

Evidence-based medicine



Centre for Eye Health

Gordon S. Doig PhD (Epidemiology and Biostatistics)
Head of Research, Centre for Eye Health,
Associate Professor, School of Optometry and Vision Science,
University of New South Wales, Australia
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23 September 2021



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Evidence-based medicine:

Is it really for ALL clinicians???



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Overview



www.EvidenceBased.net

is an initiative of the
University of New South Wales and Guide Dogs
NSW/ACT. CFEH is funded by Guide Dogs
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Overview

- Where does evidence-based medicine come from?
- What is it?
- Is it different for *me*?
- How can I do it?
- Example of EBM in action.



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Where does EBM come from?

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Where does EBM come from?

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 - In 1963, the *Index Medicus* was 'digitised' on a Honeywell 800 computer
 - MEDLARS: Medical Literature Analysis and Retrieval System.

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In the early 1990's these two worlds collided

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Where does EBM come from?

McMaster meets MEDLINE:

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Where does EBM come from?

McMaster meets MEDLINE:

- A number of early papers from key people at McMaster University recognised how MEDLINE would transform care

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2420 JAMA, November 4, 1992—Vol 268, No. 17

Evidence-Based Medicine—Evidence-Based Medicine Working Group

Evidence-Based Medicine

A New Approach to Teaching the Practice of Medicine

Evidence-Based Medicine Working Group

A NEW paradigm for medical practice is emerging. Evidence-based medicine de-emphasizes intuition, unsystematic clinical experience, and pathophysiologic rationale as sufficient grounds for clinical decision making and stresses the examination of evidence from clinical research. Evidence-based medicine requires new skills of the physician, including efficient literature searching and the application of formal rules of evidence evaluating the clinical literature.

An important goal of our medical residency program is to educate physicians in the practice of evidence-based medicine. Strategies include a weekly, formal academic half-day for residents, devoted to learning the necessary skills; recruitment into teaching roles of phy-

dose of phenytoin intravenously and the drug is continued orally. A computed tomographic head scan is completely normal, and an electroencephalogram shows only nonspecific findings. The patient is very concerned about his risk of seizure recurrence. How might the resident proceed?

The Way of the Past

Faced with this situation as a clinical clerk, the resident was told by her senior resident (who was supported in his view by the attending physician) that the risk of seizure recurrence is high (though he could not put an exact number on it) and that was the information that should be conveyed to the patient. She now follows this path, emphasizing

year is between 43% and 51%, and at 3 years the risk is between 51% and 60%. After a seizure-free period of 18 months his risk of recurrence would likely be less than 20%. She conveys this information to the patient, along with a recommendation that he take his medication, see his family doctor regularly, and have a review of his need for medication if he remains seizure-free for 18 months. The patient leaves with a clear idea of his likely prognosis.

A PARADIGM SHIFT

Thomas Kuhn has described scientific paradigms as ways of looking at the world that define both the problems that can legitimately be addressed and the range of admissible evidence that may

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How do I do it?

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How do I do it?

Two *new* core skills:

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How do I do it?

Two *new* core skills:

1. Learn (and teach) how to conduct an efficient search of the literature and;
- 2) Apply and trust a set of formal rules of evidence to identify valid studies (critical appraisal).

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How do I do it?

1. Learn (and teach) how to conduct an efficient search of the literature and;
 - *Always* use PubMed and *always* use the PubMed Clinical Queries feature

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 - *Always* make sure your search terms map to MeSH headings.

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PubMed

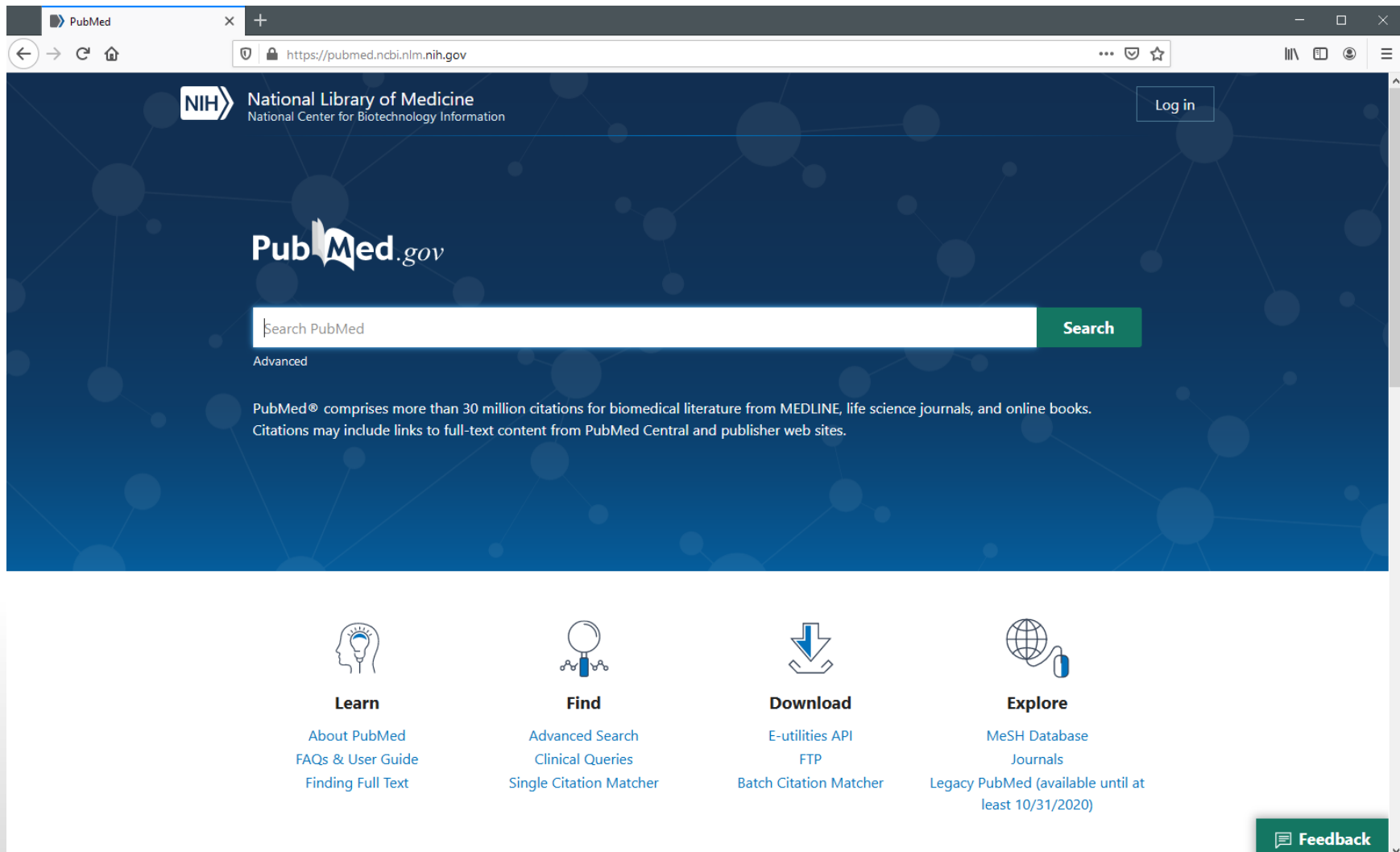
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PubMed



The screenshot shows the PubMed website in a web browser. The browser's address bar displays the URL <https://pubmed.ncbi.nlm.nih.gov>. The page header includes the NIH logo, the text "National Library of Medicine" and "National Center for Biotechnology Information", and a "Log in" button. The main content area features the "PubMed.gov" logo, a search bar with the placeholder text "Search PubMed", and a green "Search" button. Below the search bar, the text "Advanced" is visible. A paragraph states: "PubMed® comprises more than 30 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites." The footer contains four columns of links, each with an icon: "Learn" (lightbulb icon) with links to "About PubMed", "FAQs & User Guide", and "Finding Full Text"; "Find" (magnifying glass icon) with links to "Advanced Search", "Clinical Queries", and "Single Citation Matcher"; "Download" (download arrow icon) with links to "E-utilities API", "FTP", and "Batch Citation Matcher"; and "Explore" (globe icon) with links to "MeSH Database", "Journals", and "Legacy PubMed (available until at least 10/31/2020)". A green "Feedback" button is located in the bottom right corner of the page content.

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National Center for Biotechnology Information

Log in

PubMed.gov

Search PubMed

Search

Advanced

PubMed® comprises more than 30 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites.

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Advanced Search
Clinical Queries
Single Citation Matcher

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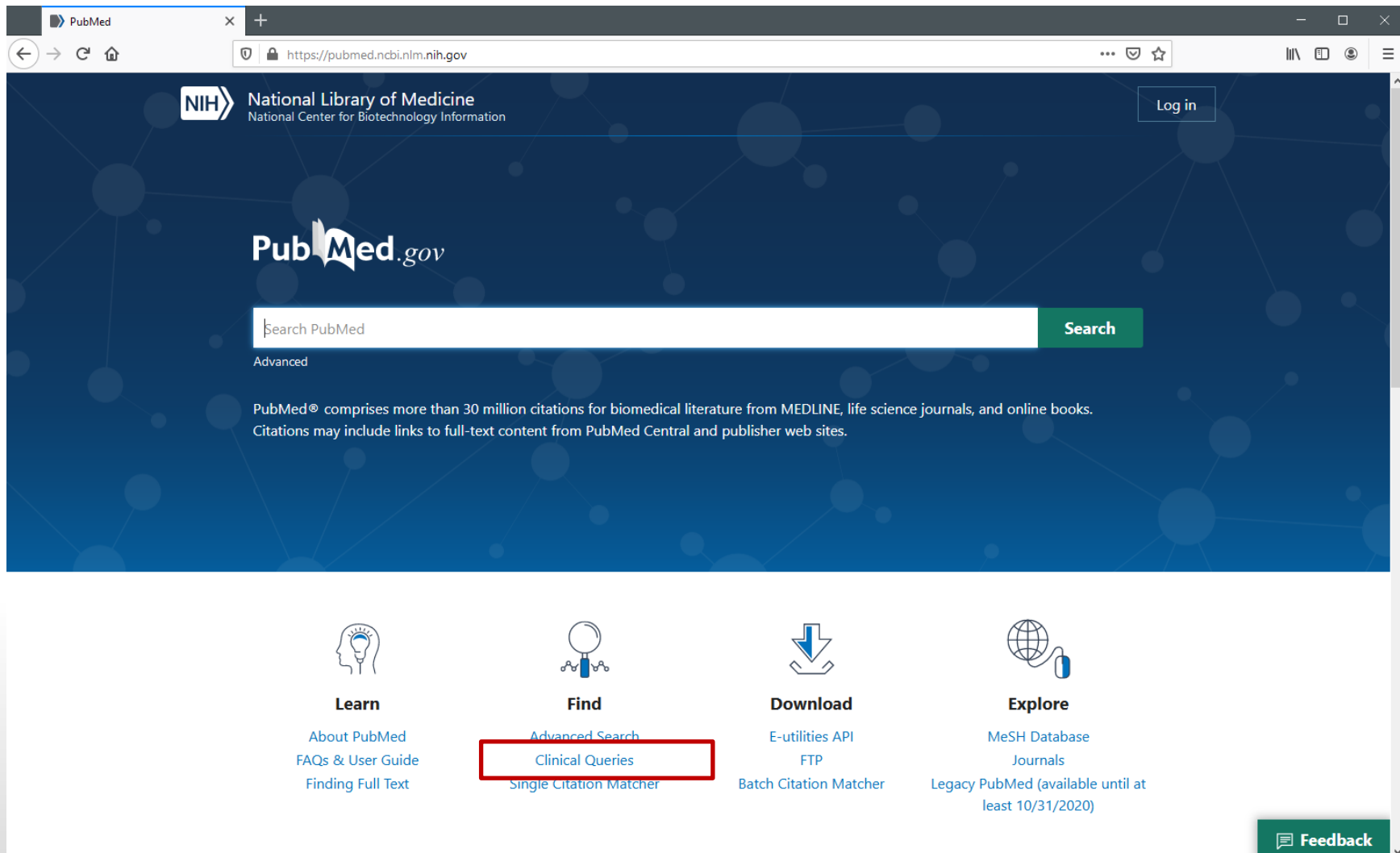
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PubMed Clinical Queries



The screenshot shows the PubMed.gov homepage. At the top, the NIH logo and 'National Library of Medicine' text are visible. The main heading is 'PubMed.gov'. Below it is a search bar with the placeholder text 'Search PubMed' and a green 'Search' button. A 'Log in' button is in the top right corner. The background features a dark blue molecular network pattern. Below the search bar, a paragraph states: 'PubMed® comprises more than 30 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites.'

At the bottom, there are four main categories with icons and links:

- Learn** (lightbulb icon):
 - About PubMed
 - FAQs & User Guide
 - Finding Full Text
- Find** (magnifying glass icon):
 - Advanced Search
 - Clinical Queries** (highlighted with a red box)
 - Single Citation Matcher
- Download** (download arrow icon):
 - E-utilities API
 - FTP
 - Batch Citation Matcher
- Explore** (globe icon):
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A green 'Feedback' button is located at the bottom right of the main content area.

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PubMed Clinical Queries

Clinical Queries - PubMed
+
https://pubmed.ncbi.nlm.nih.gov/clinical/


National Library of Medicine
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Log in



PubMed Clinical Queries

This tool uses [predefined filters](#) to help you quickly refine PubMed searches on clinical or disease-specific topics. To use this tool, enter your search terms in the search bar and select filters before searching.

Note: The Systematic Reviews filter has moved; it is now an option under the "Article Type" filter on the main PubMed search results page.

Enter your search terms
Search

Filter category
☒ Clinical Studies
☐ COVID-19

Clinical Queries filters were developed by [Haynes RB et al.](#) to facilitate retrieval of clinical studies.

Filter

Therapy

See [Clinical Queries filter details](#).

Scope

Broad

Returns more results: less specific, but more comprehensive. See [filter details](#).

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MeSH
PMC
Bookshelf
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PubMed Clinical Queries

Clinical Queries - PubMed

https://pubmed.ncbi.nlm.nih.gov/clinical/

 **National Library of Medicine**
National Center for Biotechnology Information

Log in



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Filter category

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Note: The Systematic Reviews filter has moved; it is now an option under the "Article Type" filter on the main PubMed search results page.

Search

Filter category

☒ Clinical Studies
☐ COVID-19

Filter

Therapy

Scope

Broad

Clinical Queries filters were developed by [Haynes RB et al.](#) to facilitate retrieval of clinical studies.

[See Clinical Queries filter details.](#)

Returns more results: less specific, but more comprehensive. [See filter details.](#)


Clinical Queries filters were developed by [Haynes RB et al.](#) to facilitate retrieval of clinical studies.

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PubMed Clinical Queries

Clinical Queries - PubMed

https://pubmed.ncbi.nlm.nih.gov/clinical/

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Enter your search terms

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Filter category
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☐ COVID-19
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Filter
Therapy
See [Clinical Queries filter details](#).

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Broad
Returns more results: less specific, but more comprehensive. See [filter details](#).

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myopia

×

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myopia

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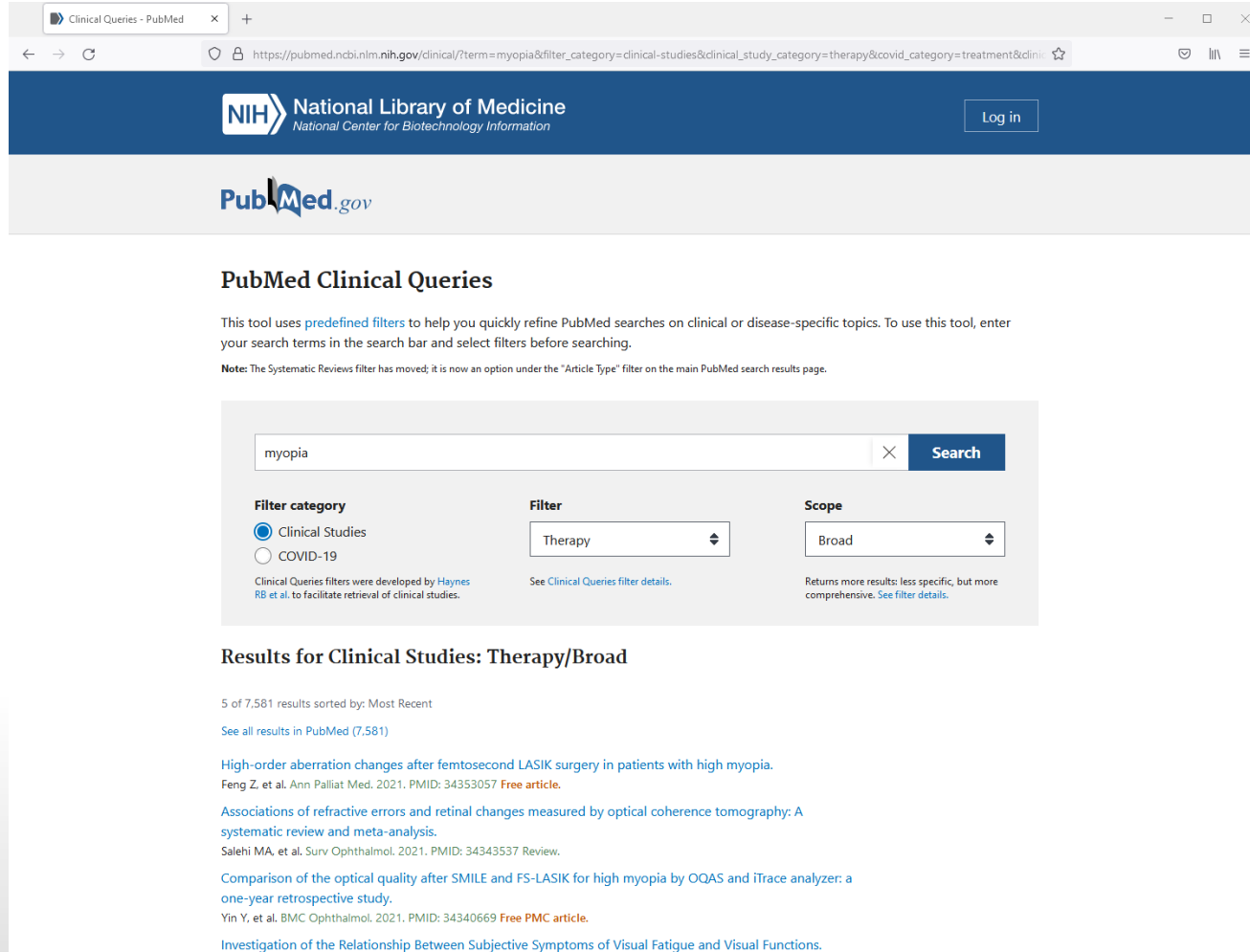
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PubMed Clinical Queries



The screenshot shows the PubMed Clinical Queries web application. At the top, there's a navigation bar with the NIH logo, "National Library of Medicine", and "National Center for Biotechnology Information". Below this is the "PubMed.gov" logo. The main heading is "PubMed Clinical Queries". A descriptive paragraph explains that the tool uses predefined filters to refine PubMed searches on clinical or disease-specific topics. A note mentions that the Systematic Reviews filter has moved. The search interface includes a search bar with "myopia" entered, a "Search" button, and three filter sections: "Filter category" (Clinical Studies selected, COVID-19 unselected), "Filter" (Therapy selected), and "Scope" (Broad selected). Below the filters, the results are titled "Results for Clinical Studies: Therapy/Broad" and show 5 of 7,581 results sorted by Most Recent. The first three results are listed with their titles, authors, journals, and PMIDs.

