

PubMed Tutorial

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e-vident



Objectives

- Introducing Practitioner PubMed
- Searching for Systematic Reviews
- Combining Search Terms
- MeSH Search



Outline

- What is PubMed
- Searching Clinical Queries
- PICO Model
- PubMed Search
- Logic of Boolean
- Combining Search Terms
- What is MeSH
- MeSH Search
- References



Outcome

Practitioner will;

- Know Search Tools
- Construct PICO model
- Combine Search Terms
- Able to Search in PubMed Search Engine



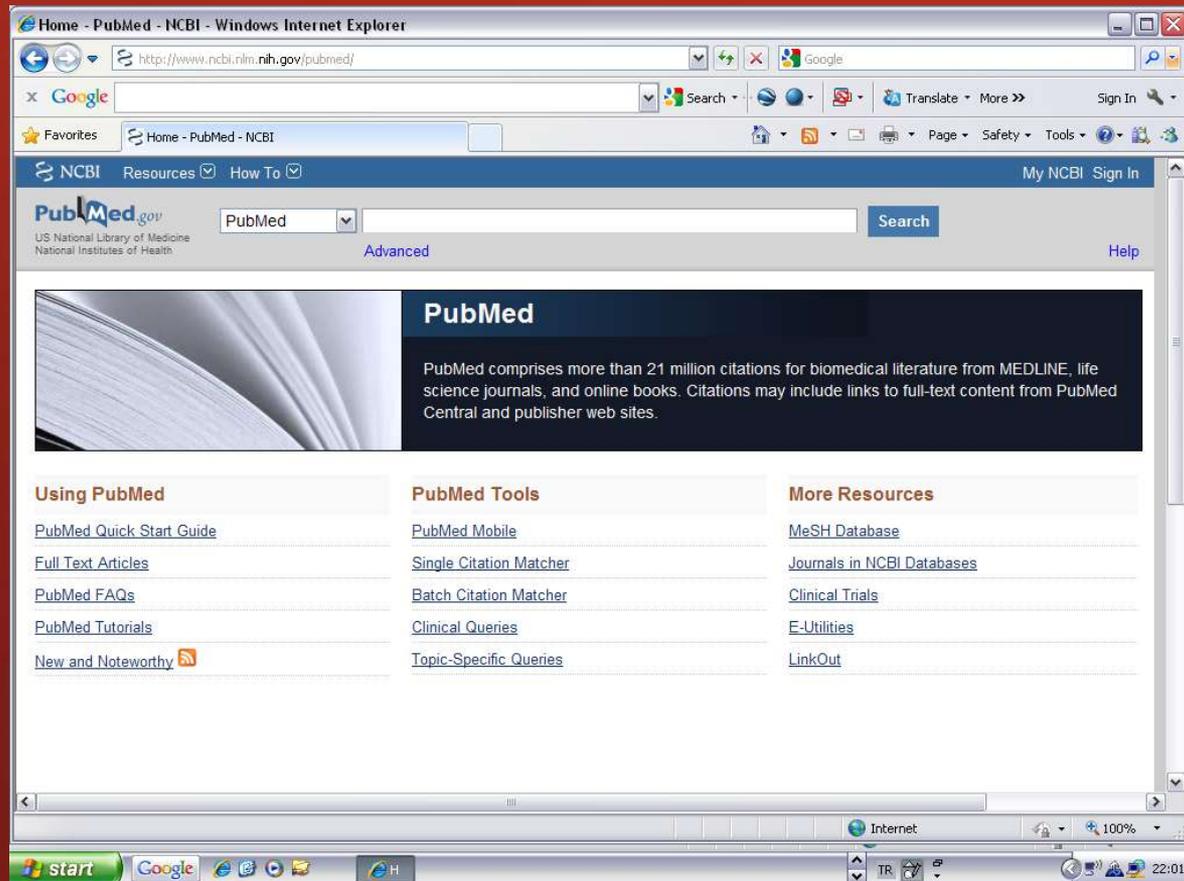
PICO Model

PICO or PECO is an acronym used to identify four primary components of a well formulated clinical question.

