



EBM I ZASOBY MEDYCZNE

Repozytoria zasobów medycznych, ich
indeksowanie oraz przeszukiwanie

Podejmowanie decyzji medycznych

- Dwa główne podejścia do podejmowania decyzji w medycynie
 - MDM – *medical decision making*
 - EBM – *evidence-based medicine*
- MDM oparte na formalnych modelach decyzyjnych i w praktyce ograniczone do zastosowań nie-klinicznych

EBM has become a major curricular movement within academic medicine while MDM has remained the interest of a relatively small scholarly community. Its core technique, decision analysis (DA), is used primarily by health policy analysts.

EBM

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

- Połączenie wiedzy decydenta z wynikami badań (*dowodami / faktami*)
 - wiedza ekspercka pozwala na uwzględnienie specyfiki pacjenta
 - wyniki badań pozwalają na aktualizację wiedzy eksperckiej
- Schemat postępowania
 1. Stwierdzenie niedostatecznej wiedzy
 2. Sformułowanie pytania 
 3. Wyszukanie dowodów
 4. Sformułowanie odpowiedzi
 5. Wykorzystanie odpowiedzi

ACQ – *answerable clinical question*
P Patient/population
I Intervention
C Comparison
O Outcome

Typy i źródła dowodów

Typy dowodów

- I poziom
 - publikacje w czasopismach
 - wartość publikacji uzależniona od charakteru badania (RCT,... badania laboratoryjne)
- II poziom
 - przeglądy systematyczne
 - bazujące na wynikach wielu badań

Źródła dowodów

- Bazy publikacji
 - MEDLINE/PubMed
- Bazy przeglądów systematycznych
 - The Cochrane Library
 - UpToDate
 - Clinical Evidence
 - ...

MEDLINE/PubMed

MEDLINE

- Biomedyczna baza bibliograficzna (referencje i streszczenia) utrzymywana przez U.S. NLM
- Tematyka wykraczająca poza medycynę i ochronę zdrowia (np. biofizyka, chemia)
- Indeksowana przy użyciu terminów MeSH
- 18 mln referencji (od 1945), 5400 czasopism, 39 języków

PubMed

- Wyszukiwarka dla MEDLINE
- Uzupełniająca baza danych
 - odnośniki do pełnych tekstów (części) prac
 - referencje prac zgłoszonych do PubMed Central
 - referencje oczekujące na indeksowanie w MEDLINE
 - referencje spoza zakresu tematycznego MEDLINE (np. astrofizyka)
- Ponad 20 mln referencji

PubMed

NCBI Resources ☒ How To ☒ My NCBI Sign In

PubMed.gov
U.S. National Library of Medicine
National Institutes of Health

Search: PubMed

☒ RSS [Save search](#) [Limits](#) [Advanced search](#) [Help](#)

[Display Settings:](#) ☒ Summary, 20 per page, Sorted by Recently Added [Send to:](#) ☒

Results: 12

☐ [MET3-AE system to support management of pediatric asthma exacerbation in the emergency department.](#)
1. Wilk S, Michalowski W, Farion K, Sayyad Shirabad J.
Stud Health Technol Inform. 2010;160(Pt 2):841-5.
PMID: 20841804 [PubMed - in process]
[Related citations](#)

☐ [A tree-based decision model to support prediction of the severity of asthma exacerbations in children.](#)
2. Farion K, Michalowski W, Wilk S, O'Sullivan D, Matwin S.
J Med Syst. 2010 Aug;34(4):551-62. Epub 2009 Mar 11.
PMID: 20703909 [PubMed - indexed for MEDLINE]
[Related citations](#)

☐ [Implementing an Integrative Multi-agent Clinical Decision Support System with Open Source Software.](#)
3. Sayyad Shirabad J, Wilk S, Michalowski W, Farion K.
J Med Syst. 2010 Mar 18. [Epub ahead of print]
PMID: 20703742 [PubMed - as supplied by publisher]
[Related citations](#)

☐ [Automatic indexing and retrieval of encounter-specific evidence for point-of-care support.](#)
4. O'Sullivan DM, Wilk SA, Michalowski WJ, Farion KJ.
J Biomed Inform. 2010 Aug;43(4):623-31. Epub 2010 Mar 15.
PMID: 20230908 [PubMed - indexed for MEDLINE]
[Related citations](#)

☐ [Clinical decision support system for point of care use--ontology-driven design and software implementation.](#)
5. Farion K, Michalowski W, Wilk S, O'Sullivan D, Rubin S, Weiss D.

