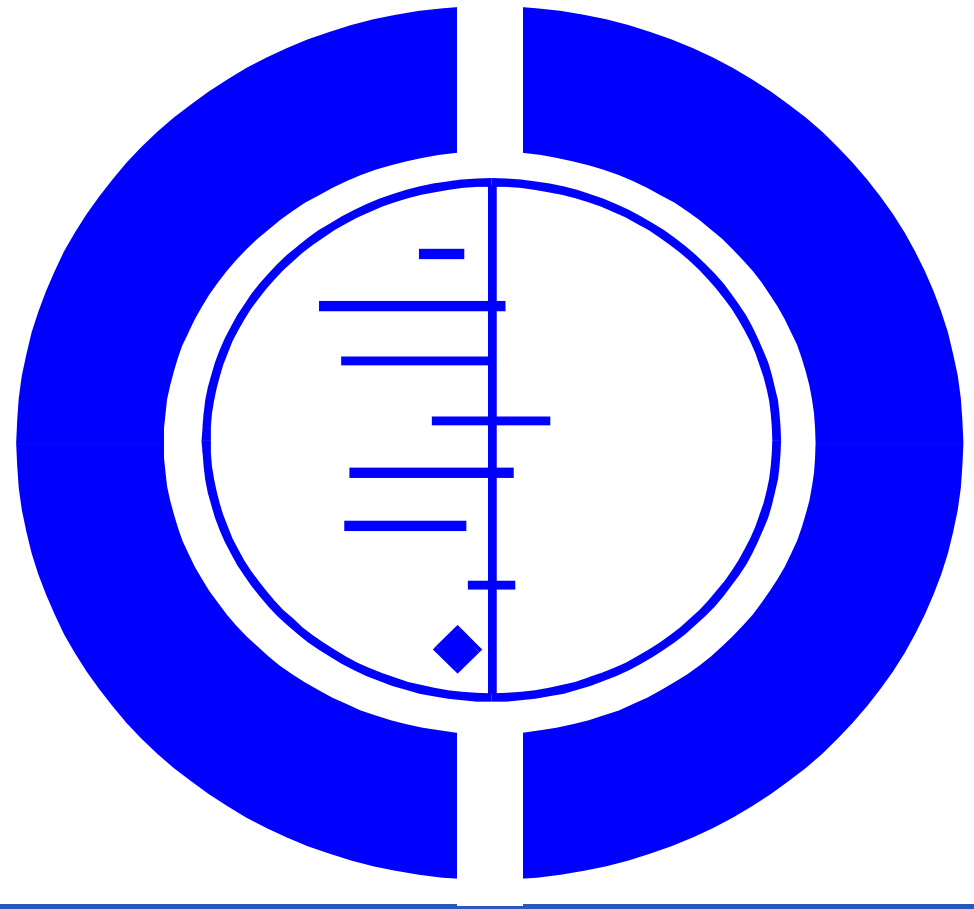




Systematic Reviews:

- Rationale
- Challenges





**The best research is....
research that's fit for purpose**



Evidence-based practice

- Now talked about routinely
- Intended to improve the quality of decisions we make which impact on the recipients of services
- Therefore, essentially an ethical issue
- Can we assume that decision-making is set to improve?
- Will recipients of services be better served?



Possibly
or
Possibly not

Because evidence-based practice is
a technical and logistical, as well as
an ethical, issue.



A definition

Evidence-based practice is the ***conscientious, explicit and judicious*** use of *current best evidence* in making decisions regarding how best to intervene in a given situation.



Ah yes... the 'Evidence'...

- Anything that establishes a fact or gives reason for believing something – OED
- Statements made in a law court to support a case -- OED
- *'The trouble with words is you never know whose mouth they've been in'* – Dennis Potter



What IS a systematic review?

