

REPOZYTORIA ZASOBÓW MEDYCZNYCH, ICH INDEKSOWANIE I PRZESZUKIWANIE

Informatyka w Medycynie, 2017-2018

WPROWADZENIE

Wydobywanie informacji

- Rodzaje informacji
 - informacje związane z pacjentem (patient specific) – związane z procesem opieki nad danym pacjentem, przechowywane w systemach EPR/EHR
 - informacje bazująca na wiedzy (knowledge-based) – wyniki i wnioski z eksperymentów i obserwacji, dostępne w książkach, czasopismach, ...

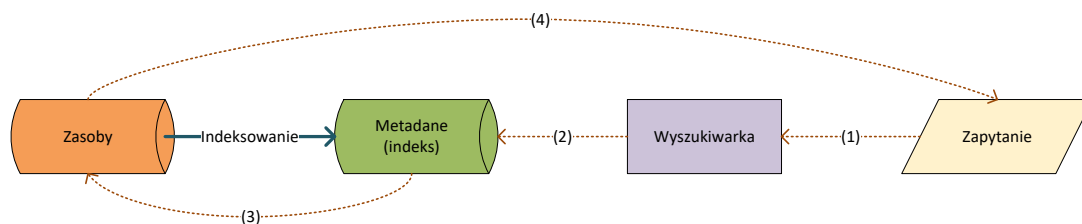


Wydobywanie informacji (ang. *information retrieval, IR*) to dziedzina zajmująca się pozyskiwaniem (gromadzeniem), organizacją i wyszukiwaniem informacji bazującej na wiedzy

- „Tradycyjne” IR ograniczone do repozytoriów z publikacjami, obecnie rozszerzone na inne formaty (np. multimedia, ...)

Proces wydobywania informacji

- Indeksowanie – tworzenie *metadanych* związanych z (poszczególnymi) zasobami
- Wydobywanie – wyszukiwanie na podstawie *metadanych* zasobów odpowiadających zapytaniu użytkownika



Trochę historii...

- 1878 – Index Medicus
 - indeks artykułów medycznych
 - metadane: tytuł, autorzy, słowa kluczowe (*subject headings*)
- 1966 – MEDLARS (Medical Literature Analysis and Retrieval System), NLM
 - komputerowa wersja Index Medicus-a
 - metadane: podobne jak w wersji papierowej (ograniczenia techniczne)
 - wykorzystanie MeSH jako formalnego zestawu słów kluczowych
 - realizacja zapytań przesyłanych tradycyjną pocztą
- lata 90-te – udostępnienie przez WWW baz bibliograficznych prowadzonych przez NLM (→ MEDLINE/PubMed)

INFORMACJA BAZUJĄCA NA WIEDZY I EBM

Informacje bazująca na wiedzy

- Informacja podstawowa (ang. *primary*)
 - nowo odkryta wiedza kliniczna (wraz z powiązаныmi danymi)
 - oryginalne wyniki specyficznych badań publikowane w literaturze (czasopisma, raporty, ...)
- Informacja wtórna (ang. *secondary*)
 - przegląd, podsumowanie lub synteza literatury podstawowej
 - publikowana w różnych formach – artykuły przeglądowe, przeglądy systematyczne (ang. *systematic reviews*), wytyczne i algorytmy kliniczne
 - najczęściej stosowana w praktyce przez lekarzy (→ „bryk” do szybkiego przejrzania i/lub wykorzystania „przy pacjencie”)

Potrzeby informacyjne

- Różni użytkownicy i różne potrzeby dotyczące informacji → najwięcej badań dotyczących lekarzy
- Stany potrzeby informacyjnej
 1. nierozpoznana – „nie wiem, że czegoś nie wiem”
 2. rozpoznana – „wiem, że czegoś nie wiem”
 - ➔ 3. realizowana – „szukam informacji (nie wiem, czy znajdę)”
 4. wypełniona – „znalazłem potrzebną informację”

Nierozpoznane potrzeby informacyjne są podstawową przyczyną tego, że w praktyce oferowana opieka często nie odpowiada najnowszym zaleceniom czy wytycznym!

Potrzeby informacyjne w praktyce

- Średnio 3 pytania na 4 pacjentów (opieka podstawowa)
 - jaki lek podać? co powoduje dany symptom? jaki test wykonać?
- Poszukiwanie odpowiedzi w 12-36% przypadków
 - brak jawnego sformułowania pytania
 - odstąpienie od poszukiwania (→ zbyt duża czasochłonność, akceptowalny czas to ok. 2 min.)
 - podstawowe źródło informacji – współpracownicy lub podręczniki
- Integracja mechanizmów IR z systemami typu EMR/EHR w celu automatyzacji procesu wyszukiwania informacji

Timpka T, Arborelius E. The GP's dilemmas: a study of knowledge need and use during health care consultations. *Methods Inf Med.* 1990; 29(1):23-9.

Ely JW, Osheroff JA, Ebell MH, et al. Analysis of questions asked by family doctors regarding patient care. *BMJ* 1999;319:358-361.

Hersh WR, Crabtree MK, Hickam DH, et al. Factors associated with success in searching MEDLINE and applying evidence to answer clinical questions. *J Am Med Assoc* 2002;9(3):283-93.

Evidence-based Medicine (EBM)

Rozumne, celowe, proste zastosowanie najnowszych i najbardziej rzetelnych danych naukowych w podejmowaniu decyzji dotyczących opieki zdrowotnej nad indywidualnym pacjentem.

- Połączenie doświadczenia lekarza z najbardziej aktualną informacją bazującą na wiedzy
 - informacja pozwala na weryfikację i aktualizację doświadczenia
 - doświadczenie pozwala na uwzględnienie specyfiki pacjenta
- Modelowy schemat postępowania
 1. Sformułowanie pytania klinicznego (na które można odpowiedzieć)
 2. Identyfikacja dowodów (informacji) zawierających odpowiedź na postawione pytanie
 3. Krytyczna ocena znalezionych dowodów – czy można je zastosować do konkretnego pacjenta?

Zapytania w EBM

- Klasy zapytań klinicznych
 1. ogólne (ang. *background*) – dotyczą natury problemu (niezależne od pacjenta), odpowiedzi w podręcznikach
 2. szczegółowe (ang. *foreground*) – dotyczą postępowania z pacjentem ze specyficznym problemem, typowe dla EBM
- Rodzaje zapytań szczegółowych
 1. terapeutyczne – jaką terapię zastosować
 2. diagnostyczne – jaki test diagnostyczny wybrać
 3. prognostyczne – jak może się rozwijać stwierdzony problem
 4. dotyczące szkodliwego wpływu (ang. *harm*) – jakie są efekty zastosowania danej terapii czy też ekspozycji na jakiś czynnik

Najbardziej wartościowe dowody uzyskiwane na podstawie wyników randomizowanych badań klinicznych (*randomized controlled trial, RCT*) → nie zawsze dostępne (np. ze względów etycznych)

REPOZYTORIA INFORMACJI BAZUJĄCEJ NA WIEDZY

Rodzaje repozytoriów

1. Bazy bibliograficzne

- podstawowa informacja o publikacjach, bez ich treści
- przykłady: MEDLINE/PubMed (NLM), EMBASE („europejski MEDLINE”), National Guidelines Clearinghouse (NGC) z wytycznymi klinicznymi

2. Bazy pełnotekstowe

- pełna treść publikacji, często odnośniki z baz bibliograficznych (np. PubMed → strona wydawcy)
- zazwyczaj utrzymywane przez wydawców komercyjnych, PubMed Central dla publikacji powstałych w ramach grantów NIH

Rodzaje repozytoriów

3. Bazy adnotowane (ang. *annotated*)

- zasoby przechowywane w specjalizowanych bazach danych (obrazowych, biologicznych, cytowań, dowodów EBM, ...)
- przykłady: Visible Human Project, PEIR, The Cochrane Library (Database of Systematic Reviews)

4. Bazy agregujące treści

- agregacja treści pochodzących z innych typów repozytoriów (kopie treści lub odnośniki do repozytoriów źródłowych)
- przykłady: MedlinePlus, Merck Manual

PubMed

NCBI Resources How To Sign in to NCBI

PubMed.gov US National Library of Medicine National Institutes of Health PubMed Search

PubMed comprises books. Citations ma

PubMed Quick Start Guide
Full Text Articles
PubMed FAQs
PubMed Tutorials
New and Noteworthy

Using PubMed

PubMed Tools
PubMed Mobile
Single Citation Match
Batch Citation Match
Clinical Queries
Topic-Specific Query

Latest Literature
New articles from highly accessed journals
Blood (2)
Cochrane Database Syst Rev (3)
J Biol Chem (16)
J Clin Oncol (2)
JAMA (29)
Methods Mol Biol (27)
N Engl J Med (18)
Nature (9)
PLoS One (86)
Proc Natl Acad Sci U S A (10)

Try PubMed Journals, our new experimental feature for following journals of interest to you.
PubMed Journals

PubMed records with
RNA-dependent sin
Elife. 2018.
High-dimensional sin
PD-1 immunotherapy
Nat Med. 2018.
Antibodies to watch i
MAbs. 2018.
A major chromatin re
cells to T cell-mediati
Science. 2018.
Tumor-Specific T-Cell
Evasion Induce Clinic
Hodgkin Lymphoma.
J Clin Oncol. 2018.

See more

Format: Abstract v

J Biomed Inform. 2013 Apr;46(2):341-53. doi: 10.1016/j.jbi.2013.01.002. Epub 2013 Jan 30.

Mitigation of adverse interactions in pairs of clinical practice guidelines using constraint logic programming.

Wilks S, Michalowski W, Michalowski M, Farion K, Hing MM, Mohapatra S.

Author information

Abstract
We propose a new method to mitigate (identify and address) adverse interactions (drug-drug or drug-disease) that occur when a patient with comorbid diseases is managed according to two concurrently applied clinical practice guidelines (CPGs). A lack of methods to facilitate the concurrent application of CPGs severely limits their use in clinical practice and the development of such methods is one of the grand challenges for clinical decision support. The proposed method responds to this challenge. We introduce and formally define logical models of CPGs and other related concepts, and develop the mitigation algorithm that operates on these concepts. In the algorithm we combine domain knowledge encoded as interaction and revision operators using the constraint logic programming (CLP) paradigm. The operators characterize adverse interactions and describe revisions to logical models required to address these interactions, while CLP allows us to efficiently solve the logical models - a solution represents a feasible therapy that may be safely applied to a patient. The mitigation algorithm accepts two CPGs and available (likely incomplete) patient information. It reports whether mitigation has been successful or not, and on success it gives a feasible therapy and points at identified interactions (if any) together with the revisions that address them. Thus, we consider the mitigation algorithm as an alerting tool to support a physician in the concurrent application of CPGs that can be implemented as a component of a clinical decision support system. We illustrate our method in the context of two clinical scenarios involving a patient with duodenal ulcer who experiences an episode of transient ischemic attack.

Copyright © 2013 Elsevier Inc. All rights reserved.