- P = Patient Population or Problem
- I = Intervention or Exposure
- C = Comparison
- O = Outcome

PubMed

<http://www.ncbi.nlm.nih.gov>



The screenshot shows the PubMed website as it appeared in a Windows Internet Explorer browser window. The browser's address bar displays the URL <http://www.ncbi.nlm.nih.gov/pubmed/>. The page features the PubMed logo and the text "US National Library of Medicine National Institutes of Health". A search bar is present with the word "PubMed" entered and a "Search" button. Below the search bar, there is a section titled "PubMed" with a description: "PubMed comprises more than 21 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 page is organized into three columns of links: "Using PubMed" (including Quick Start Guide, Full Text Articles, FAQs, Tutorials, and New and Noteworthy), "PubMed Tools" (including Mobile, Single Citation Matcher, Batch Citation Matcher, Clinical Queries, and Topic-Specific Queries), and "More Resources" (including MeSH Database, Journals in NCBI Databases, Clinical Trials, E-Utilities, and LinkOut). The Windows taskbar at the bottom shows the Start button, several application icons, and the system tray with the time 22:01.



What is PubMed

- Produced by NCBI, PubMed is part of the *Entrez* retrieval system of related biomolecular databases
- PubMed includes MEDLINE, a premier NLM biomedical database of worldwide journal literature in medicine, nursing, dentistry, veterinary medicine, public health and the preclinical sciences
- PubMed is an excellent database for finding some articles on most health/medicine topics.
- PubMed citations come from more than 5,000 biomedical journals.
- PubMed has more than 21 million citations from the 1940's to the present.
- PubMed includes very recent articles and updated each week.
- Coverage is current as participating publishers submit electronic citations daily
- PubMed is free to anyone with internet access.
- PubMed includes links to full text at publisher or library web sites



Combining similar terms

Use Boolean operators to combine different terms

- *OR* use to combine different terms for the same concept
- *AND* to combine different concepts
- *NOT* excludes concepts but must be used with caution to avoid excluding relevant items



Search limits

Consider search refinements to limit to specific aspects of a topic, such as:

- Meta-Analysis (quantitative summary combining results of independent studies)
- human or animal studies
- male or female subjects
- age groups, for example adolescents, infants
- time periods
- languages



Sample Case Scenario; PICO Model

P	Problem/Patient	A patient has prescribed Zometa and referred to your office by a fellow oncologist. Patient admitted to your office for his/her dental treatment.
I	Intervention	Some teeth need to be extracted, periodontal and endodontic treatment as well. Finally prosthetic rehabilitation planned.
C	Comparison	
O	Outcome	You are aware of Zometa related osteonecrotic lesions of the jaw bones following dental interventions like tooth extraction. Is there a dental treatment guideline and what is the best evidence based treatment option for patients under biphosphanates.

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PubMed Tutorials	Clinical Queries	E-Utilities
New and Noteworthy	Topic Specific Queries	LinkOut

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Logic of Boolean

- OR will search for articles containing any of the terms we chose.

Use OR to combine synonyms, alternative spellings or related items

- AND will search for articles which contain all of the terms we have chosen.



1. The search *heart* **AND** *lung* finds items that contain **both** *heart* and *lung*.
2. The search *heart* **OR** *lung* finds items that contain **either** *heart* or items that contain *lung*.
3. The search *heart* **NOT** *lung* finds items that contain *heart* **but do not contain** *lung*.



