Workshop Network Meta-Analysis

11:30 AM until 15:00 PM - interrupted by lunch

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Please bring your own laptop with R installed. Detailed instructions will follow.

Standard meta-analysis methods for clinical trials focus on comparisons of two interventions. In most healthcare conditions, there is a plethora of competing interventions. We are interested in finding which interventions are the most effective and/or safe. Network meta-analysis (NMA) is the extension of standard pairwise meta-analysis to multiple treatment comparisons. A key concept of NMA is that of indirect comparison. Such a comparison uses data from separate studies that are connected through sharing some common comparator. These connections are used to make inference for the relative effectiveness between interventions. NMA synthesizes direct, from clinical trials included in the meta-analysis and indirect evidence in the same framework and

1. results in effect estimates with increased precision;
2. allows estimating the relative effectiveness between any pair of interventions, even those not compared head-to-head;
3. provides a hierarchy of interventions for each outcome considered.

Just like any statistical model, NMA rests on assumptions whose plausibility determines the validity of results. The key assumption is that of transitivity that requires the distribution of effect modifiers to be similar across treatment comparisons. Another key characteristic of NMA is the contribution matrix, which determines how much each study contributes to each network estimate. The CINeMA software makes judgements about six domains: within-study bias, across-study bias, indirectness, imprecision, heterogeneity and incoherence.. Using these judgements and the contribution matrix offers us a tool to place confidence in each network summary effect. Another very important output of NMA is ranking and several methods have been suggested.

The aim of this workshop is to introduce the concepts and methods of network meta-analysis, discuss model assumptions and implications, present existing and novel ranking methods and acquaint the audience with the CINeMA software for placing confidence in NMA results.

Workshop Synthesis when meta-analysis is not possible: approaches to grouping, presentation and synthesis

11:30 AM until 15:00 PM - interrupted by lunch

Jo McKenzie

Convenor of the Cochrane Statistical Methods Group; Monash University Australia

Abstract: In reviews where meta-analysis is not used, authors commonly report results study-by-study or draw conclusions without reporting how findings were interpreted across studies. These approaches may leave decision-makers to make sense of findings themselves, and undermine confidence in the evidence. There are many circumstances that may preclude the use of meta-analysis of effect estimates. For example, when there is incomplete information reported about the intervention effect estimates (e.g. missing standard errors), or inconsistency in the reported effect metrics across studies. Other commonly cited reasons for not using meta-analysis can often be addressed through grouping, such as when there is sparse data arising from studies reporting diverse interventions or outcome measures. In this workshop we will i) consider options for grouping studies to facilitate synthesis, and ii) provide guidance on presentation and synthesis methods that can be used when meta-analysis of effect estimates is not possible (sometimes referred to as "narrative synthesis"). This workshop is based on new guidance in version 6 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Chapters 3 and 12).

Masterclass Introduction to systematic reviews of prognosis studies

11:30 - 12:45 h

Carl Moons

Co-convenor of the Cochrane Prognosis Methods Group / Julius Center, UMC Utrecht

Personalized and precision medicine is all about the inclusion of prognostic information in the management of patients. Hence, in this era of personalized medicine it is not surprising that the number of publications of studies evaluating prognostic factors and models has exploded and literally rises per day. To guide care providers, decision makers, patients, citizens, editors, guideline developers and reviewers, appraising and summarizing the published data and evidence from prognosis studies in a systematic review and meta-analysis is urgently needed.

This workshop will provide an introduction to systematic reviews and meta-analysis of prognosis studies. It will address the similarities and dissimilarities between this type of reviews and 'ordinary', well-known intervention reviews. This applies to the following aspects:

1. Defining the review question;
2. Assessment of the risk of bias of primary prognosis studies;
3. Statistical methods for meta-analysis;
4. Interpreting and reporting the review findings.

Masterclass Peer review of the scientific publication: an overview of the process and practical guidance on conduct

13:45 - 15:00 h

Gary Collins

Director UK Equator Centre / Centre for Statistics in Medicine, University of Oxford, UK

Peer review is at the heart of the scientific publication, and is considered the gatekeeper to scientific quality and integrity. Yet, quality, integrity, and credibility of the scientific research is frequently (and increasingly) debated. The peer review should be a constructive yet critical appraisal of the study methods, and subsequent evaluation of the trustworthiness (and clarity) of the study findings.

In an already over-burdened system, the number of journals continually grow and demand for peer review is at an all-time high, with each article typically requiring 2-3 referees – usually on a voluntary basis. Yet, despite the key role and importance of peer review to scholarly publishing, there is typically little training and support provided to researchers. However, the process of carrying out a peer review can be highly educational (and part of professional development) in learning the key principles of critical appraisal for a wide range of study designs.

I will describe the peer review process, including the different models of peer review, recent innovations and incentives for carrying out a peer review. I will discuss how to conduct an informative and critically constructive peer review, write a peer review report, and highlight what tools are available to help peer reviewers carry out a peer review. Finally, I will provide some advice, as an author receiving peer review reports, on how to respond to comments raised by referees.