PMID: 23376273 DOI: 10.1016/j.jbi.2013.01.002
[PubMed - indexed for MEDLINE] Free full text

Publication Types, MeSH Terms
Publication Types
Research Support, Non-U.S. Gov't

MeSH Terms
Acute Disease
Algorithms*
Chronic Disease
Comorbidity
Decision Support Systems, Clinical*
Drug Interactions
Drug-Related Side Effects and Adverse Reactions/prevention & control*

Full text links
ELSEVIER
OPEN ACCESS

Save items
Add to Favorites

Similar articles
Clinical practice guidelines and comorbid diseases: a M [Stud Health Technol Inform. 2013]
Reconciling pairs of concurrently used clinical practice guideline [AMIA Annu Symp Proc. 2011]
First-order logic theory for manipulating clinical practice guideline [AMIA Annu Symp Proc. 2014]
Review Context, automated decision support, and clinical practice guic [Int J Med Inform. 2007]
Review Synthesis of recommendations for the assessment and management of [Spine J. 2010]

See reviews...
See all...

Cited by 5 PubMed Central articles
Expanding a First-Order Logic Mitigation Framework to Hai [AMIA Annu Symp Proc. 2015]
Critical factors influencing physicians' intention to use comp [BMC Med Inform Decis Mak. 2016]
First-order logic theory for manipulating clinical practice guideline [AMIA Annu Symp Proc. 2014]

See all...

Related information
Cited in PMC

<https://www.ncbi.nlm.nih.gov/pubmed>

PubMed – Clinical Queries

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.

acute abdominal pain in children

Clinical Study Categories
Category:
Scope:

Systematic Reviews

Results: 5 of 796
Two cases of Kawasaki disease presented with acute febrile jaundice.
Kaman A, Aydin-Teke T, Gayretli-Aydin ZG, Öz FN, Metin-Akcan Ö, Eriş D, Tanir G.
Turk J Pediatr. 2017; 59(1):84-86.

Randomized, Double-Blind, Placebo-Controlled Acute Comparator Trials of Lisdexamfetamine and Extended-Release Methylphenidate in Adolescents With Attention-Deficit/Hyperactivity Disorder.
Newcorn JH, Nagy P, Childress AC, Frick G, Yan B, Pliszka S.
CNS Drugs. 2017 Nov; 31(11):999-1014.

Diagnostic Accuracy of MRI Versus CT for the Evaluation of Acute Appendicitis in Children and Young Adults.
Kinner S, Pichhardt PJ, Riedesel EL, Gill KG, Robbins JB, Kitchin DR, Ziemlewicz TJ, Haringa JB, Reeder SB, Reppinger MD.
AJR Am J Roentgenol. 2017 Oct; 209(4):911-919. Epub 2017 Aug 10.

Asparaginase-associated pancreatitis in childhood acute lymphoblastic leukaemia: an observational Ponte di Legno Toxicity Working Group study.
Wolthers BO, Frandsen TL, Baruchel A, Attarbaschi A, Barzilai S, Colombini A, Escherich G, Grell K, Inaba H, Kovacs G, et al.
Lancet Oncol. 2017 Sep; 18(9):1238-1248. Epub 2017 Jul 20.

Observational study on the palatability and tolerability of oral prednisolone and oral dexamethasone in children in Saudi Arabia and the UK.
Aljebab F, Alanazi M, Choonara I, Conroy S.
Arch Dis Child. 2018 Jan; 103(1):63-68. Epub 2017 Jul 22.

[See all \(796\)](#)

This column displays citations filtered to a specific clinical study category and scope. These search filters were developed by [Haynes RB et al.](#) See more [filter information](#).

Medical Genetics

Topic:

Results: 5 of 136
Fulminant Type 1 Diabetes in Children: A Multicenter Study in China.
Gu Y, Wang Y, Li P, Wei H, Chen L, Liu Q, Liu Y, Yang Q, Cheng X, He L, et al.
J Diabetes Res. 2017; 2017:6924637. Epub 2017 Sep 26.

Initial Pain Management in Pediatric Acute Pancreatitis: Opioid vs. Non-Opioid.
Grover AS, Mitchell PD, Manzi SF, Fox VL.
J Pediatr Gastroenterol Nutr. 2017 Oct 27; . Epub 2017 Oct 27.

A Rare Cause of Recurrent Acute Pancreatitis in a Child: Isovaleric Acidemia with Novel Mutation.
Sag E, Cebi AH, Kaya G, Karaguzel G, Cakir M.
Pediatr Gastroenterol Hepatol Nutr. 2017 Mar; 20(1):61-64. Epub 2017 Mar 27.

What's unique about acute pancreatitis in children: risk factors, diagnosis and management.
Husain SZ, Srinath AI.
Nat Rev Gastroenterol Hepatol. 2017 Jun; 14(6):366-372. Epub 2017 Mar 15.

Development of a quantitative real-time PCR assay for sapovirus in children under 5-years-old in Regina Margherita Hospital of Turin, Italy.
Bergallo M, Galliano I, Montanari P, Brusin MR, Finotti S, Paderi G, Gabliano C.
Can J Microbiol. 2017 Apr; 63(4):296-302. Epub 2016 Dec 2.

[See all \(136\)](#)

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

Nonpharmacologic Treatment of Pain.
Agoston AM, Sieberg CB.
Semin Pediatr Neurol. 2016 Aug; 23(3):220-223. Epub 2016 Oct 20.

High Variability in the Reported Management of Hepatic Veno-Occlusive Disease in Children after Hematopoietic Stem Cell Transplantation.
Skeens MA, McArthur J, Cheifetz IM, Duncan C, Randolph AG, Stanek J, Lehman L, Bajwa R. HSCCT subgroup of the Pediatric Acute Lung Injury & Sepsis Investigators (PALISI).
Biol Blood Marrow Transplant. 2016 Oct; 22(10):1823-1828. Epub 2016 Aug 2.

[See all \(57\)](#)

This column displays citations for systematic reviews, meta-analyses, reviews of clinical trials, evidence-based medicine, consensus development conferences, and guidelines. See [filter information](#) or additional [related sources](#).

Wsparcie dla EBM

Browse by Clinical Specialty

NGC currently offers 1,520 guideline summaries. [View All Guideline Summaries](#)

By Clinical Specialty | By MeSH Tag | By Organization

The following concepts classify the clinical specialties that might use the guideline professionally. For more information on each topic, view the [Glossary](#):

- | | | |
|-------------------------------|--|--------------------------------|
| Allergy and Immunology (50) | Neurological Surgery (104) | Podiatry (21) |
| Anesthesiology (56) | Neurology (228) | Preventive Medicine (267) |
| Cardiology (158) | Nuclear Medicine (93) | Psychiatry (107) |
| Chiropractic (21) | Nursing (243) | Psychology (111) |
| Colon and Rectal Surgery (36) | Nutrition (92) | Pulmonary Medicine (140) |
| Critical Care (129) | Obstetrics and Gynecology (298) | Radiation Oncology (138) |
| Dentistry (25) | Oncology (377) | Radiology (313) |
| Dermatology (56) | Ophthalmology (31) | Rheumatology (57) |
| Emergency Medicine (208) | Optometry (9) | Sleep Medicine (18) |
| Endocrinology (120) | Orthopedic Surgery (114) | Speech-Language Pathology (26) |
| Family Practice (907) | Otolaryngology (48) | Sports Medicine (30) |
| Gastroenterology (148) | Pathology (89) | Surgery (263) |
| Geriatrics (191) | Pediatrics (367) | Thoracic Surgery (75) |
| Hematology (110) | Pharmacology (80) | Urology (95) |
| Infectious Diseases (150) | Physical Medicine and Rehabilitation (112) | |
| Internal Medicine (892) | | |
| Medical Genetics (68) | | |

Head injury. Triage, assessment, investigation and early management of head injury in children, young people and adults.

Developer | **Source** | Status | Classification

National Clinical Guideline Centre. Head injury. Triage, assessment, investigation and early management of head injury in children, young people and adults. London (UK): National Institute for Health and Care Excellence (NICE); 2014 Jan. 63 p. (Clinical guideline; no. 176).

[View the original guideline documentation](#)

Sections | Download | Share | Cite | Save

Regulatory Alert

Recommendations

Major Recommendations

Pre-hospital Assessment, Advice and Referral to Hospital

Public health literature and other non-medical sources of advice (for example, St John Ambulance, police officers) should encourage people who have any concerns following a head injury to themselves or to another person, regardless of the injury severity, to seek immediate medical advice. [2003]

Telephone Advice Services

Telephone advice services (for example, National Health Service [NHS] 111, emergency department helplines) should refer patients who have sustained a head injury to the emergency ambulance services (that is, 999) for emergency transport to the emergency department if they have experienced any of the following:

- Unconsciousness or lack of full consciousness (for example, problems keeping eyes open)
- Any focal neurological deficit since the injury
- Any suspicion of a skull fracture or penetrating head injury
- Any seizure ('convulsion' or 'fit') since the injury
- A high-energy head injury
- The injured person or their carer is incapable of transporting the injured person safely to the hospital emergency department without the use of ambulance services (providing any other risk

PubMed Central

The screenshot displays the PubMed Central (PMC) interface. At the top, there are navigation links for 'NCBI Resources' and 'How To', along with a 'Sign in to NCBI' button. The main search bar contains the text 'PMC' and a search button. Below the search bar, the page is divided into several sections:

- Left Sidebar:** Contains 'Get Started' (with links for Overview, Guide, List, FAQs, and Notice), 'Other Resources' (with links for International, Text Mining, Developer, LitArch, Citation Search, and Accessibility), and 'Participate' (with links for Information, Add Journal, Participation, Submission, and Validation).
- Header:** Shows 'PMCID: PMC4765594' and 'Published online 2015 Nov 5'.
- Main Content:** Features the title 'Expanding a First-Order Logic Mitigation Framework to Handle Multimorbid Patient Preferences' by Martin Michalowski, Szymon Wilk, Daniela Rosu, Mounira Kezadri, Wojtek Michalowski, and Marc Carrier. It includes an abstract, an introduction, and a 'Full Text' link.
- Right Sidebar:** Includes 'Formats' (Article, PubReader, ePub, PDF, Citation), 'Share' (Facebook, Twitter, Google+), 'Save Items' (Add to Favorites), 'Similar articles in PubMed' (listing related clinical practice guideline studies), 'Links' (PubMed), and 'Recent Activity' (listing recent search results).

At the bottom of the page, a URL is provided: <https://www.ncbi.nlm.nih.gov/pmc/>

Visible Human Project

Home

The Visible Human Project®

Overview

The Visible Human Project® is an outgrowth of the NLM's 1986 Long-Range Plan. It is the creation of complete, anatomically detailed, three-dimensional representations of the normal male and female human bodies. Acquisition of transverse CT, MR and cryosection images of representative male and female cadavers has been completed. The male was sectioned at one millimeter intervals, the female at one-third of a millimeter intervals.

The long-term goal of the Visible Human Project® is to produce a system of knowledge structures that will transparently link visual knowledge forms to symbolic knowledge formats such as the names of body parts.

The National Library of Medicine thanks the men and the women who will their body to science, thereby enabling medical research and development.

