

PubMed Similar Articles searching was a useful additional information source for rapid reviews but no replacement for a Boolean Cochrane Library search.

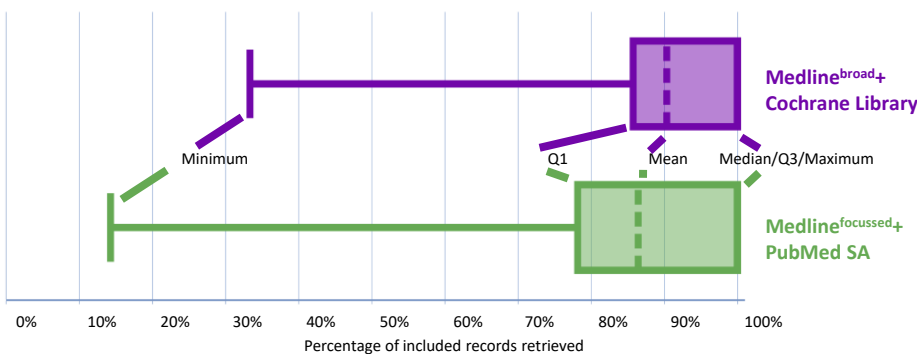
Objectives

Ebminfo.at is a rapid review service for medical doctors working in Lower Austrian hospitals. To streamline the search process, we require methods that are both reliable and time saving.

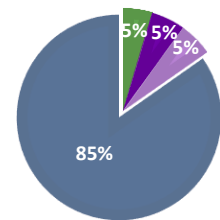
Our aims were:

- 1) To evaluate if the combination of a **focused Ovid Medline search (Mf)** and a **PubMed Similar Articles search (PubSA)** is as sensitive as a **broader Ovid Medline search plus Cochrane Library (Mb+CLib)**.
- 2) To identify if PSA identifies unique references.

Sensitivity of search approaches across 28 reviews



■ unique PubSA ■ unique Mb
■ unique CLib ■ 2+ sources



Sources of 131 records included in 28 reviews

Methods

For 28 rapid reviews (RR) we

- developed 3 Boolean searches: 2 Ovid Medline - “broad” (Mb) and “focused” (Mf) - and 1 Cochrane Library (CLib)
- used 1 to 6 records as “seeds” for a PubMed similar articles search: The first 100 linked records for each were limited by study design.
- assessed which search approaches identified studies included in each RR.

Key Results

- **Median Sensitivity:** Mb+CLib 100% (IQR 86-100%), Mf+PubSA 100% (IQR 78-100%), compared to the combination of all information sources.
- **PubSA identified 6 records missed by Mb, Mf, and CLib** in 6/27 RRs. These records lacked information about populations or interventions in their abstracts or MeSH-Terms.

Additional Results

- **Median number of retrieved records:** Mb+CLib 144.5 (IQR 92.5-410), Mf+PubSA 171.5 (IQR 105-352.5), combined sources M+CLib+PubSA 231.5 (IQR 152.5-5)
- **Number of included records:** 138 (131 found by M-CLib-PubSA)
- **7 Additional included records** found in 5/27 RRs through reference lists, web search, study registers
- **Unique records** identified in Mb in 4/28 RRs, and 3/28 RRs in CLib. All records found by Mf were also found by Mb.



PubMed Similar Articles as search method in rapid reviews



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Abstract

Title: PubMed Similar Articles as search method in rapid reviews

Background: EbM Ärztinformationszentrum (Ebminfo.at) is a rapid review service for medical doctors working in Lower Austrian hospitals. Reviews generally focus on narrow clinical questions and use systematic reviews and randomized controlled trials as evidence base. To streamline the search process, a standardized approach is used: Systematic searches of Medline and the Cochrane Library complemented by reference list checking of included records. Additional information sources and study designs are added on a case-by-case basis.

Between February 2018 and August 2019, we evaluated the value of using the PubMed Similar Articles search function as either a replacement or an addition to the main information sources.