PubMed Clinical Queries

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Search: myopia

Filter category

- ☒ Clinical Studies
- ☐ COVID-19

Clinical Queries filters were developed by Haynes RB et al. to facilitate retrieval of clinical studies.

Filter

Therapy

See [Clinical Queries filter details](#).

Scope

Broad

Returns more results: less specific, but more comprehensive. See [filter details](#).

Results for Clinical Studies: Therapy/Broad

5 of 7,581 results sorted by: Most Recent

[See all results in PubMed \(7,581\)](#)

High-order aberration changes after femtosecond LASIK surgery in patients with high myopia.
Feng Z, et al. Ann Palliat Med. 2021. PMID: 34353057 [Free article](#).

Associations of refractive errors and retinal changes measured by optical coherence tomography: A systematic review and meta-analysis.
Salehi MA, et al. Surv Ophthalmol. 2021. PMID: 34343537 Review.

Comparison of the optical quality after SMILE and FS-LASIK for high myopia by OQAS and iTrace analyzer: a one-year retrospective study.
Yin Y, et al. BMC Ophthalmol. 2021. PMID: 34340669 [Free PMC article](#).

Investigation of the Relationship Between Subjective Symptoms of Visual Fatigue and Visual Functions.

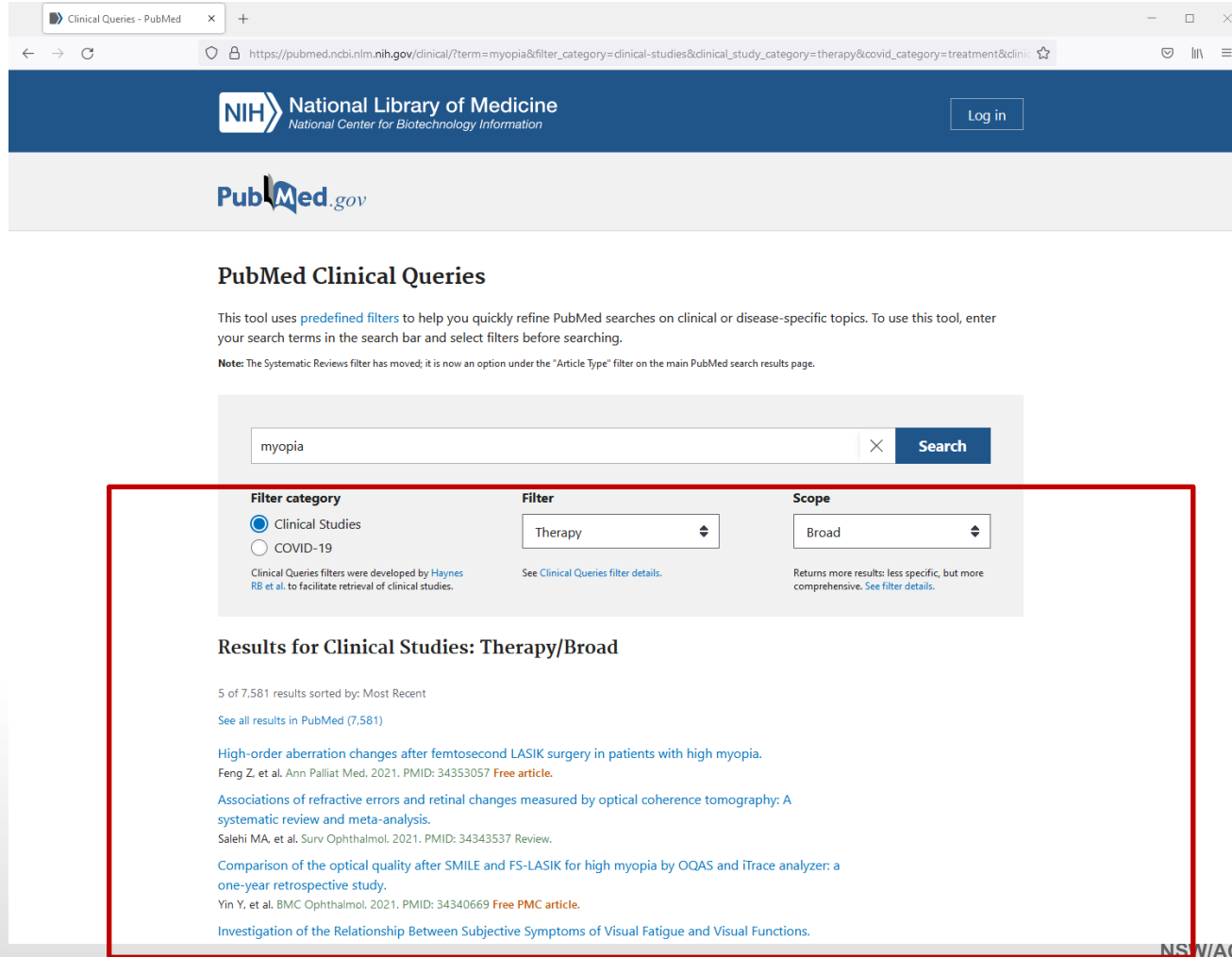
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PubMed Clinical Queries



Clinical Queries - PubMed

https://pubmed.ncbi.nlm.nih.gov/clinical/?term=myopia&filter_category=clinical-studies&clinical_study_category=therapy&covid_category=treatment&clinical_study_type=clinical-study

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PubMed Clinical Queries

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myopia **Search**

Filter category

☒ Clinical Studies
☐ COVID-19

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Filter

Therapy

See [Clinical Queries filter details](#).

Scope

Broad

Returns more results: less specific, but more comprehensive. See [filter details](#).

Results for Clinical Studies: Therapy/Broad

5 of 7,581 results sorted by: Most Recent

[See all results in PubMed \(7,581\)](#)

[High-order aberration changes after femtosecond LASIK surgery in patients with high myopia.](#)
Feng Z, et al. *Ann Palliat Med*. 2021. PMID: 34353057 [Free article](#).

[Associations of refractive errors and retinal changes measured by optical coherence tomography: A systematic review and meta-analysis.](#)
Salehi MA, et al. *Surv Ophthalmol*. 2021. PMID: 34343537 [Review](#).

[Comparison of the optical quality after SMILE and FS-LASIK for high myopia by OQAS and iTrace analyzer: a one-year retrospective study.](#)
Yin Y, et al. *BMC Ophthalmol*. 2021. PMID: 34340669 [Free PMC article](#).

[Investigation of the Relationship Between Subjective Symptoms of Visual Fatigue and Visual Functions.](#)

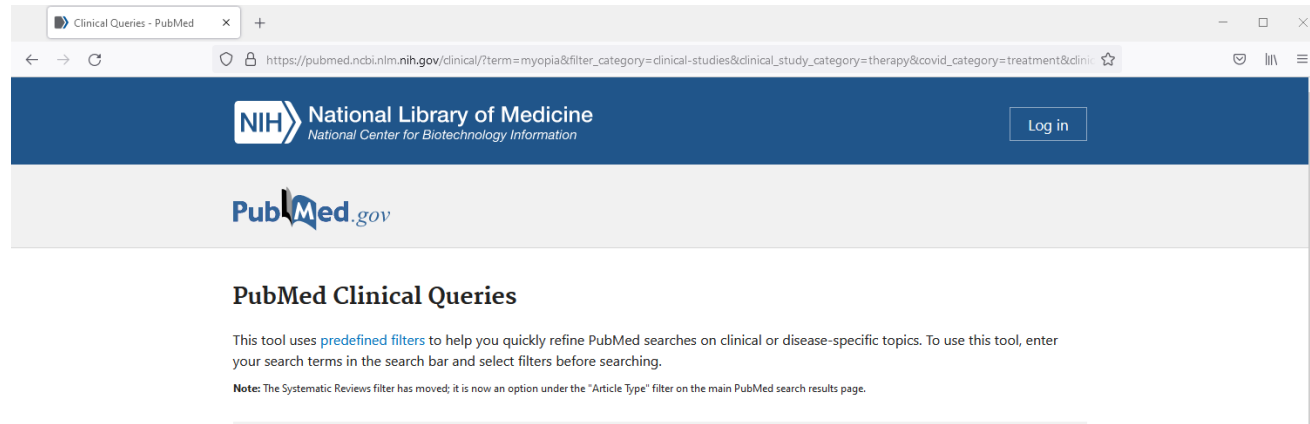
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PubMed Clinical Queries



Filter category

- ☒ Clinical Studies
☐ COVID-19

Clinical Queries filters were developed by [Haynes RB et al.](#) to facilitate retrieval of clinical studies.

Filter

Therapy

See [Clinical Queries filter details](#).

Scope

Broad

Returns more results: less specific, but more comprehensive. See [filter details](#).

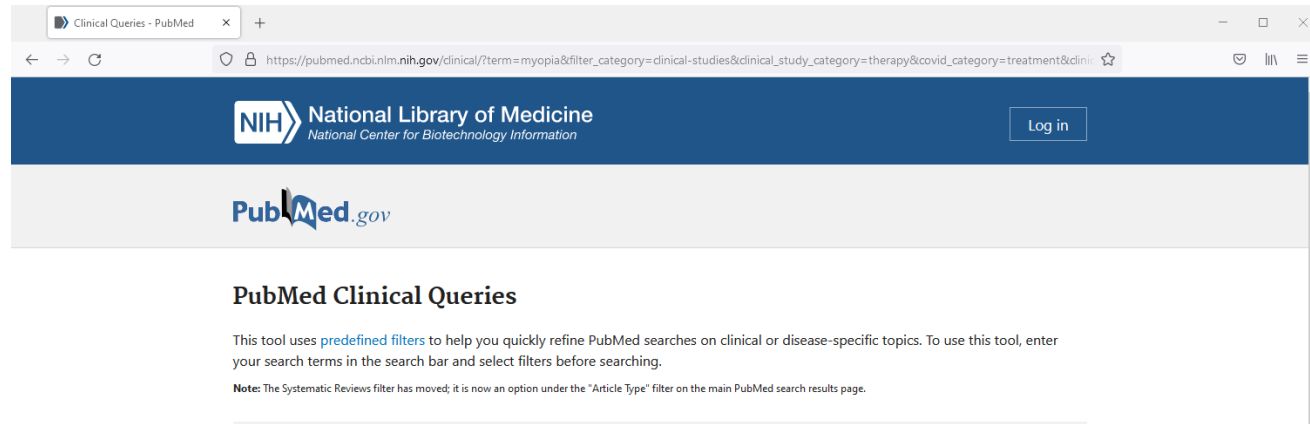
Results for Clinical Studies: Therapy/Broad

5 of 7,581 results sorted by: Most Recent

[See all results in PubMed \(7,581\)](#)

[High-order aberration changes after femtosecond LASIK surgery in patients with high myopia.](#)

PubMed Clinical Queries



Filter category

- ☒ Clinical Studies
☐ COVID-19

Clinical Queries filters were developed by [Haynes RB et al.](#) to facilitate retrieval of clinical studies.

Filter

Therapy

See [Clinical Queries filter details](#).

Scope

Broad

Returns more results: less specific, but more comprehensive. See [filter details](#).

Results for Clinical Studies: Therapy/Broad

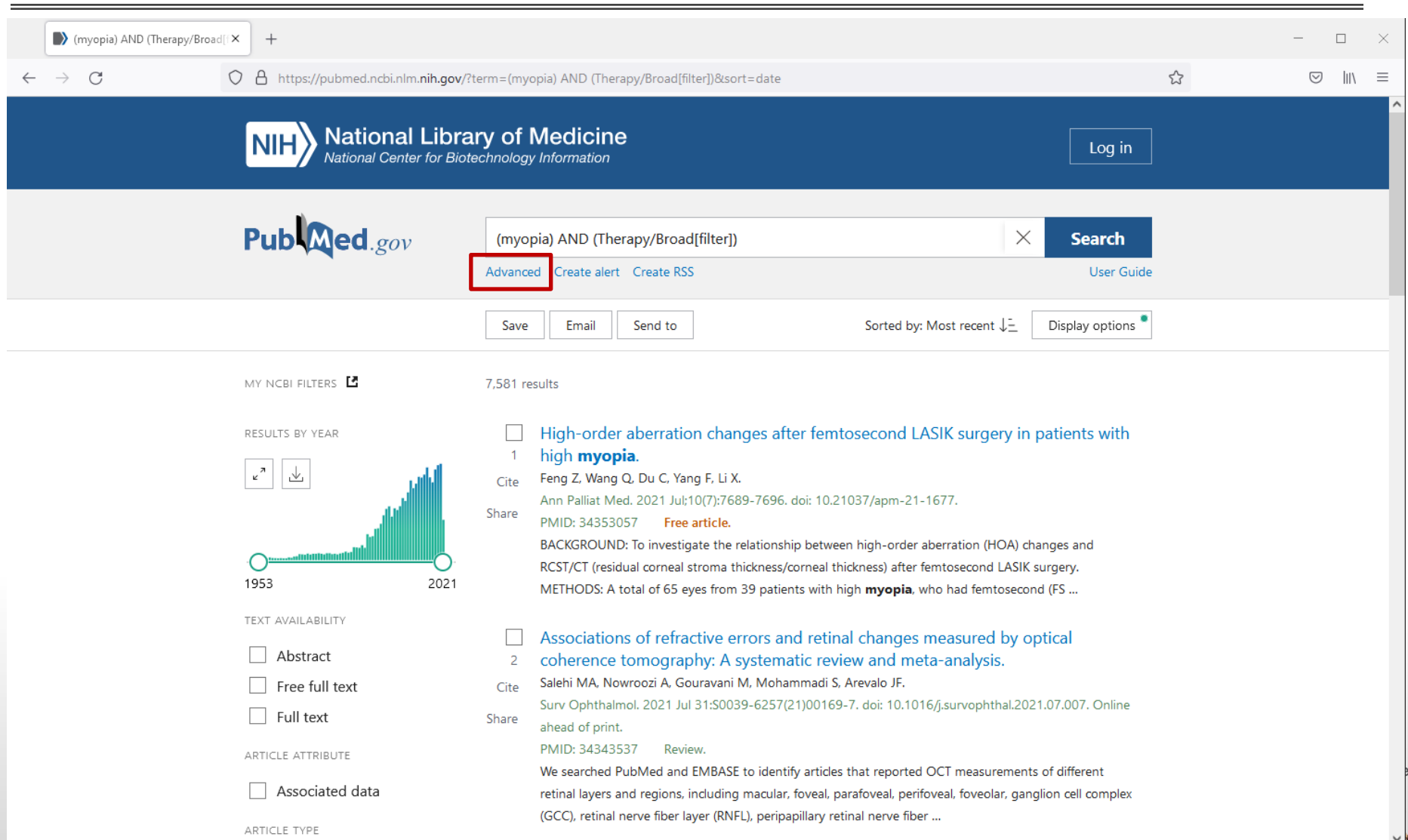
5 of 7,581 results sorted by: Most Recent

[See all results in PubMed \(7,581\)](#)

[High-order aberration changes after femtosecond LASIK surgery in patients with high myopia.](#)

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PubMed Clinical Queries




The screenshot shows the PubMed Clinical Queries interface. The search query is "(myopia) AND (Therapy/Broad[filter])". The results are sorted by "Most recent" and show 7,581 results. The left sidebar includes filters for "MY NCBI FILTERS", "RESULTS BY YEAR" (a bar chart showing an increase from 1953 to 2021), "TEXT AVAILABILITY" (Abstract, Free full text, Full text), "ARTICLE ATTRIBUTE" (Associated data), and "ARTICLE TYPE". The main results list two articles:

- ☐ **High-order aberration changes after femtosecond LASIK surgery in patients with high myopia.**
 Cite: Feng Z, Wang Q, Du C, Yang F, Li X.
 Ann Palliat Med. 2021 Jul;10(7):7689-7696. doi: 10.21037/apm-21-1677.
 Share: PMID: 34353057 [Free article.](#)
 BACKGROUND: To investigate the relationship between high-order aberration (HOA) changes and RCST/CT (residual corneal stroma thickness/corneal thickness) after femtosecond LASIK surgery.
 METHODS: A total of 65 eyes from 39 patients with high **myopia**, who had femtosecond (FS ...
- ☐ **Associations of refractive errors and retinal changes measured by optical coherence tomography: A systematic review and meta-analysis.**
 Cite: Salehi MA, Nowroozi A, Gouravani M, Mohammadi S, Arevalo JF.
 Surv Ophthalmol. 2021 Jul 31;S0039-6257(21)00169-7. doi: 10.1016/j.survophthal.2021.07.007. Online ahead of print.
 Share: PMID: 34343537 [Review.](#)
 We searched PubMed and EMBASE to identify articles that reported OCT measurements of different retinal layers and regions, including macular, foveal, parafoveal, perifoveal, foveolar, ganglion cell complex (GCC), retinal nerve fiber layer (RNFL), peripapillary retinal nerve fiber ...