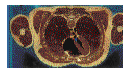
Further Information

• General Information

- A description of The Visible Human Project® [image data and how to obtain it](#) (includes [FAQ](#))
- The Visible Human Project® [FactSheet](#).
- The Visible Human Project® [From Wikipedia, the free encyclopedia](#)
- [The Visible Human Project®: From Data to Knowledge](#): An update of ongoing National Library of Medicine research.
- [Digitally encoded videos](#) - requires RealPlayer.
- A sampler of [images and animations](#) from the Project.
- Belarusian translation of The Visible Human Project® [Overview](#)
- German translation of The Visible Human Project® [Overview](#)
- Russian translation of The Visible Human Project® [Overview](#)
- Finnish translation of The Visible Human Project [Overview](#)

• NLM Initiatives

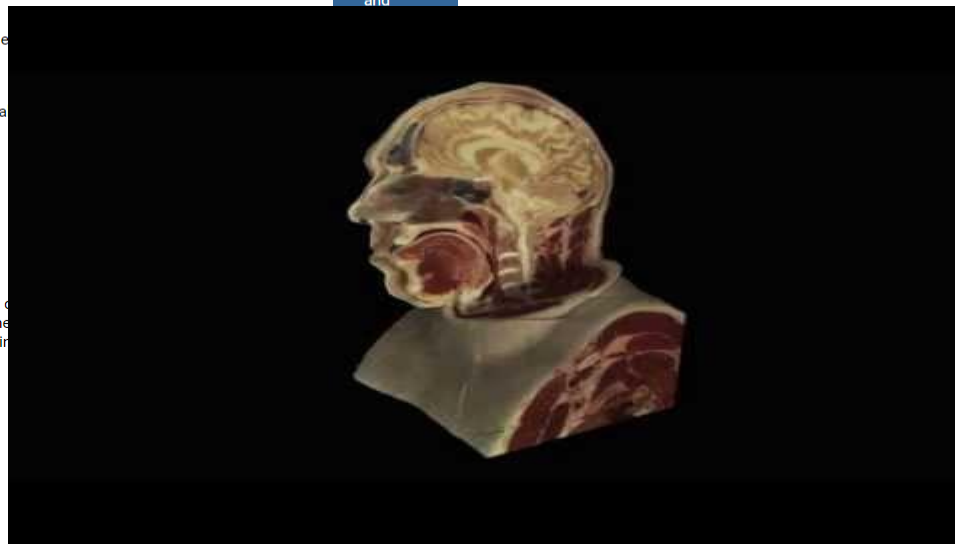
- Cryosection, MRI and CT image data of the head of a 72 year old male. Cryosections of the head were photographed at a resolution of 1056 x 1528 pixels. Work done at Brigham and Women's Hospital under contract to NLM. Available only to VHP license holders. These images can be found in the [Visible Human Project](#) to the NLM image server.



Projects
Based on the
Visible
Human Data
Set

Applications
for
viewing
images

Sources
of images
and



PEIR (Pathology Information Educational Resource) Digital Library

Menu

Szybkie wyszukiwanie

- Tagi (2169)
- Szukaj
- Komentarze (0)
- O Pwigo
- Powiadomienia

Albumy

- PEIR Pathology [12623]
- PEIR Radiology [4732]
- PEIR Slice [16293]

33648 obrazów

Specjalne

- Najczęściej odwiedzane
- Najlepiej oceniane
- Najnowsze zdjęcia
- Najnowsze albumy
- Losowe zdjęcia
- Kalendarz

Linki

- PEIR Wiki
- IPLab
- Histologic
- Virtual Microscopy

Menu

Szybkie wyszukiwanie

- Tagi (2169)
- Szukaj
- Komentarze (0)
- O Pwigo
- Powiadomienia

Albumy

- PEIR Pathology [12623]
- PEIR Radiology [4732]
- Abdomen [521]
- Adrenal [66]
- Aorta [201]
- Breast [11]
- Chest [103]
- Female Reproductive [129]
- Gastrointestinal [821]
- Genitourinary [334]
- Head [103]
- Heart [13]
- Hepatobiliary [850]
- Kidney [452]
- Lung [42]
- Male Reproductive [21]
- Musculoskeletal [48]
- Neck [62]
- Nervous [8]
- Pancreas [505]
- Spleen [77]
- Vascular [365]
- PEIR Slice [16293]

33648 obrazów

Specjalne

- Najczęściej odwiedzane
- Najlepiej oceniane
- Najnowsze zdjęcia
- Najnowsze albumy
- Losowe zdjęcia
- Kalendarz

Linki

- PEIR Wiki
- IPLab
- Histologic
- Virtual Microscopy

Uprawnienia

- Zarejestruj
- Logowanie




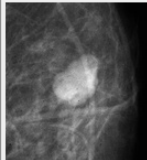

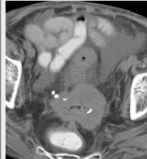
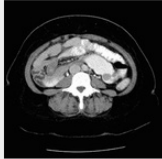

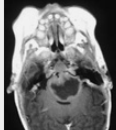
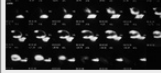
Logowanie

Użytkownik

Hasło

Strona główna / PEIR Radiology

A collection of over 4,000 curated radiology teaching images, from 1999 to the present. The images in this library are © University of Alabama at Birmingham, Department of Pathology. These digital images can be used by educators and institutions for non-profit educational activities but the University of Alabama at Birmingham Department of Pathology retains all copyrights. The University of Alabama at Birmingham Department of Pathology must be acknowledged as the source of images in any software, demonstration, or presentation utilizing these images.

 <p>Abdomen 521 obrazów</p>	 <p>Adrenal 66 obrazów</p>
 <p>Aorta 201 obrazów</p>	 <p>Breast 11 obrazów</p>
 <p>Chest 103 obrazów</p>	 <p>Female Reproductive 129 obrazów</p>
 <p>Gastrointestinal 821 obrazów</p>	 <p>Genitourinary 334 obrazów</p>
 <p>Head 103 obrazów</p>	 <p>Heart 13 obrazów</p>

The Cochrane Library

Wiley Online Library home The Cochrane Library Home

 **THE COCHRANE LIBRARY**
Independent high-quality evidence for health care decision making

from [The Cochrane Collaboration](#)

BROWSE
Cochrane Reviews: [By Topic](#) | [New Reviews](#) | [Updated Reviews](#) | [A-Z](#) | [By Review Group](#)
Other Resources: [Other Reviews](#) | [Clinical Trials](#) | [Methods Studies](#) | [Technology Assessments](#) | [Economic Evaluations](#)

SEARCH
Enter search term Title, Abstract or Keyword:
[Advanced Search](#) | [MeSH Search](#) | [Search History](#) | [Saved Searches](#)

Search Results

Show Results in:

Cochrane Reviews [210] | [Other Reviews \[46\]](#) | [Clinical Trials \[3619\]](#) | [Methods Studies \[57\]](#) | [Technology Assessments \[30\]](#) | [Economic Evaluations \[288\]](#) | [Cochrane Groups \[1\]](#)

There are **210** results out of **6369** records for: "trauma in Title, Abstract or Keywords in Cochrane Database of Systematic Reviews"

[Save Search](#)
[Edit Search](#)

View: **1-25** | [26-50](#) | [51-75](#) | [76-100](#) | [101-125](#) | [Next >](#)

[Export All Results](#)

Record Information	Issue: Current All	Restrict to: Reviews Protocols	Sort by: Record Title Match % Date
<input type="checkbox"/> Damage control surgery for abdominal trauma Roberto Cirocchi, Iosief Abraha, Alessandro Montedori, Eriberto Farinella, Isabella Bonacini, Ludovica Tagliabue, Francesco Sciannameo January 2010 Review			
<input type="checkbox"/> Audit filters for improving processes of care and clinical outcomes in trauma systems Christopher Evans, Daniel Howes, William Pickett, Luigi Dagnone October 2009 Review			
<input type="checkbox"/> Spinal immobilisation for trauma patients			

<http://www.cochranelibrary.com>

Przegląd systematyczny

- Podsumowanie wyniki z wielu publikacji podstawowych na wybrany i dobrze zdefiniowany temat
- Opracowywane i weryfikowane przez zespół recenzentów
- Stała struktura opracowania
 - część tekstowa z prezentacją problemu i podsumowaniem wyników
 - analiza dostępnych danych

TABLE OF CONTENTS	
HEADER	1
ABSTRACT	1
PLAIN LANGUAGE SUMMARY	3
BACKGROUND	3
OBJECTIVES	3
METHODS	3
RESULTS	4
DISCUSSION	7
AUTHORS' CONCLUSIONS	7
ACKNOWLEDGEMENTS	8
REFERENCES	8
CHARACTERISTICS OF STUDIES	10
DATA AND ANALYSES	13
Analysis 1.1. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 1	13
General paediatric assessment - no improvement.	
Analysis 1.2. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 2	14
General paediatric assessment - deterioration.	
Analysis 1.3. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 3	14
Functionally impaired days - no improvement.	
Analysis 1.4. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 4	14
Functionally impaired days - deterioration.	
Analysis 1.5. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 5	15
Nights B2 inhalers used - no improvement.	
Analysis 1.6. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 6	15
Nights B2 inhalers used - deterioration.	
Analysis 1.7. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 7	15
Peak expiratory flow rate - no improvement.	
Analysis 1.8. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 8	16
Peak expiratory flow rate - deterioration.	
Analysis 1.9. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 9	16
Peak expiratory flow rate - pre-medication, morning.	
Analysis 1.10. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 10	16
Peak expiratory flow rate - pre-medication, evening.	
Analysis 1.11. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 11	17
Forced expiratory volume - (in 0.75 seconds).	
Analysis 1.12. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 12	17
Thoracic gas volume.	
Analysis 1.13. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 13	17
Day wheeze.	
Analysis 1.14. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 14	18
Activity.	
WHAT'S NEW	18
HISTORY	19
CONTRIBUTIONS OF AUTHORS	19
DECLARATIONS OF INTEREST	19
SOURCES OF SUPPORT	19
INDEX TERMS	19

Przegląd systematyczny

PLAIN LANGUAGE SUMMARY

Family therapy for asthma in children

Psychological factors may have an effect on asthma in children, or its severity. As some children with families who are having problems have severe asthma, family therapy has been tried. The aim is to resolve any problems there might be in a family, in case they are causing the child stress and then making asthma worse. The review found some evidence from two trials that family therapy (in addition to standard asthma treatments) might help reduce a child's asthma symptoms, but more research is needed to be certain.

