Systematic reviews: Evidence-based searching to improve recall and precision

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SYSTEMATIC REVIEWS:
Evidence-Based Searching to Improve Recall and Precision

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I’m going to have to science the s#*@ out of this.

**Recall:**
The number of relevant documents a search retrieves out of all the relevant documents available in a database.

**Precision:**
Proportion of documents retrieved by a given search query that is relevant to the search question.

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**Step 1**
Create smaller database for hand review

All articles from the top five oncology journals 2012-2014*

=5,521 Total

**Step 2**
Identify relevant documents (Rd) about breast cancer

=647 Total

**Step 3**
Test each search strategy

Simplified Search Examples

**MeSH:**
exp Breast Neoplasms/

**Proximity:**
breast* adj8 cancer*

**Phrase:**
“breast cancer”

**AND:**
breast* AND cancer*

**Step 4**
Calculate effectiveness

Search Results for MeSH

Retrieved Relevant Documents (Rr)

Recall = \( \frac{Rr}{Rd} \)

Precision = \( \frac{Rr}{Rs} \)

5,521 Documents

Rr = 562

Rd = 647

Rs = 740

Recall = \( \frac{562}{647} \)

Non-relevant retrieved: 178

Relevant missed: 85

Rs = 740

Rr = 562

Precision = \( \frac{562}{740} \)
**Search Method Effectiveness**

- **MeSH Alone**: Precision - 76, Recall - 87
- **Proximity Alone**: Precision - 79, Recall - 99
- **Phrase Alone**: Precision - 78, Recall - 95
- **AND alone**: Precision - 77, Recall - 99
- **Proximity w/ MeSH**: Precision - 98, Recall - 99
- **Phrase w/ MeSH**: Precision - 99, Recall - 97
- **AND w/ MeSH**: Precision - 97, Recall - 97

**DISCUSSION**

- **Small Pool Size**
  - Documents in Journal Set 2012-2014: 5,521
  - Documents in Medline 2012-2014: 3,128,246

**RESULTS**

- Average number of missed relevant citations: 30

- Proximity: 5
- Phrase: 30

I found it... using proximity with MeSH!