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Which databases should we search to identify test accuracy studies?

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Introduction

• Key component of any systematic review is a thorough literature search.
• Searching for test accuracy studies is difficult due to poor indexing.
• Majority of research relating to test accuracy studies has focused on developing and evaluating filters for diagnostic studies.

Objective

• To examine the yield of searching a range of databases to identify test accuracy studies for inclusion in systematic reviews and technology assessments.

Methods

• Data sources: seven diagnostic reviews that included extensive, well-documented, literature searches, not limited by diagnostic search filters.
• Databases: MEDLINE, EMBASE, Biosis, Science Citation Index, LILACS, Pascal and CENTRAL.
• For each review and for each database calculated:
    (1) proportion of included studies identified by the searches
    (2) proportion of included studies indexed on the database
• To give an indication of the value of searching additional databases we calculated the number of studies indexed on the databases other than MEDLINE that were not indexed on MEDLINE.
• To assess the value of additional attempts to locate studies we calculated the numbers of and proportions of studies:
    (1) not identified by searching MEDLINE
    (2) not indexed on any of the databases searched
    (3) not identified by the searches carried out for each review
• For studies that were not indexed on any of the databases searched, we attempted to determine how these were identified from the review authors.

Results

1. Proportion of relevant studies indexed on each database and identified by searching the databases

Figure 1: Results of searches for 7 reviews combined (527 studies)
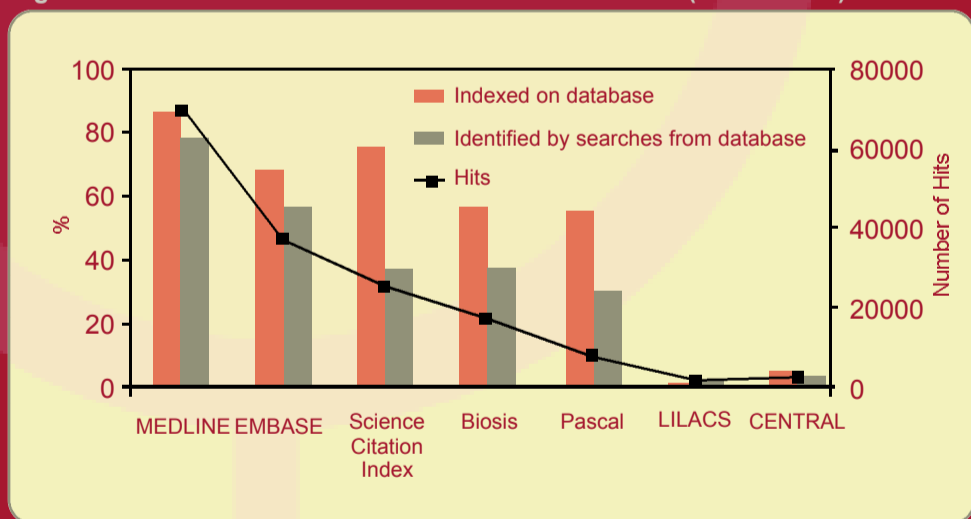
• Searches retrieved almost twice as many records on MEDLINE as for any other database.
• Greater proportion of included studies were indexed on MEDLINE and identified by searches of MEDLINE than for any other database.
• None of the searches for any of the databases identified all included studies that were indexed on the database.
• Even though a relatively large proportion of included studies were indexed on Science Citation Index, Biosis and Pascal the searches failed to identify many of these.

2. Yield of searching additional databases

Table 1: Number of studies indexed on each database but not indexed on MEDLINE

Review	Number not on MEDLINE	Number of studies on database but not on MEDLINE					
		EMBASE	Science Citation Index	Biosis	Pascal	LILACS	CENTRAL
MS/MRI	2	1	1	1	0	0	0
UTI diagnosis	11	5	3	4	0	3	0
UTI imaging	14	2	6	7	0	0	0
Haematuria	16	8	6	5	0	1	0
FOBT	15	2	8	6	1	0	0
PAD	4	2	1	0	0	0	0
FFN	9	3	0	3	1	2	0
Bacterial vaginosis	1	0	0	1	0	0	0
All reviews combined	**72**	**23**	**25**	**27**	**2**	**6**	**0**

• For the majority of reviews EMBASE, Science Citation Index and Biosis all contained studies that were not indexed on MEDLINE.
• Some unique additional studies were retrieved from each of these databases, suggesting that there is additional benefit to searching all four.
• All studies indexed on CENTRAL and all but one indexed on Pascal were also indexed on MEDLINE.
• Additional 6 studies indexed on LILACS were not indexed on any of the other databases searched.

3. Value of additional attempts to locate studies

Table 2 Summary of numbers of studies not identified by the searches and not indexed on databases

Review	Number of included studies	Number (%) not identified by searching MEDLINE	Number (%) of studies not indexed on any of the databases searched	Number (%) of studies not identified by any of the searches
MS/MRI	39	5 (13)	0	0
UTI diagnosis	76	13 (17)	0	0
UTI imaging	105	23 (22)	1 (1)	3 (3)
Haematuria	104	21 (20)	2 (2)	5 (5)
FOBT	59	21 (36)	4 (7)	10 (17)
PAD	58	12 (21)	1 (2)	3 (5)
FFN	63	12 (19)	0	7 (11)
Bacterial vaginosis	18	3 (17)	0	2 (11)
All reviews combined	**527**	**110 (21)**	**9 (2)**	**30 (6)**

• Over 20% of the studies included in reviews were not identified by searching MEDLINE.
• For two reviews all of the included studies were identified by the searches, for one other review all of the studies were indexed on the databases searched.
• Nine studies out of all the reviews combined were not indexed on any of the databases.
• 30 studies were not identified by the searches carried out for the reviews.

Conclusions

• Searching MEDLINE alone misses many relevant studies.
• A range of databases such as MEDLINE, EMBASE, BIOSIS and Science Citation Index should be searched to identify test accuracy studies.
• There is little additional benefit from searching Pascal or CENTRAL.
• LILACS gives a very small yield of relevant studies but these tend not to be indexed on other databases.
• Even sensitive searches that do not include a diagnostic filter miss a significant proportion of relevant studies indexed on medical databases.

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