Before starting search consider;

- The keywords
- Other ways to spell the keywords
- Other words which mean the same thing (synonyms)
- Related keywords need to be included
- Limits to apply: date, language, age group, publication type

PubMed Clinical Queries - Windows Internet Explorer

http://www.ncbi.nlm.nih.gov/pubmed/clinical?term=zometa#clincat=Etiology,Broad

Google

NCBI Resources How To My NCBI Sign In

PubMed Clinical Queries

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches, use [PubMed](#) directly.

zometa Search

Clinical Study Categories

Category: Etiology
Scope: Broad

Systematic Reviews

Medical Genetics

Topic: All

Results: 5 of 968

Oncologic doses of Zoledronic acid induce osteonecrosis of the jaw-like lesions in rice rats
Aguirre JI, Akhter MP, Kimmel DB, Pingel JE, Williams A, Jorgensen M, Kesavalu L, Wronski TJ.
J Bone Miner Res. 2012 May 23; . Epub 2012 May 23.

CCR1 blockade reduces tumor burden and osteolysis in vivo in a mouse model of myeloma
Dairaghi DJ, Oyajobi BO, Gupta A, McCluskey B, Miao S, Powers JP, Seitz LC, Wang Y, Zeng Y, Zhang P, et al.
Blood. 2012 May 22; . Epub 2012 May 22.

Effect of (Neo)adjuvant zoledronic acid on disease-free and overall survival in clinical stage II/III breast
Aft RL, Naughton M, Trinkaus K, Weilbaecher K.
Br J Cancer. 2012 May 22; . Epub 2012 May 22.

Results: 5 of 81

Treatment To Prevent Fractures in Men and Women With Low Bone Density or Osteoporosis: Update of
Crandall C, Newberry SJ, Diamant A, Lim YW, Gellad WF, Suttorp MJ, Motala A, Ewing B, Roth B, Shanman R, et al.
2012 Mar

2012 update of French guidelines for the pharmacological treatment of postmenopausal
Briot K, Cortet B, Thomas T, Audran M, Blain H, Breuil V, Chapuis L, Chapurlat R, Fardellone P, Feron JM, et al.
Joint Bone Spine. 2012 May; 79(3):304-13. Epub 2012 Apr 19.

Collaborative care to improve the management of depressive disorders: a community guide systematic
Thota AB, Sipe TA, Byard GJ, Zometa CS, Hahn RA, McKnight-Eily LR, Chapman DP, Abraido-Lanza AF, Pearson JL.

Results: 5 of 95

The 39th David A. Karnofsky Lecture: bench-to bedside translation of targeted therapies in multiple
Anderson KC.
J Clin Oncol. 2012 Feb 1; 30(4):445-52. Epub 2012 Jan 3.

Mycobacteria activate $\gamma\delta$ T-cell anti-tumour responses via cytokines from type 1 myeloid
Fowler DW, Copier J, Wilson N, Dalgleish AG, Bodman-Smith MD.
Cancer Immunol Immunother. 2012 Apr; 61(4):535-47. Epub 2011 Oct 15.

Bone health in primary ovarian insufficiency.
Marino R, Misra M.
Semin Reprod Med. 2011 Jul; 29(4):317-27. Epub 2011 Oct 3.

Functional inhibition of osteoblastic cells in an in vivo

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PubMed Clinical Queries - Windows Internet Explorer

http://www.ncbi.nlm.nih.gov/pubmed/clinical?term=zometa and dental treatment

pubmed

Google pubmed

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zometa and dental treatment

Clinical Study Categories

Category:

Scope:

Systematic Reviews

Results: 5 of 9

American Society of Clinical Oncology executive summary of the clinical practice guideline update on
Van Poznak CH, Temin S, Yee GC, Janjan NA, Barlow WE, Biermann JS, Bosserman LD, Geoghegan C, Hillner BE, Theriault RL, et al.
J Clin Oncol. 2011 Mar 20; 29(9):1221-7. Epub 2011 Feb 22.

Management of patients with Paget's disease: a consensus document of the Belgian Bone Club.
Devogelaer JP, Bergmann P, Body JJ, Boutsen Y, Goemaere S, Kaufman JM, Reginster JY, Rozenberg S, Boonen S, Belgian Bone Club.
Osteoporos Int. 2008 Aug; 19(8):1109-17. Epub 2008 May 27.

