



## 4.3 Retrieval

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What is Biomedical and Health Informatics? - <http://informatics.health/>  
William Hersh, MD, FACMI, FAMIA, FIAHSI  
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# Retrieval

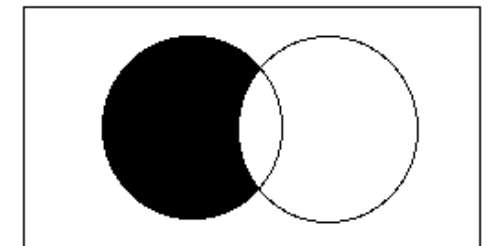
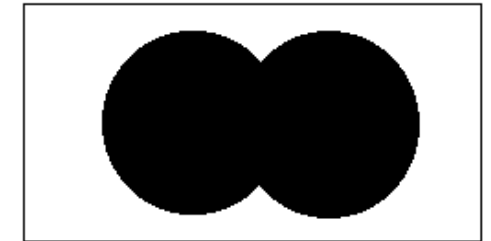
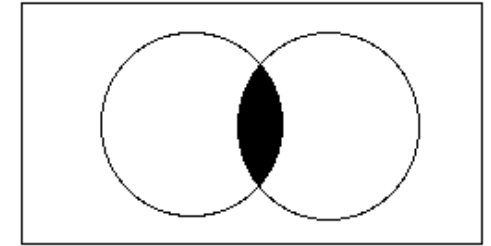
- Two general approaches – most systems make use of both, e.g., PubMed and Google
  - Boolean, set-based, exact-match
  - Natural language, automated, partial-match
- Early systems tended to be Boolean
  - Preferred by power users?
- More recent systems based on natural language
  - Simpler for less experienced searchers?

# Boolean retrieval

- Basic approach
  - Build sets of content items (i.e., documents) based on search terms from controlled vocabulary or text words
  - Combine with AND, OR, NOT
- Most bibliographic systems use Boolean operators
  - Allow searching on both assigned indexing terms and text words
- Systems retrieving other types of content use them too, though they are sometimes hidden, e.g., Google performs AND of all words in query

# Boolean operators

- AND – only content items that have all terms
- OR – content items that have any term
- NOT – content items with one term but not other



# Some advanced features of Boolean systems

- Proximity operators require words to be within a certain range
  - e.g., colon (4) cancer, “colon cancer”
- Explosions perform OR down a hierarchy
  - PubMed “autoexplodes” many MeSH terms, e.g.,
    - All diseases in a category, e.g., anemias
    - All drugs in a certain class, e.g., ACE inhibitors
- Subheadings refine a heading
  - e.g., diagnosis of hypertension

# PubMed – <https://pubmed.gov>

- NLM system for searching MEDLINE
  - Includes some OLDMEDLINE (before 1966) as well as other records not indexed in MEDLINE
- Based on Boolean heritage but has added automated features over the years
  - Search algorithm tries to map input to MeSH terms, author name, and other phrases
  - Has traditional Boolean set capability in Advanced interface but most users do not use it
- Historical output order was reverse chronological but now defaults to “Sort by Relevance” (Fiorini, 2018)

