## Leeds Institute of Health Sciences



Literature search methods for an overview of reviews ('umbrella' reviews or 'review of reviews')

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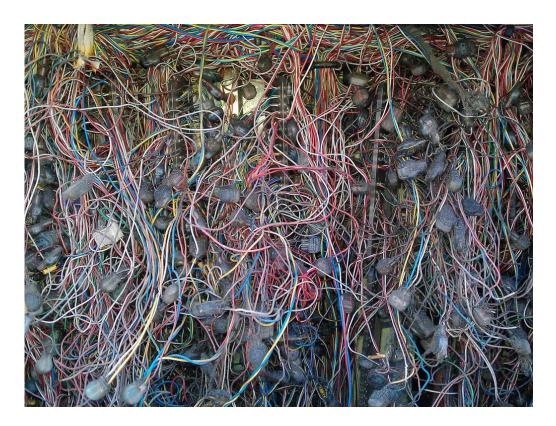


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Searches for systematic reviews can be straightforward



But, if reviewer also wants to 'back track' to get the primary studies out of reviews, it can get complicated....

### Session overview



- Definitions
- Attractions of overviews of systematic reviews
- Search methods for finding SRs DEMO
- Overview methods unravelling
- Example of CBT reviews
- Search methods for tracking primary studies
- Comparison of search methods for overviews of reviews

### Terms and definitions

- Cochrane Overviews of reviews (Cochrane Overviews)
   are Cochrane reviews designed to compile evidence from
   multiple systematic reviews of interventions into one
   accessible and usable document.<sup>(1)</sup>
- Umbrella review specifically refers to review compiling evidence from multiple reviews into one accessible and usable document. Focuses on broad condition or problem for which there are competing interventions and highlights reviews that address these interventions and their results.

## Overview of reviews terms CBT examples



- Effects of school-based interventions targeting obesity-related behaviors and body weight change: a systematic umbrella review. (Behav Med. 37(1):15-25, 2011 Jan.)
- Standardised mindfulness-based interventions in healthcare: an overview of systematic reviews and meta-analyses of RCTs. (PLoS ONE. 10(4) :e0124344, 2015.)
- Effective elements of school health promotion across behavioral domains: a systematic review of reviews. (BMC Public Health. 9:182, 2009)
- Pharmacological treatment of dementia: a scoping **review of systematic reviews**. (Dement Geriatr Cogn Disord. 36(3-4):211-28, 2013)
- The empirical status of cognitive-behavioral therapy: a review of metaanalyses (Clin Psychol Rev. 26(1):17-31, 2006 Jan)

## Steps for an overview of systematic reviews



Search

Identify existing systematic review or meta-analyses

Select

- Use pre-determined inclusion criteria
- Quality assess methods e.g. AMSTAR

Synthesize

- Pool final results of systematic reviews?
- Narrative synthesis of final results

## Attractions of an overview of reviews??



 Avoids duplicating review work (exhaustive searches, rigorous selection, painstaking data extraction, analysis....)



- Gives a more statistically significant answer (more studies are combined)
- Can reveal gaps where reviews are needed
- Answers a broader question (useful for decision makers). Gives an overview of a wide subject and integrates several interventions e.g. different diet and physical interventions for weight loss.

## Finding overviews of systematic reviews Lunny C et al. 2016 (3) UNIVERSITY OF LEEDS

MEDLINE Sensitivity-and-precision maximizing strategy (83% Sen. 17% Pre)

((overview\$ or review or synthesis or summary or Cochrane or analysis) and (reviews or meta-analyses or articles or umbrella)).ti. or "umbrella review".ab. or (meta-review or metareview).ti,ab.