BACKGROUND

The incidence of childhood asthma has increased annually at a rapid rate over the last 20 years. A variety of factors have been implicated in the pathogenesis of bronchial asthma including allergies, infections, endocrinological disorders, genetic predisposition and, more recently, psychological elements. Although psychological factors are widely acknowledged to play a part both in precipitating episodes of asthma, and in the control of symptoms, pharmacological treatment alone continues to be the main treatment, and therefore the focus of most research. Recently, however, traditional medical models upholding a split between the "psyche" and the "soma" are being replaced by those which recognise the powerful influences of the mind on the body. Similarly, the need for integrated treatment models which consider behavioural or psychological interventions in addition to pharmacotherapy are well documented (Cluss 1986; Lehrer 1992; Onnis 1984; Molinari 1994; Towns 1994)

Studies which do acknowledge psychosocial aspects to the disease range from cognitive behavioural approaches, to education programmes, relaxation techniques, autogenic therapy, and rational emotive behaviour modification as an adjunct to medication. However, such studies, although recognising that asthma has strong associations with emotional disturbances, have been conducted mainly with adults.

Of the few studies which examine psychological influences in childhood asthma, psychosocial and emotional factors are regarded as important in the most severely ill of asthmatic children (Gustafsson 1986; Lask 1979). A child's chronic illness can place psychological burdens on both child and family (Newacheck 1991; Pless 1991; Steinhauer 1974). In addition, Weil (Weil 1999) concluded that two psychological variables, child and carer mental health, were important predictors of subsequent asthma morbidity. The earliest research conducted in the 1970s indicated the presence of disturbed family relations in the families of children with severe asthma (Liebman 1974; Liebman 1976). This prompted a limited number of trials to be conducted in the area of family therapy.

The theoretical basis which underpins the systemic view of family therapy presupposes that "symptoms" can be the product of a dysfunctional family system. Therapeutic intervention is used to alter

the family system to its dysfunctional behaviours and to empower it to adaptively overcome the difficulties which give rise to the symptoms. The body of research undertaken so far has been based on a structural family therapy perspective which assumes that relationships between family members adhere to certain patterns, which are often maladaptive to the current life situation. Systemic theories regard phenomena in terms of circularity, rather than in the linear terms of cause and effect inherent to the medical model of illness. Therefore asthma is assumed to be both a symptom of the family dysfunction, and a contributor to it (Lask 1979). Family therapy has been used to decrease the symptoms and impact of asthma.

OBJECTIVES

The objective of this review is to test whether family therapy as an adjunct to traditional medication can be shown to have a significant effect in reducing the symptoms and impact of asthma in children.

METHODS

Criteria for considering studies for this review

Types of studies

Clinical trials included were randomised and controlled. Authors have been contacted to ascertain randomisation techniques. Trials included in this review compared family therapy + pharmacological intervention vs pharmacological intervention alone.

Types of participants

Chronically asthmatic children receiving medication who were treated at hospital outpatient departments or clinics, and their families.

Types of interventions

Any family therapy based on systemic theories which focus on the whole family and which aim to arrive at an understanding of

DATA AND ANALYSES

Comparison 1. FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE

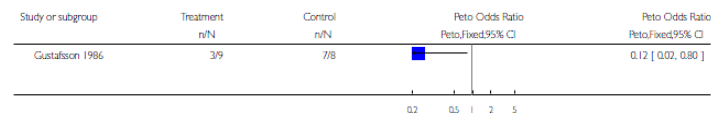
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 General paediatric assessment - no improvement			Peto Odds Ratio (Peto, Fixed, 95% CI)	Totals not selected
2 General paediatric assessment - deterioration			Peto Odds Ratio (Peto, Fixed, 95% CI)	Totals not selected
3 Functionally impaired days - no improvement			Peto Odds Ratio (Peto, Fixed, 95% CI)	Totals not selected
4 Functionally impaired days - deterioration			Peto Odds Ratio (Peto, Fixed, 95% CI)	Totals not selected
5 Nights B2 inhalers used - no improvement			Peto Odds Ratio (Peto, Fixed, 95% CI)	Totals not selected
6 Nights B2 inhalers used - deterioration			Peto Odds Ratio (Peto, Fixed, 95% CI)	Totals not selected
7 Peak expiratory flow rate - no improvement			Peto Odds Ratio (Peto, Fixed, 95% CI)	Totals not selected
8 Peak expiratory flow rate - deterioration			Peto Odds Ratio (Peto, Fixed, 95% CI)	Totals not selected
9 Peak expiratory flow rate - pre-medication, morning			Mean Difference (IV, Fixed, 95% CI)	Totals not selected
10 Peak expiratory flow rate - pre-medication, evening			Mean Difference (IV, Fixed, 95% CI)	Totals not selected
11 Forced expiratory volume - (in 0.75 seconds)			Mean Difference (IV, Fixed, 95% CI)	Totals not selected
12 Thoracic gas volume			Mean Difference (IV, Fixed, 95% CI)	Totals not selected
13 Day wheeze			Mean Difference (IV, Fixed, 95% CI)	Totals not selected
14 Activity			Mean Difference (IV, Fixed, 95% CI)	Totals not selected

Analysis 1.1. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 1 General paediatric assessment - no improvement.

Review: Family therapy for asthma in children

Comparison: 1 FAMILY THERAPY vs DRUG THERAPY ALONE

Outcome: 1 General paediatric assessment - no improvement



Merck Manual

The image displays two versions of the Merck Manual website side-by-side. The top version is the 'Professional Version', featuring a dark blue header with the Merck Manual logo and 'Professional Version' text. It includes a search bar, a 'Medical Topics' menu, and a language dropdown set to 'ENGLISH'. A button for 'VIEW CONSUMER VERSION' is visible. The bottom version is the 'Consumer Version', with a white header and 'Consumer Version' text. It features a search bar, a navigation menu with categories like 'MEDICAL TOPICS', 'SYMPTOMS', 'EMERGENCIES', 'DRUG INFORMATION', 'NEWS & COMMENTARY', and 'RESOURCES', and a language dropdown set to 'ENGLISH'. A button for 'VIEW THE PROFESSIONAL VERSION FOR DOCTORS AND MEDICAL STUDENTS' is present. A portrait of a man is shown on the right side of the consumer version header. Below the navigation menu, both versions show 'Featured Articles and Topics' with search bars and introductory text. The professional version lists 'Shifting Guidelines Concerning Ho...', while the consumer version lists '3 Signs Your Sniffles May be More Than a Cold—Commentary' and 'Three Keys to Navigating Postpartum Health—Commentary'. A 'MEDICAL TOPIC' article titled 'Compression Fractures of the Spine' is also visible in the consumer version.

<http://www.merckmanuals.com/>

MedlinePlus

NIH U.S. National Library of Medicine

MedlinePlus
Trusted Health Information for You

Search MedlinePlus MedlinePlus Connect accepts requests for information on **diagnoses (problem codes)**, **medications**, and **lab tests**, and returns related information from MedlinePlus.

About MedlinePlus

This API is available as a **Web application** or a **Web service**.

Health Topics **Drugs & Supplements** **Videos & Tools**

Health Topics
Find information on health, wellness, disorders and conditions

Drugs & Supplements
Learn about prescription drugs, over-the-counter medicines, herbs, and supplements

Videos & Tools
Discover tutorials, health and surgery videos, games, and quizzes

Lab Test Information
Learn why your doctor orders laboratory tests and what the results may mean

Medical Encyclopedia
Articles and images for diseases, symptoms, tests, treatments

Stay Connected
Sign up for newsletters
Enter email address

NIH Magazine
Read the latest

ClinicalTrials.gov
Search clinicaltrials.gov for drug and treatment studies.

Easy-to-Read Materials **Organizations and Directories** **Health Information in Multiple Languages** **MedlinePlus Connect for EHRs**

1. A patient portal, patient health record (PHR) system, or electronic health record (EHR) system sends a problem, medication, or lab code-based request to MedlinePlus Connect.

2. MedlinePlus Connect responds with targeted consumer health information for display in the patient portal or clinical system.

Accepted codes

- diagnoses – ICD-9/10-CM, SNOMED-CT
- drugs – RxNorm
- tests – LOINC

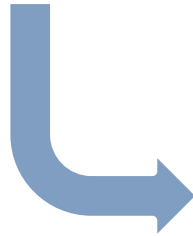
Also text query (in English)
Results in JSON format

<https://medlineplus.gov/>

MedLinePlus

Kod ICD-9-CM = 250.33

https://apps2.nlm.nih.gov/medlineplus/services/mpconnect_service.cfm?mainSearchCriteria.v.cs=2.16.840.1.113883.6.103&mainSearchCriteria.v.c=250.33&knowledge



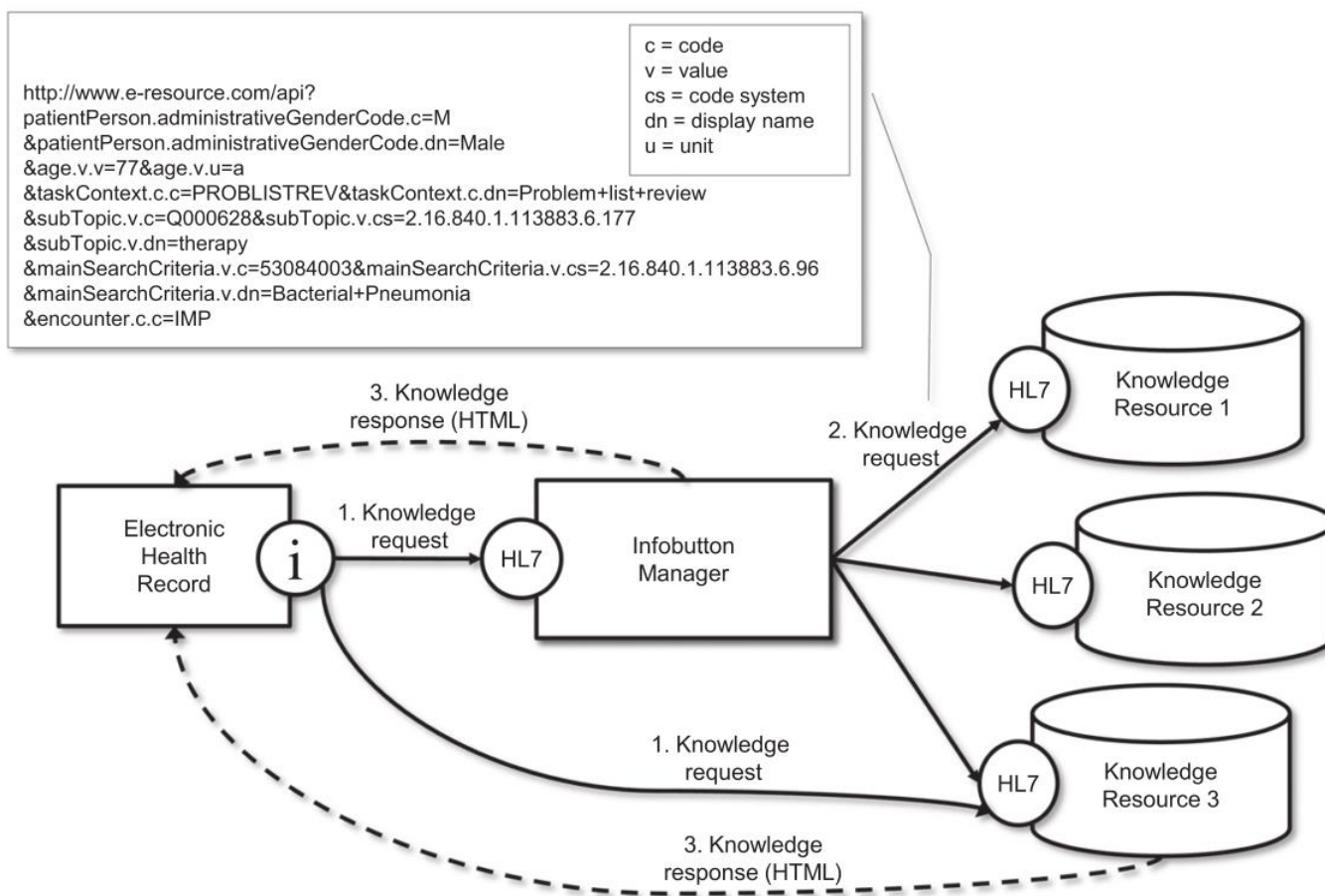
```
"entry": [
  {
    "lang": "en",
    "title": {
      "_value": "Coma",
      "type": "text"
    },
    "link": [
      {
        "title": "Coma",
        "rel": "alternate",
        "type": "html",
        "href": "https://medlineplus.gov/coma.html?utm_source=mpplusconnect&utm_medium=service"
      }
    ],
    "id": {
      "_value": "tag: https:, 2018-12-01:https://medlineplus.gov/coma.html?utm_source=mpplusconnect&utm_medium=service"
    },
    "updated": {
      "_value": "2018-01-12T00:01:27Z"
    },
    "summary": {
      "_value": "<p>A coma is a deep state of unconsciousness. An individual in a coma is alive but unable to move or respond to his or her environment. Coma may occur as a complication of an underlying illness, or as a result of injuries, such as <a href='\"https://medlineplus.gov/traumaticbraininjury.html?utm_source=mpplusconnect&utm_medium=service\"'>brain injury</a>.</p><p>A coma rarely lasts more than 2 to 4 weeks. The outcome for coma depends on the cause, severity, and site of the damage. People may come out of a coma with physical, intellectual, and psychological problems. Some people may remain in a coma for years or even decades. For those people, the most common cause of death is infection, such as pneumonia.</p><p class='\"NLMAttribution\"'> NIH: National Institute of Neurological Disorders and Stroke</p> <p class='\"NLMrelatedLinks\"'><ul><li><a href='\"https://medlineplus.gov/ency/article/003931.htm?utm_source=mpplusconnect&utm_medium=service\"'>EEG</a> (Medical Encyclopedia)</li></ul></p>",
      "type": "html"
    }
  }
],
```