# Other valuable features of PubMed

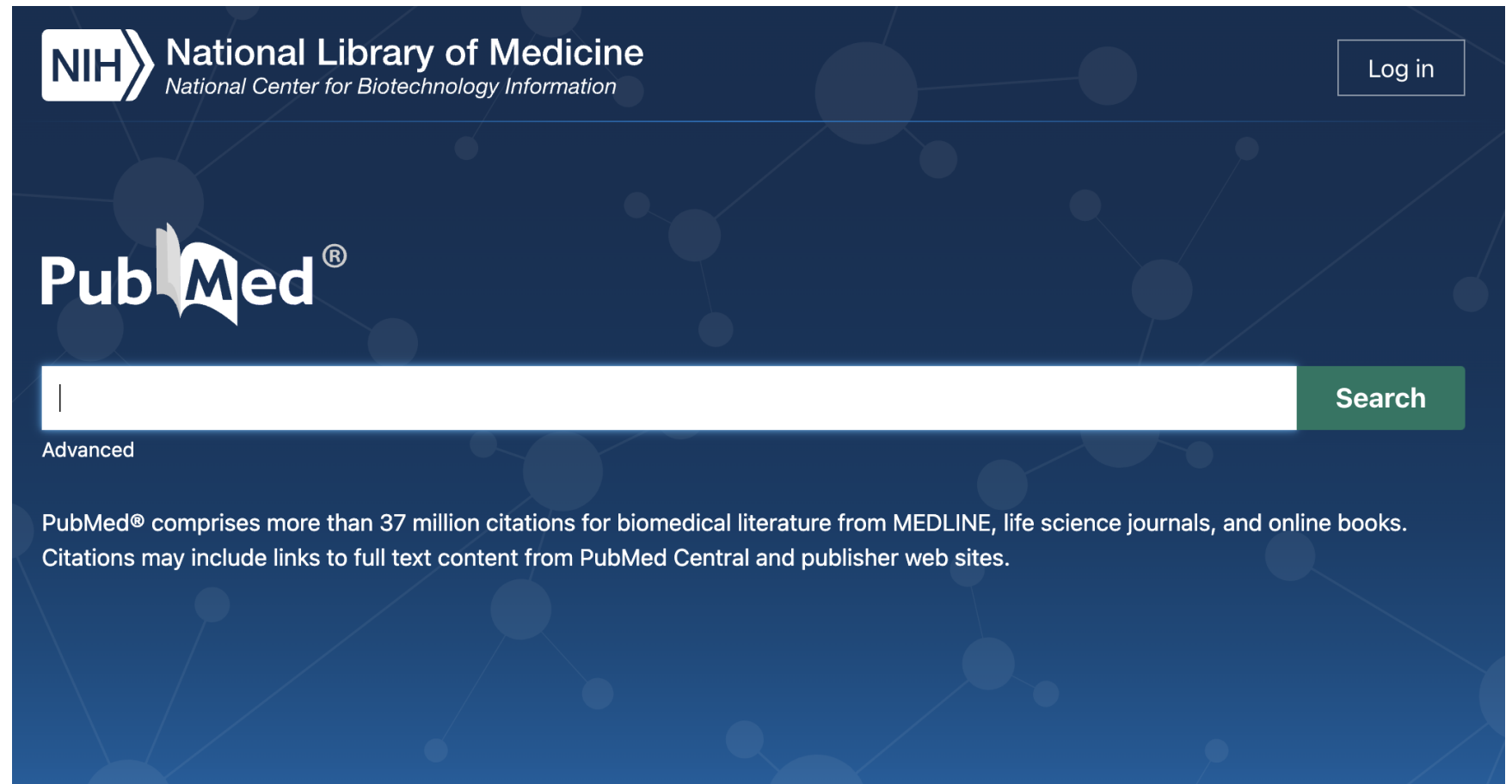
- Spelling correction
- Proximity searching using quotes ("...")
- Graphical interface for applying filters
- Link Out to full text (and other resources)
  - Link to publisher site, may not be free
- Clinical Queries
  - Help find best evidence for EBM question types
- MyNCBI
  - Allows saved searches, custom filters, emailing of results, etc.

# Tour of PubMed

- User wants to know about treatment of congestive heart failure with angiotensin-converting enzyme (ACE) inhibitors
  - PubMed maps query into appropriate Boolean statement
- Simple AND yields way too many results, so want to narrow down, especially to best evidence
  - Done by applying filters or using Clinical Queries

Main screen at:

[pubmed.gov](https://pubmed.gov)



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# A search on: congestive heart Failure

Note many  
features, to be  
discussed in  
following slides

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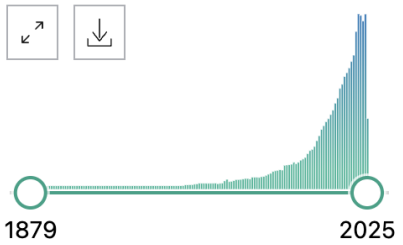
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1879 2025

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☐ Abstract  
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349,511 results

Page 1 of 34,952

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[Reversible dilated cardiomyopathy in systemic lupus erythematosus: A case report.](#)  
Reis J, Leite M, Jesus G, Ferreira D, Pereira S, Seixas A.  
Lupus. 2025 Apr 28;9612033251337516. doi: 10.1177/09612033251337516. Online ahead of print.  
PMID: 40289922  
A 40-year-old woman presented with new-onset **heart failure** with reduced ejection fraction (HFrEF) accompanied with systemic symptoms, including arthralgia, cutaneous lesions, and Raynaud's phenomenon. ...Early recognition and appropriate management of underlying aut ...

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[Furosemide-hydration matching with RenalGuard\(\) in decompensated heart failure: an alternative way to use diuretics and saline.](#)  
Mapelli M, Rubbo FM, Campodonico J, Cosentino N, Marenzi G, Mantegazza V, Trombara F, Sokolski M, Ponikowski P, Agostoni P.  
ESC Heart Fail. 2025 Apr 28. doi: 10.1002/ehf2.15316. Online ahead of print.  
PMID: 40289907 No abstract available.