### MEDLINE Sensitivity-maximizing strategy (99% Sen. 4% Pre)

- 1 ((overview\$ or review or synthesis or summary or Cochrane or analysis) and (reviews or meta-analyses or articles or umbrella)).ti. or "umbrella review".ab. or (meta-review or metareview).ti,ab.
- 2 (overview\$ or reviews) and (systematic or cochrane).ti.
- 3 (reviews adj2 meta).ab.
- 4 (reviews adj2 (published or quality or included or summar\$)).ab.
- 5 "cochrane reviews".ab.
- 6 (evidence and (reviews or meta-analyses)).ti.
- 7 or/2-6
- 8 1 or 7





### Finding systematic reviews

Database with SR filter / limit e.g. PubMed

CBT + Systematic Review limit

SR Database e.g. Cochrane Library Topic only search: CBT

**■** 

Database with no SR filter / limit e.g. Medline HDAS

CBT + (review search string)

Systematic Reviews

## Systematic Review database sources – a selection

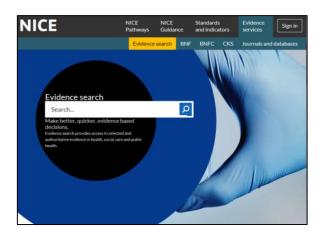


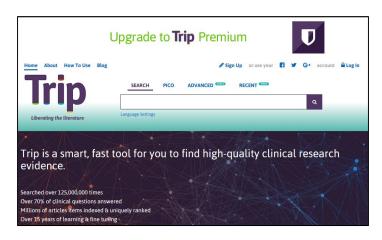
Database	Coverage
Campbell Library (Search example)	Social interventions in crime & justice, education, international development, and social welfare.
Cochrane Database of Systematic Reviews	Interventions and diagnostic tests in health care
DARE (CRD)	Health and social care interventions (to March-15)
Epistemonikos	Health care (multi-lingual)
Health Systems Evidence	Health systems (governance, finance, service delivery, implementation)
HTA database (CRD)	Completed and ongoing health technology assessments
Database of Promoting Health Effectiveness Reviews (ePPI)	Health promotion and public health
3ie Systematic Reviews	Social and economic interventions in low- and middle- income countries

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### Databases containing reviews

'Portals' allow quick filtering to systematic reviews





### NHS evidence search

- Choose major databases appropriate to your topic
  - E.g. Medline, Cinahl, PsycInfo

## Finding systematic reviews with filters / limits



- Bradley 2010 recommended PubMed search as most up to date & reliable database filter (4)
- Lack of consistency in performance of filters available in different databases and platforms<sup>(4)</sup>
- PubMed filter last updated in 2016 is this the best?
- Lee E et al. 2012 compared systematic review filters with their own (McMaster health-evidence.ca) – which proved best <sup>(5)</sup>.

MEDLINE.tw OR systematic review.tw OR meta-analysis.pt

OR intervention\$.ti

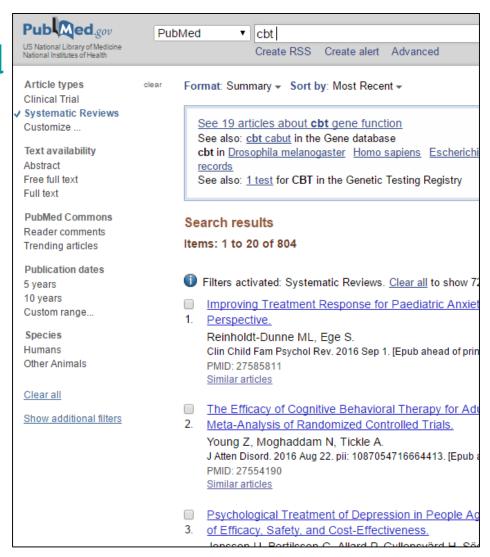
(89.9% sensitivity, 1.4% precision, 71.4 NNR)

