

# ***Introduction to Systematic Review and Meta-analysis: A Health Care Perspective<sup>1</sup>***

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## **Abstract**

One of the goals of the Research Synthesis Workshop is to increase cross-disciplinary communication and collaboration. The primary objective of this introductory talk is to provide information on the science of systematic review and meta-analysis as it is applied in health care, paying specific attention to aspects that are relevant for research synthesis in policy analysis. Given that the workshop has several presentations on meta-analytic methodology, I will focus instead on three challenges faced by any meta-analyst but which may be of particular importance in policy analysis. These challenges are: assessing the quality of individual studies; heterogeneity; and evaluating the strength of a body of evidence. Information on these issues from a health care perspective may be novel for the workshop attendees.

I will begin the talk by delineating between a systematic review and a meta-analysis as described in the [Cochrane Collaboration glossary](#), and will then define the steps in a systematic review. I will describe recent efforts to set standards for systematic reviews, particularly the 2011 Institute of Medicine (IOM) report [Finding What Works in Health Care: Standards for Systematic Reviews](#). Using a standard on the screening and selection of studies as an example, I will illustrate the IOM Committee's methodology for setting standards. I will note the report's caveats regarding when the standards should be applied, and the decisions researchers face applying these standards given limited resources.

In the latter part of the talk, I will focus on the IOM standards proposed regarding individual study quality; heterogeneity; and strength of evidence. For assessing the quality of individual studies, an example will be shown to illustrate the [Cochrane risk of bias tool](#). Heterogeneity will

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be defined from a health care perspective with a distinction being drawn between clinical, methodological, and statistical heterogeneity. The limitations of only using statistical measures such as the  $\chi^2$  or  $I^2$  statistics will be noted. In terms of evaluating strength of evidence, I will present results on a reliability study recently published in the *Journal of Clinical Epidemiology* ([Berkman, Lohr, Morgan, Kuo, Morton; 2013](#)).