☐ 3  
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[Splenic CD169<sup>+</sup>Tim4<sup>+</sup> Marginal Metallophilic Macrophages Are Essential for Wound Healing After Myocardial Infarction.](#)  
Ismahil MA, Zhou G, Rajasekar S, Gao M, Bansal SS, Patel B, Limdi N, Xie M, Antipenko S, Rokosh G, Hamid T, Prabhu SD.  
Circulation. 2025 Apr 28. doi: 10.1161/CIRCULATIONAHA.124.071772. Online ahead of print.




A search on:  
ACE inhibitors

(Angiotensin-  
converting  
enzyme  
inhibitors)

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ace inhibitors

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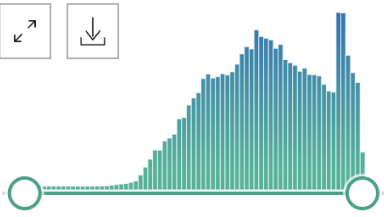
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1955 2025

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TEXT AVAILABILITY

☐ Abstract

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☐ Full text

☐ 1

**Management of hypotension in dihydropyridine calcium channel blocker overdose: The role of high-dose insulin therapy.**

Cite

Chan BSH, Isoardi KZ, Roberts DM, Har OS.

Share

Br J Clin Pharmacol. 2025 Apr 27. doi: 10.1002/bcp.70081. Online ahead of print.  
PMID: 40289269

☐ 2

**Enteric-coated Mycophenolate Sodium plus hydroxychloroquine therapy versus hydroxychloroquine for the Remission of Proteinuria in IgA Nephropathy (EMSAR-IgAN trial): study protocol for a randomised trial.**

Cite

Yan B, Tie X, Wang L, Qiao X, Su X.

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BMJ Open. 2025 Apr 27;15(4):e098688. doi: 10.1136/bmjopen-2024-098688.  
PMID: 40288788 Clinical Trial.

All enrolled patients will receive standard basic treatment to achieve optimum blood pressure and the maximum tolerated dose of **ACE inhibitors** or angiotensin receptor blockers. The primary outcome is the change in 24-hour urine protein at 6 months relative to baseli ...

☐ 3

**Sex Disparities in Medical Management: Influence on Morbidity in Peripheral Arterial Disease.**

Cite

Zhong Q, Ahmed U, Yunus RA, Saeed S, Sohail M, Manji A, Robitaille M, Schermerhorn ML, Mahmood F, Matyal R.

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Ann Vasc Surg. 2025 Apr 24:S0890-5096(25)00292-4. doi: 10.1016/j.avsg.2025.04.109. Online



# Combined with Boolean AND

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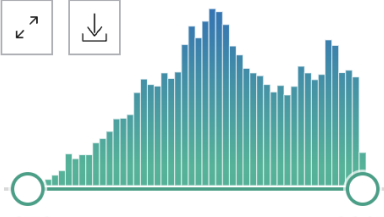
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Abstract

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Sacubitril/Valsartan Improves Hemodynamic Parameters of Pulmonary and Systemic Circulation in Patients Awaiting Heart Transplantation.

Ráduly AP, Saman Kothalawala E, Balogh L, Majoros Z, Pólik Z, Fülöp L, Győry F, Nagy L, Bódi B, Kovács MB, Csanádi Z, Papp Z, Muk B, Borbély A.

J Clin Med. 2025 Apr 8;14(8):2539. doi: 10.3390/jcm14082539.

PMID: 40283370

Free PMC article.

Background/Objectives: **Heart** transplantation (HTX) is the definitive treatment for advanced **heart failure** (AdHF). The angiotensin receptor neprilysin inhibitor (ARNI) sacubitril/valsartan (S/V) has been shown to reduce **heart failure** (HF) hospita ...

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Cite

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Newly diagnosed heart failure with reduced ejection fraction: timing, sequencing, and titration of guideline-recommended medical therapy.


Malgie J, Wilde MI, Brunner-La Rocca HP, Emans ME, De Boer GA, Siegers CEP, van Stipdonk AMW, Wardeh AJ, Schaap J, Sanders-van Wijk S, van den Heuvel M, Wierda E, De Boer RA, Koudstaal S, Brugts JJ.

Eur Heart J. 2025 Apr 24;ehaf244. doi: 10.1093/eurheartj/ehaf244. Online ahead of print.


PMID: 40272103

BACKGROUND AND AIMS: Despite guidelines recommending rapid initiation and up-titration of Guideline-recommended medical therapy (GRMT) for **heart failure** (HF) with reduced ejection fraction (HFrEF), its feasibility in daily practice remains unclear. ...Drug titration ...