### PubMed search



Search as systematic [sb]
 e.g. <u>cbt AND systematic [sb]</u>

 Or use Article types = Systematic Review



## Strategy behind PubMed search (last modified February 2016)



(systematic review [ti] OR meta-analysis [pt] OR meta-analysis [ti] OR systematic literature review [ti] OR this systematic review [tw] OR pooling project [tw] OR (systematic review [tiab] AND review [pt]) OR meta synthesis [ti] OR meta synthesis [ti] OR integrative review [tw] OR integrative research review [tw] OR rapid review [tw] OR consensus development conference [pt] OR practice guideline [pt] OR drug class reviews [ti] OR cochrane database syst rev [ta] OR acp journal club [ta] OR health technol assess [ta] OR evid rep technol assess summ [ta] OR jbi database system rev implement rep [ta]) OR (clinical guideline [tw] AND management [tw]) OR ((evidence based[ti] OR evidence-based medicine [mh] OR best practice\* [ti] OR evidence synthesis [tiab])AND (review [pt] OR diseases category[mh] OR behavior and behavior mechanisms [mh] OR therapeutics [mh] OR evaluation studies[pt] OR validation studies[pt] OR guideline [pt] OR pmcbook))OR ((systematic [tw] OR systematically [tw] OR critical [tiab] OR (study selection [tw]) OR (predetermined [tw] OR inclusion [tw] AND criteri\* [tw]) OR exclusion criteri\* [tw] OR main outcome measures [tw] OR standard of care [tw] OR standards of care [tw]) AND (survey [tiab] OR surveys [tiab] OR overview\* [tw] OR review [tiab] OR reviews [tiab] OR search\* [tw] OR handsearch [tw] OR analysis [ti] OR critique [tiab] OR appraisal [tw] OR (reduction [tw]AND (risk [mh] OR risk [tw]) AND (death OR recurrence)))

**AND** 

(literature [tiab] OR articles [tiab] OR publications [tiab] OR publication [tiab] OR bibliography [tiab] OR published [tiab] OR pooled data [tw] OR unpublished [tw] OR citation [tw] OR citations [tw] OR database [tiab] OR internet [tiab] OR textbooks [tiab] OR references [tw] OR scales [tw] OR papers [tw] OR datasets [tw] OR trials [tiab] OR meta-analy\* [tw] OR (clinical [tiab] AND studies [tiab]) OR treatment outcome [mh] OR treatment outcome [tw] OR pmcbook))

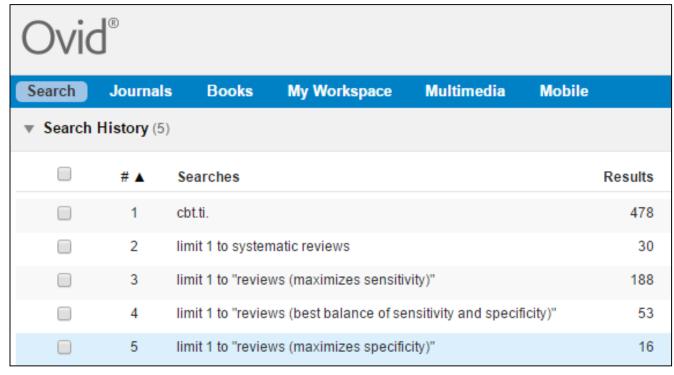
**NOT** 

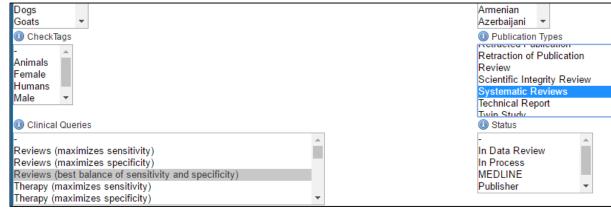
(letter [pt] OR newspaper article [pt])

## Ovid – publication type or clinical query?



Additional
Limits for
publication
type or clinical
queries limits





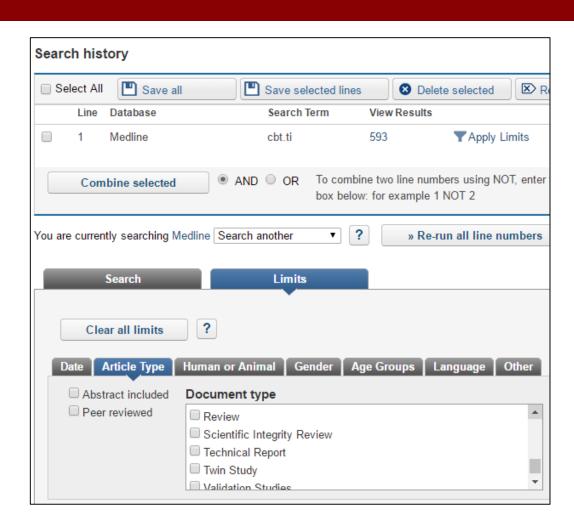
Ovid Publication
Type Systematic
Review = PubMed
systematic [sb] ?