Filter your results:
All (12)
Review (0)
[Free Full Text \(3\)](#)
[Manage Filters](#)

3 free full-text articles in PubMed Central
A constraint satisfaction approach to data-driven implementation of [AMIA Annu Symp Proc. 2008]
Engineering of a clinical decision support framework for the [AMIA Annu Symp Proc. 2008]
Triage of the child with abdominal pain: A clinical algorithm for [Paediatr Child Health. 2001]
[See all \(3\)...](#)

Find related data
Database:

Search details
michalowski[All Fields] AND
wilk[All Fields]

The Cochrane Library

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

- Jedno z bardziej uznanych źródeł dowodów dla EBM
- Tworzona przez The Cochrane Collaboration i zarządzana przez Wiley Inc.
- Dostęp na zasadach komercyjnych – darmowy dostęp w Polsce wstrzymany w 2009 r. (małe zainteresowanie)
- Obejmuje 8 baz, m.in.
 - Cochrane Database of Systematic Reviews
 - Cochrane Central Register of Controlled Trials
 - Health Technology Assessment Database
 - ...
- Indeksowana za pomocą terminów MeSH (dodatkowo indeks tekstowy)

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 \[3819\]](#) | [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"

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

[Export All Results](#)

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

Record Information Issue: [Current](#) | **All** Restrict to: [Reviews](#) | [Protocols](#) Sort by: [Record Title](#) | **Match %** | [Date](#)

☐	Damage control surgery for abdominal trauma Roberto Cirocchi, Iosief Abraha, Alessandro Montedori, Eribero Farinella, Isabella Bonacini, Ludovica Tagliabue, Francesco Sciannameo January 2010 Review
☐	Audit filters for improving processes of care and clinical outcomes in trauma systems Christopher Evans, Daniel Howes, William Pickett, Luigi Dagnone October 2009 Review
☐	Spinal immobilisation for trauma patients

Przegląd systematyczny

- Opracowanie podsumowują wyniki wielu badań (publikacji) na wybrany i dobrze zdefiniowany temat
 - weryfikowane przez zespół recenzentów
 - dla The Cochrane Library
wysoki *impact factor* (~ 5.65)
- 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.	13
Analysis 1.2. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 2	14
General paediatric assessment - deterioration.	14
Analysis 1.3. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 3	14
Functionally impaired days - no improvement.	14
Analysis 1.4. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 4	14
Functionally impaired days - deterioration.	14
Analysis 1.5. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 5	15
Nights B2 inhalers used - no improvement.	15
Analysis 1.6. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 6	15
Nights B2 inhalers used - deterioration.	15
Analysis 1.7. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 7	15
Peak expiratory flow rate - no improvement.	15
Analysis 1.8. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 8	16
Peak expiratory flow rate - deterioration.	16
Analysis 1.9. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 9	16
Peak expiratory flow rate - pre-medication, morning.	16
Analysis 1.10. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 10	16
Peak expiratory flow rate - pre-medication, evening.	16
Analysis 1.11. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 11	17
Forced expiratory volume - (in 0.75 seconds).	17
Analysis 1.12. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 12	17
Thoracic gas volume.	17
Analysis 1.13. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 13	17
Day where.	17
Analysis 1.14. Comparison 1 FAMILY THERAPY & DRUG THERAPY vs DRUG THERAPY ALONE, Outcome 14	18
Activity.	18
WHAT'S NEW	18
HISTORY	19
CONTRIBUTIONS OF AUTHORS	19
DECLARATIONS OF INTEREST	19
SOURCES OF SUPPORT	19
INDEX TERMS	19