INFOBUTTONS


Infobuttons

- Odnośniki z systemów typu EPR do potencjalnie interesujących informacji w zewnętrznych repozytoriach
- *Infobutton Manager* – dobór odpowiedniego źródła wiedzy w zależności od kontekstu (np. dane pacjenta, temat zapytania, odbiorca wyniku)
- Szczegółowa specyfikacja w ramach standardu HL7 (*context-aware information retrieval*)
 - wykorzystanie modelu HL7 RIM (→ HL7 V3)
 - zapytanie i jego kontekst jako RMIM
 - wywołanie poprzez URL, SOAP albo RESTful
- Dostępne otwarte implementacje infrastruktury

Infobutton Manager – schemat działania



Infobutton - kontekst

Open  nbutton

OpenInfobutton

*Server:

*Execution mode:

*Requesting Organization:

*Task context:

*Main search criteria: Code: Display name: Code system:

Age: Value: Unit:

Age group:

Gender:

Care setting:

Performer: language: discipline:

Information recipient: language: discipline:

Output (XML and JSON available only in the production server):

```
http://dev-service.oib.utah.edu:8080/infobutton-service/infoRequest?
representedOrganization.id.root=1.3.6.1.4.1.3768&xsItTransform=Infobutton_UI_VA&taskContext.c.c=MLREV&mainSearchCriteria.v.cs=2.16.840.1.113883.6.103&main
SearchCriteria.v.dn=warfarin&patientPerson.administrativeGenderCode.c=M&age.v.v=44&age.v.u=a&encounter.c.c=IMP&informationRecipient=PROV
```

<http://lite.bmi.utah.edu/InfobuttonQA.html>

Infobuttons – demo

Open **i**nfobutton

Electronic Health Record University of Utah Information audience Patient

Age 47 ↑

Gender F

Problem list

- Heart Failure **i**
- Post traumatic stress disorder **i**
- Gastroesophageal reflux **i**
- Diabetes mellitus type 2 **i**
- Migraine **i**
- Add problem Neurofibromatosis type 1 **i**

Medications

- Rosuvastatin (Crestor), 20 Mg, Tablet, Oral **i**
- Linagliptin (Tradjenta), 5 Mg, Tablet, Oral **i**
- Warfarin (Coumadin) 7.5Mg, Tablet, Oral **i**
- Clopidogrel 300 MG Oral Tablet **i**
- Amoxicillin 500 MG Oral Tablet **i**

Lab results

- Serum digoxin 1.5 mg/dl **N i**
- Total cholesterol 300 mg/dl **H i**
- K 2.8 mEq/L **L i**
- Na 127 mEq/L **L i**
- C Reactive Protein 555 ug/dl **H i**
- HbA1c 8.2% **H i**

INDEKSOWANIE I PRZESZUKIWANIE REPOZYTORIÓW

Indeksowanie zasobów

- Indeksowanie ręczne
 - wykonywane przez ludzi – ekspertów z danej dziedziny
 - zazwyczaj przy użyciu kontrolowanej terminologii i zgodnie z pewnym przyjętym protokołem (np. do rozwiązywania konfliktów)
 - stosowane w repozytoriach bibliograficznych i adnotowanych
- Indeksowanie automatyczne
 - z wykorzystaniem terminów z rozważanych zasobów i/lub kontrolowanej terminologii
 - stosowane w repozytoriach pełnotekstowych
- Podejścia hybrydowe → indeksy automatyczne „czyszczone” przez ekspertów (np. w MEDLINE)

Kontrolowane terminologie

Terminologia kontrolowana (ang. *controlled terminology*) to **zbiór terminów** (dla każdego wersja kanoniczna i alternatywy) oraz **relacji między nimi** (hierarchia, synonim, związek), który może zostać wykorzystany do **indeksowania zasobów** (a także do **kodowania informacji**).

- MeSH (Medical Subject Heading)
 - terminologia opracowana przez NLM (MEDLINE), I wydanie w 1960 r.
 - corocznie uaktualniane, poprawiane i rozszerzane: 5 700 terminów w pierwszym wydaniu, > 26 tys. w najnowszym)
 - typy terminów
 - deskryptor (*Main Heading*) → pojęcie biomedyczne
 - kwalifikator (*Subheading*) → doprecyzowanie znaczenia deskryptora
 - rekord uzupełniający (*Supplementary Concept Record*) → lek lub inna substancja chemiczna
- EMTREE (dla EMBASE)

MeSH – deskryptory i kwalifikatory

Liver MeSH Descriptor Data 2017

Details	Qualifiers	MeSH Tree Structures	Concepts
MeSH Heading	Liver		
Tree Number(s)	A03.620		
Unique ID	D008099		
Annotation	/ blood supply: consider also LIVER CIRCULATION; / cytol: consider also HEPATOCYTES & KUPFFER CELLS; / surg: consider also HEPATECTOMY & LIVER TRANSPLANTATION; inflammation = HEPATITIS & its specifics; specialty is HEPATOLOGY see GASTROENTEROLOGY; do not confuse "hepatic" with "intrahepatic"; "intrahepatic" may refer to BILE DUCTS, INTRAHEPATIC & its diseases		
Scope Note	A large lobed glandular organ in the abdomen of vertebrates that is responsible for detoxification, metabolism, synthesis and storage of various substances.		
Entry Term(s)	Livers		
See Also	Hepatectomy		
Consider Also	consider also terms at HEPAT-		
Public MeSH Note	/cytology was LIVER CYTOLOGY 1964-65; /enzymology was LIVER ENZYMOLOGY 1964-65; /physiology was LIVER FUNCTION 1964-65		
History Note	/cytology was LIVER CYTOLOGY 1964-65; /enzymology was LIVER ENZYMOLOGY 1964-65; /physiology was LIVER FUNCTION 1964-65		
Entry Combination	transplantation:Liver Transplantation		
Date of Entry	1999/01/01		
Revision Date	2015/06/16		

Liver MeSH Descriptor Data 2017

Details	Qualifiers	MeSH Tree Structures	Concepts
Allowable Qualifiers	abnormalities (AB) anatomy & histology (AH) blood supply (BS) chemistry (CH) cytology (CY) diagnostic imaging (DG) drug effects (DE) embryology (EM) enzymology (EN) growth & development (GD) immunology (IM) injuries (IN) innervation (IR) metabolism (ME) microbiology (MI) parasitology (PS) pathology (PA) physiology (PH) physiopathology (PP) radiation effects (RE) secretion (SE) surgery (SU) ultrastructure (JL) virology (VI)		

surgery MeSH Qualifier Data 2017

Details	Concepts
MeSH Qualifier	surgery
Unique ID	Q000601
Annotation	subhead only; includes "operation", "surgical therapy"; for tissue section or coagulation by laser; not for transplantation (= /transplantation); indexing policy: Manual 19.8.70; DF: /surg or /SU
Scope Note	Used for operative procedures on organs, regions, or tissues in the treatment of diseases, including tissue section by lasers. It excludes transplantation, for which "transplantation" is used.
Entry Version	SURG
Abbreviation	SU
Entry Term(s)	intraoperative procedures invasive procedures operations operative procedures operative therapy perioperative procedures preoperative procedures preoperative procedures
Online Note	search policy: Online Manual; use: main heading/SU or SU (SH) or SUBS APPLY SU
History Note	66; used with Category A, C & F 1966-74; A, C & F3 1975; A, B2, C & F3 1976-89; A1-10, A13-14, A16, B2, C & F3 1990 forward
Date of Entry	1973/12/27
Revision Date	2003/07/24

Organizacja deskryptorów

- Deskryptory podzielone na 16 kategorii
- Kategorie zorganizowane jako wielopoziomowe drzewa
 - od najbardziej ogólnych do najbardziej szczegółowych
 - do 13 poziomów w kategorii
- Deskryptor może wystąpić w więcej niż jednym drzewie

1. - Anatomy [A]

- [Body Regions \[A01\]](#) +
- [Musculoskeletal System \[A02\]](#) +
- [Digestive System \[A03\]](#) +
- [Respiratory System \[A04\]](#) +
- [Urogenital System \[A05\]](#) +
- [Endocrine System \[A06\]](#) +
- [Cardiovascular System \[A07\]](#) +
- [Nervous System \[A08\]](#) +
- [Sense Organs \[A09\]](#) +
- [Tissues \[A10\]](#) +
- [Cells \[A11\]](#) +
- [Fluids and Secretions \[A12\]](#) +
- [Animal Structures \[A13\]](#) +
- [Stomatognathic System \[A14\]](#) +
- [Hemic and Immune Systems \[A15\]](#) +
- [Embryonic Structures \[A16\]](#) +
- [Integumentary System \[A17\]](#) +