## HDAS? – no SR limit, make your own



 Adapt Lee et al.<sup>(5)</sup> or PubMed strategies?

MEDLINE.tw
OR
systematic review.tw
OR
meta-analysis.pt
OR
intervention\$.ti



## Next step Quality assessment

- AMSTAR. A Measurement Tool to Assess Systematic Reviews
- Index of the Scientific Quality of Research Overviews (ISQRO) (Pre-AMSTAR)
- Quality Assessment Tool for Reviews (Effective Public Health Practice Project)
- Methodology Checklist 1:Systematic Reviews and Meta-Analyses. (The Scottish Intercollegiate Guidelines Network-SIGN)
- CASP Systematic Review Checklist
- PRISMA ???



## Effectiveness of CBT (Cognitive Behavioural Therapy) Example



### Lots of research

- 10's overviews
- 100's reviews
- 1000's / 10 000's trials published.

Looking at specific variant forms of CBT, for different populations, different conditions.

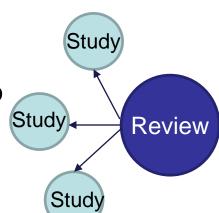
Question remains: For which problems, subgroups and formats is CBT clinically effective?

What conclusions can we safely generalise?

## The decision to backtrack to primary studies



- Individual trial data not fully reported in review
  - meta-analysis and detailed sub-group analysis not possible
  - Lack of safety data and selective outcomes reviewed (6)
- Low quality review methods
  - don't want to propagate errors, but opportunity to re-do analysis with its primary studies
- Double counting (same trial in multiple reviews)
- If reviews results disagree with each other, primary study data helps check why
- But can be v complex and time consuming (7)



## 'New' searches needed for primary studies?



- If review searches lacked rigour (e.g. 'best' CBT overview may have missed 75% relevant literature)\*
- Search date ranges
  - assume previous reviews found all studies (despite different searches)
  - Last search is old? 50% are out of date if over 5.5 yrs old (8)
- Terms used
  - e.g. behavior not 'behaviour'. Missing abbreviations 'CBT'
- Databases searched
  - only PubMed? only Cochrane? (20% CBT reviews in Hoffman overview were Cochrane)
- Gaps where reviews don't cover important therapy for overview

<sup>\*</sup>based on comparing in-house targeted search for CBT reviews published in 2010 compared to 2010 reviews listed in Hoffman Overview

## Planning an overview that includes primary studies. Questions...



- Existing overviews what are their limitations?
- Estimate size of search results for reviews, what % relevant?
- Can we limit our overview to Cochrane reviews?
- How can avoid missing relevant evidence?
- How much time/cost to estimate for an Information Specialist to do the searches if we
  - Search for overviews, then extract reviews, then extract trials
  - Search for reviews (Cochrane & non-Cochrane), then extract trials
  - Just search for trials

## Primary study data from Cochrane reviews



- If access to Cochrane Archie/Review group, may get batch file of titles, abstracts, data extracted.
- If not part of Cochrane Collaboration – download references from each review oneby-one from web page via CrossRef or WoS links

#### **≯** References

#### References to studies included in this review

#### Ekers 2011 (published data only)

Ekers D, Richards D, McMillan D, Bland JM, Gilbody S. Behavioural activation delivered by randomised controlled trial. British Journal of Psychiatry 2011;198(1):66-72. [PUBMED: 21

CrossRef | Web of Science® Times Cited: 20

#### Ekkers 2011 (published data only)

Ekkers W, Korrelboom K, Huijbrechts I, Smits N, Cuijpers P, van der Gaag M. Competitiv depression and rumination in depressed older adults: a randomized controlled trial. *Be* 2011;49(10):588-96. [PUBMED: 21784413]

CrossRef | Web of Science® Times Cited: 3

#### Gawrysiak 2009 (published data only)

Gawrysiak M, Nicholas C, Hopko DR. Behavioral activation for moderately depressed ur controlled trial. *Journal of Counseling Psychology* 2009;3:468-75.

