

Risk of bias

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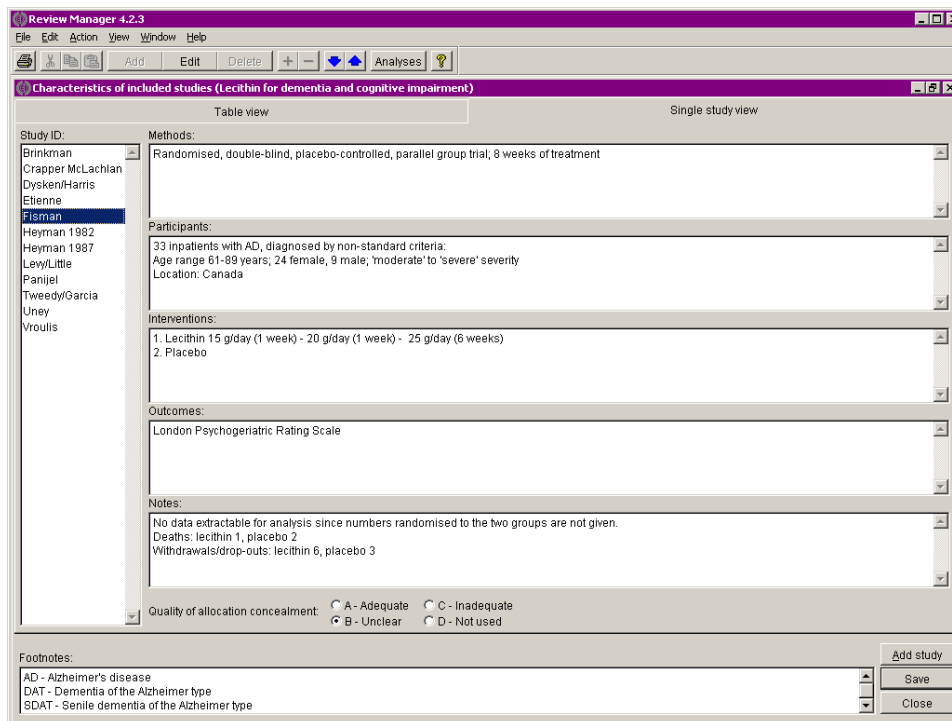
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Overview

- Current practice
- 'Quality' or 'Risk of bias'?
- The new tool
- Try it out
- Review and discussion

Previous guidance for assessing quality

- Allocation concealment
 - A = adequate
 - B = unclear
 - C = inadequate
 - D = this system not used to assess allocation concealment
- No guidance on assessing other domains
- Different approaches by different review groups



'Quality' or 'Risk of bias'?

Quality ≈ "did they do the best they could?"

Bias ≈ "should I believe the result?"

- We never know biases, but there is rationale for considering **risk of bias**
 1. Key consideration in Cochrane reviews is *believability*; risk of bias targets this question squarely
 2. 'High quality' research methods can still leave a study at important risk of bias. (e.g. when blinding is impossible)
 3. Some markers of quality in medical research are unlikely to have direct implications for risk of bias (e.g. ethical approval, sample size calculation)
 4. Overcomes ambiguity between quality of *reporting* and the quality of the underlying *research*
- NB Summary of findings tables use 'Quality of evidence' to assess something different

The new tool: principles

- Provides a framework for assessing the whole trial
- Explicitly judgemental – but separates the facts from the judgements
- Transparent, and so repeatable

The new tool: items to address

1. Sequence generation (randomization)
2. Allocation concealment
3. Blinding of participants, personnel and outcomes
4. Incomplete outcome data (attrition and exclusions)
5. Selective outcome reporting
6. Other (including topic-specific, design-specific)

The new tool: how to assess them

Two components

1. Description of what happened

- possibly including 'done', 'probably done', 'probably not done' or 'not done' for some items

2. Review authors' judgement

- whether bias unlikely to be introduced through this item (Yes, No, Unclear)

Yes = Low risk of bias

No = High risk of bias

'Blinding' and 'Incomplete outcome data' may need separate assessments for different outcomes

