Methods research in overviews of reviews: overview of a research program

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Conflicts of Interest

- I have no actual or potential conflict of interest in relation to this presentation.

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A Descriptive Analysis of Overviews of Reviews Published between 2000 and 2011

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Conclusions

This study shows considerable variation in the methods used for overviews. There is a need for methodological rigor and consistency in overviews, as well as empirical evidence to support the methods employed.

Methodological considerations

1) Searching for and including non-Cochrane SRs
2) Assessing the methodological quality of SRs
3) Grading the evidence based on SRs
4) Conducting network meta-analysis based on SRs

1) Searching for and including non-Cochrane SRs

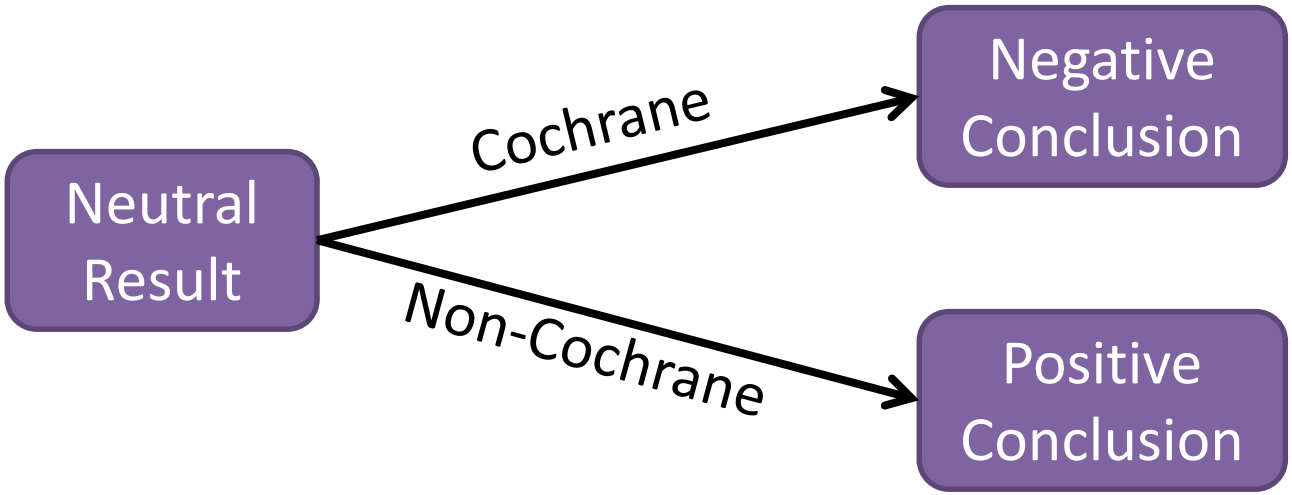
- Multiple SRs on the same topic → overlapping reviews
- Why do “overlapping reviews” matter to overview authors:
  - Whether to include multiple reviews on the same topic area
  - How to extract and present data from these reviews
  - How to interpret evidence from multiple reviews on the same topic that come to different conclusions

Case study: four topics areas

		Cochrane	Non-Cochrane
coverage	Total # systematic reviews	15	46
	Total # interventions	17	32
	Total # studies	202	749
	Total # subjects	28,018	1,034,242
	Unique studies (n=541)	32%	90%
quality	Mean AMSTAR score (/11)	10	4
	Mean # databases searched	5	3
	Mean # “other” sources searched	4	2
	Mean % reviews reporting methodological quality of studies	100%	39%

Case study: four topic areas

- For groups of reviews that overlap in content:
  - Results were fairly consistent across reviews, *but*…
  - Conclusions were highly variable across reviews (different authors consider different factors, and weigh these factors differently)



Implications for overviews of reviews

- Overview conclusions may differ depending on whether you extract the Results or Conclusions from your included reviews
- Including non-Cochrane reviews in your overview involves a trade-off: increased complexity vs. increased coverage

2) Assessing the methodological quality of SRs

- Authors should assess and report the methodological quality of the reviews included in the overview
- AMSTAR tool (11-item) can be used for this purpose
- We examined issues related to use of AMSTAR to assess quality of Cochrane and non-Cochrane reviews in overviews
  - 101 reviews: 24 Cochrane, 77 non-Cochrane