PubMed Clinical Queries


Advanced Search Results - PubMed

https://pubmed.ncbi.nlm.nih.gov/advanced/

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[User Guide](#)

Add terms to the query box

All Fields

Enter a search term

ADD

[Show Index](#)

Query box

Enter / edit your search query here

Search

History and Search Details

[Download](#) [Delete](#)


Search	Actions	Details	Query	Results	Time
#1	...	>	Search: (myopia) AND (Therapy/Broad[filter]) Sort by: Most Recent	7,581	23:37:36

Showing 1 to 1 of 1 entries

PubMed Clinical Queries


Advanced Search Results - PubMed

https://pubmed.ncbi.nlm.nih.gov/advanced/

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Search	Actions	Details	Query	Results	Time
#1	...	>	Search: (myopia) AND (Therapy/Broad[filter]) Sort by: Most Recent	7,581	23:37:36

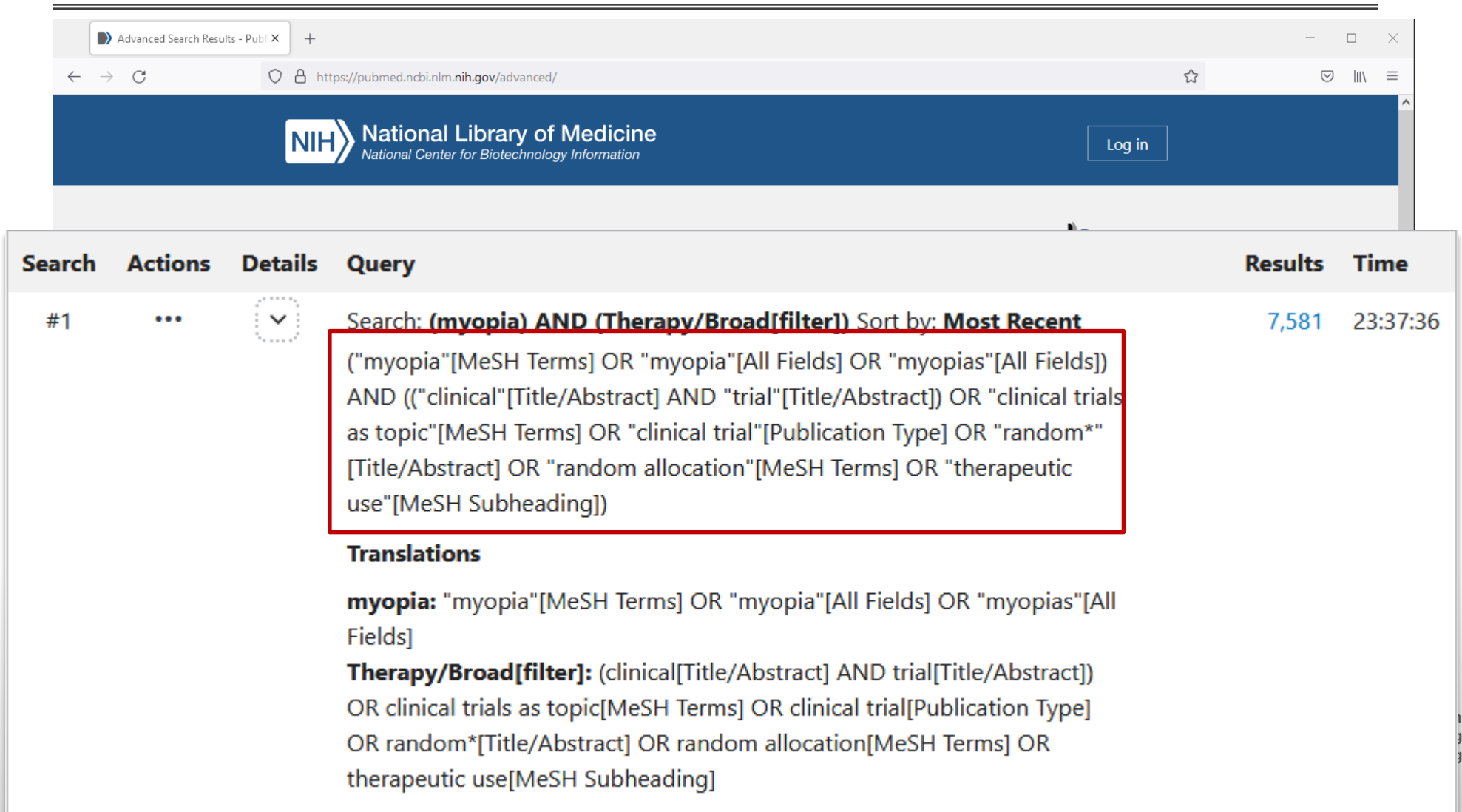
Showing 1 to 1 of 1 entries

PubMed Clinical Queries



Search	Actions	Details	Query	Results	Time
#1	...	▼	<p>Search: (myopia) AND (Therapy/Broad[filter]) Sort by: Most Recent</p> <p>("myopia"[MeSH Terms] OR "myopia"[All Fields] OR "myopias"[All Fields]) AND (("clinical"[Title/Abstract] AND "trial"[Title/Abstract]) OR "clinical trials as topic"[MeSH Terms] OR "clinical trial"[Publication Type] OR "random*" [Title/Abstract] OR "random allocation"[MeSH Terms] OR "therapeutic use"[MeSH Subheading])</p> <p>Translations</p> <p>myopia: "myopia"[MeSH Terms] OR "myopia"[All Fields] OR "myopias"[All Fields]</p> <p>Therapy/Broad[filter]: (clinical[Title/Abstract] AND trial[Title/Abstract]) OR clinical trials as topic[MeSH Terms] OR clinical trial[Publication Type] OR random*[Title/Abstract] OR random allocation[MeSH Terms] OR therapeutic use[MeSH Subheading]</p>	7,581	23:37:36

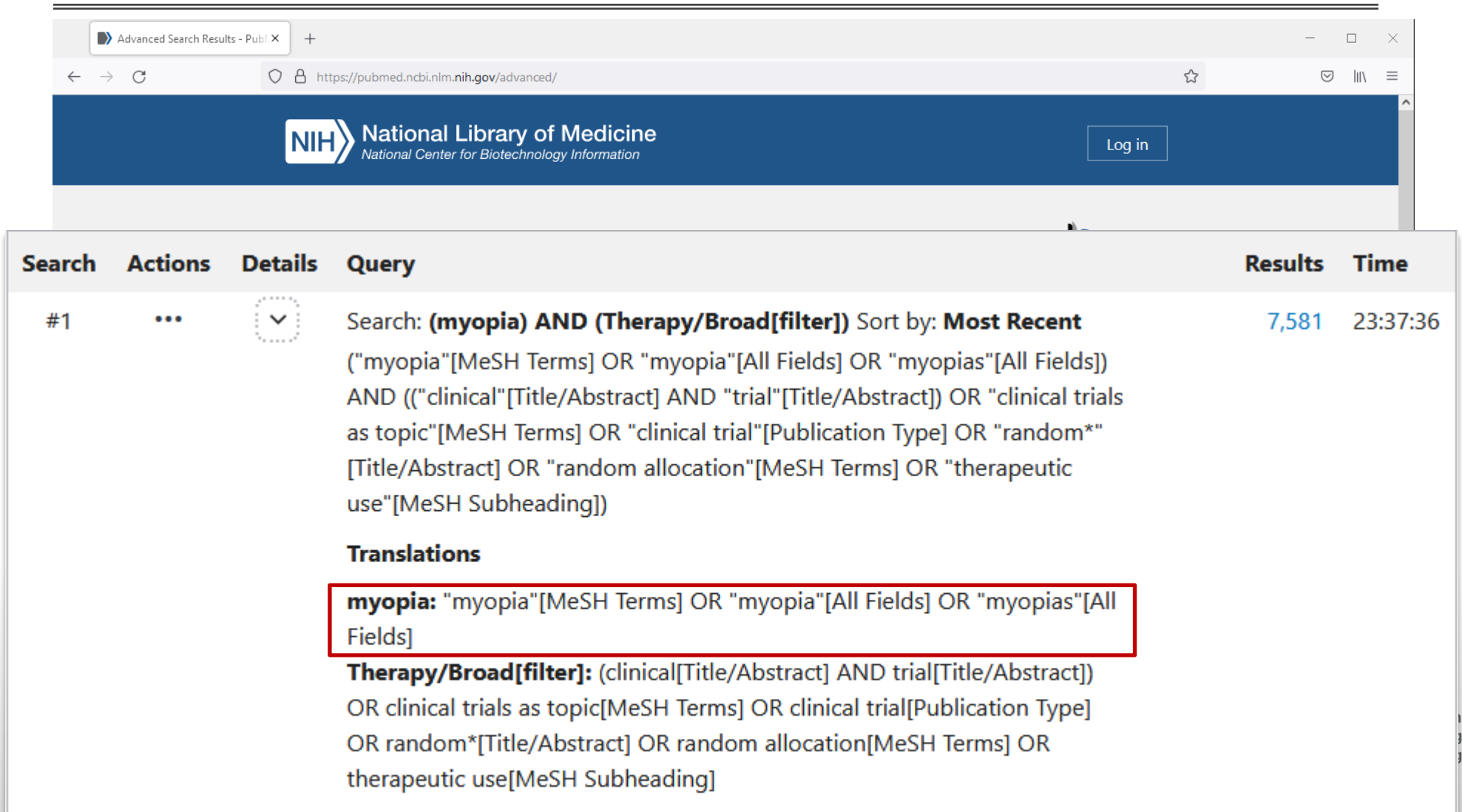
PubMed Clinical Queries



The screenshot displays the PubMed Clinical Queries interface. At the top, the browser address bar shows the URL <https://pubmed.ncbi.nlm.nih.gov/advanced/>. The NIH National Library of Medicine logo and a "Log in" button are visible in the header. The main content area has tabs for Search, Actions, Details, and Query. The "Query" tab is active, showing a search query for "myopia" AND "Therapy/Broad[filter]". The query is highlighted with a red box. Below the query, the "Translations" section provides a breakdown of the query components: "myopia" and "Therapy/Broad[filter]".

Search	Actions	Details	Query	Results	Time
#1	...	▼	<p>Search: (myopia) AND (Therapy/Broad[filter]) Sort by: Most Recent</p> <p>("myopia"[MeSH Terms] OR "myopia"[All Fields] OR "myopias"[All Fields]) AND (("clinical"[Title/Abstract] AND "trial"[Title/Abstract]) OR "clinical trials as topic"[MeSH Terms] OR "clinical trial"[Publication Type] OR "random*" [Title/Abstract] OR "random allocation"[MeSH Terms] OR "therapeutic use"[MeSH Subheading])</p> <p>Translations</p> <p>myopia: "myopia"[MeSH Terms] OR "myopia"[All Fields] OR "myopias"[All Fields]</p> <p>Therapy/Broad[filter]: (clinical[Title/Abstract] AND trial[Title/Abstract]) OR clinical trials as topic[MeSH Terms] OR clinical trial[Publication Type] OR random*[Title/Abstract] OR random allocation[MeSH Terms] OR therapeutic use[MeSH Subheading]</p>	7,581	23:37:36

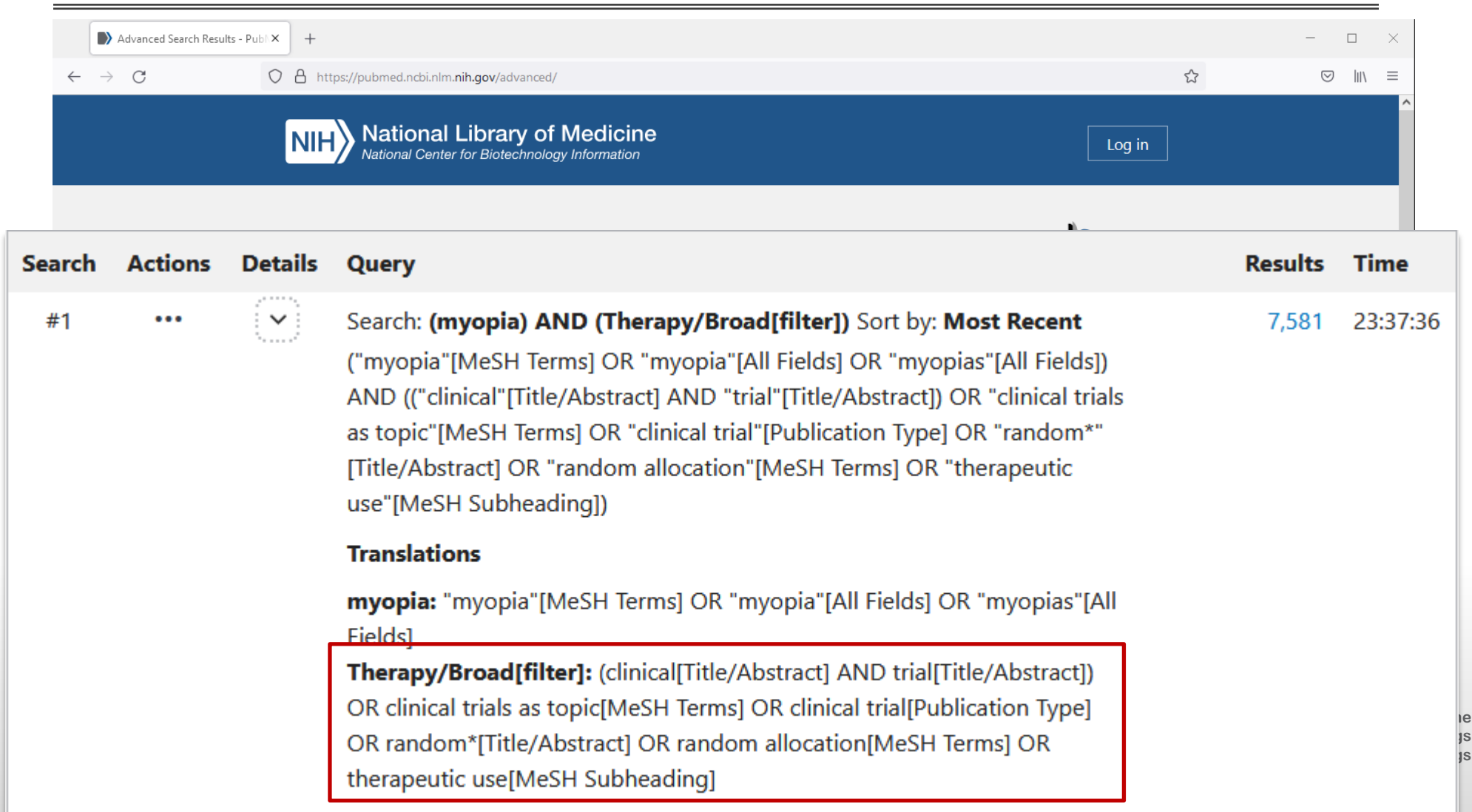
PubMed Clinical Queries



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Search	Actions	Details	Query	Results	Time
#1	...	▼	<p>Search: (myopia) AND (Therapy/Broad[filter]) Sort by: Most Recent</p> <p>("myopia"[MeSH Terms] OR "myopia"[All Fields] OR "myopias"[All Fields]) AND (("clinical"[Title/Abstract] AND "trial"[Title/Abstract]) OR "clinical trials as topic"[MeSH Terms] OR "clinical trial"[Publication Type] OR "random*" [Title/Abstract] OR "random allocation"[MeSH Terms] OR "therapeutic use"[MeSH Subheading])</p> <p>Translations</p> <p>myopia: "myopia"[MeSH Terms] OR "myopia"[All Fields] OR "myopias"[All Fields]</p> <p>Therapy/Broad[filter]: (clinical[Title/Abstract] AND trial[Title/Abstract]) OR clinical trials as topic[MeSH Terms] OR clinical trial[Publication Type] OR random*[Title/Abstract] OR random allocation[MeSH Terms] OR therapeutic use[MeSH Subheading]</p>	7,581	23:37:36

PubMed Clinical Queries



The screenshot displays the PubMed Clinical Queries interface. At the top, the browser address bar shows the URL <https://pubmed.ncbi.nlm.nih.gov/advanced/>. The NIH logo and "National Library of Medicine" text are visible, along with a "Log in" button. Below the header, the interface is divided into sections: Search, Actions, Details, Query, Results, and Time.

The **Search** section shows a search query for **myopia** AND **(Therapy/Broad[filter])**, sorted by **Most Recent**. The query is displayed in a table with columns for #1, Actions, Details, Query, Results, and Time. The query text is as follows:

Search: **(myopia) AND (Therapy/Broad[filter])** Sort by: **Most Recent**
 ("myopia"[MeSH Terms] OR "myopia"[All Fields] OR "myopias"[All Fields])
 AND (("clinical"[Title/Abstract] AND "trial"[Title/Abstract]) OR "clinical trials
 as topic"[MeSH Terms] OR "clinical trial"[Publication Type] OR "random*" [Title/Abstract] OR "random allocation"[MeSH Terms] OR "therapeutic
 use"[MeSH Subheading])

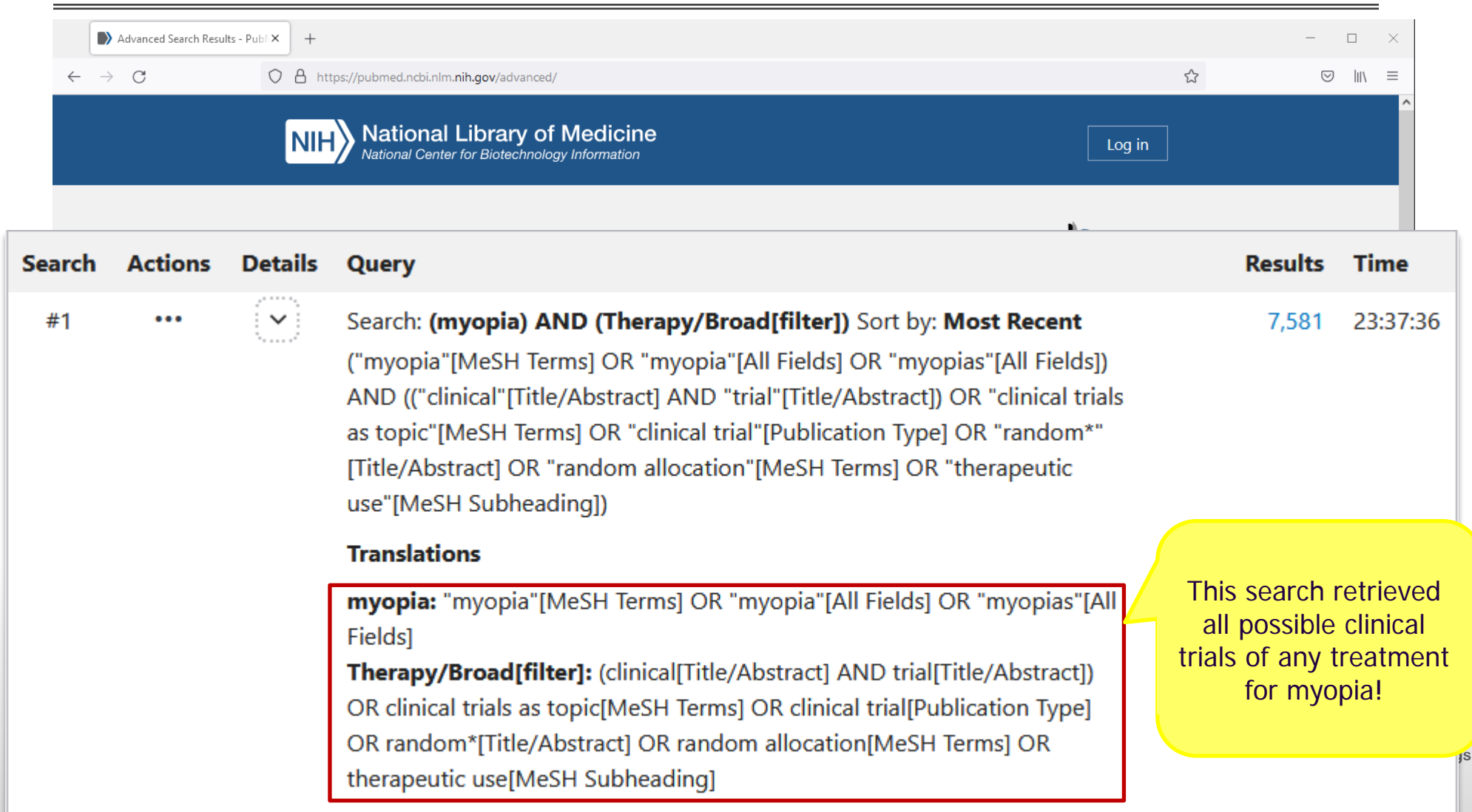
The **Translations** section shows the following translations:

myopia: "myopia"[MeSH Terms] OR "myopia"[All Fields] OR "myopias"[All Fields]

Therapy/Broad[filter]: (clinical[Title/Abstract] AND trial[Title/Abstract]) OR clinical trials as topic[MeSH Terms] OR clinical trial[Publication Type] OR random*[Title/Abstract] OR random allocation[MeSH Terms] OR therapeutic use[MeSH Subheading]

The **Results** section shows 7,581 results, and the **Time** section shows 23:37:36.