2. - Organisms [B]

- [Animals \[B01\]](#) +
- [Algae \[B02\]](#) +
- [Bacteria \[B03\]](#) +
- [Viruses \[B04\]](#) +
- [Fungi \[B05\]](#) +
- [Plants \[B06\]](#) +
- [Archaea \[B07\]](#) +
- [Mesomycetozoea \[B08\]](#) +

3. + Diseases [C]

- 4. + Chemicals and Drugs [D]
- 5. + Analytical, Diagnostic and Therapeutic
- 6. + Psychiatry and Psychology [F]
- 7. + Phenomena and Processes [G]
- 8. + Disciplines and Occupations [H]
- 9. + Anthropology, Education, Sociology
- 10. + Technology, Industry, Agriculture [J]
- 11. + Humanities [K]

[Virus Diseases \[C02\]](#)

[RNA Virus Infections \[C02.782\]](#)

[Orthomyxoviridae Infections \[C02.782.620\]](#)

▶ [Influenza, Human \[C02.782.620.365\]](#)

[Influenza in Birds \[C02.782.620.375\]](#)

[Respiratory Tract Diseases \[C08\]](#)

[Respiratory Tract Infections \[C08.730\]](#)

[Bovine Respiratory Disease Complex \[C08.730.085\]](#) +

[Bronchitis \[C08.730.099\]](#) +

[Common Cold \[C08.730.162\]](#)

[Empyema, Pleural \[C08.730.265\]](#) +

▶ [Influenza, Human \[C08.730.310\]](#)

[Laryngitis \[C08.730.368\]](#) +

[Legionellosis \[C08.730.382\]](#) +

[Lung Abscess \[C08.730.407\]](#)

[Lung Diseases, Fungal \[C08.730.435\]](#) +

UMLS (Unified Medical Language System)

- Zestaw zasobów i narzędzi wspomagających komputerowe przetwarzanie tekstów biomedycznych rozwijany przez NLM
- Metathesaurus
 - meta-słownik łącząca wiele istniejących słowników oraz terminologii
 - hierarchia i powiązania między pojęciami pochodzącymi z różnych źródeł i w różnych językach
- Semantic Network
 - hierarchia i powiązania między typami semantycznymi związanymi z poszczególnymi pojęciami z Metathesaurus-a
- API pozwalające na wykorzystanie funkcjonalności UMLS-a we własnych aplikacjach

Metathesaurus

Search **Tree** **Recent Searches**

Term CUI Code

clinical decision support system

Release: 2016AB ▾

Search Type: Word ▾

Source: All Sources
AIR
ALT
AOD
AOT

Search Results (2)

- [C0525070](#) Decision Support Systems, Clinical
- [C4035904](#) Clinical decision support (CDS) system

Basic View **Report View** **Raw View**

Concept: [C0525070] Decision Support Systems, Clinical

Semantic Type

- [Intellectual Product](#) [T170]

Definition

MSH/null - Computer-based information systems used to integrate clinical and patient information and provide support for decision-making in patient care.

MSHNOR/null - Datamaskinbaserte informasjonssystemer anvendt for å integrere klinisk informasjon med pasientinformasjon og gi støtte til avgjørelser innen pasientbehandlingen.

Synonyms (38)

- Bestillingsondersteunend systeme, klinisch
- Bestillingsondersteunende systemen, klinische
- Beslutsstødsystem, kliniska
- MSHSWE
- CLIN DECISION SUPPORT SYSTEMS
- Clinical Decision Support Systems
- DECISION SUPPORT SYSTEMS CLIN
- MSH
- Decision Support Systems, Clinical
- Entscheidungsunterstützende Systeme, klinische
- KLINICHESKIE RESHENIIA, KOMPIUTERNYE SISTEMY PODDERZHKI PRINIATIIA
- KLINICHESKIKH RESHENII SISTEMY PODDERZHKI
- MSHRUS

Search **Tree** **Recent Searches**

Term CUI Code

aspirin

Release: 2016AB ▾

Search Type: Word ▾

Source: All Sources
AIR
ALT
AOD
AOT

Search Results (1172)

[: 1 - 25 : 🔍]

- [C0004057](#) Aspirin
- [C1454756](#) N-acetyl-S-(alpha-methyl-4-(2-methylpropyl)-5-oxo-1H-imidazole-2-yl)benzoic acid
- [C3843719](#) Aspirin or aspirin-containing product
- [C0002370](#) Aluminum aspirin
- [C0004058](#) Aspirin allergy
- [C0004059](#) aspirin intolerance
- [C0004060](#) Poisoning by aspirin
- [C0050535](#) acetylsalicylic acid hydrolase
- [C0067608](#) N-3'a-propylphenazonyl-2-acetoxybenzar

Basic View **Report View** **Raw View**

Concept: [C0004057] Aspirin

Semantic Type

- [Organic Chemical](#) [T109]
- [Pharmacologic Substance](#) [T121]

Definition

Synonyms (92)

- 2-(ACETYLOXY)benzoic acid
- DRUGBANK
- 2-(Acetyloxy)benzoic Acid
- MSH
- NCI
- NDFRT
- PDQ
- 2-Acetoxybenzenecarboxylic acid
- 2-Acetoxybenzoic acid
- AAS
- ASA
- ASPIRIN

Semantic Network

The screenshot displays a web-based semantic network interface. It is divided into several main sections:

- Search Panel (Left):** Contains a search bar with the term "abdominal pain", a "Go" button, and a "Release" dropdown set to "2016AB". Below this is a "Search Type" dropdown set to "Word" and a "Source" dropdown with options: "All Sources", "AIR", "ALT", "AOD", and "AOT". A "Search Results (194)" list is shown below, with the first few items being "Abdominal Pain", "No abdominal pain", and "severe; abdominal pain, abdominal rigidity".
- Basic View Panel (Top Center):** Shows the selected concept: "Concept: [C0000737] Abdominal Pain". It has three expandable sections: "Semantic Type" (highlighted with an orange box and containing "Sign or Symptom [T184]"), "Definition", and "Synonyms (193)".
- Relationship Configuration Panel (Bottom Center):** A dropdown menu is set to "2016AB". It has two sections: "Select a Semantic Type" with a list of options including "Sign or Symptom" (which is selected), and "Select a Relation Label" with a list of options including "adjacent_to", "affects", "analyzes", etc.
- Report Panel (Bottom Right):** Shows the "Report" for the selected concept. It includes sections for "Sign or Symptom", "Definition" (describing it as an observable manifestation), "Properties" (Unique Identifier: T184, Tree Number: A2.2.2), "Parents" (Finding), "Relations" (listing relationships like "degree_of Sign or Symptom (D)", "isa Finding (D)", etc.), "Inverse Relations", "Inherited Relations", and "Inverse Inherited Relations".

MetaMap

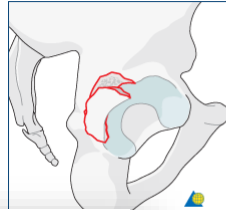
- System do analizy tekstów biomedycznych w języku angielskim rozwijany przez NLM
- Wykorzystuje techniki przetwarzania języka naturalnego do wykrywania w tekstach terminów z UMLS Metathesaurus
- Podstawowy element systemu Medical Text Indexer (MTI) używanego przez NLM do automatycznego indeksowania publikacji medycznych
- Możliwość wykorzystania we własnych zastosowaniach (udostępniony darmowo jako *open source*)

MetaMap

Tylko MeSH



1. Introduction and epidemiology



Posterior wall fractures are the most common acetabular fractures and account for approximately 24% of acetabular fractures.

They typically involve the rim of the acetabulum, a portion of the retroacetabular surface, and a variable segment of the articular cartilage.

The fracture line leaves undisturbed the major portion of the posterior column. A posterior dislocation is usually associated.

Posterior wall column.

Wszystkie dostępne słowniki



```
Phrase: "Posterior wall fractures"
>>>> Phrase
posterior wall fractures
<<<<< Phrase
>>>> Mappings
Meta Mapping (827):
    827 Fractures (Fractures, Bone) [Injury or Poisoning]
<<<<< Mappings

Phrase: "are"
>>>> Phrase
<<<<< Phrase

Phrase: "the most common acetabular fractures"
>>>> Phrase
most common acetabular fractures
<<<<< Phrase
>>>> Mappings
Meta Mapping (704):
    574 Acetabulum [Body Part, Organ, or Organ Component]
    812 Fractures (Fractures, Bone) [Injury or Poisoning]
<<<<< Mappings

Phrase: "and"
>>>> Phrase
<<<<< Phrase

Phrase: "account"
>>>> Phrase
account
<<<<< Phrase
>>>> Mappings
Meta Mapping (900):
    900 Accountability [Idea or Concept]
<<<<< Mappings
```

```
Phrase: "Posterior wall fractures"
>>>> Phrase
posterior wall fractures
<<<<< Phrase
>>>> Mappings
Meta Mapping (981):
    981 Posterior wall fracture [Intellectual Product]
<<<<< Mappings

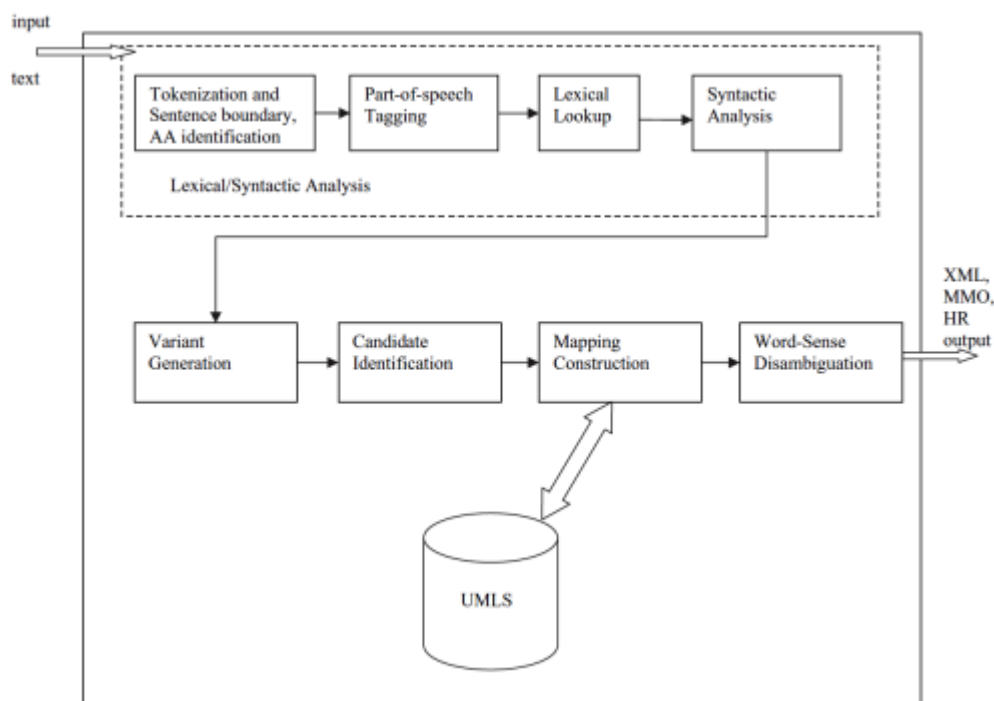
Phrase: "are"
>>>> Phrase
<<<<< Phrase

Phrase: "the most common acetabular fractures"
>>>> Phrase
most common acetabular fractures
<<<<< Phrase
>>>> Mappings
Meta Mapping (815):
    645 Common (Common (qualifier value)) [Quantitative Concept]
    842 Acetabular Fracture [Injury or Poisoning]
Meta Mapping (815):
    645 Common (shared attribute) [Functional Concept]
    842 Acetabular Fracture [Injury or Poisoning]
<<<<< Mappings

Phrase: "and"
>>>> Phrase
<<<<< Phrase

Phrase: "account"
>>>> Phrase
account
<<<<< Phrase
>>>> Mappings
Meta Mapping (1000):
    1000 Account # (Account number:Identifier:Point in time:^Patient:Nominal) [Clinical Attribute]
Meta Mapping (1000):
    1000 account (account - ActClass) [Idea or Concept]
<<<<< Mappings
```