A review of the literature on osteonecrosis of the jaw in patients with osteoporosis treated with oral

Medical Genetics

Topic:

Results: 1 of 1

Genetic polymorphisms and other risk factors associated with bisphosphonate induced
Katz J, Gong Y, Salmasinia D, Hou W, Burkley B, Ferreira P, Casanova O, Langaee TY, Moreb JS.
Int J Oral Maxillofac Surg. 2011 Jun; 40(6):605-11. Epub 2011 Mar 10.

[See all \(1\)](#)

This column displays citations pertaining to topics in medical genetics. See more [filter information](#).

start Google Microsoft Word Microsoft PowerPoi... PubMed Clinical Qu... TR 21:05

PubMed Clinical Queries - Windows Internet Explorer

https://www.ncbi.nlm.nih.gov/pubmed/clinical?term=zometa AND dental treatment AND guidelines

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NCBI Resources How To Sign in to NCBI

PubMed Clinical Queries

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches, use PubMed directly.

zometa AND dental treatment AND guidelines **Search**

Clinical Study Categories

Category: Therapy
Scope: Broad

Systematic Reviews

Medical Genetics

Topic: All

Results: 6 of 12

American Society of Clinical Oncology executive summary of the clinical practice guideline update on the role of bone-
Van Poznak CH, Temin S, Yee GC, Janjan NA, Barlow WE, Biermann JS, Bosserman LD, Geoghegan C, Hillner BE, Theriault RL, et al. J Clin Oncol. 2011 Mar 20; 29(9):1221-7. Epub 2011 Feb 22.

Bisphosphonates and dental implants: a case report and a brief review of literature.
Ferlito S, Liardo C, Puzzo S. Minerva Stomatol. 2011 Jan-Feb; 50(1-2):75-81.

Use of cone-beam computerized tomography for evaluation of bisphosphonate-associated osteonecrosis of the jaws
Treister NS, Friedland B, Woo SB. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2010 May; 109(5):753-54. Epub 2010 Mar 28.

[Osteonecrosis of the jaw developing during bisphosphonate treatment]
Udvardy E, Redl P, Márton I. Magyar Onkol. 2008 Mar; 52(1):81-7.

Results: 4 of 4

American Society of Clinical Oncology executive summary of the clinical practice guideline update on the role of bone-
Van Poznak CH, Temin S, Yee GC, Janjan NA, Barlow WE, Biermann JS, Bosserman LD, Geoghegan C, Hillner BE, Theriault RL, et al. J Clin Oncol. 2011 Mar 20; 29(9):1221-7. Epub 2011 Feb 22.

International Society of Geriatric Oncology (SIOG) clinical practice recommendations for the use of bisphosphonates in
Body JJ, Coleman R, Clezardin P, Ripamonti C, Rizzoli R, Aspro M, International Society of Geriatric Oncology. Eur J Cancer. 2007 Mar; 43(5):852-8. Epub 2007 Jan 26.

[Diagnostic work-up of bone metastases of genitourinary tumors and their treatment with bisphosphonates.
Weisebach L. Urologe A. 2009 Dec; 45(12):1527-31.

Mayo clinic consensus statement for the use of bisphosphonates in multiple myeloma
Lacy MQ, Dispenzieri A, Gertz MA, Greipp PR, Gollbach KL, Hayman SR, Kumar S, Lust JA, Rajkumar SV, Russell SJ, et al. Mayo Clin Proc. 2005 Jun; 80(6):647-53.

Results: 0 of 0

This column displays citations pertaining to topics in medical genetics. See more [filter information](#)

Internet 115%

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- By adding terms and combining them with appropriate boolean operators will refine search.
- In this particular example combining terms “zometa”, “dental treatment”, “guidelines combined by AND.
- Therefore, the practitioner retrieved 4 systematic reviews.



MeSH Medical Subject Headings

- MeSH is the standard terminology used by the indexer and helps to find articles on the topic, regardless of the exact wording used by the authors.
- Controlled vocabulary of subject terms; it is another feature built into PubMed to enhance retrieval of best evidence.