Objectives:

- 1) To evaluate if the combination of a focused Ovid Medline search (Mf) and a PubMed Similar Articles search (PubSA) is as sensitive as the combination of a more comprehensive search using Ovid Medline and the Cochrane Library (Mb+CLib).
- 2) To identify if PubSA identifies unique references.

Methods: For each rapid review (RR) we developed 2 Ovid Medline strategies, one valorizing comprehensiveness (Mb), and one giving greater weight to precision (Mf). We also conducted a comprehensive search of the Cochrane Library (CLib). Additionally, we used the 1 to 6 references found by preliminary searches as seed articles for a PubMed similar articles search (PubSA). For each seed article, the first 100 similar references were limited by the same formal criteria as the Boolean Medline searches (e.g. study design, language) and exported. After the completion of the RR, we checked which search approach(es) identified the studies included in the review.

Results:

In 28 RRs, the combination of Mb+CLib retrieved a median of 144.5 records (IQR 92.5-410), Mf+PubSA retrieved a median of 171.5 (IQR 105-352.5). The combined sources M+CLib+PubSA retrieved a median of 231.5 references (IQR 152.5-5).)

A median of 4 records (IQR 2-7) was included per RR. Across all 28 RRs, a total of 138 records were included, 131 were retrieved by searching Medline, Cochrane Library, or PubMed Similar Articles.

The median sensitivity of both search approaches was 100%, when compared to the total of included studies found by the combination of all databases and additional search methods. However, the interquartile range of Mb+CLib (IQR 86-100%) was smaller than that of Mf+PubSA (IQR 78-100%).

In 6 RRs, PubSA retrieved 6 unique references that were not identified by any other search method. Their similarity rank ranged from 2 to 79.

Mb identified 6 unique records in 3 RRs, CLib 7 records in 3 RRs

In 5 RRs, 7 records were identified by additional searches: web searching, study registers, reference lists.

Limitations: We compared the relevant studies found by two abbreviated search approaches to the relevant studies found by a combination of these approaches and limited additional searching. Because RRs are characterized by time and resource constraints, we cannot estimate how either approach would compare to a full systematic review search.

Conclusions: Based on these results, Mf+PubSA is not an acceptable replacement for Mb+CLib as the sensitivity of the approach varied widely. However, PubSA proved a valuable addition to Mb+CLib. The unique references found by PubSA lacked information about the intervention or the population in their abstracts or MeSH-Terms, making them difficult to retrieve by traditional database searching.

We hope that the possibility to use PubMed Similar Articles for systematic searching will remain available after the PubMed relaunch in 2020.

Retrieved Records	n	Mean	Std. Dev.	Min.	Q1	Median	Q3	Max.	IQR
Mb+CLib	28	270.54	295.38	20	92.5	144.5	410	1357	317.5
Mf+PubSA	28	252.93	217.85	15	105	171.5	352.5	819	247.5
M+CLIB+PSA	28	371	343.4	22	152.5	231.5	524	1534	371.5

Sensitivity	n	Mean	Std. Dev.	Min.	Q1	Median	Q3	Max.	IQR
Mb+CLib	28	0.9	0.18	0.33	0.86	1	1	1	0.14
Mf+PubSA	28	0.86	0.24	0.14	0.78	1	1	1	0.22
M+CLIB+PubSA	28	0.96	0.12	0.5	1	1	1	1	0

Additional records retrieved via PubMed Similar articles search

Sample Size	Mean	Std. Dev.	Min.	Q1	Median	Q3	Max.	IQR
28	99.75	87.75	2	38.5	82.5	136	381	97.5

included records per RR

Sample Size	Mean	Std. Dev.	Min.	Q1	Median	Q3	Max.	IQR
28	4.93	4.35	1	2	4	7	18	5

PubMed similar article rank of records included in RRs (without seed articles)

Sample Size	Mean	Std. Dev.	Min.	Q1	Median	Q3	Max.	IQR
43	23.12	24.1	2	3.75	14	32.75	89	29