SEARCH FILTERS: WHAT TO MEASURE & HOW TO PRESENT THESE MEASURES?

OVERVIEW

• What are search filters & why are they useful?
• Filter performance measures
• Project background
• Aims and objectives
• Methods
• How filter performance is tested
• Literature review results
• Questionnaire responses
• Presenting performance data
• Next steps
WHAT AND WHY?

• What are search filters?
  – Search terms/strategies to identify a specific topic or aspect
  – Intended for repeated use
  – Routinely combined with subject specific terms

• Why are filters useful?
  – Systematic review field
  – Large literature base
  – “Best compromise” solutions

1. randomized controlled trial.pt.
2. controlled clinical trial.pt.
3. randomized.ab.
4. placebo.ab.
5. drug therapy.fs.
6. randomly.ab.
7. trial.ab.
8. groups.ab.
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. exp animals/ not humans.sh.
11. 9 not 10

(Cochrane HSSS: sensitivity maximising)
FILTER PERFORMANCE MEASURES

- **Sensitivity**: number of relevant records retrieved as a proportion of the total number of relevant records
- **Precision**: number of relevant records retrieved as a proportion of the total number of records retrieved
- **Specificity**: number of irrelevant records NOT retrieved as a proportion of the total number of irrelevant records
- Other measures include accuracy, number needed to read (NNR), etc
PROJECT BACKGROUND

- UK Medical Research Council – MRC-NIHR Methodology Research Programme to support NICE decision-making
- Focus on methodological search filters
- Used to improve efficiency and consistency of evidence retrieval
- There can be multiple filters for the same study design
- Few are validated
- Other filters exist but are not part of this project
AIMS & OBJECTIVES

• To find out which performance measures are reported in search filter studies
• To understand more about methodological search filter use
• To better understand how searchers choose search filters
• To explore ways to present search filter performance data
• To develop guidance on providing the performance data which searchers require
5 REVIEWS

Performance measures

Which filter performance measures are reported in development studies?

Which filter performance measures are reported in performance comparisons?

Which performance measures are reported in diagnostic test accuracy studies?

Choosing

How do searchers choose a filter?

How do clinicians choose diagnostic tests?

How to present filter/test performance data to assist in filter selection?
QUALITATIVE RESEARCH & GUIDANCE

• Interviews and a web-based questionnaire
  – Use of filters
  – How filters are chosen
• Draft guidance documents
  – How to conduct performance assessments of filters
  – How to report performance data
• Pilot website with performance data
HOW FILTERS ARE TESTED

DEVELOPMENT STUDY

1. Test filter in derivation set

2. Test performance in validation set

Gold standard A (1000 records)
Derivation set (n=400)
Validation set (n=600)
Derive filter

PERFORMANCE COMPARISON

Test all filters in gold standard B
Developed filter
Published filters

Gold standard B (1000 records)
RESULTS: PERFORMANCE MEASURES

• 23 search filter studies included
• All studies reported sensitivity
• Specificity and precision were the next most frequently reported measures
• Accuracy only reported in papers by the McMaster Hedges team
• Tables were the most commonly used format
• Results were presented in figures in two studies
Performance comparison studies most commonly report:
- highest sensitivity
- highest precision
- optimal/balanced strategies

Limited details in some methods sections

No syntheses of results of multiple performance comparisons identified
RESULTS: CHOOSING A FILTER

• How do searchers choose filters?
  – Development and quality of search filters
  – Studies comparing published filters
  – No studies that explored how searchers select filters
QUESTIONNAIRE RESPONSES

• 90 respondents
  – 75% worked in library or information services
  – 94.4% used methodological search filters
  – Supporting evidence syntheses

• Main methods currently used when choosing search filters:
  – Information on sensitivity, specificity and precision (16.7%)
  – Published reports and evaluations (11.1%)
  – Authorship (5.6%)
  – Advice from colleagues (5.6%)
QUESTIONNAIRE RESPONSES

Other suggestions included:

- Colleague recommendations/discussion
- Knowledge of the creator/developer
- Results of own testing
- Name of the database for which the filter was designed
- Ease of use (including automatic loading)
- Simplicity or understandability
PILOTING PERFORMANCE DATA (EXAMPLES)
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NEXT STEPS

• Launch the pilot website
• Process feedback on the performance diagrams
• Publish our findings and build up the performance website further
• Develop a research agenda
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