- Doing reviews wasn't new – even in Cochrane's time
- Being systematic was
- Systematic reviews use **explicit** and rigorous methods to identify, critically appraise, and synthesize relevant studies.
- Ideally, they are preceded by a peer reviewed protocol



Different kinds of systematic reviews

- When the results of primary studies are summarized but not statistically combined, the review may be called a **narrative systematic review**.
- A **quantitative systematic review**, or **meta-analysis**, is a systematic review that uses statistical methods to combine the results of two or more studies. **Meta-analysis** is a statistical procedure that integrates the results of several independent studies considered "combinable."



Systematic reviews...

....involve a type of **secondary** research and are written by reviewers who use * explicit * and * rigorous * methods to

- Identify and collect
- critically appraise
- synthesize results of **all relevant studies from the pre-existing research**



🔥 Pardon?

.... Yes that's 'synthesize results of **all relevant studies from the pre-existing research.**'

- What's a relevant study?
- Does it have to be in the form of a randomised controlled trial (RCT)?



Don't get me started

.... NO 'Relevant studies' means studies that met inclusion criteria in the protocol.

Relevant studies may (or may not) include RCTS.

It's up to you to set the bar.



Systematic reviews can review...

- Effects of interventions
- Adverse effects
- Diagnostic test accuracy
- Prognostic variables
- Qualitative research
- **Clearly what's a relevant study for one type of SR isn't relevant to all**



✦ Systematic reviews are about context and synthesis and ultimately, for **USEFULNESS**

- Any single study is derived from how it fits with and expands previous work... what we are trying to build is **CONTEXT...**
- And, in the case of reviews of the effects of interventions, disentangle what makes interventions have different effects on different people
- We seek (by looking at effects on many people) to better predict effects of interventions/ treatments for individuals



🌟 Challenges of systematic reviews: the protocol stage (1)

- Background knowledge – aetiology of condition, rationale for intervention
- Inclusion/exclusion criteria – are they tight enough to eliminate static?

Intervention

Population

Types of study

Outcomes



🌿 Challenges of systematic reviews: the protocol stage (2)

- **Search strategy** – is it comprehensive? Does it account for variations produced over time and change in ‘culture’ and understanding of aetiology?
- **Plans for analysis** – are they robust and have they taken account of the mess that is out there and the mess that is to come in the ‘real world’ of studies?



Challenges of systematic reviews: the review stage

- **FINDING** the literature... dependent on quality of indexing and dissemination
- Acquisition of literature – availability, translation, the ‘grey literature’ and ‘publication bias’
- Data extraction – once you’ve got those studies, can you use them?
- Assessment of quality / risk of bias of included studies
- Communication with the authors to acquire missing data. Are they alive? Do the data still exist? Are authors muzzled by employers?



Be sceptical of your investigators

"It is possible to be seriously misled by taking the statistical competence /or the intellectual honesty of authors for granted. Common errors [are] committed (deliberately or inadvertently) by authors..."

Trisha Greenhalgh

How to read a paper: Statistics for the non-statistician. II: "Significant" relations and their pitfalls. BMJ, Aug 1997; 315: 422 - 425.



Challenges of systematic reviews: the review stage (continued)

- What might make you ‘chuck’ a study?
- When is a study ‘in your review’ but not in your meta-analysis?
- Conducting meta-analysis as per your protocol
- What about the unexpected when it comes to results?
- Stamping out bias: in the studies, in yourself
- Writing up your conclusions... for current practice and for future research