CrossRef | Web of Science® Times Cited: 12

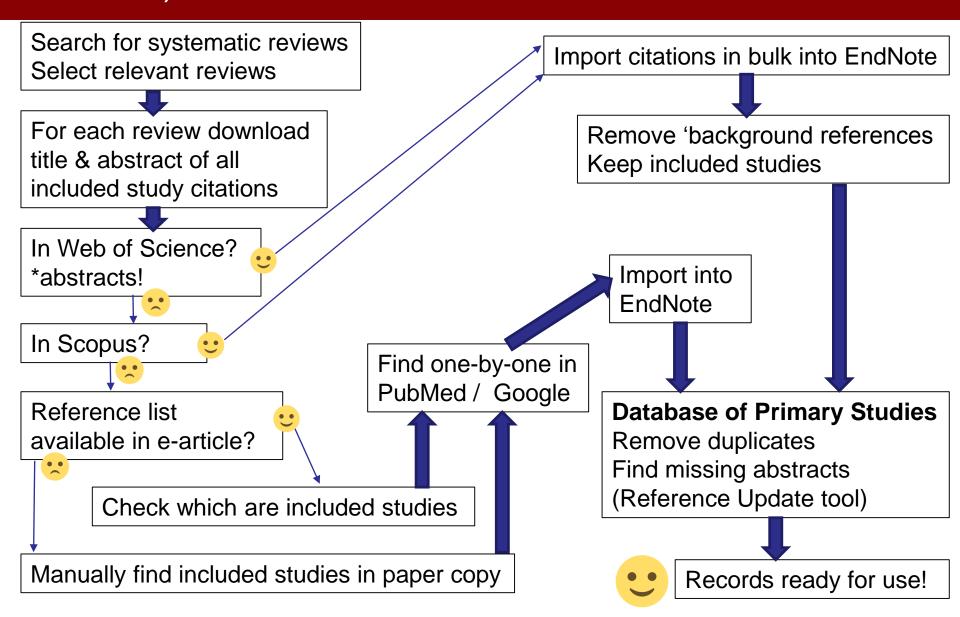
#### Pellowe 2006 (unpublished data only)

Pellowe ME. Acceptance and commitment therapy as a treatment for dysphoria. Disser 2007; Vol. 67.

#### References to studies excluded from this review

#### Bohlmeijer 2011 (published data only)

# Getting primary study records (title & abstract) from non-Cochrane reviews UNIVERSITY OF LEEDS



## Getting primary study records (title & abstract) from non-Cochrane reviews UNIVERSITY OF LEEDS

### Considerations

- Included studies are a sub-section of those in the bibliography. Lots of cross checking needed with included study tables
- Some reviews report included studies bibliography in a separate file
- Some reference records are incorrect and untraceable
- Ideally want to download abstract with the reference as it will be screened later

### Web of Science reference download





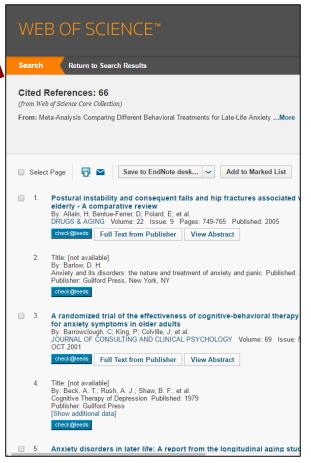
### Download Abstracts! 🐸



Check records that don't import – search for these separately

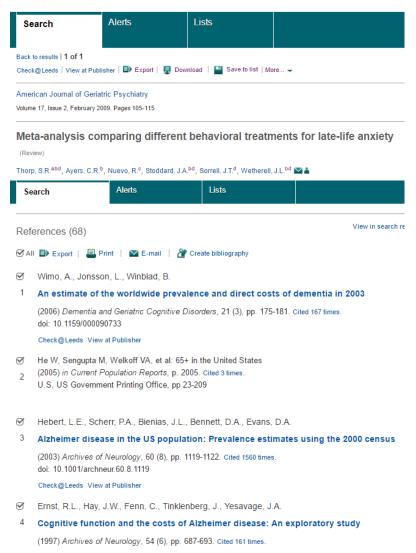
- Success for 80% of refs in 3 overviews, 86.5% of 4 reviews.
- Finding last15-20% takes long time 🔀





### Same review, different references

#### Scopus



Scopus may have electronic records of some studies that WoS didn't.