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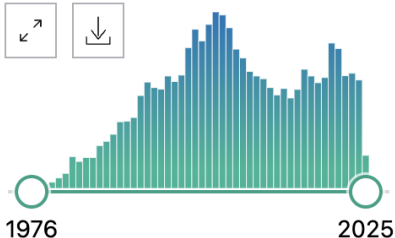
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**Sacubitril/Valsartan Improves Hemodynamic Parameters of Pulmonary and Systemic Circulation in Patients Awaiting Heart Transplantation.**  
Ráduly AP, Saman Kothalawala E, Balogh L, Majoros Z, Pólik Z, Fülöp L, Győry F, Nagy L, Bódi B, Kovács MB, Csanádi Z, Papp Z, Muk B, Borbély A.  
J Clin Med. 2025 Apr 8;14(8):2539. doi: 10.3390/jcm14082539.  
PMID: 40283370 **Free PMC article.**  
Background/Objectives: **Heart** transplantation (HTX) is the definitive treatment for advanced **heart failure** (AdHF). The angiotensin receptor neprilysin inhibitor (ARNI) sacubitril/valsartan (S/V) has been shown to reduce **heart failure** (HF) hospita ...

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**Newly diagnosed heart failure with reduced ejection fraction: timing, sequencing, and titration of guideline-recommended medical therapy.**  
Malgie J, Wilde MI, Brunner-La Rocca HP, Emans ME, De Boer GA, Siegers CEP, van Stipdonk AMW, Wardeh AJ, Schaap J, Sanders-van Wijk S, van den Heuvel M, Wierda E, De Boer RA, Koudstaal S, Brugts JJ.  
Eur Heart J. 2025 Apr 24;ehaf244. doi: 10.1093/eurheartj/ehaf244. Online ahead of print.  
PMID: 40272103  
BACKGROUND AND AIMS: Despite guidelines recommending rapid initiation and up-titration of Guideline-recommended medical therapy (GRMT) for **heart failure** (HF) with reduced ejection fraction (HFrEF), its feasibility in daily practice remains unclear. ...Drug titration ...


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How does it  
do all of this?

Search	Actions	Details	Query	Results	Time
#2	...	▼	<p>Search: <b>congestive heart failure ace inhibitors</b> Sort by: <b>Most Recent</b></p> <p>("heart failure"[MeSH Terms] OR ("heart"[All Fields] AND "failure"[All Fields]) OR "heart failure"[All Fields] OR ("congestive"[All Fields] AND "heart"[All Fields] AND "failure"[All Fields]) OR "congestive heart failure"[All Fields]) AND ("angiotensin converting enzyme inhibitors"[Pharmacological Action] OR "angiotensin converting enzyme inhibitors"[Supplementary Concept] OR "angiotensin converting enzyme inhibitors"[All Fields] OR "ace inhibitors"[All Fields] OR "angiotensin converting enzyme inhibitors"[MeSH Terms] OR ("angiotensin converting"[All Fields] AND "enzyme"[All Fields] AND "inhibitors"[All Fields]) OR ("ace"[All Fields] AND "inhibitors"[All Fields]))</p> <p><b>Translations</b></p> <p><b>congestive heart failure:</b> "heart failure"[MeSH Terms] OR ("heart"[All Fields] AND "failure"[All Fields]) OR "heart failure"[All Fields] OR ("congestive"[All Fields] AND "heart"[All Fields] AND "failure"[All Fields]) OR "congestive heart failure"[All Fields]</p> <p><b>ace inhibitors:</b> "angiotensin-converting enzyme inhibitors"[Pharmacological Action] OR "angiotensin-converting enzyme inhibitors"[Supplementary Concept] OR "angiotensin-converting enzyme inhibitors"[All Fields] OR "ace inhibitors"[All Fields] OR "angiotensin-converting enzyme inhibitors"[MeSH Terms] OR ("angiotensin-converting"[All Fields] AND "enzyme"[All Fields] AND "inhibitors"[All Fields]) OR ("ace"[All Fields] AND "inhibitors"[All Fields])</p>	13,531	06:38:48

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chronological or  
“relevance”

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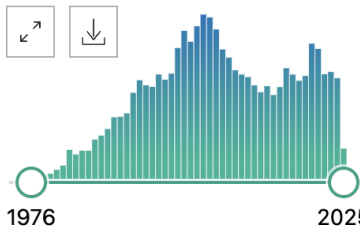
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☐ **Congestive Heart Failure.**  
1 Scott MC, Winters ME.  
Cite Emerg Med Clin North Am. 2015 Aug;33(3):553-62. doi: 10.1016/j.emc.2015.04.006. Epub 2015 Jun 10.  
Share PMID: 26226866 Review.  
Patients with acute decompensated **heart failure** are usually critically ill and require immediate treatment. However, most are not volume overloaded. ...Short-term inotropic therapy can be considered in select patients with cardiogenic shock and acute decompensated ...