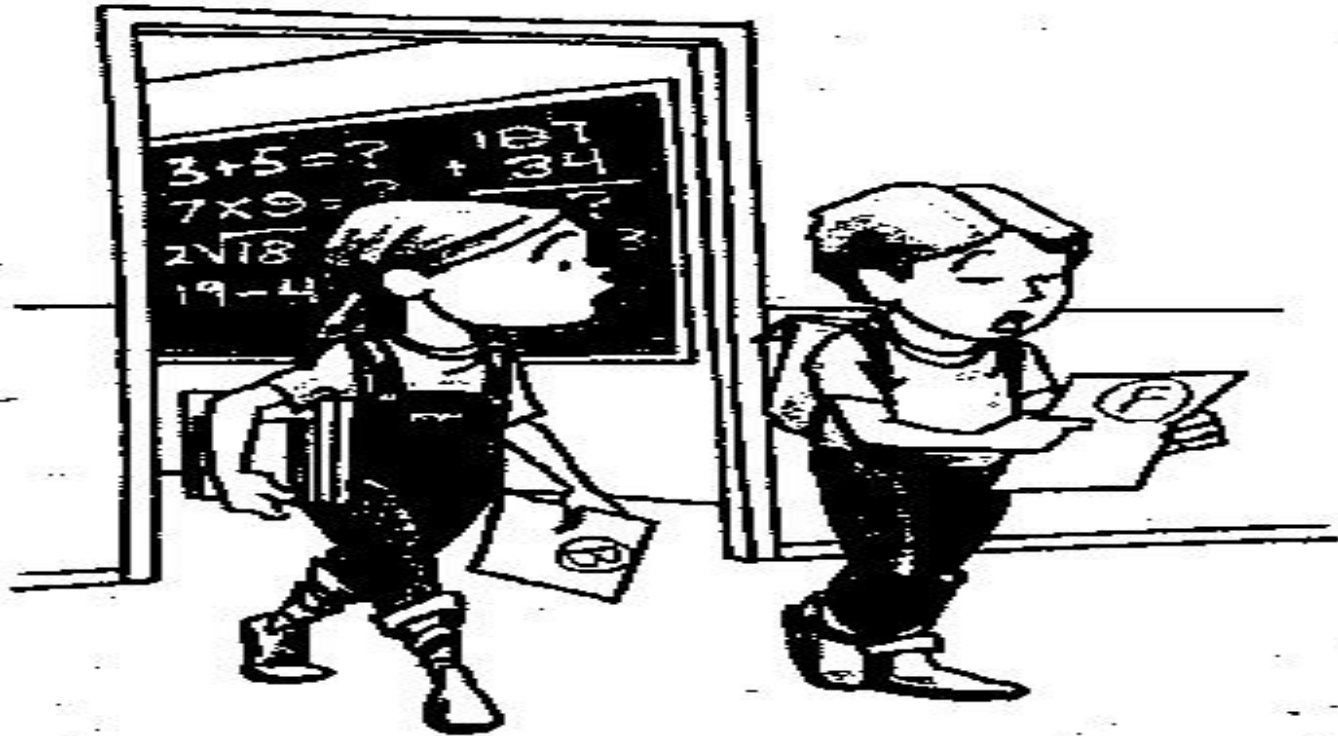


And challenges to SRs of the future:

- Finding more and better ways of including qualitative data
- Finding more and better ways to include data on equity and inequality
- Evolving statistical techniques
- Dissemination – is anybody out there LISTENING?
- Most importantly to you as an author – can you keep your review up to date?



🔥 Keeping systematic reviews up-to-date



"It's not the math I hate...it's the aftermath."



A final thought from Prof. Doug Altman (Cancer Research UK/ NHS Centre for Statistics in Medicine, Oxford) to the medical research community at large on PRIMARY research:

- DO LESS RESEARCH.
- Do what research you DO do...
..... BETTER.



Poor research is the fault of authors, not journals. Poor research methods, unnecessary research, redundant or duplicate publication, thinly sliced study results, selective reporting, and scientific fraud, as well as a general tendency to inflate the importance of the results, should all be resisted vigorously. All could be less likely if research were not a career necessity for physicians.

Altman, JAMA 2002



Key messages:

- It's a good idea to base interventions on evidence – or in some cases, highlight that the existing evidence isn't good enough to make decisions by
- 'Evidence' certainly involves a review of existing research, and may involve secondary analysis
- Secondary analysis can be as rewarding as the more 'spectacular' rewards of primary research
- If you do an SR, keep your focus on what really constitutes good evidence for YOUR research area. Accept no substitutes. Better an empty review than a misleading one.

