Meta-Analysis of Observational Data

CLASS SESSIONS
Tuesday, June 13 and Wednesday, June 14, 2017
8:30am to 12:30pm
Location: Hammer Room LL207
located in the Hammer Building (701 West 168th St)

INSTRUCTORS
Prof. Philippe Ravaud, MD, PhD
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Anna Chaimani

COURSE DESCRIPTION
Meta-analyses of data arising from systematic reviews are increasingly used for evidence-based clinical and public health practice. Health-care professionals need to understand and critique this research design.
This course will present a detailed description of the meta-analysis process, discuss the strengths, potential bias and limitations of this design, and provide step-by-step guidance on how to actually perform and report a meta-analysis.
We will focus on issues relevant to meta-analyses of observational studies although the overall methodology is highly applicable to meta-analyses of randomized trials as well. In particular, there will be discussion about issues such as adjustment for confounders, aggregating data from different observational designs, assessing small-study effects.

PREREQUISITES
All participants should bring a laptop, with R software installed.
R is available for download at http://cran.at.r-project.org

Required packages: Participants should install the meta, metasens,
http://www.statmethods.net/interface/packages.html
https://cran.r-project.org/bin/macosx/RMacOSX-FAQ.html#How-to-install-packages

COURSE LEARNING OBJECTIVES
By the end of the course, students will be able to:

- Understand the specific methodological issues raised by meta-analyses of observational studies
- Understand the principles of fixed-effect and random-effects models
- Examine sources of between-trial heterogeneity
- Assess small-study effects
- Incorporate risk of bias assessments into synthesis

COURSE READINGS


COURSE SCHEDULE

Session 1 – Methodological issues raised by syntheses of observational studies

June 13th
8:30am-11:30am

Learning Objectives:
- Describe the specific issues pertaining to the search for studies, registration of studies, reporting bias, assessment of risk of bias, small-study effect

Reading:
Egger, Martin, Davey-Smith. BMJ 1998; 316 :140

Session 2 – Meta-analysis model & exploration of between-trial heterogeneity

June 13th
11:30am-12:30pm

Learning Objectives:
- Fixed-effect model
- Random-effects model and estimators of between-trial variance
- Subgroup analyses and meta-regression analyses

Reading:
Riley, Higgins, Deeks. BMJ 2011;342:d549

Session 3 – Adjustment for risk of bias

June 14th
8:30am-11:30am

Learning Objectives:
- Discuss meta-analysis of randomized trials adjusted for risk of bias
- Meta-analysis of observational studies using credibility ceilings, and with unmeasured confounders

Reading:
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<tr>
<th>Date</th>
<th>Time</th>
<th>Session 4 — Small-study effects and reporting bias</th>
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<tr>
<td>June 14th</td>
<td>11:30am-12:30pm</td>
<td>Learning Objectives:</td>
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<td>- Funnel plot</td>
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<td>- Regression-based methods to adjust for small-study effects</td>
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<td>- Copas selection model</td>
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<td>Sterne et al. BMJ 2011;342:d4002</td>
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