☐ **ACE inhibitors in congestive heart failure.**  
2 Riegger AJ.  
Cite Cardiology. 1989;76 Suppl 2:42-9. doi: 10.1159/000174558.  
Share PMID: 2670220 Review.  
The renin-angiotensin-aldosterone system plays an important role in the development of **congestive heart failure** (CHF). In patients with chronic **heart failure**, **angiotensin-converting enzyme (ACE) inhibitors**, suc ...

☐ **Underutilisation of ACE inhibitors in patients with congestive heart failure.**  
3 Bungard TJ, McAlister FA, Johnson JA, Tsuyuki RT.  
Cite Drugs. 2001;61(14):2021-33. doi: 10.2165/00003495-200161140-00002.  
PMID: 11735631 Review.

# What we want: the MEDLINE record

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[Review](#) > [Biochem Pharmacol.](#) 2024 Apr 20:116232. doi: 10.1016/j.bcp.2024.116232.  
Online ahead of print.

## Challenging and target-based shifting strategies for heart failure treatment: An update from the last decades

[Yuichi Hattori](#)<sup>1</sup>, [Kohshi Hattori](#)<sup>2</sup>, [Kuniaki Ishii](#)<sup>3</sup>, [Masanobu Kobayashi](#)<sup>4</sup>

Affiliations + expand  
PMID: 38648905 DOI: [10.1016/j.bcp.2024.116232](#)

### Abstract

Heart failure (HF) is a major global health problem afflicting millions worldwide. Despite the significant advances in therapies and prevention, HF still carries very high morbidity and mortality, requiring enormous healthcare-related expenditure, and the search for new weapons goes on. Following initial treatment strategies targeting inotropism and congestion, attention has focused on offsetting the neurohormonal overactivation and three main therapies, including angiotensin-converting enzyme inhibitors or angiotensin II type 1 receptor antagonists,  $\beta$ -adrenoceptor antagonists, and mineralocorticoid receptor antagonists, have been the foundation of standard treatment for patients with HF. Recently, a paradigm shift, including angiotensin receptor-neprilysin inhibitor, sodium glucose co-transporter 2 inhibitor, and ivabradine, has been added. Moreover, soluble guanylate cyclase stimulator, elamipretide, and omecamtiv mecarbil have come out as a next-generation therapeutic agent for patients with HF. Although these pharmacologic therapies have been significantly successful in relieving symptoms, there is still no complete cure for HF. We may be currently entering a new era of treatment for HF with animal experiments and human clinical trials assessing the value of antibody-based immunotherapy and gene therapy as a novel therapeutic strategy. Such tempting therapies still have some challenges to be addressed but may become a weighty option for treatment of HF. This review article will compile the paradigm shifts in HF treatment over the past dozen years or so and illustrate current landscape of antibody-based immunotherapy and gene therapy as a new therapeutic algorithm for patients with HF.

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RESULTS BY YEAR

PUBLICATION DATE

TEXT AVAILABILITY

ARTICLE ATTRIBUTE

ARTICLE TYPE

Filters applied: Randomized Controlled Trial. Clear all

1 Estimating lifetime benefits of comprehensive disease-modifying pharmacological therapies in patients with heart failure with reduced ejection fraction: a comparative analysis of three randomised controlled trials.  
Vaduganathan M, Claggett BL, Jhund PS, Cunningham JW, Pedro Ferreira J, Zannad F, Packer M, Fonarow GC, McMurray JJV, Solomon SD.  
Lancet. 2020 Jul 11;396(10244):121-128. doi: 10.1016/S0140-6736(20)30748-0. Epub 2020 May 21. PMID: 32446323 Free article. Clinical Trial.  
BACKGROUND: Three drug classes (mineralocorticoid receptor antagonists [MRAs], angiotensin receptor-neprilysin inhibitors [ARNIs], and sodium/glucose cotransporter 2 [SGLT2] inhibitors) reduce mortality in patients with heart failure with reduced ejection fraction ...


2 ACE inhibitors in congestive heart failure.  
Riegger AJ.  
Cardiology. 1989;76 Suppl 2:42-9. doi: 10.1159/000174558. PMID: 2670220 Review.  
The renin-angiotensin-aldosterone system plays an important role in the development of congestive heart failure (CHF). In patients with chronic heart failure, angiotensin-converting enzyme (ACE) inhibitors, such as ...

