Screening & Appraising Results
Evaluating the quality of academic and non-academic information
Housekeeping

• If you can’t hear us speaking, check that your sound isn’t muted
• Katie McLean is available in the chat box for assistance
• Type questions for the speakers in the chat box at any time
• This session is being recorded
Information in Action series

Check out upcoming lunch & learn dates! → Register at library.nshealth.ca/lunchandlearn

Session 3: Synthesizing Information
Tuesday, November 21, 2017, 12-1pm

Session 4: Using Knowledge to Change Practice
Wednesday, December 6, 2017, 12-1pm
Learning Outcomes

• Recognize that authoritative content may be packaged formally or informally and may include sources of all media types and different methodologies

• **Understand different methodologies** and their impact on the quality of identified information

• **Select appropriate methodologies** based on information need

• **Monitor** gathered information and **assess** for gaps or weaknesses
What are we covering today?

1. What is Critical Appraisal?
2. General Internet Resource Appraisal
3. Appraising Academic Literature
   - Appraising Evidence Syntheses
   - Appraising Quantitative Studies
   - What about Qualitative Studies?
What is critical appraisal?

How would you define *critical appraisal*? (Sometimes called *quality assessment*.)

Critical appraisal asks two main questions:

1. “Can I believe this information?”
   - Also known as *internal validity*
   - In other words, has the information been designed appropriately, and is it free from bias?

2. “How generalisable or applicable is this information?”
   - Also known as *external validity*
   - In other words, can I apply the information in contexts other than the one described?
What kinds of resources need critical appraisal?

All kinds!

- Websites, media, academic literature... nowhere is safe!
- Can be conducted formally or informally
  - We’ll introduce a few tools today

General Internet Resource Appraisal

xkcd. Duty Calls. Available online: https://xkcd.com/386/
Why we need to evaluate?

The Medical Medium’s Opinion on the Origins of Thyroid Cancer

Taking medical advice from Spirit—the divine voice that Medical Medium Anthony William says speaks through him— involves a leap of faith for many, but we’re continually amazed by the testimonials of readers and friends who have been helped by doing so, particularly for thyroid-related issues. William—author of three books, including the forthcoming *Thyroid Healing: The Truth behind Hashimoto’s, Graves’, Insomnia, Hypothyroidism, Thyroid Nodules & Epstein-Barr*—shares his view on thyroid cancer and the link he sees to the Epstein-Barr Virus. For those not familiar with the Medical Medium’s work (see more on goop here), it’s clear that current science does not support all his theories, but (again) many people find them incredibly insightful—and they’re certainly thought-provoking. (As always, we’d love to hear from you whether you have supporting or contradicting info and feelings—feedback at goop dot com.)

Google search for:
“medical advice” = Over 25 million results
“Flu vaccine” = Just under 1 million results
The Test
How recent is the information?
Can you locate a date when the info was created, updated?
Based on your topic is this current enough?
Why might the date matter for your topic?

CRAP or NOT?
Item 1:
Depression and Bipolar Disorder general patient handout
✓ Date: 2014
Item 2:
Wound care guideline
✗ Date: 1925
- What kind of information is included in the resource?
- Is the content primarily opinion?
- Is the info balanced or biased?
- Does the author provide citations & references?
Can you determine who the author/creator is?
What are their credentials?
Who is the publisher or sponsor?
Is this publisher or sponsor reputable?
CRAP or NOT?
Website titled: How to Naturally Manage Manic Depression? Dr. Knife

Today and tomorrow, I'm hosting a free presentation all about what I've created to be the fastest and most authoritative way to become a Certified Essential Oil Coach.

And you're invited! Click Here to Register

Whether you're in pursuit of essential oil mastery or you want to build an essential oil business, this is a must-see presentation. Plus, I've set aside a half hour to answer your questions.

Like I said, no charge and you can register here.
Appraising Academic Literature
Avoid Predatory Publishers

- Predatory publishing is still a booming business
- Avoiding predators can be difficult
- Beall’s List is no longer being updated, and had flaws to begin with
- Nevertheless, it’s archived here: http://beallslist.weebly.com/
- Generally, a good quality journal will make the effort to be indexed in DOAJ

Beware of predators!
Avoid Predatory Publishers: Where should I search?

“16% and 25% of predatory journals retrieved in neuroscience and neurology, respectively, are indexed in PubMed.”

(Manca et al. 2017)

• Historically, databases like PubMed have been pretty safe, but predatory journals have slipped through the cracks

• DOAJ, Scopus, and MEDLINE (accessed through Ovid) are still fairly safe sources of open access material (Manca et al. 2017)

• Keep your guard up!