PubMed Clinical Queries



The screenshot shows the PubMed Clinical Queries interface. The browser address bar displays <https://pubmed.ncbi.nlm.nih.gov/advanced/>. The NIH logo and "National Library of Medicine" text are visible in the header. A "Log in" button is present. The search results table has columns for Search, Actions, Details, Query, Results, and Time. The first search result is highlighted, showing a search for myopia clinical trials. The search query is displayed in the "Query" column, and the number of results (7,581) and the time taken (23:37:36) are shown in the "Results" and "Time" columns respectively. A red box highlights the search query text, and a yellow callout bubble explains the search results.


Search	Actions	Details	Query	Results	Time
#1	...	▼	<p>Search: (myopia) AND (Therapy/Broad[filter]) Sort by: Most Recent</p> <p>("myopia"[MeSH Terms] OR "myopia"[All Fields] OR "myopias"[All Fields]) AND (("clinical"[Title/Abstract] AND "trial"[Title/Abstract]) OR "clinical trials as topic"[MeSH Terms] OR "clinical trial"[Publication Type] OR "random*" [Title/Abstract] OR "random allocation"[MeSH Terms] OR "therapeutic use"[MeSH Subheading])</p> <p>Translations</p> <p>myopia: "myopia"[MeSH Terms] OR "myopia"[All Fields] OR "myopias"[All Fields]</p> <p>Therapy/Broad[filter]: (clinical[Title/Abstract] AND trial[Title/Abstract]) OR clinical trials as topic[MeSH Terms] OR clinical trial[Publication Type] OR random*[Title/Abstract] OR random allocation[MeSH Terms] OR therapeutic use[MeSH Subheading]</p>	7,581	23:37:36

This search retrieved all possible clinical trials of any treatment for myopia!


Check you are using MeSH headings

Clinical Queries - PubMed

https://pubmed.ncbi.nlm.nih.gov/clinical/

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PubMed Clinical Queries

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×

Search

Filter category
☒ Clinical Studies
☐ COVID-19
Clinical Queries filters were developed by [Haynes RB et al.](#) to facilitate retrieval of clinical studies.

Filter

Therapy

See [Clinical Queries filter details](#).

Scope

Broad

Returns more results: less specific, but more comprehensive. See [filter details](#).

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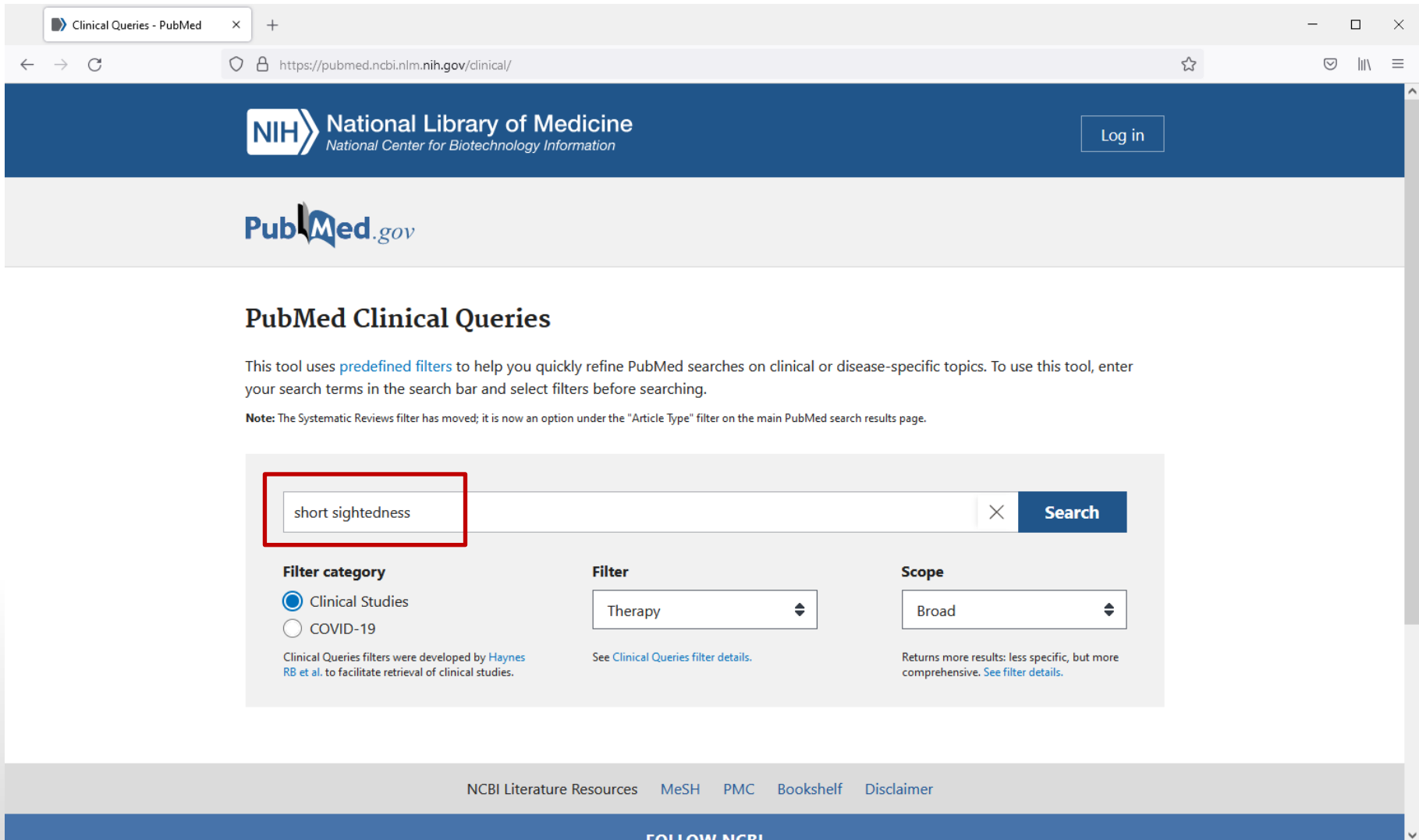


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short sightedness

Search

Filter category

☒ Clinical Studies
☐ COVID-19

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Filter

Therapy

See [Clinical Queries filter details](#).

Scope

Broad

Returns more results: less specific, but more comprehensive. See [filter details](#).

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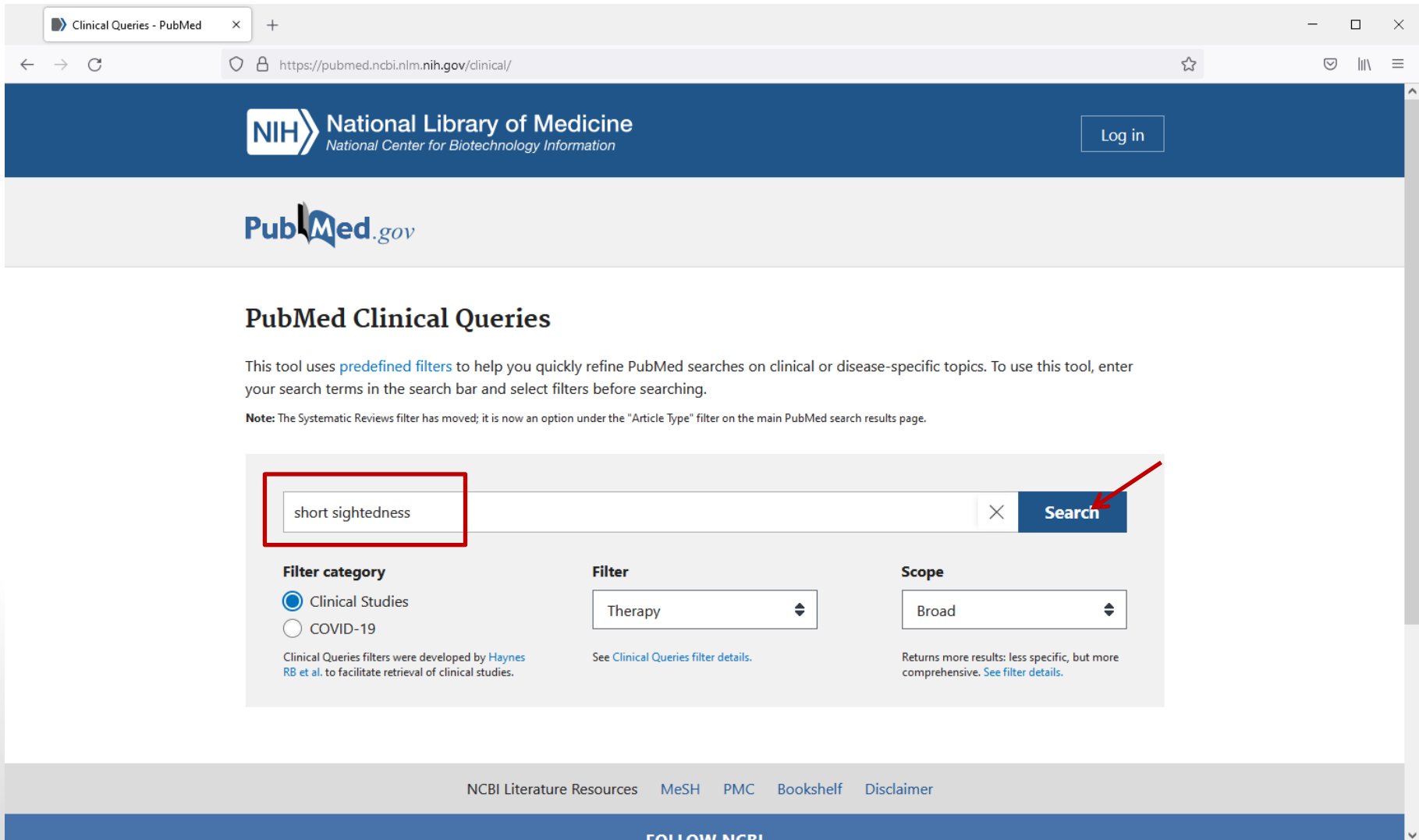
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short sightedness

Search

Filter category

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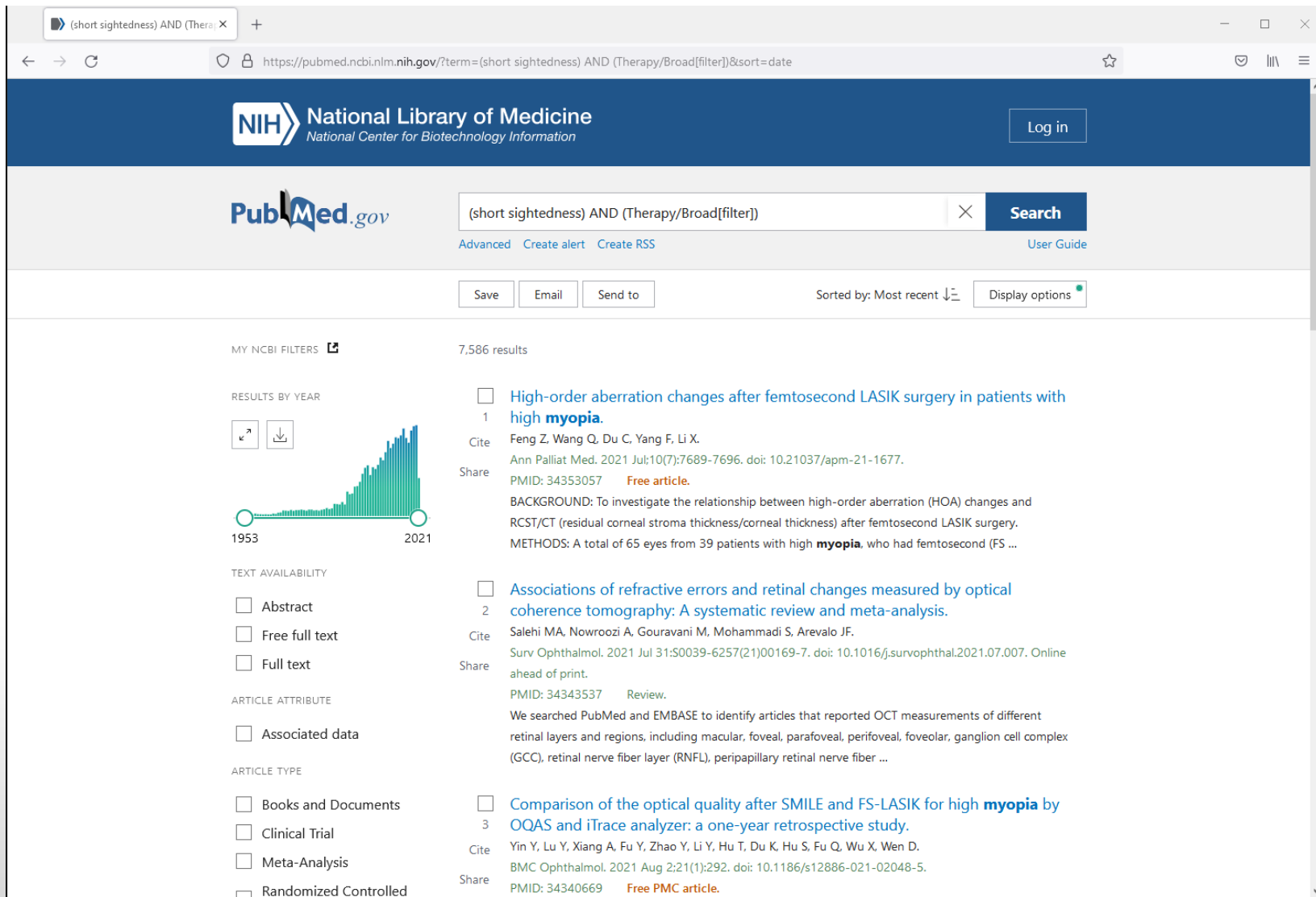
Broad

Returns more results: less specific, but more comprehensive. See [filter details](#).

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The screenshot shows a web browser window with the URL [https://pubmed.ncbi.nlm.nih.gov/?term=\(short+sightedness\) AND \(Therapy/Broad\[filter\]\)&sort=date](https://pubmed.ncbi.nlm.nih.gov/?term=(short+sightedness)+AND+(Therapy/Broad[filter])&sort=date). The page is from the National Library of Medicine (NIH) and features the PubMed logo. The search query is entered in the search bar, and the results are sorted by 'Most recent'. The left sidebar shows filters for 'MY NCBI FILTERS', 'RESULTS BY YEAR' (a bar chart from 1953 to 2021), 'TEXT AVAILABILITY' (Abstract, Free full text, Full text), 'ARTICLE ATTRIBUTE' (Associated data), and 'ARTICLE TYPE' (Books and Documents, Clinical Trial, Meta-Analysis, Randomized Controlled). The main content area displays 7,586 results. The first three results are listed below.

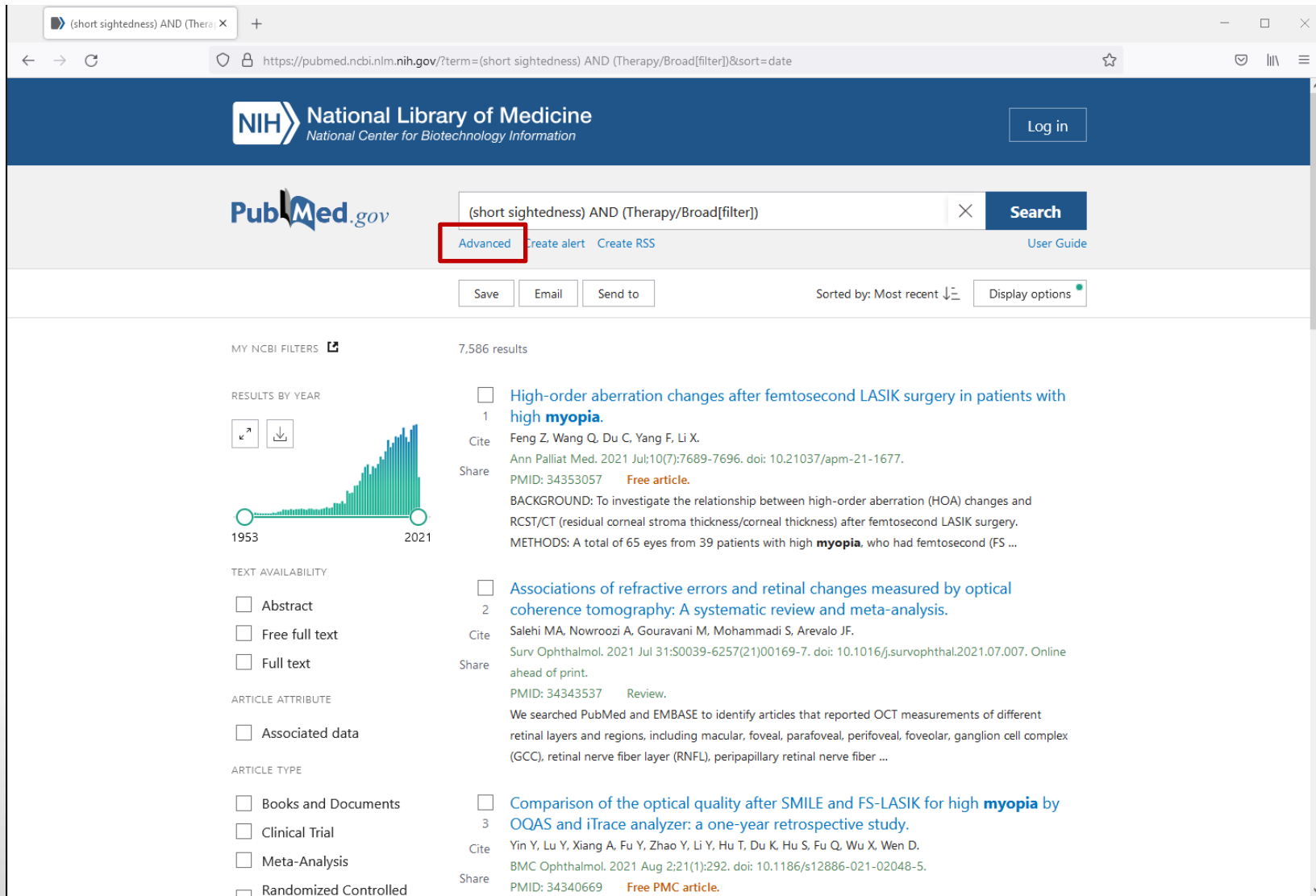
Rank	Title	Cite	Share
1	High-order aberration changes after femtosecond LASIK surgery in patients with high myopia.	Feng Z, Wang Q, Du C, Yang F, Li X. Ann Palliat Med. 2021 Jul;10(7):7689-7696. doi: 10.21037/apm-21-1677. PMID: 34353057 Free article.	BACKGROUND: To investigate the relationship between high-order aberration (HOA) changes and RCST/CT (residual corneal stroma thickness/corneal thickness) after femtosecond LASIK surgery. METHODS: A total of 65 eyes from 39 patients with high myopia, who had femtosecond (FS ...
2	Associations of refractive errors and retinal changes measured by optical coherence tomography: A systematic review and meta-analysis.	Salehi MA, Nowroozi A, Gouravani M, Mohammadi S, Arevalo JF. Surv Ophthalmol. 2021 Jul 31;S0039-6257(21)00169-7. doi: 10.1016/j.survophthal.2021.07.007. Online ahead of print. PMID: 34343537 Review.	We searched PubMed and EMBASE to identify articles that reported OCT measurements of different retinal layers and regions, including macular, foveal, parafoveal, perifoveal, foveolar, ganglion cell complex (GCC), retinal nerve fiber layer (RNFL), peripapillary retinal nerve fiber ...
3	Comparison of the optical quality after SMILE and FS-LASIK for high myopia by OQAS and iTrace analyzer: a one-year retrospective study.	Yin Y, Lu Y, Xiang A, Fu Y, Zhao Y, Li Y, Hu T, Du K, Hu S, Fu Q, Wu X, Wen D. BMC Ophthalmol. 2021 Aug 2;21(1):292. doi: 10.1186/s12886-021-02048-5. PMID: 34340669 Free PMC article.	