3 Effects of candesartan in patients with chronic heart failure and reduced left-ventricular systolic function intolerant to angiotensin-converting-enzyme inhibitors: the CHARM-Alternative trial.  
Granger CB, McMurray JJ, Yusuf S, Held P, Michelson EL, Olofsson B, Ostergren J, Pfeffer MA, Swedberg K; CHARM Investigators and Committees.  
Lancet. 2003 Sep 6;362(9386):772-6. doi: 10.1016/S0140-6736(03)14284-5. PMID: 13678870 Clinical Trial.  
BACKGROUND: Angiotensin-converting-enzyme (ACE) inhibitors improve outcome of patients with chronic heart failure (CHF). ...INTERPRETATION: Candesartan was generally well tolerated and reduced cardiovascular mortality and morbidity ...


4 A randomized trial of the angiotensin-receptor blocker valsartan in chronic heart failure.  
Cohn JN, Tognoni G; Valsartan Heart Failure Trial Investigators.  
N Engl J Med. 2001 Dec 6;345(23):1667-75. doi: 10.1056/NEJMoa010713. PMID: 11759645 Free article. Clinical Trial.

# Still too many, so can filter by Systematic Review

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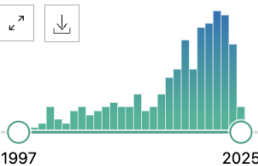
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ARTICLE ATTRIBUTE

☐ Associated data

ARTICLE TYPE

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☐ Clinical Trial

☐ Guideline

☐ Meta-Analysis

☐ Practice Guideline

☐ Randomized Controlled Trial

☐ Review

☒ Systematic Review

226 results

Page 1 of 23

☒ Filters applied: Systematic Review. [Clear all](#)

☐ 1

A Systematic Review and Network Meta-Analysis of Pharmacological Treatment of Heart Failure With Reduced Ejection Fraction.

Cite

Tromp J, Ouwerkerk W, van Veldhuisen DJ, Hillege HL, Richards AM, van der Meer P, Anand IS, Lam CSP, Voors AA.

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JACC Heart Fail. 2022 Feb;10(2):73-84. doi: 10.1016/j.jchf.2021.09.004. Epub 2021 Dec 8. PMID: 34895860 [Free article](#).

METHODS: We performed a systematic network meta-analysis, using MEDLINE/EMBASE and the Cochrane Central Register of Controlled Trials for randomized controlled trials published between January 1987 and January 2020. We included **angiotensin-converting enzyme** ...

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Pharmacological Treatments in Heart Failure With Mildly Reduced and Preserved Ejection Fraction: Systematic Review and Network Meta-Analysis.

Cite

Zafeiropoulos S, Farmakis IT, Milioglou I, Doundoulakis I, Gorodeski EZ, Konstantinides SV, Cooper L, Zanos S, Stavrakis S, Giamouzis G, Butler J, Giannakoulas G.

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JACC Heart Fail. 2024 Apr;12(4):616-627. doi: 10.1016/j.jchf.2023.07.014. Epub 2023 Aug 30. PMID: 37656079 [Free article](#).

BACKGROUND: Medical treatment for **heart failure** with preserved ejection (HFpEF) and **heart failure** with mildly reduced ejection fraction (HFmrEF) has weaker evidence compared with reduced ejection fraction, despite recent trials with an angiotensin rece ...

☐ 3

Calcium channel blockers versus other classes of drugs for hypertension.

Cite

Zhu J, Chen N, Zhou M, Guo J, Zhu C, Zhou J, Ma M, He L.

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Cochrane Database Syst Rev. 2022 Jan 9;1(1):CD003654. doi: 10.1002/14651858.CD003654.pub6. PMID: 35000192 [Free PMC article](#). Review.

As compared to beta-blockers, CCBs reduced the following outcomes: major cardiovascular events (RR 0.84, 95% CI 0.77 to 0.92), stroke (RR 0.77, 95% CI 0.67 to 0.88, moderate-certainty evidence), and cardiovascular mortality (RR 0.90, 95% CI 0.81 to 0.99, low-certainty evidence). ...

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Underutilisation of ACE inhibitors in patients with congestive heart failure.

Cite


Bungard TJ, McAlister FA, Johnson JA, Tsuyuki RT.

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Drugs. 2001;61(14):2021-33. doi: 10.2165/00003495-200161140-00002. PMID: 11735631 Review.


**Congestive heart failure** (CHF) is associated with substantial morbidity and mortality, and is the only major cardiovascular disease increasing in prevalence. Despite abundant evidence to support their efficacy and cost-effectiveness, **angiotensin-con** ...

