

Why do a systematic review?

- too much information
- reduce bias
- explore variability
- provide reliable basis for making decisions
- inform and guide future research

What's the difference?
Systematic review v traditional review

Traditional vs systematic reviews

Traditional

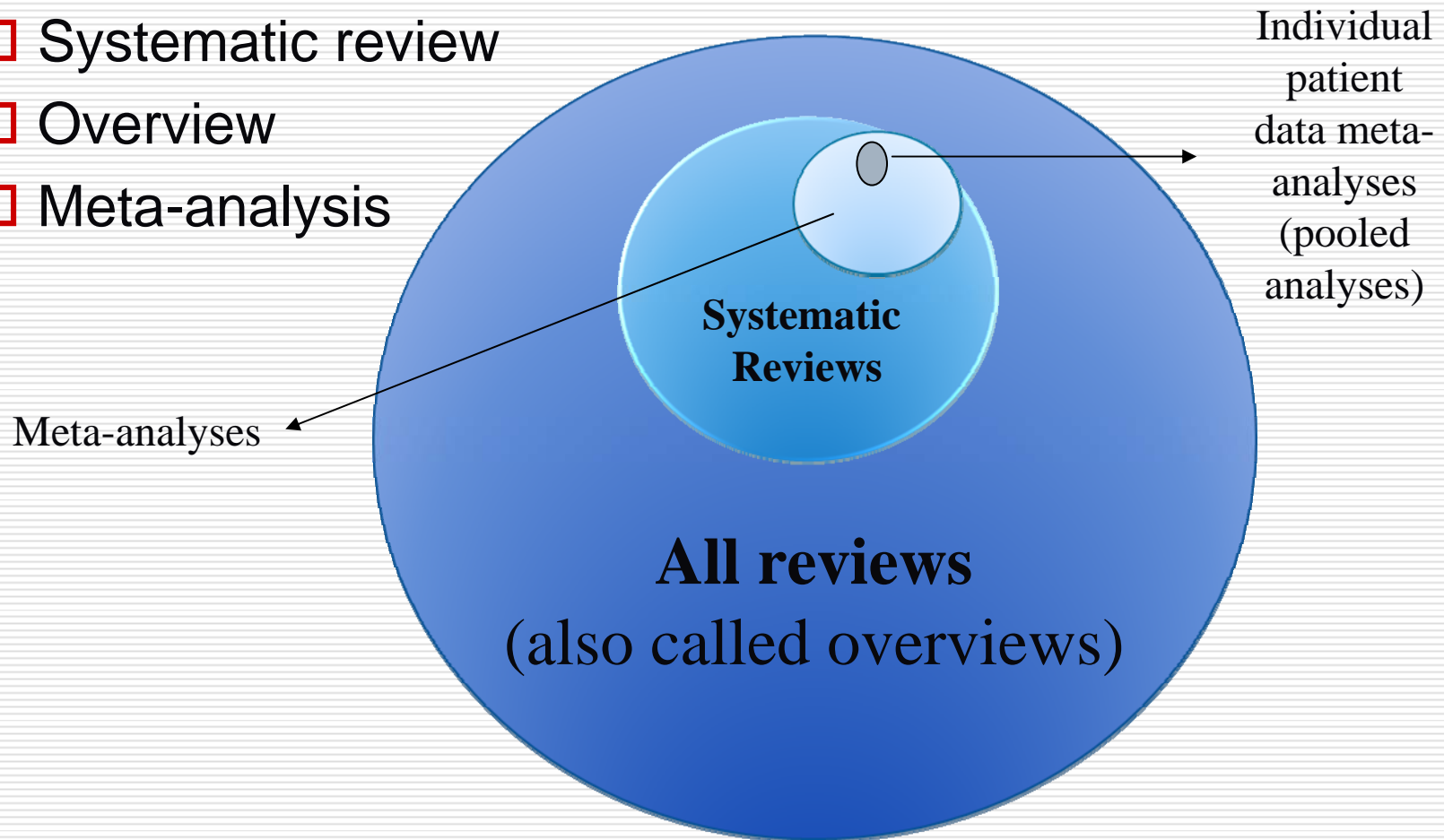
- No Protocol
- methodology not transparent
- lack rigor/different reviewers different conclusions
- become out of date

Systematic

- Protocol (Cochrane)
- explicit/reproducible methodology
- scientific rigor to minimise risk of bias
- regularly updated (Cochrane)

Same or Different?

- ❑ Traditional, narrative review
- ❑ Systematic review
- ❑ Overview
- ❑ Meta-analysis



Why aren't traditional narrative reviews good enough?

- ❑ Subjective, liable to bias and error
- ❑ Literature search not comprehensive
- ❑ Selective citation of literature
- ❑ Limited description of review methods
- ❑ Usually not quantitative: can't pick up small effects
- ❑ Readers can't judge the quality of included studies
- ❑ Hard to separate research evidence from anecdotal experiences

How are Systematic Reviews Better?