Check, check, check that the references you download refer to the included references in the review

### Same review, PubMed Central full text



Am J Geriatr Psychiatry, Author manuscript; available in PMC 2010 Feb 1. Published in final edited form as:

Am J Geriatr Psychiatry. 2009 Feb; 17(2): 105-115. doi: 10.1097/JGP.0b013e31818b3f7e

#### Meta-analysis Comparing Different Behavioral Treatments for Late-Life Anxiety

Steven R. Thorp, Ph.D., Catherine R. Ayers, Ph.D., Roberto Nuevo, Ph.D., Jill A. Stoddard, Ph.D., John T. Sorrell, Ph.D., and Julie Loebach Wetherell, Ph.D.

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The publisher's final edited version of this article is available at Am J Geriatr Psychiatry See other articles in PMC that cite the published article.

References Go to: ✓

- 1. Beekman AT, Bremmer MA, Deeg DH, et al. Anxiety disorders in later life: A report from the Longitudinal Aging Study Amsterdam. Int J Geriatr Psychiatry. 1998;13:717–726. [PubMed]
- 2. Regier DA, Rae DS, Narrow WE, et al. Prevalence of anxiety disorders and their comorbidity with mood and addictive disorders. British Journal of Psychiatry. 1998;173 (Suppl 34):24-28. [PubMed]
- 3. Ettner SL, Hermann RC. Provider specialty choice among Medicare beneficiaries treated for psychiatric disorders. Health Care Financing Rev. 1997;18:43-59. [PMC free article] [PubMed]
- Wetherell JL, Thorp SR, Patterson TL, et al. Quality of life in geriatric generalized anxiety disorder: a preliminary investigation. J Psychiatr Res. 2004;38:305-312. [PubMed]
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- Diefenbach GJ, Hopko DR, Feigon S, et al. 'Minor GAD': characteristics of subsyndromal GAD in older adults. Behav Res Ther. 2003;41:481-487. [PubMed]

### Steps:

PMCID: PMC2794407

NIHMSID: NIHMS108576

- Check which refs are included studies
- Go to PubMed links
- 3. Save citation to clip board
- 4. Import to EndNote in bulk

## Comparing search costings – CBT example



### Reviews & backtracking search



- 5 databases, ~5500 review records
- 5 days IS

Screen

- ~100 Cochrane & ~2060 eligible non-Cochrane CBT reviews
- Reviewer Time? (some full text screening needed)

Download review citations

- Cochrane studies download (Archie). 2 days IS?
- non-Cochrane reviews.183 days IS\*

10 months IS ~5000 trials to screen

### Primary search + overviews backtracking



- 5 databases, 10 000 + trials records, 70 overviews
- 2 weeks IS
- Reviewer Time?
- Automated screening?
- # Trials?
- Screen 15 eligible overviews
  - Further screen ~400 reviews from 15 overviews

Download overview & review citations

- Cochrane studies download (Archie). 2 days IS?
- non-Cochrane reviews. 38 days IS\*

2.5 months IS 12 000 ? trials to screen

<sup>\*</sup>based on 40 mins per review and ave. 11.1 trials per CBT review (duplicates & non-trials removed)

- How serious are the methodological concerns of overviews?
- Should primary studies be sought? Pieper et al 2012 reported 5% overviews searches for primary studies (8)
- Are searches in overviews being fully reported?
  - How common is it to go back to primary studies in reviews?
  - How common are supplementary searches for recent/ongoing data?
- How reliable/unreliable are reference lists in e journals & databases?
- At what point is it more efficient to search for primary studies and treat is as new, large, complex review rather than track included studies back through their reviews?

### Summary

- Many overviews of systematic reviews use the results of systematic reviews only in their analysis
- Searches are straightforward using SR databases, and SR search filters
- Search beyond Cochrane CDSR for wider set of reviews
- But, re-use of SRs to gain efficiency is not a foregone conclusion (9)
- Backtracking from SRs to their primary studies could be effective where number SRs and number of their included studies is small.
- Proceed with caution and prior-testing

### References



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#### Acknowledgements

- Overviews methods search by Rocio Rodriguez-Lopez
- Emoji provided free by <a href="http://emojione.com">http://emojione.com</a>