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(short sightedness) AND (Therapy/Broad[filter])

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MY NCBI FILTERS

RESULTS BY YEAR

1953 2021

TEXT AVAILABILITY

☐ Abstract

☐ Free full text

☐ Full text

ARTICLE ATTRIBUTE

☐ Associated data

ARTICLE TYPE

☐ Books and Documents

☐ Clinical Trial

☐ Meta-Analysis

☐ Randomized Controlled

7,586 results

1 ☐ High-order aberration changes after femtosecond LASIK surgery in patients with high myopia.

Cite Feng Z, Wang Q, Du C, Yang F, Li X.
Ann Palliat Med. 2021 Jul;10(7):7689-7696. doi: 10.21037/apm-21-1677.
PMID: 34353057 Free article.

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Cite Salehi MA, Nowroozi A, Gouravani M, Mohammadi S, Arevalo JF.
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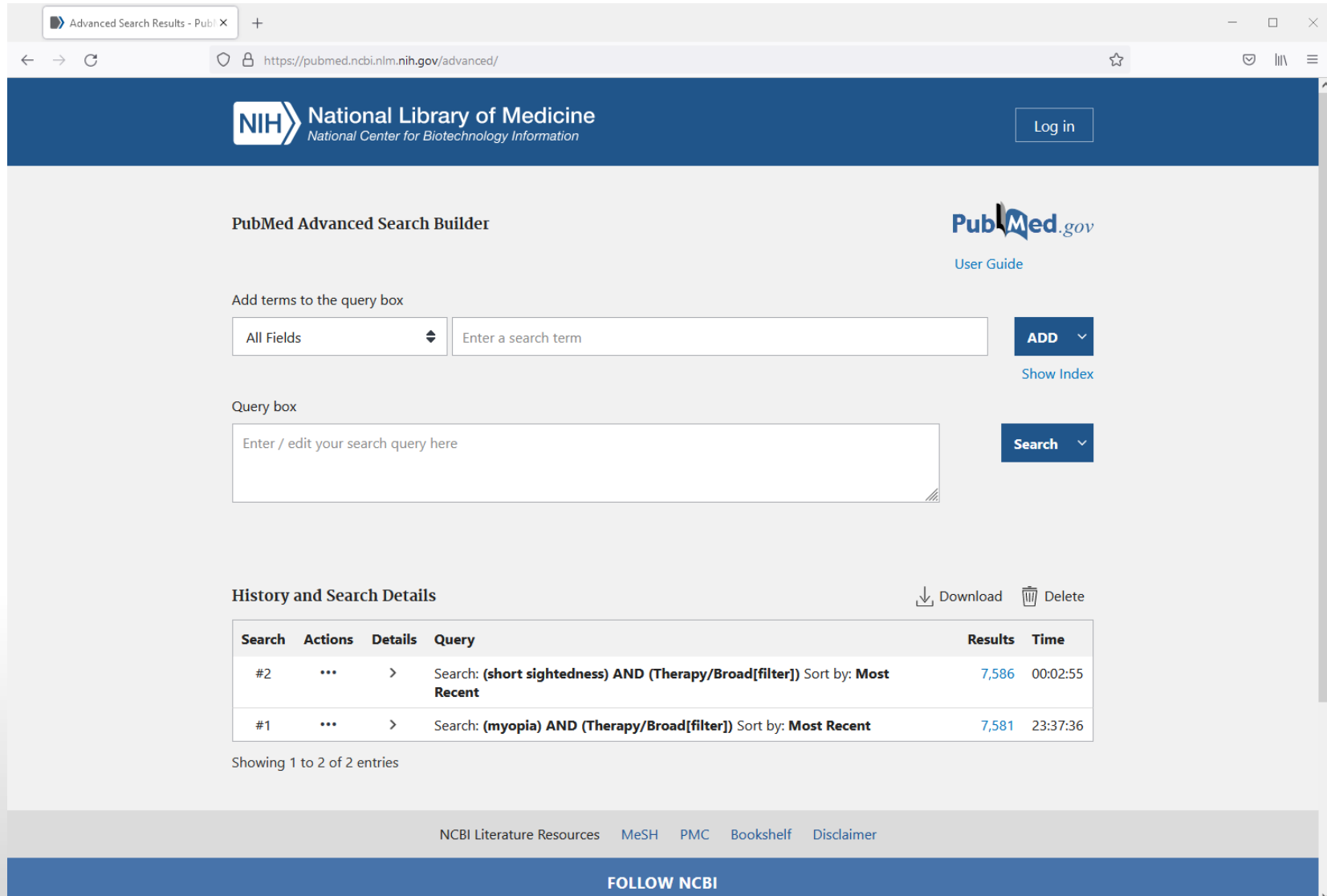
Cite Yin Y, Lu Y, Xiang A, Fu Y, Zhao Y, Li Y, Hu T, Du K, Hu S, Fu Q, Wu X, Wen D.
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The screenshot shows the PubMed Advanced Search Builder interface. At the top, there's a navigation bar with the NIH logo and the text "National Library of Medicine National Center for Biotechnology Information". A "Log in" button is on the right. Below the navigation bar, the page is titled "PubMed Advanced Search Builder". On the right side, there's a "PubMed.gov" logo and a "User Guide" link. The main content area has a section "Add terms to the query box" with a dropdown menu set to "All Fields" and a text input field labeled "Enter a search term". To the right of the input field is an "ADD" button with a dropdown arrow. Below this is a "Query box" with a text input field labeled "Enter / edit your search query here" and a "Search" button with a dropdown arrow. To the right of the "Search" button is a "Show Index" link. Below the query box is a section "History and Search Details" with a "Download" button and a "Delete" button. This section contains a table with search history entries.

Search	Actions	Details	Query	Results	Time
#2	...	>	Search: (short sightedness) AND (Therapy/Broad[filter]) Sort by: Most Recent	7,586	00:02:55
#1	...	>	Search: (myopia) AND (Therapy/Broad[filter]) Sort by: Most Recent	7,581	23:37:36

Showing 1 to 2 of 2 entries

At the bottom of the page, there's a footer with links to "NCBI Literature Resources", "MeSH", "PMC", "Bookshelf", and "Disclaimer". Below this is a blue bar with the text "FOLLOW NCBI".

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User Guide

Add terms to the query box

All Fields Enter a search term ADD Show Index

Query box

Enter / edit your search query here Search

History and Search Details Download Delete

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Showing 1 to 2 of 2 entries

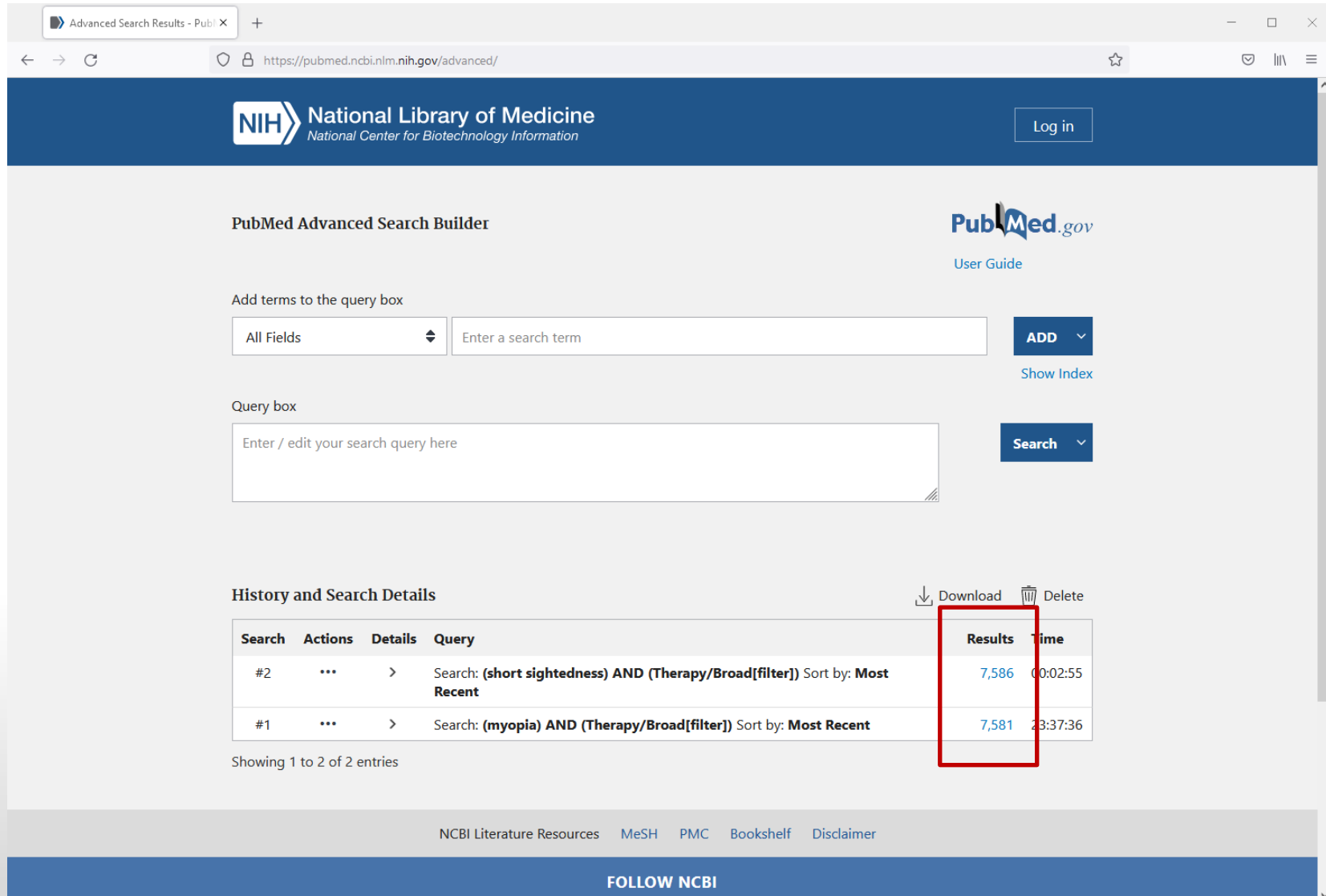
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Add terms to the query box