'Risk of bias' assessment in Cochrane reviews

▢ Risk of bias table

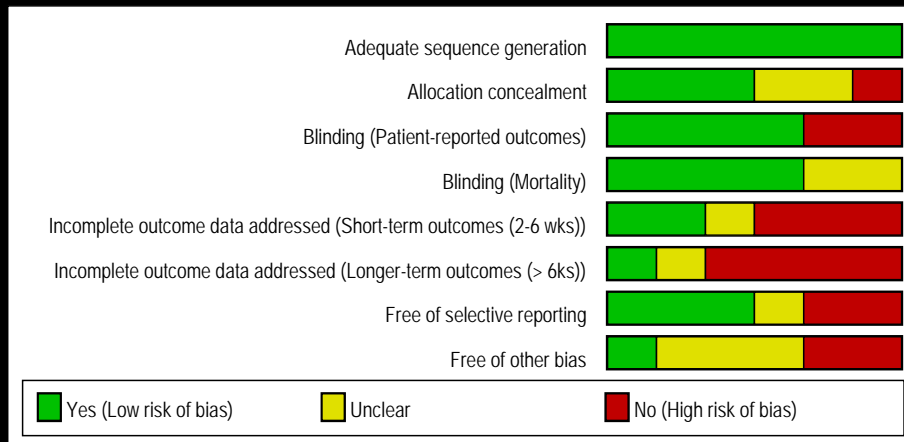
Item	Authors' judgment	Description
Adequate sequence generation?	Unclear	"Patients were randomly allocated"
Allocation concealment?	Unclear	No information.
Blinding?	Yes	"double blind design". "Millet... resembles lecithin in appearance... When ground, each substance could be distinguished from the other by hue and taste but staff were not informed as to which was which."
Incomplete outcome data addressed?	No	Data unavailable for meta-analysis. Randomised: lecithin = Not stated, placebo = Not stated, Total = 33. Missing: lecithin = 7 (non-cooperation or diarrhoea = 2; moved to nursing home = 4, death = 2), placebo = 5 (non-cooperation or diarrhoea = 3, death = 2), total missing = 36%.
Free of selective reporting?	No	No quantitative results reported due to lack of effect. It is apparently clear which outcomes were measured.
Free of other bias?	Yes	No problems apparent

Risk of bias summary

- Here 'Blinding' and 'Incomplete outcomes data' have been assessed for two sets of outcomes

	Adequate sequence generation	Allocation concealment	Blinding (Patient-reported outcomes)	Blinding (Mortality)	Incomplete outcome data addressed (Short-term outcomes (2-6 wks))	Incomplete outcome data addressed (Longer-term outcomes (> 6ks))	Free of selective reporting	Free of other bias
Barry 1988	+	-	+	+	-	-	-	-
Baylis 1989	+	+	+	+	?	?	+	?
Cooper 1987	+	?	-	?	-	-	+	?
Dodd 1985	+	?	+	+	+	-	?	?
Goodwin 1986	+	+	+	+	+	+	+	+
Sanders 1983	+	+	-	?	-	-	-	-

Risk of bias graph



Summary assessment by outcome

Risk of bias	Interpretation	Within a study	Across studies
Low risk of bias	Plausible bias unlikely to seriously alter the results	Low risk of bias for all key items	Most information is from studies at low risk of bias
Unclear risk of bias	Plausible bias that raises some doubt about the results	Unclear risk of bias for one or more key items	Most information is from studies at low or unclear risk of bias
High risk of bias	Plausible bias that seriously weakens confidence in the results	High risk of bias for one or more key items	The proportion of information from studies at high risk of bias is sufficient to affect the interpretation of results

Try it out

- Ingle et al. S Afr Med J 2006; 96: 831-835.
 - Wound healing with honey – a randomised controlled trial

Domain	Description	Review authors' Judgment
Sequence generation		
Allocation concealment		
Blinding (outcome?)		
Blinding (outcome?)		
Incomplete outcome data (outcome?)		
Incomplete outcome data (outcome?)		
Selective outcome reporting		
Other sources of bias		

More detail on items

- [Sequence generation](#)
- [Allocation concealment](#)
- [Blinding](#)
- [Incomplete outcome data](#) in detail
- [Selective outcome reporting](#)
- [Other sources of bias](#)

Issues in training for assessing risk of bias

Some preliminary comments

- Review authors have always been required to assess quality
- The tool provides a general framework and some explicit criteria for these assessments
- The review team needs some general epidemiological understanding to be able to assess quality or risk of bias
- There is plenty of explanation in the Handbook
 - but a lot to read
- Descriptions should be straightforward most of the time
- Judgements can be very difficult

Help is not necessarily at hand



Issues for discussion

- Do *all* authors need in-depth understanding?
- To what extent are issues field-specific?
 - training by CRGs vs Centres
- Updating reviews
 - Do existing authors need re-training?
 - Assessments will change (e.g. subgroup analyses)
- Implementation in RevMan
- Some particular scientific challenges:
 - selective reporting (we have very little experience assessing this)
 - how to group outcomes (blinding, missing data)
 - non-randomized studies (e.g. EPOC, PHHP)
- A library of examples of judgements could be helpful