What is MeSH?

- MeSH is a vocabulary of subject headings and subheadings
- Subject terms are selected and approved for use by NLM
- Each year subject headings are revised with additions and deletions
- Scope note indicate what is meant by the term
- Used to describe the subject content of all publication types in PubMed and in the library catalogs
- Hierarchy of terms with broad and narrow terms
- Items are indexed with the most specific MeSH term available



Advantages of MeSH

- Consistency in meaning of terms is maintained over time
- Synonyms are organized under one MeSH term
- Allows for both specific and comprehensive results
- Cuts down on irrelevant retrieval



- The MeSH controlled vocabulary is a distinctive feature of MEDLINE.
- It imposes uniformity and consistency to the indexing of biomedical literature.
- MeSH terms are arranged in a hierarchical categorized manner called MeSH Tree Structures and are updated annually.
- Searching using MeSH allows you to overcome problems of spelling and terminology; especially when you might not be aware of different spellings or terminology.

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You are here: NCBI > Literature > PubMed Write to the Help Desk

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zoledronic acid - MeSH - NCBI - Windows Internet Explorer

http://www.ncbi.nlm.nih.gov/mesh/term=zometa

MeSH Search: zometa

Search

Save search Limits Advanced

Display Settings: Full

zoledronic acid [Supplementary Concept]

a potent inhibitor of bone resorption; structure given in first source
Date introduced: September 1, 1994
Registry Number: 116072-93-6
Heading Mapped to:

[Diphosphonates](#)

- [Imidazoles](#)

Entry Terms:

- 2-(imidazol-1-yl)-1-hydroxyethylidene-1,1-bisphosphonic acid
- Zoledronic acid
- Zometa
- Novartis brand of zoledronic acid
- CGP 42446A
- CGP-42446
- CGP-42446
- CGP 42446

Pharmacologic Action:

- [Bone Density Conservation Agents](#)

PubMed search builder

Add to search builder AND

Search PubMed

Related information

PubMed

Clinical Queries

NLM MeSH Browser

MedGen

PubChem Compound

PubChem Substance

Search details

"zoledronic acid"[Supplementary Concept] OR zometa[Text Word]

Done

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1:19 PM

Click on the **term** to view full record and access PubMed search options for additional information.



Diphosphonates - MeSH - NCBI - Windows Internet Explorer

http://www.ncbi.nlm.nih.gov/mesh/59004164

MeSH Search

Display Settings: Full

Diphosphonates

Organic compounds which contain P-C-P bonds, where P stands for phosphonates or phosphonic acids. These compounds affect calcium metabolism. They inhibit ectopic calcification and slow down bone resorption and bone turnover. Technetium complexes of diphosphonates have been used successfully as bone scanning agents.

Year introduced: 1977

PubMed search builder options

Subheadings:

<input type="checkbox"/> administration and dosage	<input type="checkbox"/> contraindications	<input type="checkbox"/> pharmacology
<input type="checkbox"/> adverse effects	<input type="checkbox"/> diagnostic use	<input type="checkbox"/> physiology
<input type="checkbox"/> analogs and derivatives	<input type="checkbox"/> economics	<input type="checkbox"/> poisoning
<input type="checkbox"/> antagonists and inhibitors	<input type="checkbox"/> history	<input type="checkbox"/> radiation effects
<input type="checkbox"/> chemical synthesis	<input type="checkbox"/> immunology	<input type="checkbox"/> standards
<input type="checkbox"/> chemistry	<input type="checkbox"/> isolation and purification	<input type="checkbox"/> therapeutic use
<input type="checkbox"/> classification	<input type="checkbox"/> metabolism	<input type="checkbox"/> toxicity
	<input type="checkbox"/> pharmacokinetics	<input type="checkbox"/> urine

Restrict to MeSH Major Topic.

Do not include MeSH terms found below this term in the MeSH hierarchy.