All Fields Enter a search term ADD Show Index

Query box

Enter / edit your search query here Search

History and Search Details

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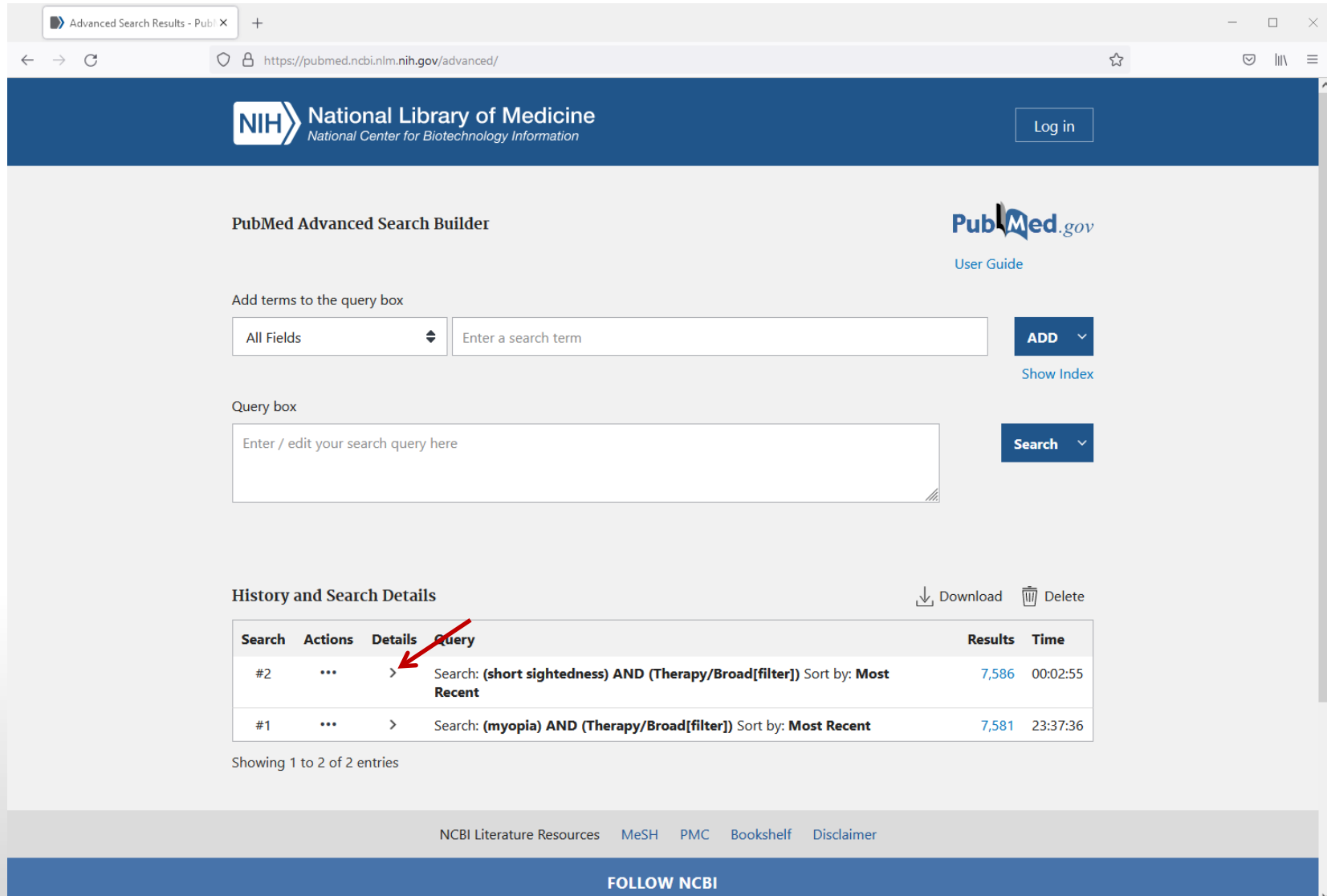
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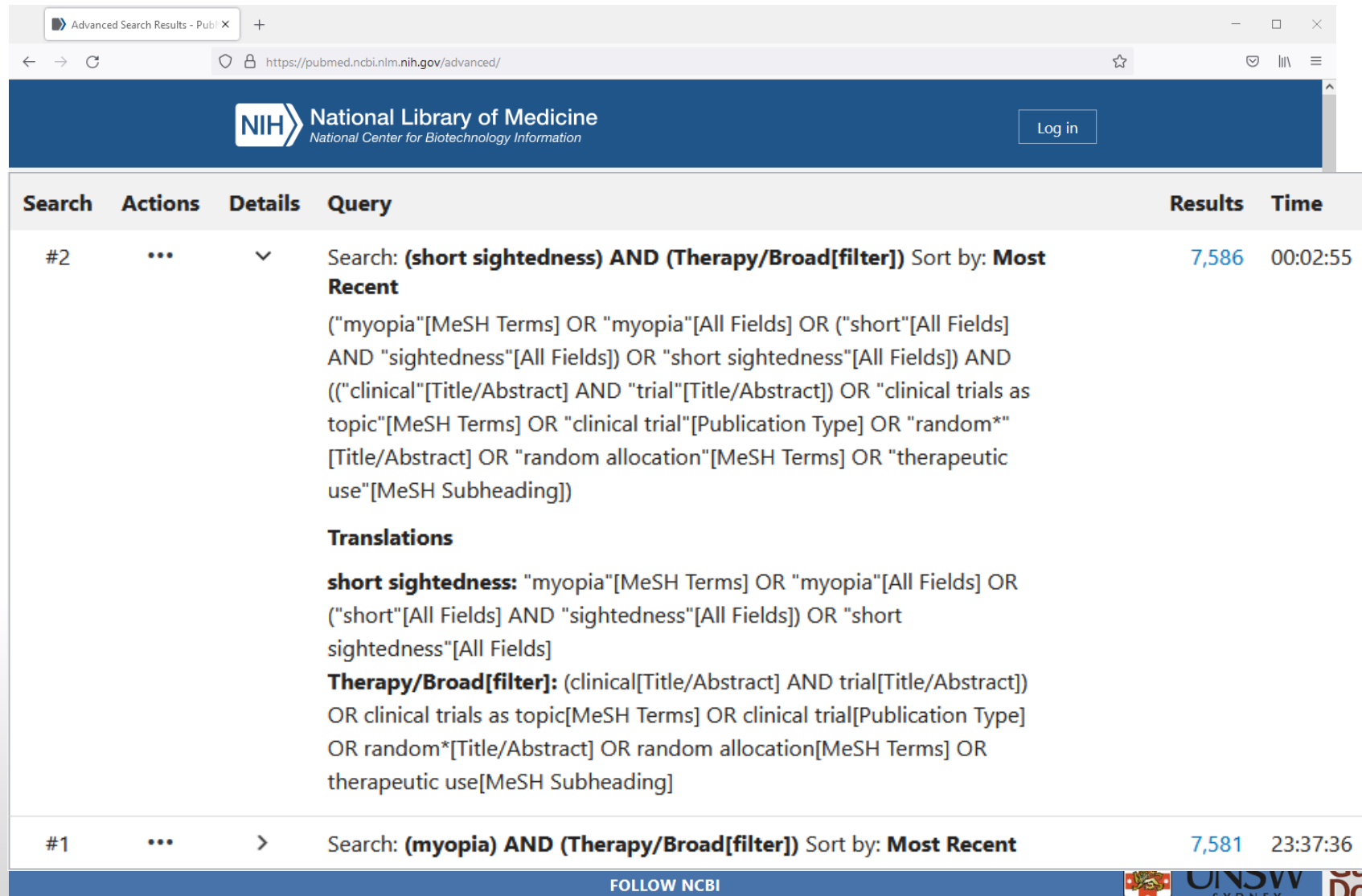
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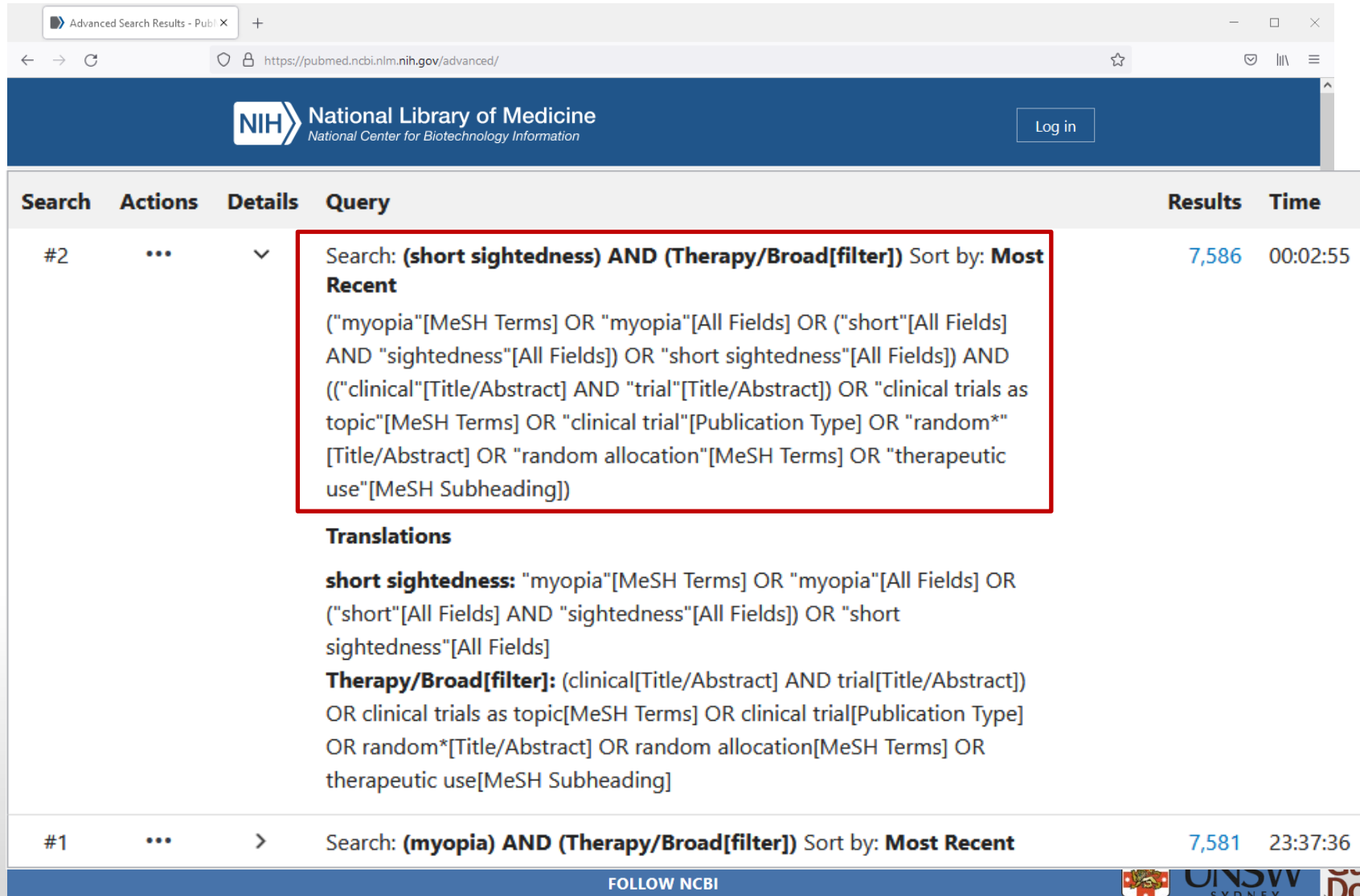
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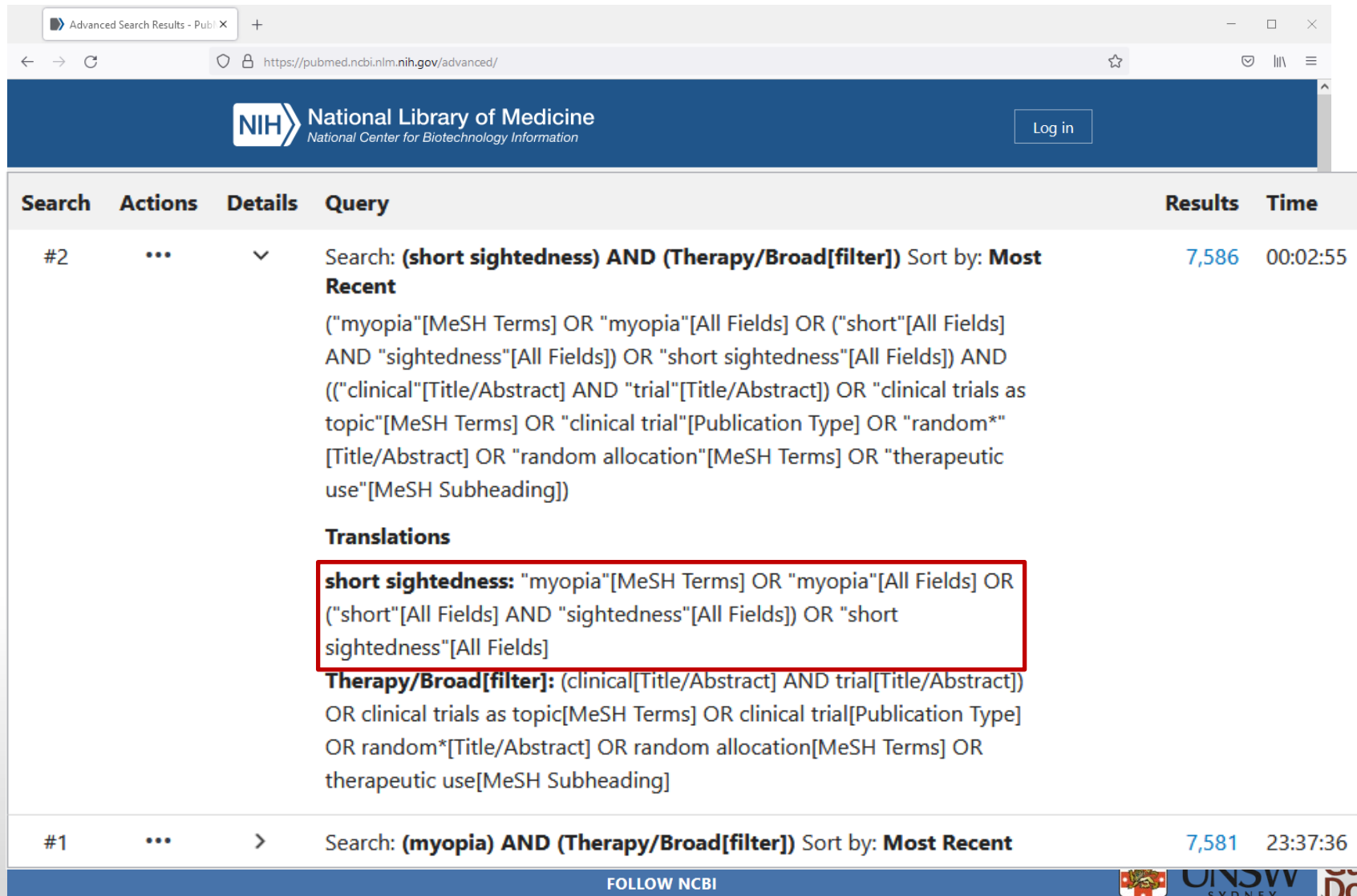
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PubMed uses AI to make sure your common medical terms map to MeSH headings!!

How do I do it?

1. Learn (and teach) how to conduct an efficient search of the literature and;
 - *Always* use PubMed and *always* use the PubMed Clinical Queries feature
 - *Always* make sure your search terms map to MeSH headings

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PubMed is smart, it will map most common language terms to MeSH headings.

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If it does not map the common language term you are using, choose another term.

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P Kang, M Kalloniatis, GS Doig. **Using Updated PubMed: New Features and Functions to Enhance Literature Searches.** *JAMA* 2021; 326(6):479-480.
<https://doi.org/10.1001/jama.2021.12021>

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How do I do it?

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<https://web.archive.org/web/20051231064848/http://www.cche.net/usersguides/main.asp>

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<https://web.archive.org/web/20051231064848/http://www.cche.net/usersguides/main.asp>

If the study is not valid, throw it out!!!

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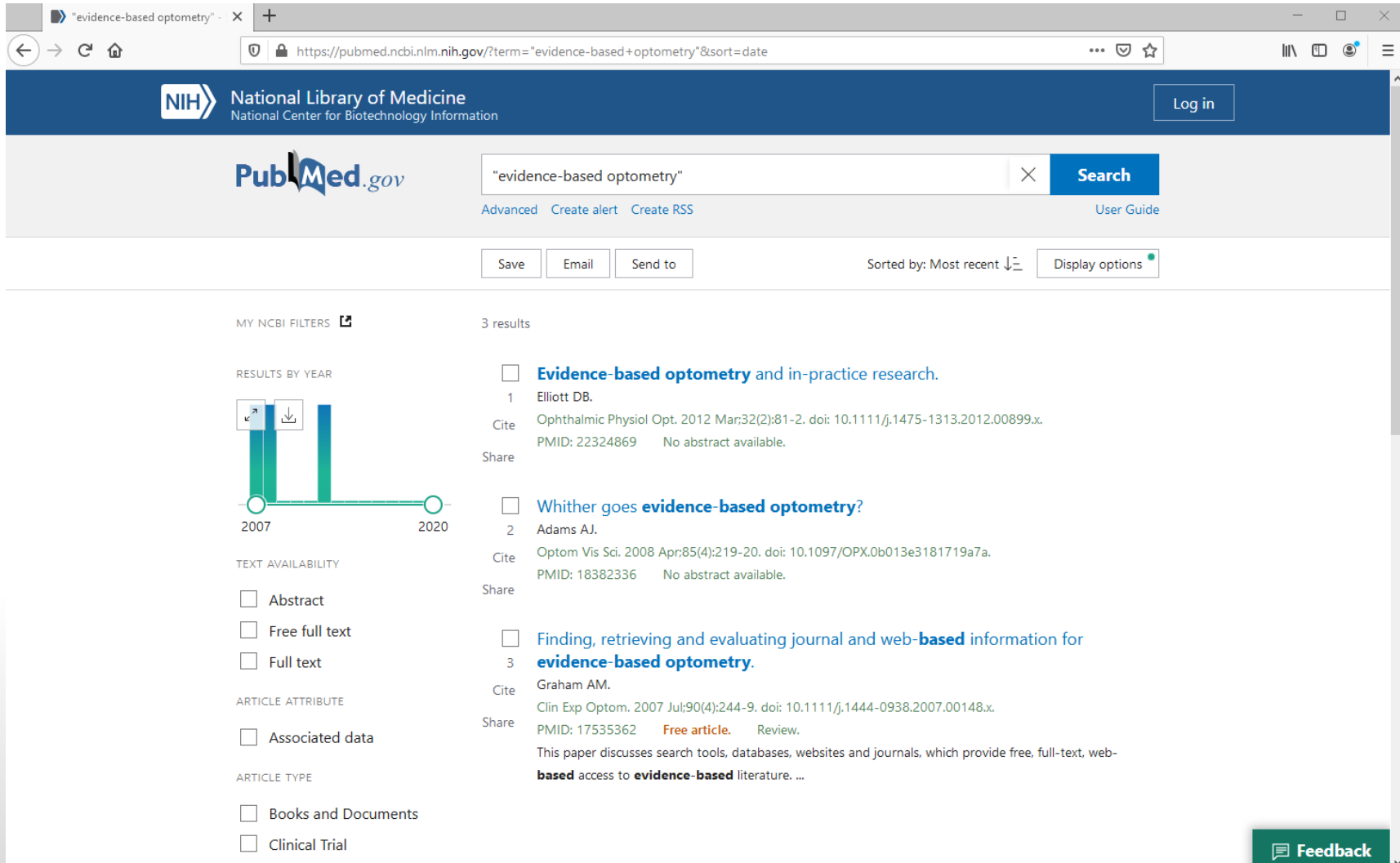
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Is it different for *me*?




The screenshot shows a web browser window with the URL <https://pubmed.ncbi.nlm.nih.gov/?term='evidence-based+optometry'&sort=date>. The page is from the National Library of Medicine (NIH) and features the PubMed logo. The search term "evidence-based optometry" is entered in the search bar, and the results are sorted by "Most recent".

On the left side, there are filters for "MY NCBI FILTERS", "RESULTS BY YEAR" (a bar chart showing results from 2007 to 2020), "TEXT AVAILABILITY" (Abstract, Free full text, Full text), "ARTICLE ATTRIBUTE" (Associated data), and "ARTICLE TYPE" (Books and Documents, Clinical Trial).

Three search results are displayed:

- Evidence-based optometry and in-practice research.**
1 Elliott DB.
Cite Ophthalmic Physiol Opt. 2012 Mar;32(2):81-2. doi: 10.1111/j.1475-1313.2012.00899.x.
PMID: 22324869 No abstract available.
Share
- Whither goes evidence-based optometry?**
2 Adams AJ.
Cite Optom Vis Sci. 2008 Apr;85(4):219-20. doi: 10.1097/OPX.0b013e3181719a7a.
PMID: 18382336 No abstract available.
Share
- Finding, retrieving and evaluating journal and web-based information for evidence-based optometry.**
3 Graham AM.
Cite Clin Exp Optom. 2007 Jul;90(4):244-9. doi: 10.1111/j.1444-0938.2007.00148.x.
PMID: 17535362 **Free article.** Review.
Share This paper discusses search tools, databases, websites and journals, which provide free, full-text, web-based access to evidence-based literature. ...

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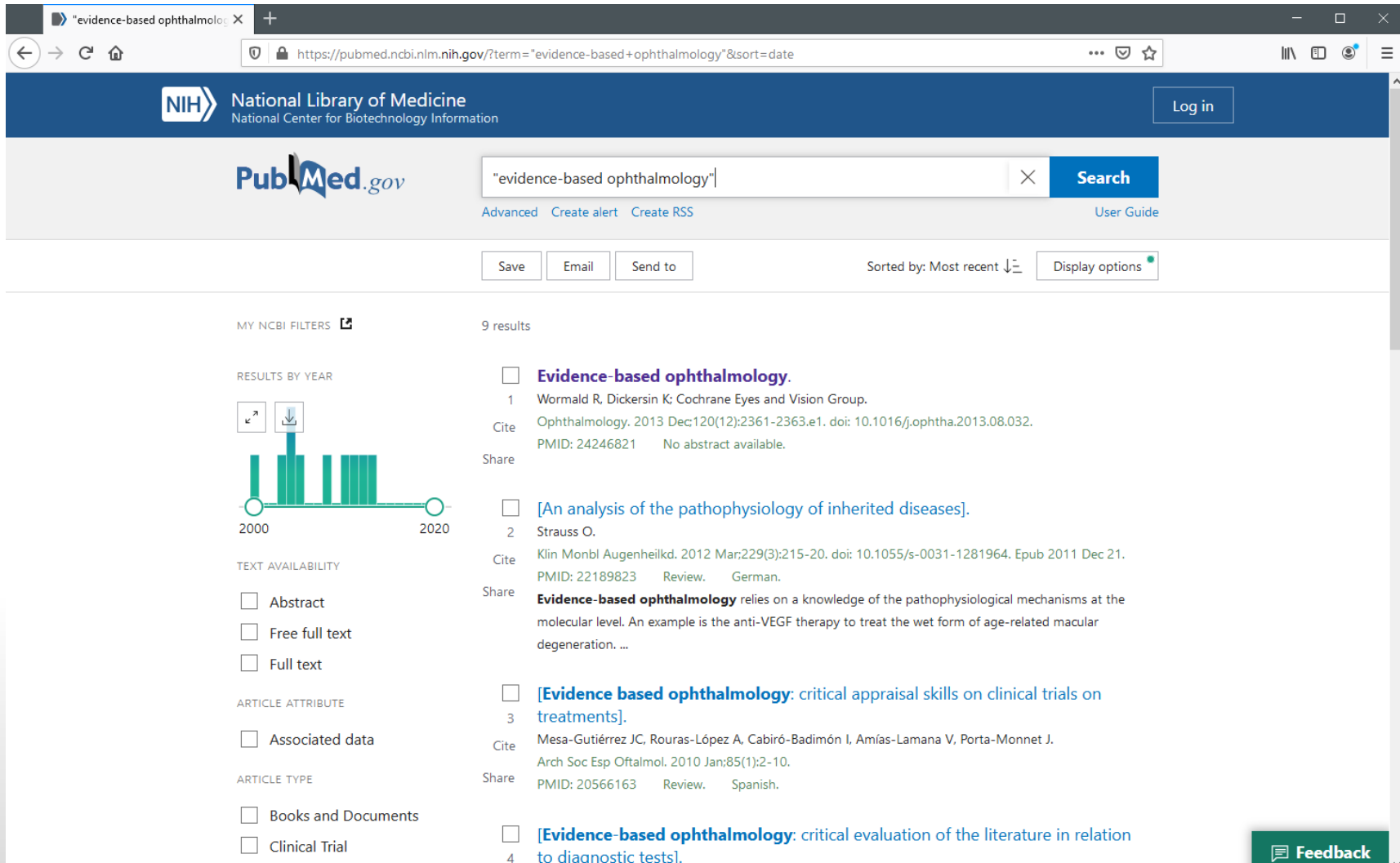
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Is it different for *me*?