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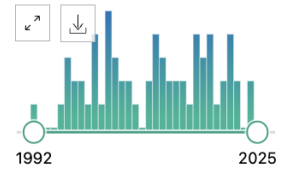
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☐ Clinical Trial

☒ Guideline

☐ Meta-Analysis

☐ Practice Guideline

☐ Randomized Controlled Trial

☐ Review

☐ Systematic Review

☒ Filters applied: Guideline. Clear all

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2022 AHA/ACC/HFSA Guideline for the Management of **Heart Failure**: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines.

Heidenreich PA, Bozkurt B, Aguilar D, Allen LA, Byun JJ, Colvin MM, Deswal A, Drazner MH, Dunlay SM, Evers LR, Fang JC, Fedson SE, Fonarow GC, Hayek SS, Hernandez AF, Khazanie P, Kittleson MM, Lee CS, Link MS, Milano CA, Nnacheta LC, Sandhu AT, Stevenson LW, Vardeny O, Vest AR, Yancy CW.

J Am Coll Cardiol. 2022 May 3;79(17):e263-e421. doi: 10.1016/j.jacc.2021.12.012. Epub 2022 Apr 1. PMID: 35379503 **Free article.**

AIM: The "2022 AHA/ACC/HFSA Guideline for the Management of **Heart Failure**" replaces the "2013 ACCF/AHA Guideline for the Management of **Heart Failure**" and the "2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of **Heart Failure**".

☐ 2

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2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of **Heart Failure**: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the **Heart Failure Society of America**.

Yancy CW, Jessup M, Bozkurt B, Butler J, Casey DE Jr, Colvin MM, Drazner MH, Filippatos GS, Fonarow GC, Givertz MM, Hollenberg SM, Lindenfeld J, Masoudi FA, McBride PE, Peterson PN, Stevenson LW, Westlake C.

Circulation. 2017 Aug 8;136(6):e137-e161. doi: 10.1161/CIR.0000000000000509. Epub 2017 Apr 28. PMID: 28455343 **Review.** **No abstract available.**

☐ 3

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AMERICAN ASSOCIATION OF CLINICAL ENDOCRINOLOGISTS AND AMERICAN COLLEGE OF ENDOCRINOLOGY COMPREHENSIVE CLINICAL PRACTICE GUIDELINES FOR MEDICAL CARE OF PATIENTS WITH OBESITY.

Garvey WT, Mechanick JL, Brett EM, Garber AJ, Hurley DL, Jastreboff AM, Nadolsky K, Pessah-Pollack R, Plodkowski R; Reviewers of the AACE/ACE Obesity Clinical Practice Guidelines.


Endocr Pract. 2016 Jul;22 Suppl 3:1-203. doi: 10.4158/EP161365.GL. Epub 2016 May 24. PMID: 27219496

OBJECTIVE: Development of these guidelines is mandated by the American Association of Clinical Endocrinologists (AACE) Board of Directors and the American College of Endocrinology (ACE) Board of Trustees and adheres to published AACE protocols for the standardized producti ...

☐

2014 evidence-based guideline for the management of high blood pressure in

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“advanced”  
interface



National Library of Medicine  
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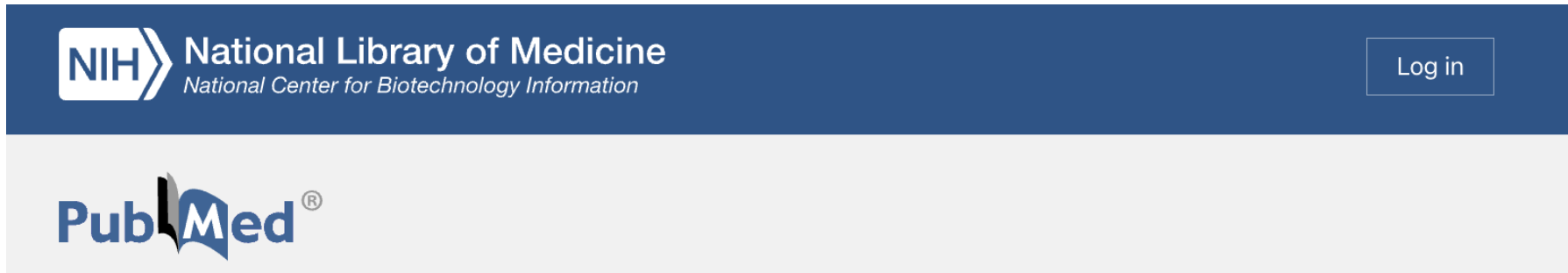
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#7	...	>	Search: congestive heart failure ace inhibitors Filters: <b>Guideline</b>	66	06:45:17
#6	...	>	Search: congestive heart failure ace inhibitors Filters: <b>Systematic Review</b>	226	06:45:11
#5	...	>	Search: congestive heart failure ace inhibitors Filters: <b>Randomized Controlled Trial</b>	1,558	06:45:00
#2	...	>	Search: congestive heart failure ace inhibitors	13,531	06:44:09
#4	...	! >	Search: congestive heart failure and ace inhibitors Sort by: <b>Most Recent</b>	13,531	06:37:30
#3	...	>	Search: ace inhibitors Sort by: <b>Most Recent</b>	64,240	06:36:10
#1	...	>	Search: congestive heart failure Sort by: <b>Most Recent</b>	349,511	06:32:45