Tree Number(s): D02.705.429.500

Entry terms

- Bisphosphonates

Send to: PubMed search builder

"Diphosphonates" [MeSH]

Add to search builder AND

Search PubMed

Related information

PubMed

PubMed - Major Topic

Clinical Queries

NLM MeSH Browser

MedGen

PubChem Compound

PubChem Substance

Recent activity

zoledronic acid [Supplementary Concept] MeSH

zometa (1)

Diphosphonates

"Diphosphonates" [MeSH]

Click to add to search builder



Subheadings describe specific aspects of the subject. Click if appropriate

Restrict to MeSH Major Topic.
 Do not include MeSH terms found below this term in the MeSH hierarchy.

Tick out the appropriate box to broaden or narrow the search for your interest

Windows Internet Explorer browser window showing a PubMed search result for the article: "Dental management of patients receiving oral bisphosphonate therapy: expert panel recommendations." The article title is circled in red.

Search query: ("Diphosphonates"[Mesh]) AND "Dental Care"[Mesh:NoExp] AND "Practice Guideline"[Publication Type]

Display Settings: Abstract

Full Text: J Am Dent Assoc

Save items: Add to Favorites

Related citations in PubMed: Updated recommendations for managing the care of patients receiving oral bisphosphonate therapy [J Am Dent Assoc. 2008]; Canadian consensus practice guidelines for bisphosphonate-associated osteonecrosis of the jaw [J Rheumatol. 2008]; Outcomes of placing dental implants in patients taking oral bisphosphonates [J Oral Maxillofac Surg. 2008]; Review: Bisphosphonate-induced osteonecrosis of the jaw in patients with cancer [Oral Surg Oral Med Oral Pathol Oral Radiol. 2008]; Review: A review of the literature on bisphosphonate-induced osteonecrosis of the jaw in patients with cancer [Clin Ther. 2007]

Cited by 11 PubMed Central articles: Bisphosphonate induced osteonecrosis of the jaw in breast cancer [J Oral Maxillofac Pathol. 2012]

Abstract:

BACKGROUND: In light of the uncertainty surrounding the incidence of bisphosphonate-associated osteonecrosis of the jaw (BON) and concomitant risk factors, dentists have questioned how to manage the care of patients receiving oral bisphosphonate therapy. Expert panelists were selected by the American Dental Association Council on Scientific Affairs on the basis of their expertise in the relevant subject matter and on their respective dental or medical specialties, and the panel was tasked with developing guidance for dentists treating these patients.

METHODS: There are no data from clinical trials evaluating dental management of the care of patients receiving oral bisphosphonate therapy and, therefore, these recommendations are based on a thorough review of the available literature relating to bisphosphonate use and osteonecrosis of the jaw. After reviewing the literature, the panel developed these recommendations based on their expert opinion.

RESULTS: These panel recommendations focus on conservative surgical procedures, proper sterile technique, appropriate use of oral disinfectants and the principles of effective antibiotic therapy.

CONCLUSIONS: The recommendations are a resource for dentists to use in their practice, in addition to the dentist's own professional judgment, the information available in the dental and medical literature, and information from the patient's treating physician. The recommendations must be balanced with the practitioner's professional judgment and the individual patient's preferences and needs.

Comment in: Informed consent: a delicate balance. [J Am Dent Assoc. 2006]

PMID: 16873332 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms, Substances



Practitioner easily retrieved a guideline for dental treatment in patients on bisphosphonates by implementing appropriate search terms in a short time in MeSH.



References

1. Elliot Abt; The Basics of Evidence Based Dentistry
2. ADA Policy on Evidence Based Dentistry
3. Sutherland S.; J Can Dent Assoc 2001; 67:204-6
4. McQuay HJ, Moore RA; Evidence-based resource for pain relief. Oxford:Oxford University Press, 1988.
5. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS; Evidence based medicine: what it is and what it isn't. BMJ. 1996;312:71-72.
6. UT Health Science Center; Oral Health Information Tutorial for Dental Public Health Professionals.