SYSTEMATIC REVIEWS AND META-ANALYSES

CHSC 7362 T02 / CRN 27112

January 8, 2015 - April 9, 2015

Thursdays, 13H00- 16H00

Bannatyne Campus,
University of Manitoba

GEORGE & FAY YEE
Centre for Healthcare Innovation

UNIVERSITY OF MANITOBA

Course offered by the University of Manitoba, Faculty of Health Sciences, College of Medicine, Department of Community Health Sciences and the George & Fay Yee Centre for Healthcare Innovation

About the Course:

This course will guide participants through the process of completing their own publication quality systematic review and meta-analysis. Whether you are preparing a funding application, or synthesizing knowledge to inform policy or change practice, this course will provide participants with the knowledge and skill-set necessary to plan, conduct, critically appraise, analyze, and report evidence from randomized trials.

Who Should Take This course?

Graduate Students (MSc/PhD)
Physicians (trainees and faculty)
Investigators and Research Personnel

Course Directors:

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*Permission from the course directors is required.

Note: If you are not currently registered as a graduate student, Graduate Studies must receive your full application as an "occasional student" before October 15, 2014. Application details can be found **here.**

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SESSION OBJECTIVES:

SESSION 1A: INTRODUCTION AND OVERVIEW OF SYSTEMATIC REVIEWS

1. What is a systematic review and how does it compare to a narrative review?
2. What are the types of systematic reviews?
3. Discuss the purpose and value of systematic reviews.
4. Introduce the Cochrane collaboration and sources of high quality systematic reviews.

SESSION 1B: DEVELOPING A SYSTEMATIC REVIEW QUESTION AND PROTOCOL

1. What makes a good systematic review question?
2. Discuss what a systematic review protocol is and the importance of such a document.
3. What are the elements of a good systematic review protocol?
4. To identify the importance of a priori hypotheses.

SESSION 2: INTRODUCTION TO LITERATURE SEARCHING & REFERENCE MANAGEMENT

1. Discuss the elements of a comprehensive literature search.
2. Identify important electronic databases and how to access them.
3. What is 'grey literature' and how do you search it?
4. Discuss how to catalogue and manage citations found during the searching process.

SESSION 3: LITERATURE SEARCHING FOR SYSTEMATIC REVIEWS

1. Discuss techniques to devise and adapt search strategies for electronic databases.
2. Use filters to locate particular study types.
3. Practice making search strategies with the help of an information specialist.

SESSION 4: REFERENCE MANAGEMENT FOR SYSTEMATIC REVIEWS

1. Discuss available reference management platforms – functions and limitations.
2. Practice using Endnote with sample or with your search results datasets.

SESSION 5: PROCESS ISSUES AND DATA EXTRACTION

1. How to develop inclusion/exclusion criteria and apply these criteria.
2. Discuss the process of developing a data extraction template
3. How to automate and collate extracted reviewer data.
4. Handling of missing data.

SESSION 6: SOURCES AND MEASUREMENT OF BIAS – MOVING BEYOND QUALITY

1. Discuss the impact of bias in clinical research and systematic reviews.
2. Define and discuss the impact of publication language, publication status, duplicate publications, sponsorship and selective outcomes reporting through the use of case examples.
3. Discuss registration processes for clinical trials and systematic reviews.

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SESSION 7: QUALITY ASSESSMENT AND THE RISK OF BIAS

1. How does bias affect the results of a systematic review and how to mitigate potential bias.
2. Discuss the methods of assessing bias (eg. Cochrane Risk of Bias tool) and quality of interventional and observation studies.
3. Discuss how the strength of evidence for individual outcomes are assessed in systematic reviews.
4. How the strength of the evidence (e.g. GRADE methodology) differs from quality

SESSION 8: CONDUCTING SYSTEMATIC REVIEWS – STATISTICS (I)

1. Discuss analytic issues pertaining to single studies with dichotomous and continuous outcomes.
2. Introduce the concepts of meta-analysis (odds ratios, variance, pooling techniques, weighting).
3. Develop an approach to interpreting output of a meta-analysis.

SESSION 9: CONDUCTING SYSTEMATIC REVIEWS – STATISTICS (III)

1. Analytic issues required to synthesize data from multiple studies.
2. Perform a meta-analysis as a group.
3. Define and discuss clinical and statistical heterogeneity, and how to measure it.

SESSION 10: CONDUCTING SYSTEMATIC REVIEWS – STATISTICS (III)

1. What is publication bias – how do you prevent it, detect it, and adjust for it?
2. What is the importance and impact of publication bias
3. Discuss advanced meta-analytic techniques including meta-regression, pooling of indirect outcomes, and pooled probabilities

SESSION 11:

PART 1: REPORTING AND UPDATING OF SYSTEMATIC REVIEWS

1. What are the required elements in a complete systematic review report (i.e. PRISMA and MOOSE reporting guidelines) and how were these elements developed?
2. Why must systematic reviews be updated, and how frequently?

PART 2: OBSERVATIONAL SYSTEMATIC REVIEWS

1. Discuss the pros and cons of combining data from observational studies
2. Highlight unique search techniques and analytic methods for observational studies
3. Introduce analytic strategies unique to observational reviews

SESSION 12: ADVANCED SYSTEMATIC REVIEW TOPICS

The content of this session will be dictated by the needs and interest of the participants. Review method topics might include scoping reviews or rapid reviews. Meta-analytic topics might include indirect meta-analysis, network meta-analysis (frequentist and Bayesian approaches), imputation methods for missing data.

SESSION 13: CLASS PRESENTATIONS!

Each person will deliver a PowerPoint presentation detailing the background, methods, analysis, results, and the interpretation of their systematic review. Audience will be the rest of the class and course instructors. Each student will be given 10 minutes to present and 5 minutes for questions