

Using PubMed 'humans' limit: losing more than you think¹

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Background

Searching any database can be more complex than it appears. In the case of PubMed, we believe there is a nuance of the system that most users are unaware of, and yet could significantly impact their ability to identify the best and most recent evidence. The US National Library of Medicine, which produces PubMed, follows set procedures and definitions on the use of the 'humans' limit, which are necessarily logical and explicit². Our collective experience is that it is easy for searchers to select the 'humans' limit almost as an automatic process, without necessarily understanding how PubMed interprets such a limit.

Essentially choosing the 'humans' limit excludes a range of articles which quite legitimately have not been indexed with the term 'humans', yet may be relevant. An assumed and incorrect belief may be held by some, that all journal articles once available on PubMed have been assigned either 'humans' or 'animals' as an indexing term. This is not the case.

Objective

To explore whether or not limiting a PubMed search to 'humans' would result in potentially substantial article retrieval losses.

Method

All searching was undertaken on 6 August 2008. Two separate searches were examined.

First, we undertook a search for systematic reviews on a topic which a physician might reasonably require - brain natriuretic peptide. We used the phrase (*brain natriuretic peptide OR BNP*) AND *systematic[sb]*. This search was then further limited by adding AND *humans[MeSH]* and the reduction in retrieval rates noted.

Second, all citations published in the last four weeks were searched (rather than search for a topic or use a systematic review restriction) in the entire PubMed database, and in five general medical journals (Annals of Internal Medicine, Lancet, BMJ, JAMA and New England Journal of Medicine) which are indexed for Medline. The form of the search was: *Annals of Internal Medicine[Journal] AND "last 4 weeks"[dp];* then AND *humans[MeSH]* was added and the reduction in retrieval rates noted. This was repeated for each journal.

Results

In the first search, 72 retrieved records were reduced to 65 records when the 'humans limit' was applied, meaning that seven systematic reviews were omitted. When these citations were reviewed for their relevance to humans, six were clearly relevant, and one arguably so.

In the second search, of the 517 citations published in the five journals in the last four weeks, nearly half (47.8%, 247/517) of those initially retrieved were not found when the search was limited to 'humans' (Table 1).

On analysis, most missed records were awaiting MeSH term allocation or review (85.4%, 211/247), and others were MeSH indexed but not with 'humans' (14.6%, 36/247). Of the 50061 citations published in PubMed in the last four weeks, 97.9% (48991/50061) were not retrieved with 'humans' included. Accordingly, when all missed citations were reviewed for their relevance, 0/247 (0%) were indexed with 'humans'. Only 1 citation (1/247, 0.40%) was indexed with 'animals'; yet, all articles (247/247, 100%) were deemed relevant to humans.

Table 1 PubMed citation retrieval, limited to "last 4 weeks"[dp] AND humans[MeSH]*

| Journal s Searched | All citations limited to last 4 weeks [dp] | All citations limited to last 4 weeks [dp] AND humans [MeSH] | Non-retrieved Citations (%) |
|---------------------------------|--|---|-----------------------------|
| Annals of Internal Medicine | 18 | 16 | 2 (11.1%) |
| BMJ | 188 | 60 | 128 (68.1%) |
| JAMA | 59 | 54 | 5 (8.5%) |
| Lancet | 131 | 54 | 77 (58.8%) |
| New England Journal of Medicine | 121 | 86 | 35 (28.9%) |
| All five journals above | 517 | 270 | 247 (47.8%) |
| Entire PubMed database | 50061 | 1070 | 48991 (97.9%) |

*Search date 6 August 2008

Discussion

These examples highlight retrieval losses using the 'humans' limit. The extent and reasons for such losses will vary according to the topic and search date. The point is that they can occur.

This issue is important in the current healthcare environment, where a significant emphasis is given to finding the best published research evidence. Indeed, knowing the evidence base is a pre-requisite step to identifying evidence to practice gaps, and thus any occurrence of systematic bias to this process should be taken seriously.

Depending on the intended use of the literature, there may be significant ramifications of unknowingly excluding relevant articles from a search, ranging from contributing bias to the conclusions of systematic review, through to impacting clinical care decisions.

Conclusion

Limiting to 'humans' might appear enticingly logical, but relevant articles can readily be missed. If you routinely select the PubMed limit of humans, you may be exposing yourself to potential bias caused by your searching technique. The limit of humans, like all searching decisions, needs to be made mindfully.

For further details about the study contact

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References

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