SYSTEMATIC REVIEW UNIT

Goal: At the completion of this unit, participants will be able to critically appraise a Systematic Review, using the "Users' Guides to the Medical Literature".

Instructional Objectives:

1. Assess the validity of a Systematic Review.
2. Understand the concept of heterogeneity, and how this is measured.
3. Interpret a meta-analysis plot.
4. Understand the pros and cons of different ways of presenting pooled effects for continuous outcomes.

Reference (further readings):

In: Guyatt GH, Rennie D, Meade M, Cook DJ. Editors. *Users' Guides to the Medical Literature: A Manual for Evidence Based Clinical Practice, 3ⁿᵈ Edition*, New York, NY: The McGraw-Hill Companies, Inc. 2015.

- Summarizing the Evidence

  - Chapter 22, p.459 The process of a systematic review and meta-analysis
  - Chapter 23, p. 471 Understanding and applying the results of a systematic review and meta-analysis
  - Chapter 25, p.507 Advanced Topics in Systematic Reviews
    25.1 Fixed-Effects and Random Effects Models   p.507

Problem Based Educational Strategy:

1. Read the Users Guides introductory chapter on Summarizing the Evidence
2. Advanced learners could review the chapters on subgroup analyses and fixed and random effects models.
3. Read the scenario below.
4. Read the enclosed reference "Predictors of Persistent Pain Following Breast Cancer Surgery: A Systematic Review and Meta-analysis of Observational Studies".
5. Complete the critical appraisal form.
6. Return to the scenario and formulate a recommendation.

Advanced learners could use this module in tandem with the practice guideline module and grade the evidence, discuss whether they would recommend the intervention or not, and decide with what strength they would make such a recommendation.

Scenerio: A 39-year-old man presents to your office with low back pain of 1-week duration. He has managed his pain with an over-the-counter analgesia and muscle relaxant (Robaxacet), but continues to experience troublesome pain and functional limitation and wonders if spinal manipulation may be helpful. He has heard from some friends and family members that this treatment may help, and from others that it will not, and he is interested in finding out about the most current evidence to help inform his decision.

You advise your patient that your experience has been positive, but acknowledge that selection bias has almost certainly influenced your impressions (e.g. patients who find manipulation helpful come back, and those who do not are less likely to return). You relay that you would be happy to look into this further and discuss your findings at his next appointment.

Using PubMed and Clinical Queries you use the search terms "acute low back pain" and "spinal manipulation" and restrict your search to "therapy". You identify 52 systematic reviews, the most recent of which you decide to explore further:

> Paige NM, Miake-Lye IM, Booth MS, Beroes JM, Mardian AS, Dougherty P, Branson R, Tang B, Morton SC, Shekelle PG. Association of Spinal Manipulative Therapy with Clinical Benefit and Harm for Acute Low Back Pain: Systematic Review and Meta-analysis. JAMA. 2017 Apr 11;317(14):1451-1460. doi: 10.1001/jama.2017.3086.

A quick review of the abstract suggests that this publication is relevant to your patient. You decide to critically appraise this paper using the "Users' Guides" for a Systematic Review.

After critically appraising this paper, what will you tell your patient?

Enclosed Materials:

1. Paige NM, Miake-Lye IM, Booth MS, Beroes JM, Mardian AS, Dougherty P, Branson R, Tang B, Morton SC, Shekelle PG. Association of Spinal Manipulative Therapy with Clinical Benefit and Harm for Acute Low Back Pain: Systematic Review and Meta-analysis. JAMA. 2017 Apr 11;317(14):1451-1460. doi: 10.1001/jama.2017.3086.

2. Blank critical review form