The development of validated UK geographic search filters for MEDLINE and Embase

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Evidence-based guidance and advice for health, public health and social care

Information services for commissioners, practitioners and managers

Quality standards and performance metrics for providers and commissioners in health, public health and social care

National Institute for Health and Care Excellence
Background to the filters
What is ‘UK evidence’?

UK made up of 4 countries:
1. England
2. Northern Ireland
3. Scotland
4. Wales

UK evidence is about:
- UK health or social care activities
- UK-based populations
- UK activities or populations in multinational studies

UK evidence is not:
- Publications about other places by UK-based authors
Need for validated UK search filters

- No validated UK search filters
- Various search strategies used to retrieve UK evidence
- UK search strategies not always used to retrieve UK evidence

Unavailable ❌
Quality? ❗
Resource intensive ❌
Other validated geographic filters

**Africa** (PubMed & Embase)

**Spain** (PubMed)
Developing the filters
Filters methodology

- identify the terms (GS1)
- test performance (GS1 & GS2)
- validate the filter (GS3)
Creating the first draft

1\textsuperscript{st} GS

Development Set

- Identify search fields
- Identify search terms
- Test internal validity
- Test external validity

Validation Set
Developing the draft

relevant results

irrelevant results

British Journals

English Language

Non-UK places

Good Recall
MEDLINE UK filter overview

Key features

- MeSH
- Title
- Abstract
- Journal
- Institution

5 fields

UK terms

- NHS
- Countries
- Cities

Excludes (using NOT Boolean operator):
- Non-UK locations which share UK country/city names
- ‘English’ used in the context of language
- Non-UK publications in ‘British’ journals (e.g. BMJ)
- Non-UK publications by UK-based authors
## MEDLINE UK Filter - recall

<table>
<thead>
<tr>
<th>Gold standard</th>
<th>Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(^{st}) GS (418 UK publications)</td>
<td>90.7%</td>
</tr>
<tr>
<td>2(^{nd}) GS (285 UK publications)</td>
<td>89.8%</td>
</tr>
<tr>
<td>3(^{rd}) GS (266 UK publications)</td>
<td>87.6%</td>
</tr>
</tbody>
</table>

**3\(^{rd}\) Gold Standard: non-retrieved records**
1 identifiable UK publication missed (poor level of geographic details)

Others had no UK terms in MEDLINE records
MEDLINE UK filter

1   exp Great Britain/
2   (national health service* or nhs*).ti,ab,in.
3   (english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) adj5 english)).ti,ab.
4   (gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*).ti,ab,jw,in.
5   **UK city names**.ti,ab,in
6   or/1-5
7   (exp africa/ or exp americas/ or exp antarctic regions/ or exp arctic regions/ or exp asia/ or exp oceania/) not (exp great britain/ or europe/)
8   6 not 7
Case study: Workplace-based learning for UK healthcare professionals (2015)

- 100% recall
- 11.4% precision (vs 1.5%)
- 9 Number Needed to Read (NNR) (vs 67)
Embase UK filter overview

- Translated from MEDLINE UK filter
  - Addition of ‘correspondence address’ field [.ad]

6 fields:
- Emtree
- Title
- Abstract
- Journal
- Institution
- Address

UK terms:
- NHS
- Countries
- Cities
## Embase UK filter - recall

<table>
<thead>
<tr>
<th>Gold standard</th>
<th>Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st GS (471 UK publications)</td>
<td>93.4%</td>
</tr>
<tr>
<td>2nd GS (300 UK publications)</td>
<td>93.7%</td>
</tr>
<tr>
<td>3rd GS (299 UK publications)</td>
<td>93.3%</td>
</tr>
</tbody>
</table>

3 identifiable UK studies not retrieved
All incorrectly indexed as ‘United States’ in Emtree

Elsevier will be notified…
Embase UK filter

1. United Kingdom/
2. (national health service* or nhs*).ti,ab,in,ad.
3. (english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) adj5 english)).ti,ab.
4. (gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*).ti,ab,jw,in,ad.
5. **UK city names**.ti,ab,in,ad
6. or/1-5
7. (exp "arctic and antarctic"/ or exp oceanic regions/ or exp western hemisphere/ or exp africa/ or exp asia/) not (united kingdom/ or europe/)
8. 6 not 7
Case study: Use of complementary medicine by people in the UK (2013)

- 98.5% recall
- 7.6% precision (vs 1.1%)
- 13 NNR (vs 91)
post-project filter analysis
Retrospective recall tests

1,830 included refs from 68 UK systematic reviews:

MEDLINE UK filter: 96% recall

Embase UK filter: 97% recall

- 47 missing MEDLINE refs: 24 retrievable by Embase filter
- 39 missing Embase refs: 10 retrievable by MEDLINE filter
How the filters have been used at NICE…

<table>
<thead>
<tr>
<th>UK topic</th>
<th>Database</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation models for antimicrobial stewardship</td>
<td>MEDLINE:</td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>Embase:</td>
<td>79%</td>
</tr>
<tr>
<td>Oral care in care homes</td>
<td>MEDLINE:</td>
<td>91%</td>
</tr>
<tr>
<td></td>
<td>Embase:</td>
<td>88%</td>
</tr>
</tbody>
</table>
How the filters have been used

*by external organisations…*

<table>
<thead>
<tr>
<th>UK topic</th>
<th>No. results before filter</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interventions to reduce risk-taking behaviours</td>
<td>MEDLINE:</td>
<td>92%</td>
</tr>
<tr>
<td></td>
<td>Embase:</td>
<td>88%</td>
</tr>
<tr>
<td>Utilisation of routinely collected data in prospective clinical studies</td>
<td>MEDLINE:</td>
<td>88%</td>
</tr>
<tr>
<td></td>
<td>Embase:</td>
<td>87%</td>
</tr>
</tbody>
</table>
discussion
**Strengths**
- Good quality development methods
- Tested on 1000+ UK publications
- Retrieve a range of topics & study types

**Limitations**
- Poor geographic indexing and reporting
- Difficulty retrieving multinational studies
- Only retrieves country / city / NHS terms
How people can use these filters

**Use**

identify UK literature for search topics that require geographic limits

**Adapt**

translate for use with other platforms, for example HDAS

**Develop**

Methodology developed here can be applied to developing other validated filters
Forthcoming articles on the development of the filters in the Health Information and Libraries Journal (HILJ)

Presentation at the 2016 Cochrane Colloquium

Session and poster at the 2017 European Association of Health Information and Libraries (EAHIL) workshop

Potential development of UK filters for other databases
Any questions?

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