Cochrane reviews scored higher than non-Cochrane reviews for ***all 11*** questions

↓

Mean AMSTAR scores (/11) were much ***higher for Cochrane*** compared with non-Cochrane reviews:

Cochrane	Non-Cochrane
10.0	***5.0***

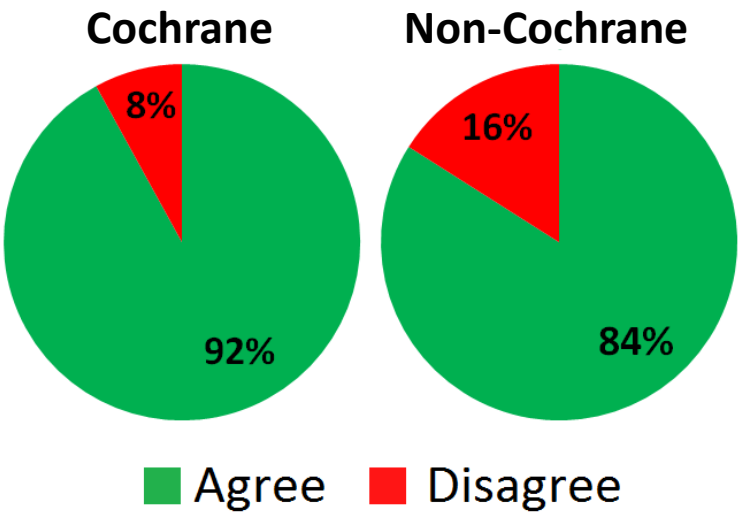
↓

47% of non-Cochrane reviews had an ***AMSTAR score <5*** (0% Cochrane). Reviews with low AMSTAR scores may be missing important information, making them hard to use in overviews.

Agreement was higher for Cochrane reviews for ***8 out of 11*** questions

↓

Overall agreement was high, but slightly ***higher for Cochrane*** compared with non-Cochrane reviews:



Implications for overviews of reviews

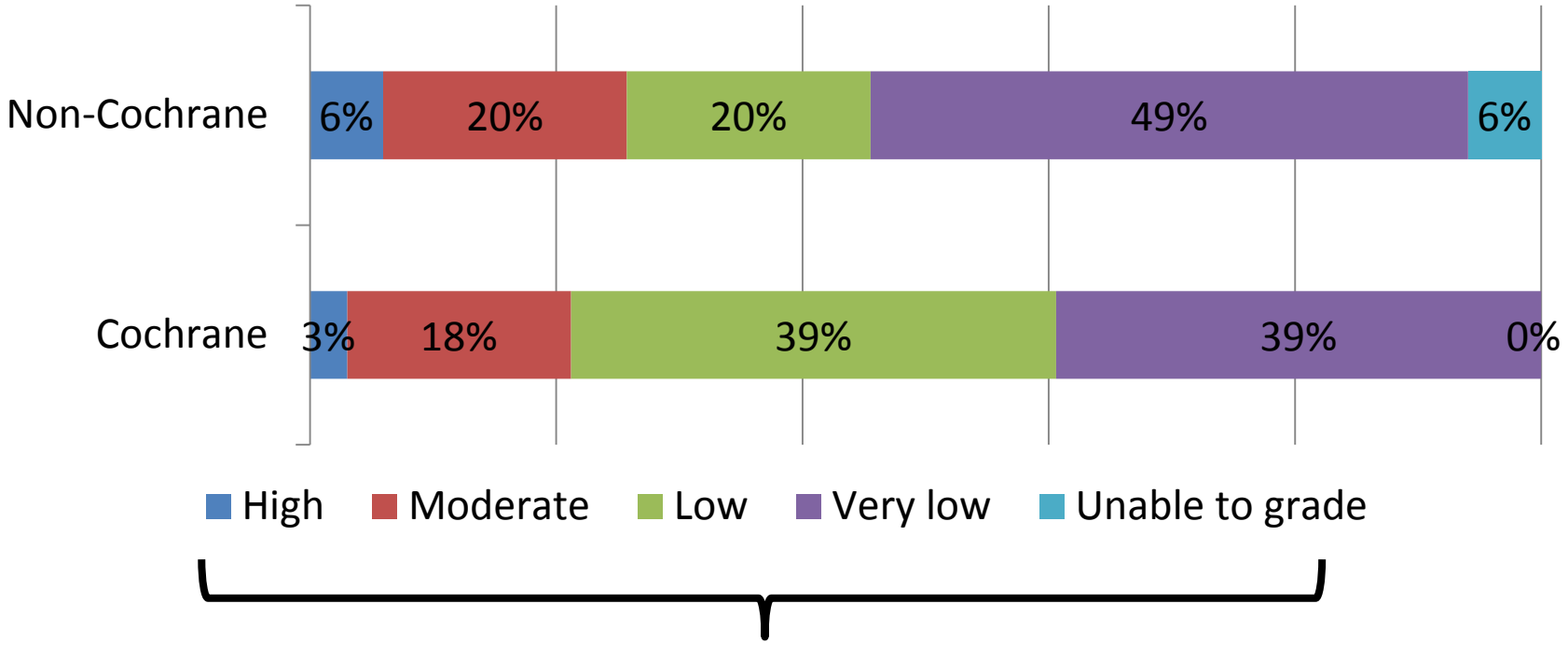
- AMSTAR can be used successfully in overviews
- Minor modifications may be required
- Teams should establish *a priori* decision rules as needed
- A minimum AMSTAR score may be useful as an inclusion criterion