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The main content area displays 9 results. The first three results are visible:

- Evidence-based ophthalmology.**
1 Wormald R, Dickersin K: Cochrane Eyes and Vision Group.
Ophthalmology. 2013 Dec;120(12):2361-2363.e1. doi: 10.1016/j.ophtha.2013.08.032.
Cite PMID: 24246821 No abstract available.
Share
- [An analysis of the pathophysiology of inherited diseases].**
2 Strauss O.
Klin Monbl Augenheilkd. 2012 Mar;229(3):215-20. doi: 10.1055/s-0031-1281964. Epub 2011 Dec 21.
Cite PMID: 22189823 Review. German.
Share **Evidence-based ophthalmology** relies on a knowledge of the pathophysiological mechanisms at the molecular level. An example is the anti-VEGF therapy to treat the wet form of age-related macular degeneration. ...
- [Evidence based ophthalmology: critical appraisal skills on clinical trials on treatments].**
3 Mesa-Gutiérrez JC, Rouras-López A, Cabiró-Badimón I, Amías-Lamana V, Porta-Monnet J.
Arch Soc Esp Oftalmol. 2010 Jan;85(1):2-10.
Cite PMID: 20566163 Review. Spanish.
Share

The fourth result is partially visible:

- [Evidence-based ophthalmology: critical evaluation of the literature in relation to diagnostic tests].**
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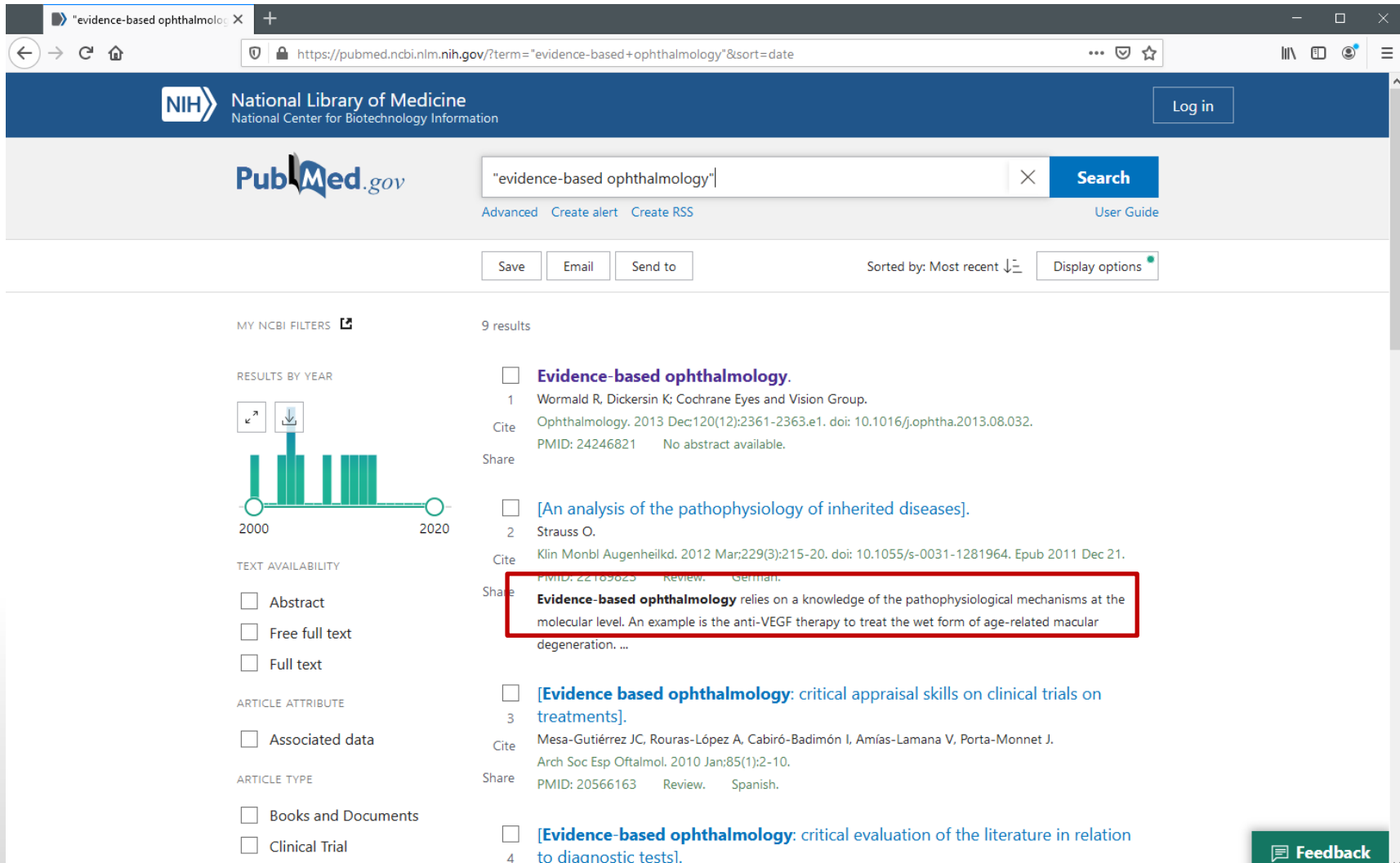
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The search results are listed on the right, with 9 results shown. The first result is "Evidence-based ophthalmology" by Wormald R, Dickersin K, Cochrane Eyes and Vision Group, published in Ophthalmology in 2013. The second result is "[An analysis of the pathophysiology of inherited diseases]" by Strauss O, published in Klin Monbl Augenheilkd in 2012. The third result is "[Evidence based ophthalmology: critical appraisal skills on clinical trials on treatments]" by Mesa-Gutiérrez JC, Rouras-López A, Cabiró-Badimón I, Amías-Lamana V, Porta-Monnet J, published in Arch Soc Esp Oftalmol in 2010. The fourth result is "[Evidence-based ophthalmology: critical evaluation of the literature in relation to diagnostic tests]".

The abstract for the second result is highlighted with a red box:

Evidence-based ophthalmology relies on a knowledge of the pathophysiological mechanisms at the molecular level. An example is the anti-VEGF therapy to treat the wet form of age-related macular degeneration. ...

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2420 JAMA, November 4, 1992—Vol 268, No. 17

Evidence-Based Medicine—Evidence-Based Medicine Working Group

Evidence-Based Medicine

A New Approach to Teaching the Practice of Medicine

Evidence-Based Medicine Working Group

A NEW paradigm for medical practice is emerging. Evidence-based medicine de-emphasizes intuition, unsystematic clinical experience, and pathophysiologic rationale as sufficient grounds for clinical decision making and stresses the examination of evidence from clinical research. Evidence-based medicine requires new skills of the physician, including efficient literature searching and the application of formal rules of evidence evaluating the clinical literature.

An important goal of our medical residency program is to educate physicians in the practice of evidence-based medicine. Strategies include a weekly, formal academic half-day for residents, devoted to learning the necessary skills; recruitment into teaching roles of phy-

dose of phenytoin intravenously and the drug is continued orally. A computed tomographic head scan is completely normal, and an electroencephalogram shows only nonspecific findings. The patient is very concerned about his risk of seizure recurrence. How might the resident proceed?

The Way of the Past

Faced with this situation as a clinical clerk, the resident was told by her senior resident (who was supported in his view by the attending physician) that the risk of seizure recurrence is high (though he could not put an exact number on it) and that was the information that should be conveyed to the patient. She now follows this path, emphasizing

year is between 43% and 51%, and at 3 years the risk is between 51% and 60%. After a seizure-free period of 18 months his risk of recurrence would likely be less than 20%. She conveys this information to the patient, along with a recommendation that he take his medication, see his family doctor regularly, and have a review of his need for medication if he remains seizure-free for 18 months. The patient leaves with a clear idea of his likely prognosis.

A PARADIGM SHIFT

Thomas Kuhn has described scientific paradigms as ways of looking at the world that define both the problems that can legitimately be addressed and the range of admissible evidence that may

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Is it different for *me*?

2420 JAMA, November 4, 1992—Vol 268, No. 17

Evidence-Based Medicine—Evidence-Based Medicine Working Group

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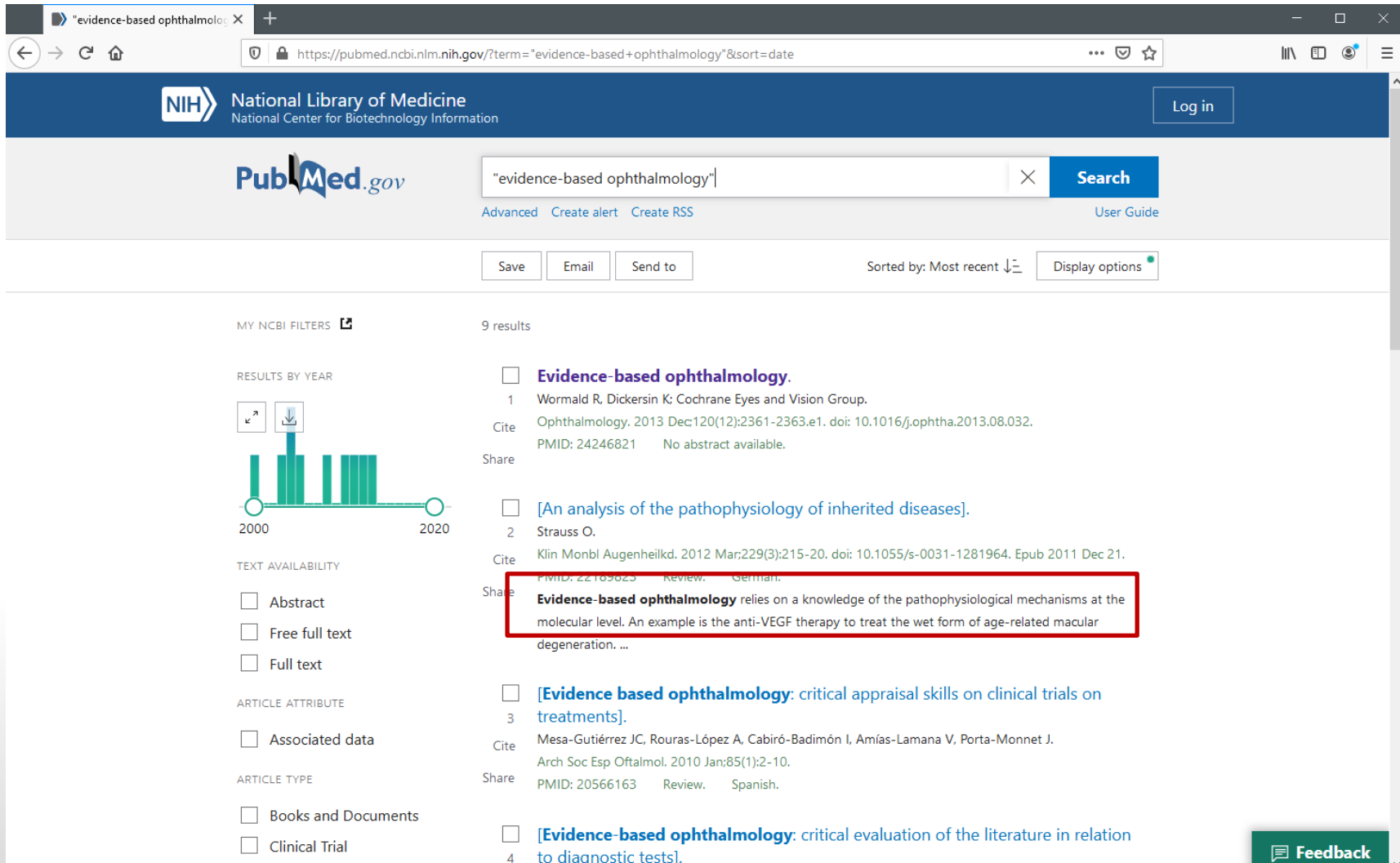
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The screenshot shows a web browser window with the URL <https://pubmed.ncbi.nlm.nih.gov/?term='evidence-based+ophthalmology'&sort=date>. The page is from the National Library of Medicine (NIH) and features the PubMed.gov logo. The search term "evidence-based ophthalmology" is entered in the search bar, and the results are sorted by "Most recent".


On the left side, there are filters for "MY NCBI FILTERS", "RESULTS BY YEAR" (a bar chart showing results from 2000 to 2020), "TEXT AVAILABILITY" (Abstract, Free full text, Full text), "ARTICLE ATTRIBUTE" (Associated data), and "ARTICLE TYPE" (Books and Documents, Clinical Trial).

The search results are listed on the right, with 9 results shown. The first result is "Evidence-based ophthalmology" by Wormald R, Dickersin K, Cochrane Eyes and Vision Group, published in Ophthalmology in 2013. The second result is "[An analysis of the pathophysiology of inherited diseases]" by Strauss O, published in Klin Monbl Augenheilkd in 2012. The third result is "[Evidence based ophthalmology: critical appraisal skills on clinical trials on treatments]" by Mesa-Gutiérrez JC, Rouras-López A, Cabiró-Badimón I, Amías-Lamana V, Porta-Monnet J, published in Arch Soc Esp Oftalmol in 2010. The fourth result is "[Evidence-based ophthalmology: critical evaluation of the literature in relation to diagnostic tests]".

The abstract for the second result is highlighted with a red box:

Evidence-based ophthalmology relies on a knowledge of the pathophysiological mechanisms at the molecular level. An example is the anti-VEGF therapy to treat the wet form of age-related macular degeneration. ...

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 Feedback



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EBM, by any other name....

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Is it different for *me*?

EBM, by any other name....

....make sure it is still EBM.

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10 minute RCT Update:

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10 minute RCT Update: Atropine for Myopia

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Results for Clinical Studies: Therapy/Broad

5 of 7,581 results sorted by: Most Recent

[See all results in PubMed \(7,581\)](#)

[High-order aberration changes after femtosecond LASIK surgery in patients with high myopia.](#)

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Scroll through retrieved titles until I find most recent RCT on Atropine:

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Low-Concentration Atropine for **Myopia** Progression (LAMP) Study: A
Randomized, Double-Blinded, Placebo-**Controlled Trial** of 0.05%, 0.025%, and
0.01% Atropine Eye Drops in **Myopia** Control.

Yam JC, Jiang Y, Tang SM, Law AKP, Chan JJ, Wong E, Ko ST, Young AL, Tham CC, Chen LJ, Pang CP.

Ophthalmology. 2019 Jan;126(1):113-124. doi: 10.1016/j.ophtha.2018.05.029. Epub 2018 Jul 6.

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10 minute RCT Update: Atropine for Myopia

438 children aged 4 to 12 of at least -1.0 D and astigmatism of -2.5 or less
randomised to: 0.05%, 0.025%, 0.01% atropine or placebo

Primary outcome reported as change in SE at 1 year follow-up.

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3. C: Complete follow-up:

- 438 subjects recruited, 383 subjects (87%) followed to primary outcome

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93%(102/109)	84%(91/108)	88%(97/110)	84%(93/111)

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> 20% loss to follow-up is major flaw.

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Results and conclusion:

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10 minute RCT Update: Atropine for Myopia

Primary question, compared to placebo, does treatment effect persist until 12 months , as assessed by SE?

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	SE	Baseline	1 year	Change	Lower 95% CI	Upper 95% CI	
	0.05	102	-3.98	-4.25	-0.27	-0.39	-0.15
	0.025	91	-3.71	-4.17	-0.46	-0.55	-0.37
	0.01	97	-3.77	-4.36	-0.59	-0.71	-0.47
placebo		93	-3.85	-4.66	-0.81	-0.92	-0.70

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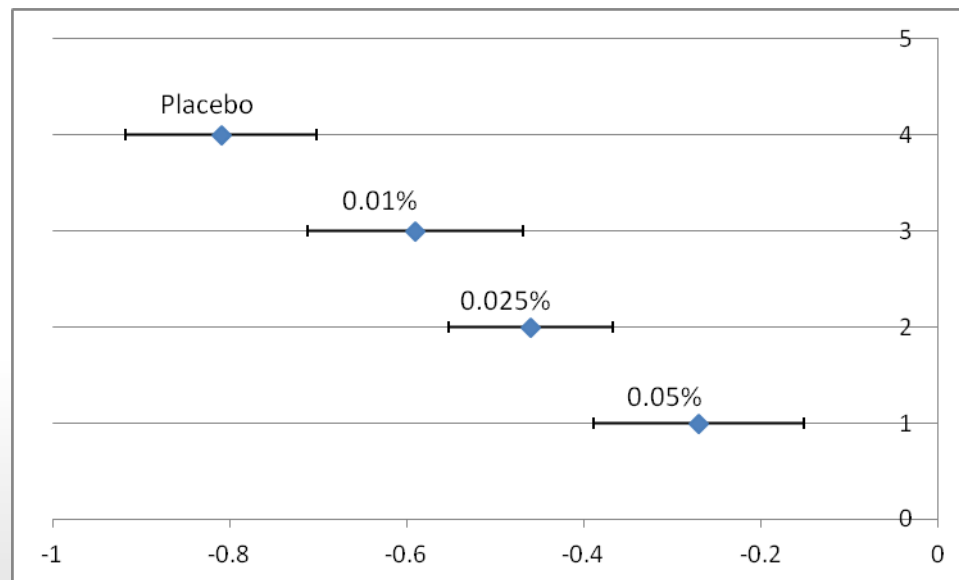
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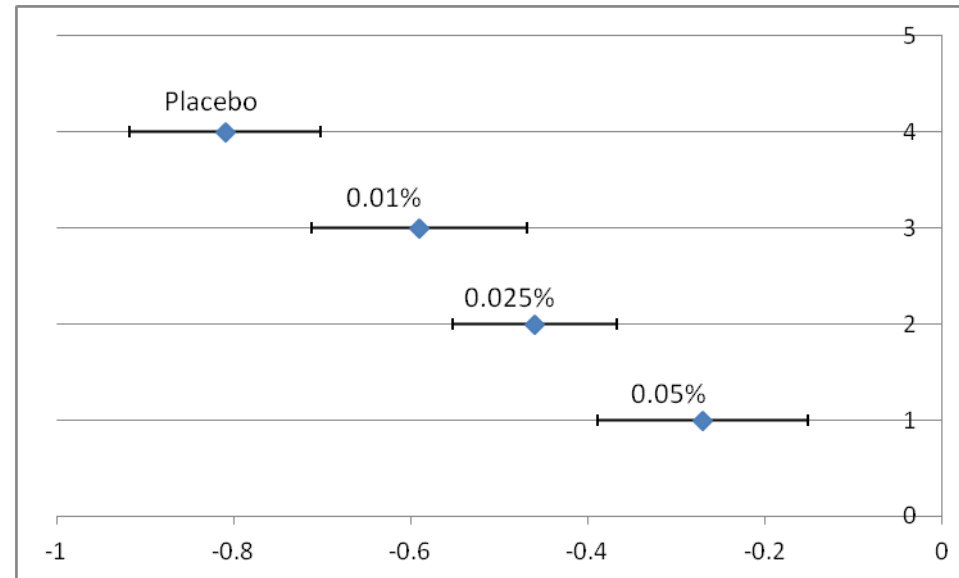
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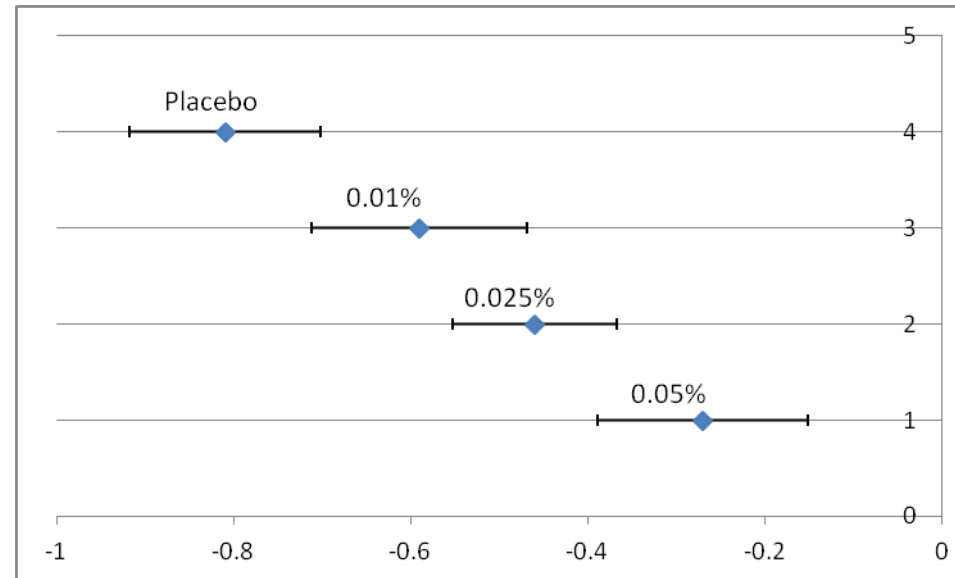


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If 95% Confidence Intervals overlap, results are not significantly different.