Showing 1 to 7 of 7 entries

# Another option: Clinical Queries



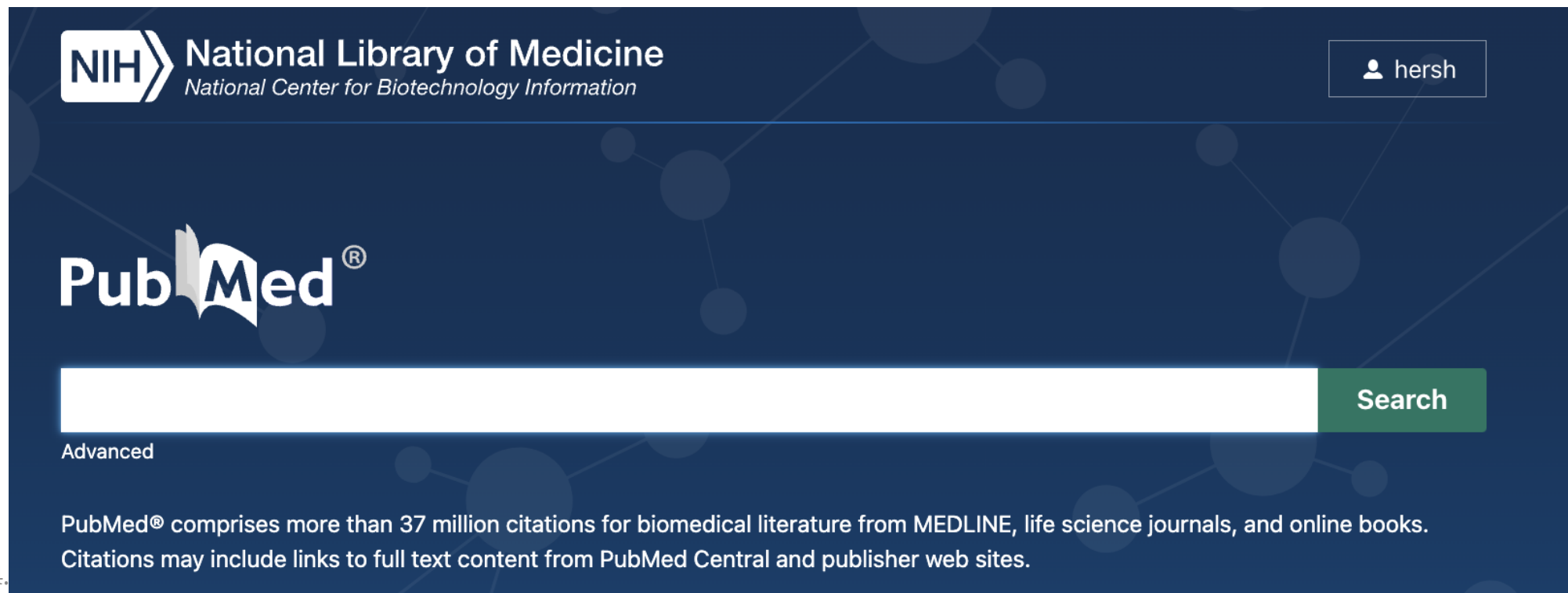
## PubMed Clinical Queries

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.

The image shows the main search interface of the PubMed Clinical Queries tool. At the top, there is a search bar containing the text "congestive heart failure ace inhibitors" and a "Search" button. Below the search bar, there are three main sections: "Filter category", "Filter", and "Scope". The "Filter category" section has two radio buttons: "Clinical Studies" (selected) and "COVID-19". Below these is a note: "Clinical Queries filters were developed by [Haynes RB et al.](#) to facilitate retrieval of clinical studies." The "Filter" section is a dropdown menu that is currently open, showing a list of filter options: "Therapy" (checked), "Clinical Prediction Guides", "Diagnosis", "Etiology", and "Prognosis". The "Scope" section has a dropdown menu set to "Broad" and a note: "Returns more results: less specific, but more comprehensive. [See filter details.](#)". At the bottom right of the form is a "Reset form" button.

# Can also set up myNBCI account

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  - Can be sent via email
- MyBibliography



# Which features do expert searchers value most (Russell-Rose, 2017)?