3) Grading the quality of evidence in existing systematic reviews

- Older Cochrane reviews and non-Cochrane reviews often do not have GRADE assessments
- This has implications for grading quality of evidence in overviews of reviews
- We examined methodological considerations involved when using information from existing reviews to grade the quality of outcomes included in an overview (111 outcomes)

Domain	Agreement between reviewers (weighted kappa):	
	Outcomes from Cochrane reviews (n = 77)	Outcomes from non-Cochrane reviews (n = 34)
Study limitations	0.30	0.62
Consistency	0.90	0.69
Directness	0.91	0.74
Precision	0.62	0.69
Overall GRADE	**0.63**	**0.49**

There was ***moderate agreement*** for overall GRADE assessments, though agreement was generally higher for Cochrane vs. non-Cochrane reviews.



Outcomes in Cochrane reviews tended to obtain ***higher GRADE assessments.***

In some cases, so little information was given that we were ***unable to grade*** one or more domains. For non-Cochrane reviews, we were unable to provide a final GRADE assessment for 6% of outcomes.

Observations:

Study Limitations
Most difficult and time-consuming domain to assess.
Inconsistent reporting across reviews (different tools, incomplete assessments, inadequate detail).

Consistency
Easiest to assess when meta-analysis conducted, and both forest plot and measure of heterogeneity are reported.
More challenging to assess if no meta-analysis.

Directness
Easiest domain to assess.
Can be pre-specified by overview authors.

Precision
Need to pre-specify precision cutoffs (e.g., appreciable benefit or harm)
More challenging to assess if no meta-analysis.

Implications for overviews of reviews

- Grading the quality of evidence in existing reviews is often possible, but may be challenging.
- There may not always be enough information reported in reviews to assess every GRADE domain, particularly non-Cochrane reviews.
- Teams should establish *a priori* decision rules as needed to determine how to assess domains when reporting in reviews in inconsistent or incomplete.

Summary

- Completed:
  - Descriptive analysis of overviews published from 2000-2010
  - Multiple overlapping reviews
  - Assessing methodological quality/risk of bias of reviews
  - GRADING evidence based on existing reviews
- In progress:
  - Scoping review of available guidance for overview conduct and reporting
  - Applying ROBIS to overviews of reviews

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Variation in methods and reporting of overviews

- Majority of overviews:
  - Searched at least 2 databases (70%)
  - Reported years and databases searched (76%)
  - Provided key words (69%)
  - Clearly stated inclusion criteria (87%)
  - Assessed quality of SRs (52%) [13 tools used]
  - Conducted narrative or descriptive analysis of included SRs

Variation in methods and reporting of overviews

- Variation:
  - Minority of overviews included Cochrane SRs only (21%)
  - Dual independent screened and study selection (41%)
  - Quality of individual studies extracted from original SRs (18%)
  - Quality of evidence assessed (12%)
  - Publication bias discussed (22%)