Appraising Academic Literature
Appraising Evidence Syntheses
Appraising Evidence Syntheses

• Understand what methodologies are appropriate
• Like designing a study, but in reverse
• Instead of choosing a methodology, you appraise how others chose theirs
• Get familiar with different types of evidence synthesis:


## Appraising Evidence Syntheses

<table>
<thead>
<tr>
<th>Type of evidence synthesis</th>
<th>Objective</th>
<th>Critical appraisal tips</th>
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<tbody>
<tr>
<td><strong>Systematic review</strong></td>
<td>To systematically retrieve, appraise, and synthesize research evidence</td>
<td>Conventions are highly developed (e.g. Cochrane conventions), so the bar is set high</td>
</tr>
<tr>
<td><strong>Meta-analysis</strong></td>
<td>To statistically combine the results of quantitative studies</td>
<td>High-quality meta-analyses accompany systematic reviews; not all systematic reviews require meta-analyses</td>
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<tr>
<td><strong>Scoping review</strong></td>
<td>To determine the scope of a topic; does not make recommendations based on findings</td>
<td>Does not require critical appraisal in its methodology</td>
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<tr>
<td><strong>Rapid review</strong></td>
<td>To retrieve and synthesize research evidence as systematically as possible within a short time frame</td>
<td>Rapid reviews can use shortcuts, but they should be justified and described</td>
</tr>
<tr>
<td><strong>Umbrella review / overview of reviews</strong></td>
<td>To retrieve, appraise, and synthesize evidence syntheses</td>
<td>An umbrella review is only as good as the reviews it synthesizes</td>
</tr>
</tbody>
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Appraising Systematic Reviews

A Measurement Tool to Assess Systematic Reviews (AMSTAR) Checklist:
https://amstar.ca/Amstar_Checklist.php

Some highlights of the checklist:

- Did the research questions and inclusion criteria for the review include the components of PICO?
- Was there a protocol? What did it include?
- Did the authors use and report a comprehensive search strategy?
- Did the authors perform study selection and data extraction in duplicate?
- Did the authors provide a list of excluded studies with reasons?
- Did the authors describe the included studies in adequate detail?
- Etc…

The big question: Could I replicate this systematic review?
Appraising Quantitative Studies
Appraisal tools - Books


McKibbon A. PDQ Evidence-Based Principles and Practice. (2009)
Appraisal Tools - Journals

BMJ
Research methods & Reporting
How to read a paper series
https://goo.gl/3qG33J


Others: ACP Journal Club, Evidence Based Medicine, Evidence Based Nursing, Evidence Based Mental Health
Appraisal tools – Web Resources

✓ Centre for Evidence-Based Medicine (CEBM)
http://www.cebm.net/critical-appraisal/

✓ Duke University – EBP Appraise
https://goo.gl/43m6D2

✓ Critical Appraisal Skills Programme (CASP)
http://www.casp-uk.net/

✓ Graphic Appraisal Tool for Epidemiology (GATE)
https://goo.gl/1mPbbr

✓ Cochrane & Joanna Briggs Institute
http://joannabriggs.org/research/critical-appraisal-tools.html
Appraising Therapy Studies
Are the results of the Trial valid? (internal validity)

- Was the assignment of patients to treatments randomized? (Methods)
- Were the groups similar at the start of the trial? (Results)
- Aside from the allocated treatment, were the groups treated equally? (Methods)
- Were all patients who entered the trial accounted for? And were they analyzed in the groups to which they were randomized? (Results)
- Were the measures objective or were the patients and the clinicians kept “blind” to which treatment? (Methods)
What were the results?

• How large was the treatment effect?
• What is the measure?
• Relative Risk (RR) = risk of the outcome in treatment group/risk of the outcome in the control
• Absolute Risk Reduction (ARR) = also known as absolute risk difference
• Relative Risk Reduction (RRR) = ARR/Risk of outcome in the control group
• Number Needed to Treat (NNT) = inverse of ARR and is calculated as 1/ARR
Other Questions

• How precise was the estimate of the treatment effect?
• Will the results help me in caring for my patient? (external/validity/applicability)
• Is my patient so different to those in the study that the results don’t apply?
• Is the treatment feasible in my setting?
• Will the potential benefits of treatment outweigh the potential harms of treatment for my patient?
Appraising Other Studies

• Diagnosis – likelihood ratios, comparison of test to independent reference standard
• Prognosis – patients classified into prognostically homogenous groups, how precise are the estimates of likelihood
• Harm – cohort vs case control study
• Clinical Decision Analysis, Economic Analysis, Screening, Therapy Non Inferiority Trials, etc etc.
Appraising Qualitative Studies
Appraising Qualitative Studies

There is a lot of debate about critical appraisal of qualitative research.

Is it possible?
If it is possible, should it be done?
If it should be done, how?

We could do a whole session on this topic (stay tuned!), but in the meantime, here is one resource:

- Cochrane Qualitative and Implementation Methods Group - supplemental guidance to Cochrane Handbook, Chapter 4: http://methods.cochrane.org/qi/supplemental-handbook-guidance
Thank you!

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