

Designing a search filter to identify reports of adverse events

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Recent search filter research has used statistical analysis to identify the most efficient search filters for retrieving systematic reviews¹ and randomised controlled trials (RCTs).² Those methods were used in this study to seek to identify the most efficient search terms to retrieve reports of adverse events.

Table 1: Five most frequently occurring terms in relevant MEDLINE records

Words in the Title	Words in the Abstract	MeSH	Publication Type
Epilepsy	Patients	Therapeutic use	Journal article
Study	Seizure	Adverse effects	Clinical trial
Long-term	Visual	Drug therapy	Multicenter study
Vigabatrin	Vigabatrin	Anticonvulsants	Randomized controlled trial
Visual	Field	Middle age	Controlled clinical trial

Background

Recent research by White et al¹ has used word frequency and statistical analysis to achieve objectively derived search filters for retrieving systematic reviews. Little research has been conducted on developing search filters to retrieve reports of adverse events.^{3,4,5} White et al's methods were used in this study to find the most efficient search terms (in terms of high sensitivity with acceptable precision) to retrieve papers reporting adverse events from MEDLINE.

Objectives

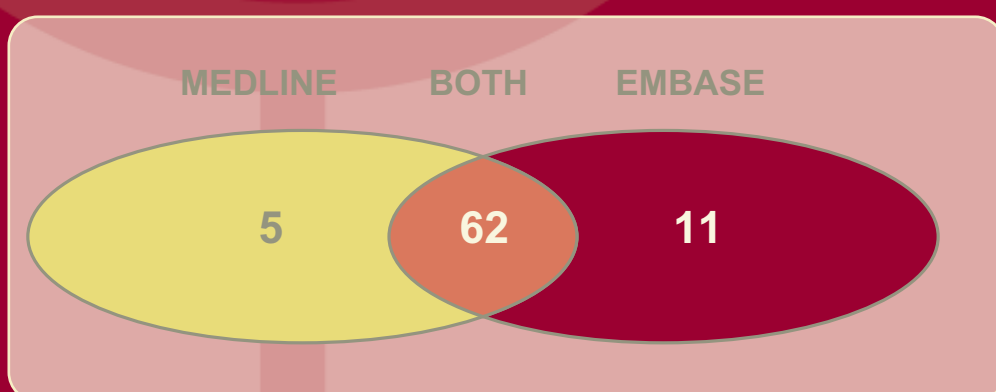
To find the most efficient search terms to identify reports of adverse events in MEDLINE.

Methods

A systematic review of the effectiveness and adverse effects of seven new anti-epileptic drugs was used as a case study. This review included a thorough search for studies of effectiveness and additional searches for reports of adverse events. The adverse events papers were found by searching MEDLINE, EMBASE, and TOXLINE, by contacting experts, checking bibliographies and industry submissions, and assessing the results of effectiveness searches on the topic. The papers identified by these methods and indexed on MEDLINE formed a quasi gold standard for use in this study. To assess which terms were most discriminating, a comparison set of MEDLINE records was compiled by randomly selecting papers which had also been retrieved when searching for adverse events but had failed to meet the review inclusion criteria.

The relevant records were then subjected to word frequency analysis using SIMSTAT for Windows and word frequencies were recorded in both the quasi gold standard and the comparison sets of records. The data were analysed, using logistic regression in SPSS for Windows, to determine which words were best at discriminating adverse events records from other records in the comparison group.

Diagram 1: Relevant records indexed on MEDLINE and EMBASE



Results

84 relevant adverse event papers were found from all the searches, 73 of which were indexed in EMBASE and 67 in MEDLINE (Diagram 1).

All the databases produced unique records despite the very broad nature of the search strategies (Diagram 2).

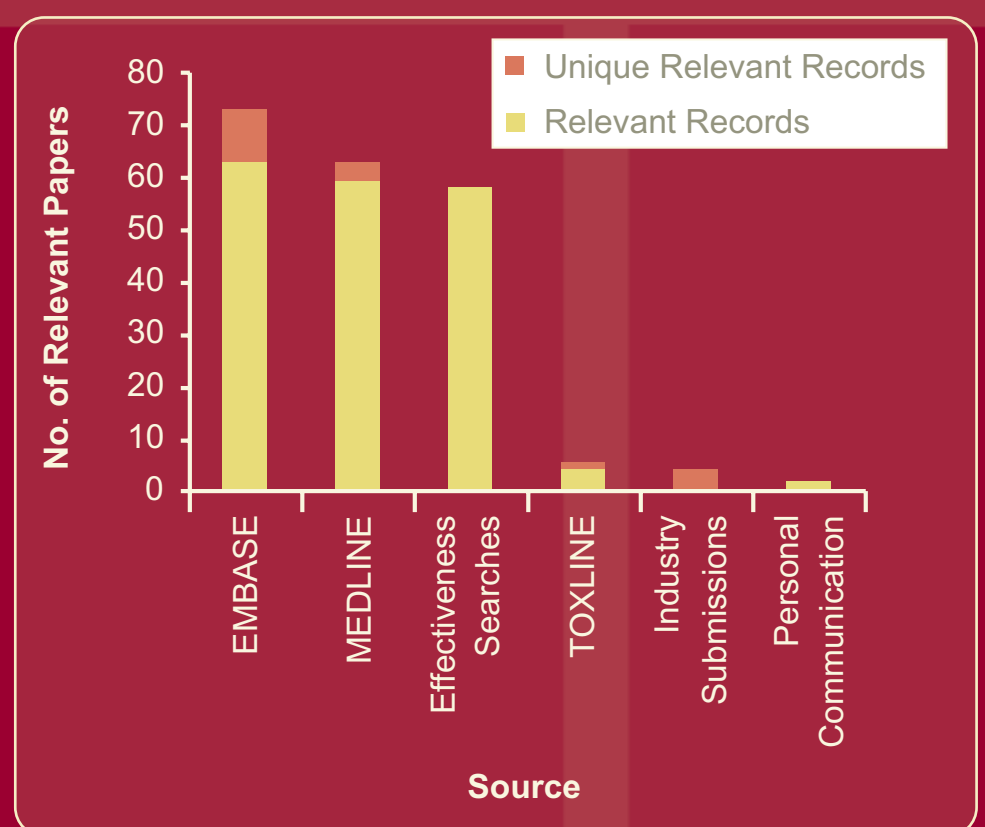
26 papers were found by the adverse events searches (22 via electronic databases) that were not found by the effectiveness searches.

Table 1 shows the five most frequently occurring terms in the relevant MEDLINE records. The results of the analysis of MEDLINE records using a comparison set of 201 records with a word frequency cut off point of 6 suggest that there are no clearly discriminating search terms to identify adverse events records in this topic. Further statistical analysis is being conducted, varying the volume of records in the comparison group and word frequency cut off levels to verify if these preliminary results are maintained.

Conclusions

The results of this case study so far indicate that searching for reports of adverse events in MEDLINE is complex, and that different approaches and combinations of approaches may be required. Adverse event papers are not clearly and consistently labeled at present to assist effective searching. Retrieval of adverse events papers in MEDLINE could be improved with better indexing and/or the allocation of new Publication Types.

Diagram 2: Sources of relevant records



References

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