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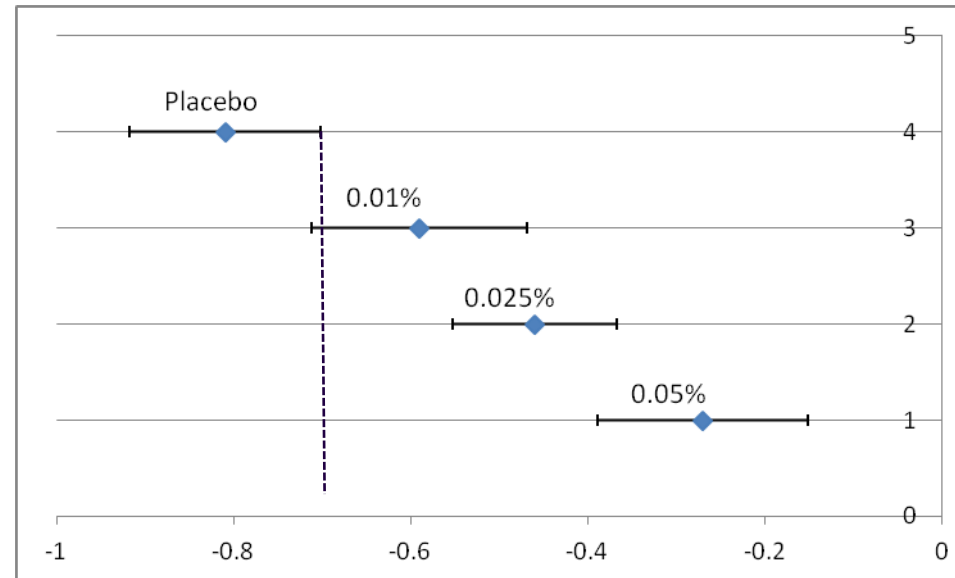


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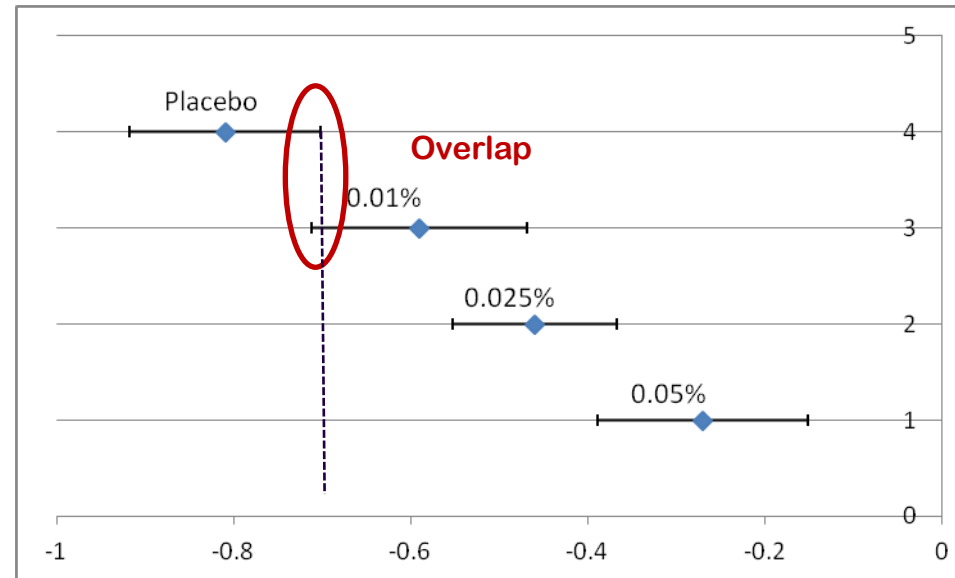


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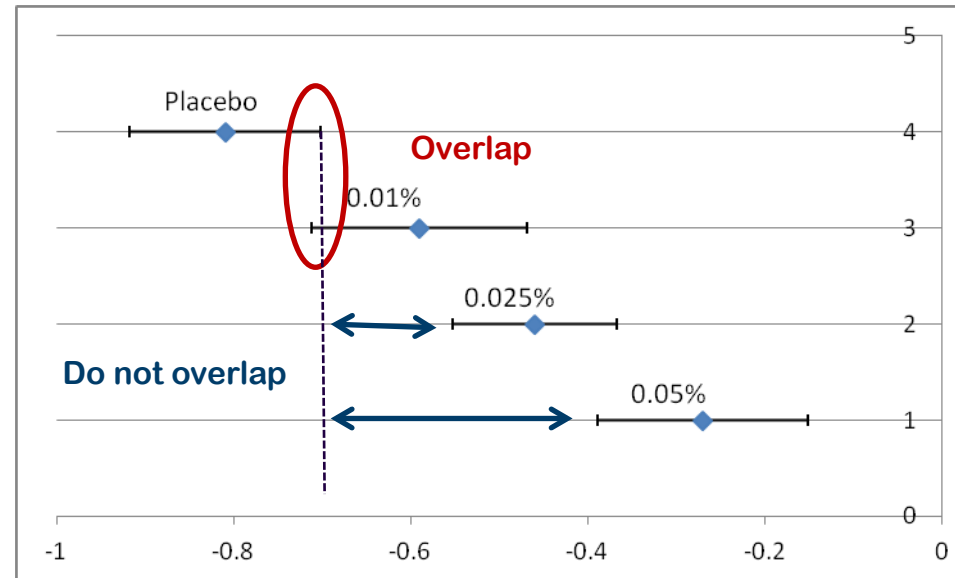


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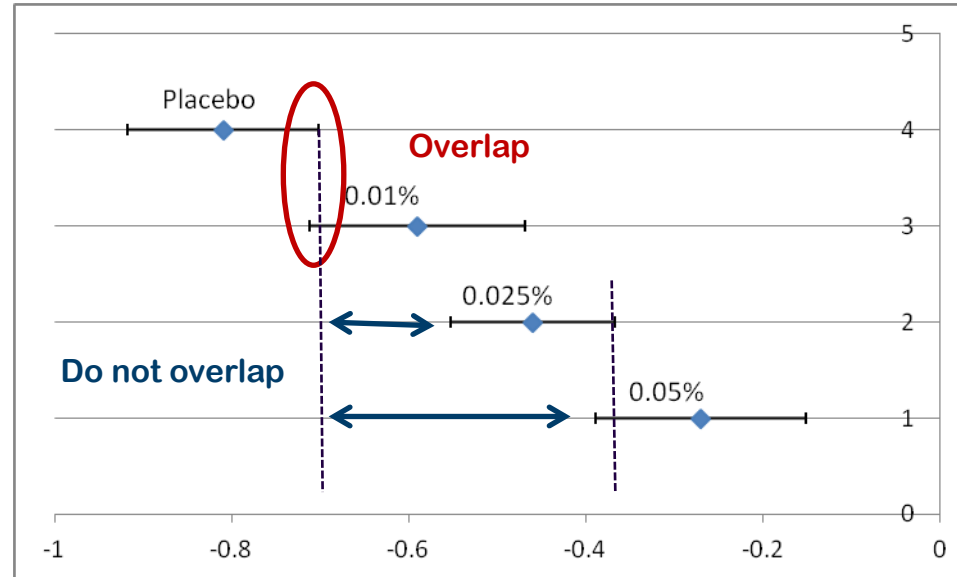


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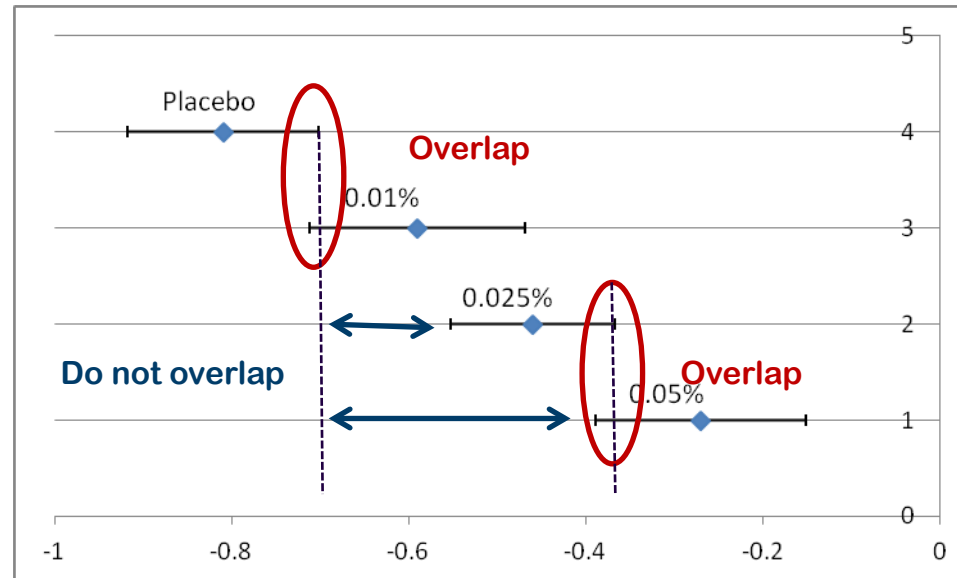


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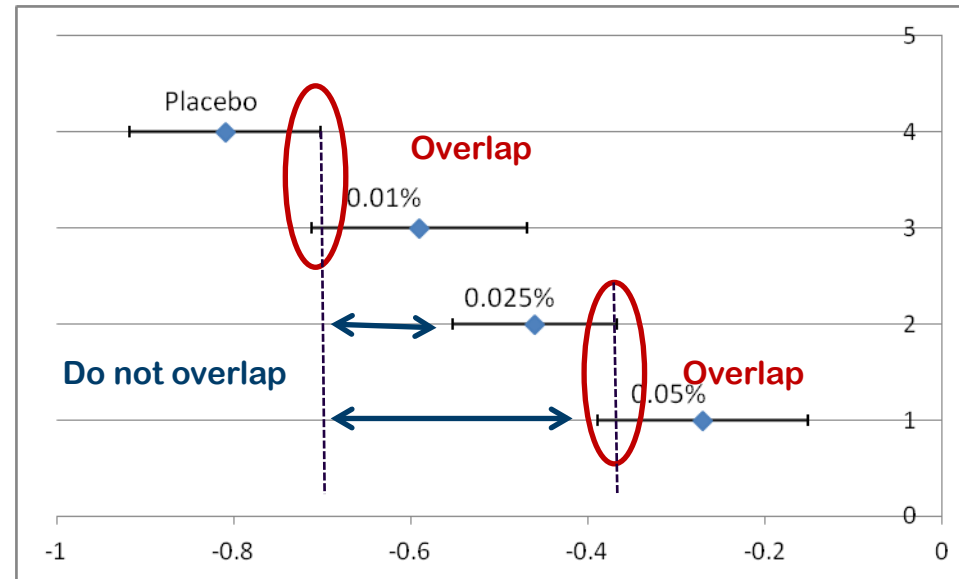


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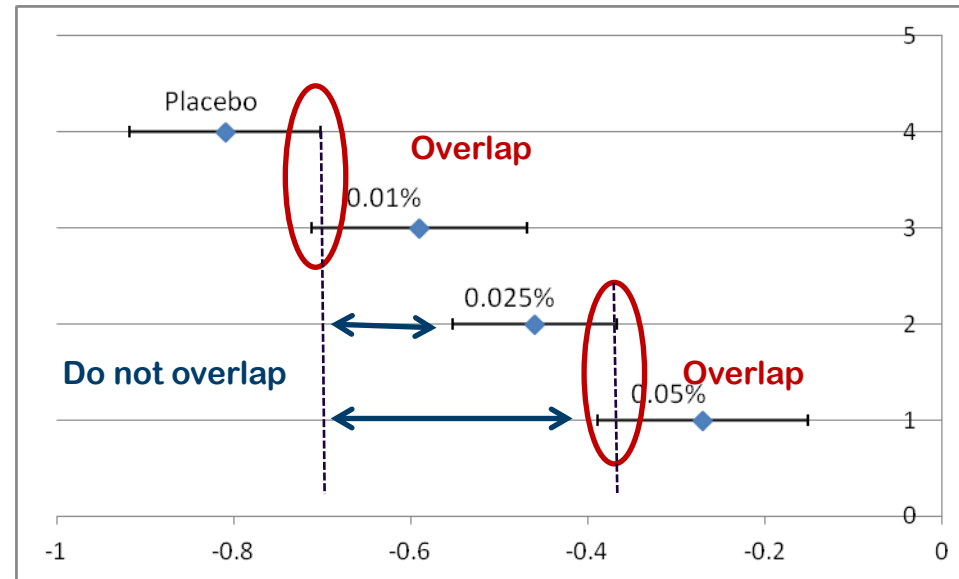


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10 minute RCT Update: Atropine for Myopia

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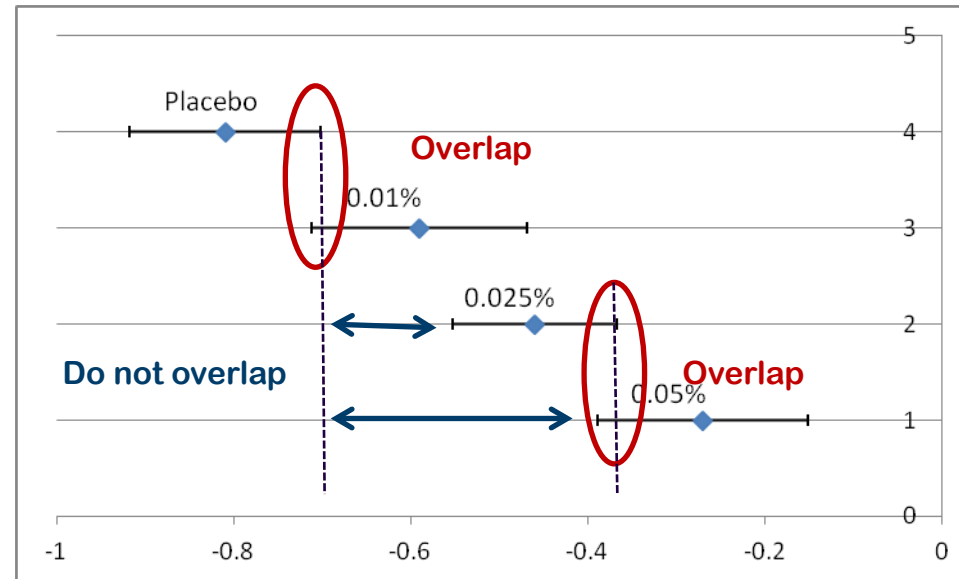


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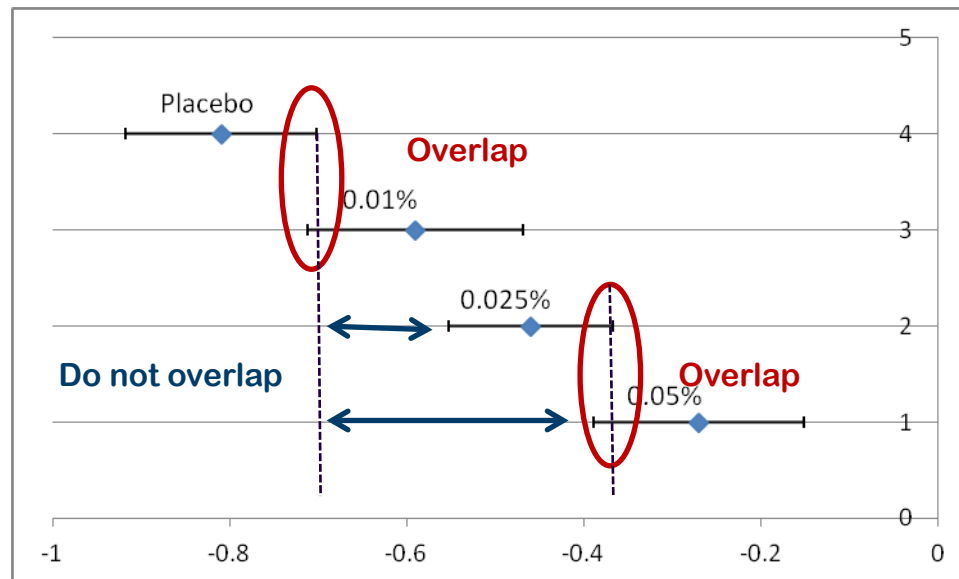


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Now we know Validity and Results we can discuss clinical context....

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Summary: What is EBM?

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Summary: What is EBM?

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Evidence-based medicine requires new skills for the physician, skills that training programs should be equipped to teach.....

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Evidence-Based Medicine Working Group. **Evidence-Based Medicine A New Approach to Teaching the Practice of Medicine.** *JAMA* 1992;268(17):2420-2425.

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Questions?



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