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Where to identify information on adverse effects for a systematic review

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Introduction

Ideally systematic reviews of effects should include information about adverse effects. Where information on adverse effects is sought will influence the amount and type of data retrieved.[1]

Data on adverse drug effects can potentially come from many different sources. However, little is known about the relative value of these sources.

Objectives

To examine how issues beyond test accuracy have been considered in published diagnostic systematic reviews. To discuss our own experience in conducting these reviews and assess whether a restriction to test accuracy studies would have changed findings.

Aim

To investigate the utility of searching different data sources to identify information on adverse effects of health care interventions.

Methods

We conducted a systematic review of methodological research which compared at least two sources to identify information on adverse effects. Searches were undertaken in 10 databases and supplemented with other sources of information such as handsearching, citation searching and contacting experts. Two reviewers screened the records for potentially relevant papers.

Results

Included studies

- 18 methodological evaluations met the inclusion criteria[2-19]
- 16 evaluated sources of data on the adverse effects of drug interventions
- The number of sources included in each study varied between 2 and 24
- The majority of the methodological evaluations compared the different sources of data using the numbers of relevant references retrieved, however, 4 used scores for ability to answer queries on adverse effects[2, 4, 7, 9]

Methodological assessment

The generalisability of the methodological evaluations was limited by the number of relevant references, the limited range of interventions and adverse effects included and because many of the evaluations were done over 20 years. The number of unique and total references was described fully for four studies[3, 10, 13, 15] and partially for five studies.[5, 11, 12, 17, 19] The sensitivity, precision, search functionality, the difference between the availability and the identification of studies, cost, quality of records or impact on research of searching the databases was rarely considered.

Database comparisons

- 8 methodological evaluations found that searching EMBASE retrieves more relevant references than MEDLINE[3, 5, 6, 11, 12, 15, 17, 19]
- 2 methodological evaluations (both of non-pharmaceutical drugs) found that MEDLINE retrieved more records than EMBASE[8, 19]
- 3 of the 4 methodological evaluations which included Derwent Drug File indicated its potential value above that of EMBASE and MEDLINE[5, 11, 15]
- 3 of the 4 methodological evaluations which included TOXLINE found that MEDLINE and EMBASE retrieved more relevant references than TOXLINE
- 5 of the 6 methodological evaluations which included International Pharmaceutical Abstracts (IPA),[6, 8, 10, 12, 16, 18] indicated that IPA retrieves either the lowest or joint lowest number of relevant references

Non-database comparisons

- Other sources also retrieved relevant references, particularly, manufacturers, reference books, reference lists/hand searching and AltaVista

Unique references

- Only one database, BIOSIS, did not identify any unique references and this was only in one case study[15]

Discussion

It is not surprising that searches in EMBASE tended to retrieve the most records for adverse drug effects as EMBASE is a large pharmacological and biomedical bibliographic database renowned for its drug-related literature. The relative value of Derwent Drug File over EMBASE and MEDLINE merits further analysis. There are many other potentially useful sources of data not covered in these studies including, full-text databases, post-marketing surveillance databases, regulatory agencies (such as the FDA), citation searching and discussion lists.

Conclusion

This review indicates the value of searching a range of sources when conducting a thorough search for information on adverse effects and that of the included sources EMBASE, Derwent Drug File, MEDLINE, Industry, Iowa Drug Information Service (IDIS), and drug monographs may provide the greatest number of references for adverse effects information.

An evaluation of a significant number of sources using a large set of references with a range of types of adverse effects would be useful to prioritise the sources available for data on adverse effects.

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