Przetwarzanie tekstu w MetaMap



1. Podział na tokeny, wykrywanie skrótów
2. Oznaczanie części mowy
3. Uzyskanie informacji leksykalnej z leksykonu SPECIALIST (UMLS)
4. Analiza składniowa – wykrywanie fraz
5. Generowanie wariantów fraz
6. Identyfikacja kandydatów do mapowań
7. Konstrukcja mapowań (przez łączenie kandydatów)
8. Usuwanie zanegowanych mapowań
9. Wybór mapowań najlepiej dopasowanych do otaczającego tekstu

Indeksowanie automatyczne

- Wstępne przetwarzanie dokumentu
 - podział tekstu na słowa/tokeny (tokenizacja)
 - usuwanie „nieznaczących” słów (tzn. stopwords)
 - normalizacja – ujednoczenie zapisu (np. tylko małe litery)
 - transformacja słów do formy kanonicznej (termów) – *stemming* (wspólna część) lub *lematyzacja* (forma podstawowa)

stemming: am, are, is → am, ar, is
lematyzacja: am, are, is → be

- Reprezentacja w formie **worka słów** (ang. *bag of words*), czyli zbioru termów występujących w dokumencie
 - wykorzystanie bezpośrednio do budowy indeksu
 - budowa dodatkowych metryk na podstawie tej reprezentacji (TF-IDF)

Reprezentacja TF-IDF

TF = *term frequency*
IDF = *inverse document frequency*

- Każdy dokument reprezentowany jako wektor w przestrzeni m -wymiarowej (m – liczba termów)
- Poszczególne elementy wektora zdefiniowane jako

$$TFIDF(t, d) = TF(t, d) \times IDF(t)$$

$TF(t, d)$ = liczba wystąpień termu t w dokumencie d

$$IDF(t) = \log \left(\frac{\text{liczba wszystkich dokumentow}}{\text{liczba dokumentow z termem } t} \right)$$

- Połączenie perspektywy „lokalnej” (TF) oraz „globalnej” (IDF) przy ocenie poszczególnych termów i dokumentów

Problemy z indeksowaniem automatycznym

- Synonimy – różne termy, takie samo znaczenie
- Polisemia – takie same termy, różne znaczenie
- Znalezione termy mogą nie być adekwatne do głównego tematu dokumentu („dygresje”)
- Znaczenie termów zależne od sąsiedztwa (np. wysokie ciśnienie) – konieczność rozważania większego kontekstu
- Różna „granularność” indeksowanych dokumentów i zapytań – zapytanie dotyczy antybiotyków jako klasy leków, a dokumenty dotyczą konkretnych substancji

Mechanizmy rozszerzania indeksu albo zapytań w celu rozwiązania (części) powyższych problemów

Przeszukiwanie repozytoriów

- Dwa podejścia do dopasowywania dokumentów i zapytań
 - dopasowanie dokładne (*exact match*) – zapytania w formie wyrażeń logicznych (AND, OR , NOT) → wymagane pełne dopasowanie dokumentu i zapytania
 - dopasowanie częściowe (*partial match*) – wykorzystanie różnych miar dopasowania, wybór dokumentów najlepiej (także częściowo) dopasowanych do zapytania (→ *relevance ranking*)
- Dopasowanie dokładne dla indeksów stworzonych ręcznie (bazy bibliograficzne i adnotowane), dopasowanie częściowe dla indeksów automatycznych (repozytoria pełnotekstowe)

Dopasowanie dokładne preferowane przez zaawansowanych użytkowników (wrażenie lepszej kontroli), ale w praktyce brak znaczących różnic w uzyskiwanych wynikach

Wyznaczanie dopasowania częściowego

- Miara Jaccarda – dla reprezentacji *bag of words*
(→ dokument jako zbiór słów)

$$\text{sim}(d_i, d_j) = \frac{|d_i \cap d_j|}{|d_i \cup d_j|}$$

- Miara **cosinusowa** – dla reprezentacji TFIDF
(→ dokument jako wektor liczbowy)

$$\text{sim}(d_i, d_j) = \frac{d_i \cdot d_j}{\|d_i\| \times \|d_j\|} = \frac{\sum_t \text{TFIDF}(t, d_i) \times \text{TFIDF}(t, d_j)}{\|d_i\| \times \|d_j\|}$$

W przypadku obliczania podobieństwa między dokumentem a zapytaniem, czynnik TF jest obliczany na podstawie zapytania, a IDF – na podstawie zbioru dokumentów.

Miary oceny systemów IR

- Ocena bezpośrednia (*system-oriented evaluation*)
- Precyzja (*precision*) i przywołanie (*recall*)

$$precision(q) = \frac{|wyszukane_q \cap istotne_q|}{|wyszukane_q|}$$

$$recall(q) = \frac{|wyszukane_q \cap istotne_q|}{|istotne_q|}$$

- *Precision@k* – precyzja wyznaczona na podstawie k -pierwszych odszukanych dokumentów
- *Average precision* (uwzględniająca kolejność zwracanych dokumentów) i *mean average precision* (dla zbioru zapytań)

Problem ze oceną bezpośrednią

- Ocena za pomocą „złotego standardu” (albo *ground truth*)
- Konieczność określenia dokumentów istotnych z punktu widzenia danego zapytania (→ ogromna pracochłonność)
- Znaczące różnice w ocenach ekspertów wskazujących dokumenty istotne dla zapytania
 - Kolekcja OHSUMED – kappa = 0.41
 - Nasz eksperyment – kappa = 0.30



słaba zgodność ocen

Nasz eksperyment...

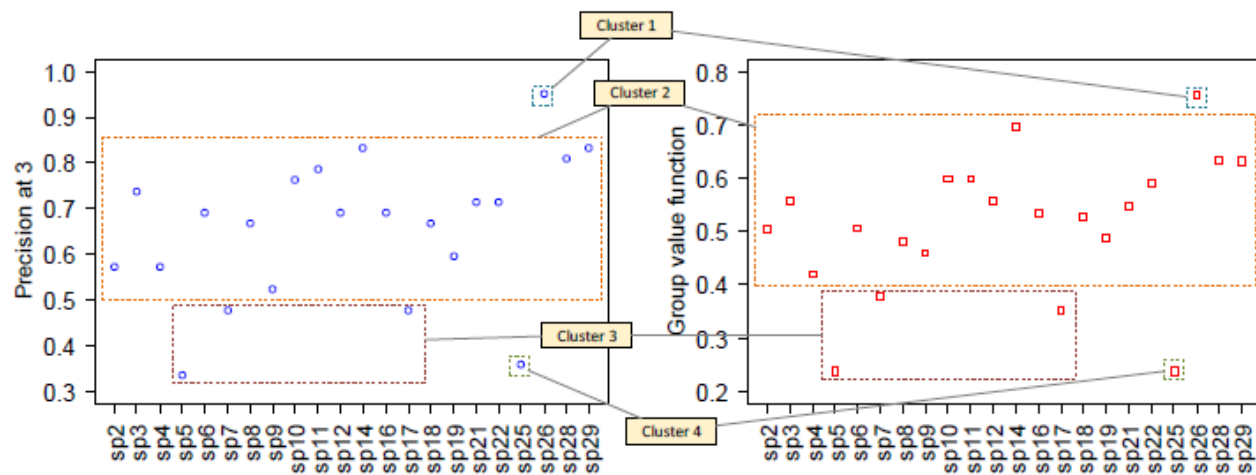
Appendix 3. Coded triples representing relevance evaluations by physicians

Participant	1	2	3
sp2	XXX	XXX	YX
sp3	XNN	XXX	XN
sp4	NNY	XXX	NX
sp5	XXX	XXX	XX
sp6	XNX	YXN	XX
sp7	XXN	XXX	XX
sp8	XXX	NXN	XY
sp9	NNY	YXX	XX
sp10	NNY	YXN	NX
sp11	NNY	YXN	NX
sp12	NNN	XXX	NX
sp14	NYN	YXX	NN
sp16	NNN	YXX	XX
sp17	XXN	NXX	XX
sp18	NYN	XXX	NN
sp19	XYN	XXX	YX
sp21	NXN	YXX	XX
sp22	NNN	XNN	NN
sp25	NNX	XXX	NX
sp26	YYY	YNN	NN
sp28	YNN	YNN	NN
sp29	NNY	NXN	NX

There are major differences in evaluations across vignettes. For example, physician sp5 (considered all of them to be relevant) and sp25 (considered all of them not relevant).

Vignette

Appendix 6. Selected clustering of physicians in the context of precision at 3 and group value function



Physician sp5 from cluster 3 and sp25 from cluster 4 are very similar in terms of these two measures. However, a closer look at their coded triples (Appendix 3) reveals differences in evaluations across vignettes. For example, reviews retrieved for vignette 1 were evaluated as *XXX* by sp5 and as *NNX* by sp25, while for vignette 10 the evaluations were *NNX* for sp5 and *XXX* for sp25. While these differences were compensated after averaging values of both measures over all vignettes, they were captured by the kappa coefficient (that indicated the lack of agreement between sp5 and sp25) and resulted in placing these two physicians in two different clusters.

