pair-wise comparisons
- Indirect comparisons and comparison/combination of direct vs indirect evidence
- Validity of indirect comparisons
- Computer practical (Stata® or WinBUGS)

Tuesday
- Network meta-analysis using meta-regression
- Full network meta-analysis using multivariate methods
- Presentation of results
- Computer practical (Stata® or WinBUGS)

Wednesday
- Identifying and addressing inconsistency in network meta-analysis
- Determining confidence in the results of a network meta-analysis
- Group discussion of a published network meta-analysis
- Participants presenting their own problems, and/or group discussion
- Computer practical (Stata® or WinBUGS)
- Question and answer session, and feedback on the course

Maximum number of participants

The maximum number of participants on this course will be 25.

Course fee

Academic: CHF 900
Industry: CHF 1500

Course hotels

See www.epi-winter-school.ch