- ❑ You don't have to be an "expert" to do one!
- ❑ More objective, less prone to bias and error
- ❑ Literature search is comprehensive, exhaustive and repeatable
- ❑ Clear description of the methods used
- ❑ Explicit criteria for choosing studies
- ❑ Includes assessment and discussion of quality of primary studies
- ❑ Can pick up small effects by pooling of data

Elements of a Systematic Review

Formulate the Review Question & Write A Protocol

State objectives of the review of RCTs and outline eligibility criteria



Search for and include primary studies

Search for trials that seem to meet eligibility criteria



Assess Study Quality

Tabulate characteristics of each trial identified and assess its methodological quality. Apply eligibility criteria, and justify any exclusions



Extract data

Assemble the most complete dataset possible



Analyze data

Analyze results of eligible RCTs, using statistical synthesis of data (meta-analysis) if appropriate and possible



Interpret Results & Write a Report

Prepare a critical summary of the review, stating aims, describing materials and methods, and reporting results

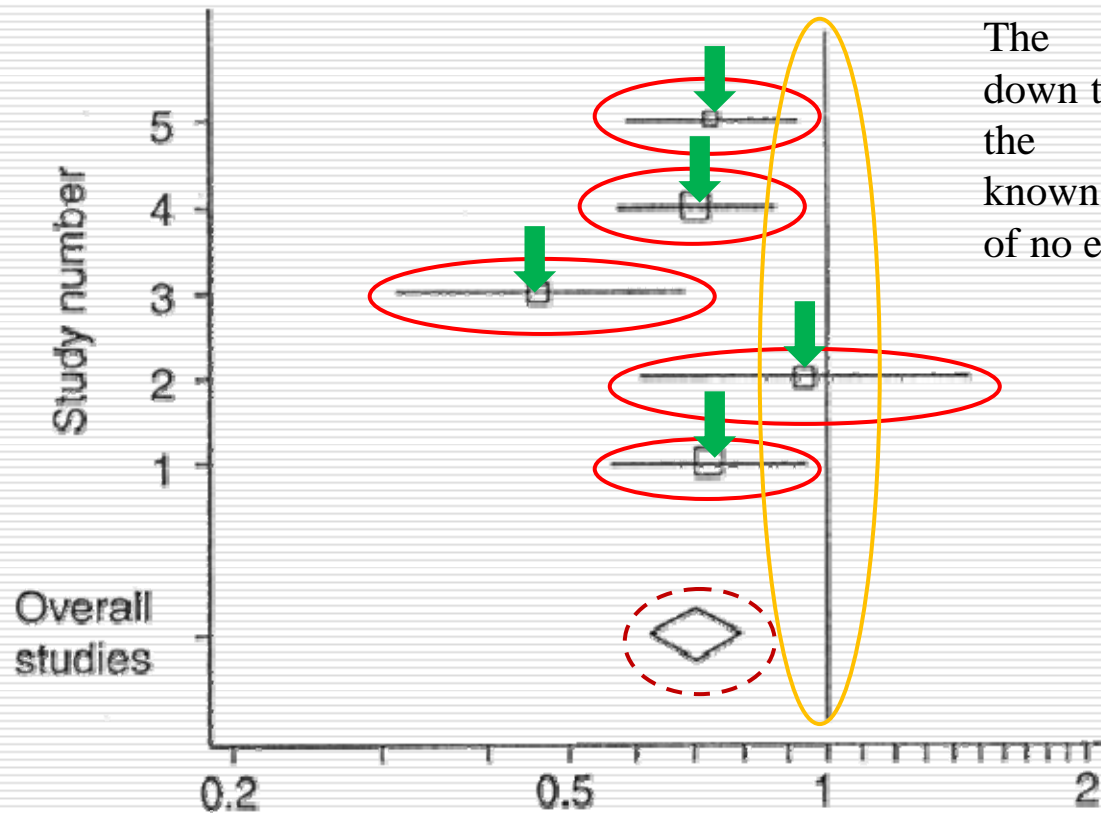
What to look for in a systematic review?

- An explicit and clearly defined question
- Comprehensive and systematic search for studies
- Explicit, reproducible strategy for screening and including studies (inclusion/exclusion criteria)
- Assessment of quality of included studies
- Explicit data extraction
- Appropriate analysis and reporting of results
- Exploration of heterogeneity, publication bias
- Discussion should consider limitations and strength of evidence
- Implications for patient care and future research

Meta-analysis For The Non-Statistician

The **horizontal lines** corresponding to each of the five trials shows the **relative risk**

The “blob” in the middle of each line is the point estimate of the difference between the groups (the best single estimate), and the width of the line represents the 95% confidence interval of this estimate.



The black line down the middle of the picture is known as the “line of no effect,”

‘**Diamond**’ - This represents the pooled data from all five trials (overall relative risk), with a new, much narrower, confidence interval.

Pictorial representation (colloquially known as a “forest plot”) of the pooled data from five randomized controlled trials