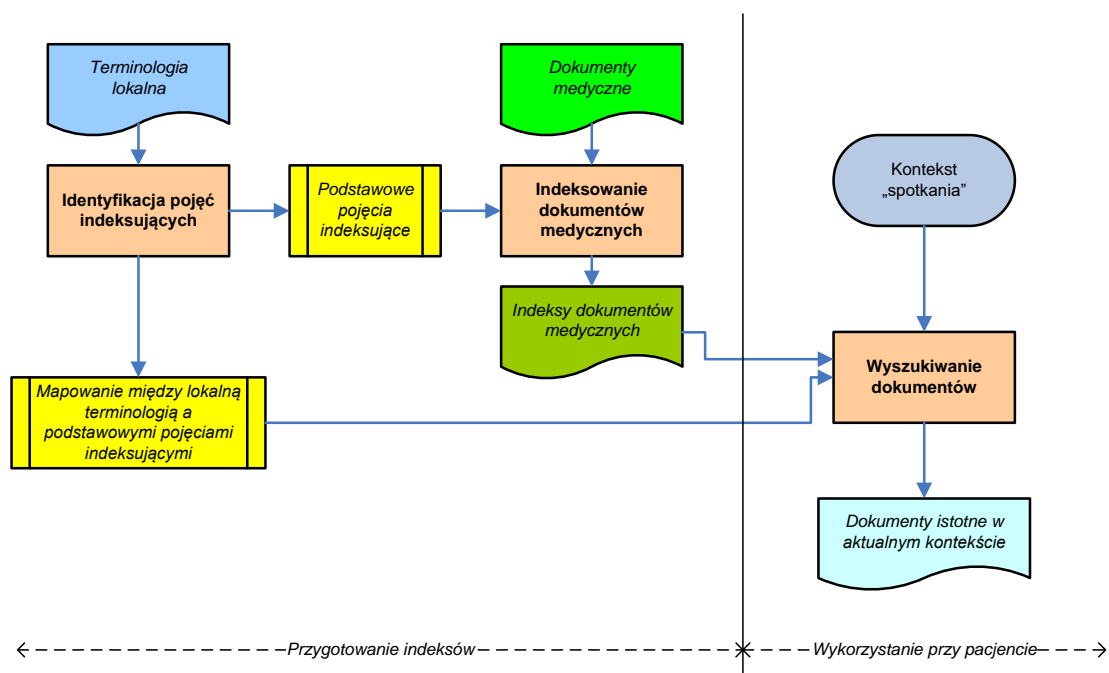
Inne podejścia do oceny

- Ocena pośrednia – wpływ użycia systemu na jakość zadań wykonywanych przez użytkowników (*user-oriented evaluation*)
- Częsty scenariusz – odpowiedzi na pytania przed i po użyciu systemu IR do wyszukania informacji
 - w eksperymentach brak różnic między różnymi podejściami do formułowania zapytań (→ dopasowanie dokładne i częściowe)
 - różny przyrost trafności w zależności od kategorii użytkowników (większy dla pielęgniarek, mniejszy dla lekarzy), ale porównywalny efekt końcowy

ROZSZERZANIE INDEKSÓW I ZAPYTAŃ

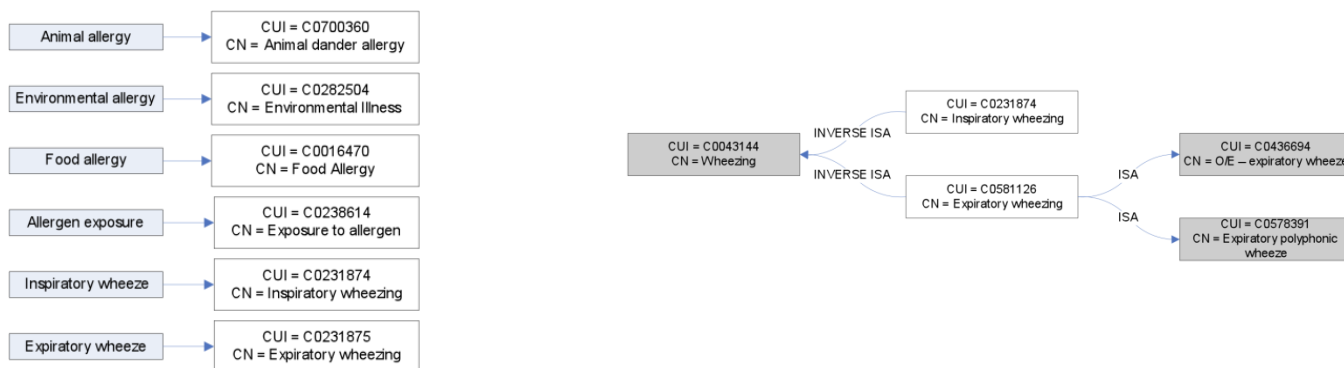
Rozszerzanie indeksów

- Automataczne wyszukiwanie przeglądów systematycznych „dopasowanych” do aktualnego pacjenta
- Uwzględnienie lokalnej terminologii w indeksowaniu i wyszukiwaniu dokumentów



Identyfikacja terminów indeksujących

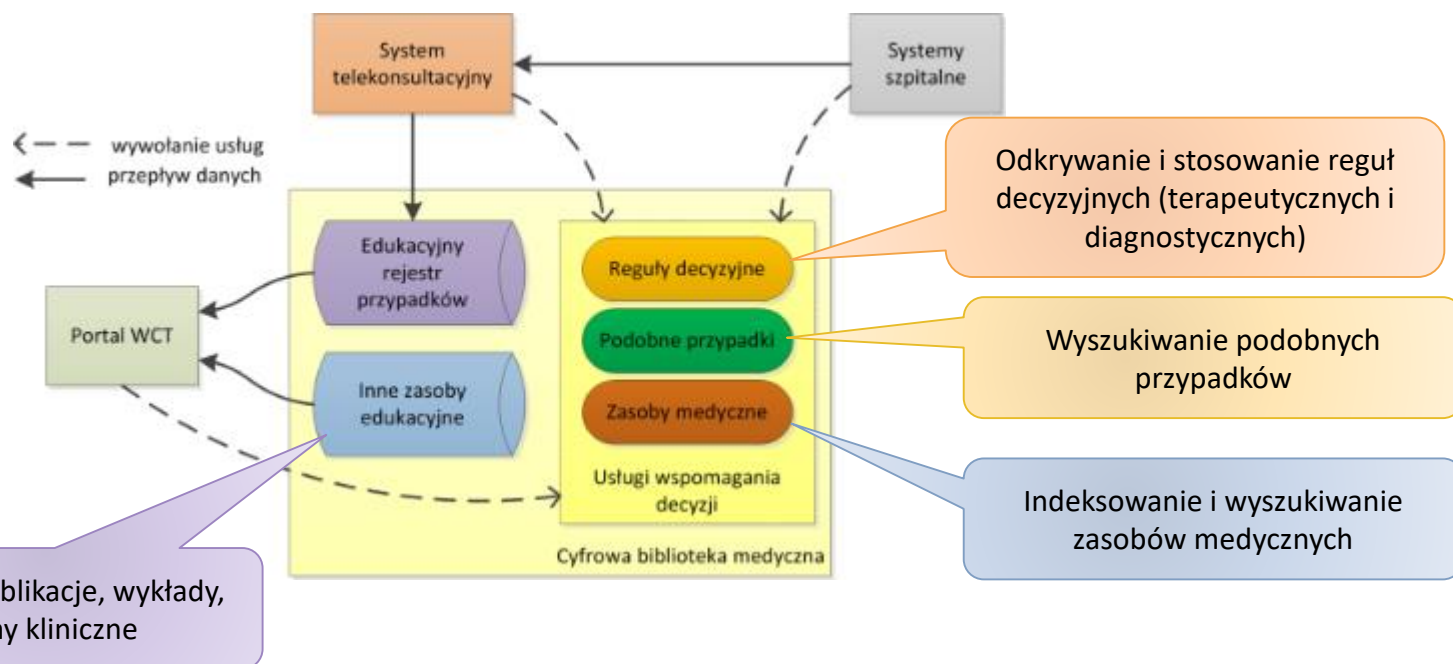
- Podstawowe terminy indeksujące (Metathesaurus)
- Rozszerzone terminy indeksujące – synonimy, hypernimy i hyponimy dla terminów podstawowych (Metathesaurus)



- Wyszukiwanie terminów rozszerzonych w dokumentach (MetaMap) i mapowanie do terminów podstawowych

Rozszerzanie zapytań

- Wyszukiwanie zasobów w wybranych serwisach (usługa w ramach Wielkopolskiego Centrum Telemedycyny)
- Indeksowanie zasobów za pomocą terminów MeSH



Rozszerzanie zapytań

- Tłumaczenie zapytań tekstowych użytkownika (PL) na ciąg terminów MeSH – *stemming* i wybór najlepszego dopasowania
- Rozszerzenie wewnętrznego zapytania poprzez dodanie bardziej szczegółowych terminów z mniejszą wagą

„Wounds, Penetrating”



```
„Wounds, Penetrating”^1.0  
„Decapitation”^0.5  
„Eye Injuries, Penetrating” ^0.5  
„Head Injuries, Penetrating”^0.5  
„Wounds, Gunshot”^0.5  
„Wounds, Stab”^0.5  
„Needlestick Injuries”^0.33
```

- Poprawa wyników (MAP@10, przywołanie) dla rozszerzonych zapytań, ale pogorszenie precyzji (akceptowalne w praktyce)

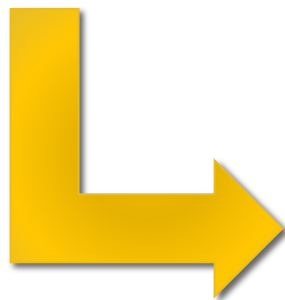
PODSUMOWANIE

Wpływ EBM i systemów IR na podejmowane decyzje

Table 3 Nine observational studies reporting cognitive impact of clinical information-retrieval technology on physicians (sorted by frequency of searches for information with positive impact)

Reference number	Searches with positive impact (%)	Number of searches	Number of participants	Recall	Design	Platform
Hayward et al. [28]	20	20	9	Up to 1 month	Cross-sectional	Multiple databases on CD-ROM
Jousimaa et al. [21]	36	2036	102	None	Cohort	Finnish guidelines on CD-ROM
Lindberg et al. [29]	36	1158	552	CIT ^a : Up to 12 months	Cross-sectional	Bibliographic database on CD-ROM
Swinglehurst et al. [30]	39	60	22	Up to 1 month	Case series	Multiple databases (device not reported)
Haynes et al. [20]	41	280	158	Up to 8 months	Cohort	Bibliographic database on the internet
Gorman et al. [14]	51	60	48	Up to 14 months	Cross-sectional	Bibliographic database on the internet
Veenstra [31]	59	261	30	Up to 12 months	Cross-sectional	Bibliographic database on the internet
Schwartz et al. [17]	70	92	3	Not specified	Cohort	Multiple databases on the internet
Crowley et al. [27]	82	625	82	None	Cohort	Multiple databases on the internet

^a CIT: critical incident technique. This technique is known to be reliable and valid, and may reduce recall bias.



Changed patient management
 Information influenced decision
 An impact on clinical problem solving
 Increased understanding/knowledge or provided reassurance
 Would have had an impact on doctors or their practice
 Had an impact
 Would affect the treatment of future patients
 Confirmed patient care decisions or changed patient management

Podsumowanie

- Znaczenie klinicznych systemów IR
 - potrzeby informacyjne personelu medycznego
 - medycyna oparta na dowodach (EBM)
- Różne podejścia do indeksowania i wyszukiwania (dopasowania) zasobów medycznych
- Ocena systemów IR i problemy z „tradycyjnymi” podejściami → zorientowanie na użytkowników i ich zadania
- Integracja systemów IR z EPR → *infobuttons* jako standard HL7 i jego praktyczne wykorzystanie