Przegląd systematyczny

DATA AND ANALYSES

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

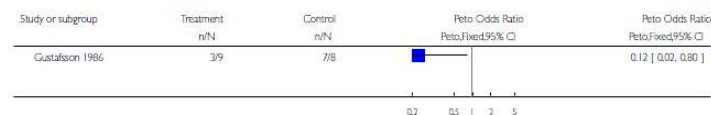
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 General paediatric assessment - no improvement			Peto Odds Ratio (Peto, Fixed, 95% CI)	Totals not selected
2 General paediatric assessment - deterioration			Peto Odds Ratio (Peto, Fixed, 95% CI)	Totals not selected
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 & DRUG THERAPY vs DRUG THERAPY ALONE

Outcome: 1 General paediatric assessment - no improvement



Family therapy for asthma in children (Review)

Copyright © 2008 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

13

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 alert

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

Family therapy for asthma in children (Review)

Copyright © 2008 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

3

MeSH

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

(Medical Subject Headings)

- Słownik (kartoteka) terminów biomedycznych przeznaczonych do indeksowania publikacji opracowana przez U.S. NLM
- Typy terminów
 - deskryptor (*Main Heading*) → pojęcie biomedyczne
 - kwalifikator (*Subheading*) → doprecyzowanie znaczenia deskryptora
 - rekord uzupełniający (*Supplementary Concept Record*) → lek lub inna substancja chemiczna
- Pierwsze „oficjalne” wydanie w 1960 r.
- Corocznie uaktualniany, poprawiany i rozszerzany: 5 700 terminów w pierwszym wydaniu, > 26 tys. w najnowszym)

Deskryptory i kwalifikatory

National Library of Medicine - Medical Subject Headings

2011 MeSH

MeSH Descriptor Data

[Return to Entry Page](#)

Standard View: [Go to Concept View](#); [Go to Expanded Concept View](#)

MeSH Heading	Liver
Tree Number	A03.620
Annotation	/ blood supply : consider also LIVER CIRCULATION ; / cytol : consider also KUPFFER CELLS ; / surg : consider also HEPATECTOMY & LIVER TRANSPLANTATION ; inflammation = HEPATITIS & its specifics; specialty is HEPATOLOGY see GASTROENTEROLOGY ; be careful: do not confuse "hepatic" with "intrahepatic": "intrahepatic" may refer to BILE DUCTS, INTRAHEPATIC
Entry Term	Livers
See Also	Hepatectomy
Consider Also	consider also terms at HEPAT-
Allowable Qualifiers	AB AH BS CH CY DE EM EN GD IM IN IR ME MI PA PH PP PS RA RE RI SE SU UL US VI
History Note	/cytology was LIVER CYTOLOGY 1964-65; /enzymology was LIVER ENZYMOLOGY 1964-65; /phy 1964-65
Entry Combination	transplantationLiver Transplantation
Date of Entry	19990101
Unique ID	D008099

National Library of Medicine - Medical Subject Headings

2011 MeSH

MeSH Qualifier Data

[Return to Entry Page](#)

Subheading	surgery
Record Type	Q
Entry Version	SURG
Abbreviation	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.
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
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
Entry Term	intraoperative procedures
Entry Term	invasive procedures
Entry Term	operations
Entry Term	operative procedures
Entry Term	operative therapy
Entry Term	perioperative procedures
Entry Term	peroperative procedures
Entry Term	preoperative procedures
Date of Entry	19731227

Organizacja deskryptorów

- Deskryptory podzielone na 16 kategorii
- Kategorie zorganizowane jako wielopoziomowe drzewa
 - deskryptory uporządkowane od najbardziej ogólnych do najbardziej szczegółowych
 - do 12 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 \[C08.730.435\]](#) +

MeSH.PL

<http://www.mesh.pl/>
<http://sloownik.mesh.pl/>

- Polska wersja słownika MeSH
- Opracowywana przez Bibliotekę Główną PUM i Bibliotekę Główną Collegium Medicum UJ
- Obecnie dostępna wersja oparta na MeSH z 2007 r. – 24 tys. deskryptorów, brak kwalifikatorów i rekordów uzupełniających

MeSH.PL

START

INFORMACJE

Szczegóły hasła

Hasło polskie	Systemy wspomagania decyzji klinicznych
Hasło angielskie	Decision Support Systems, Clinical
Definicja w j. angielskim	Computer-based information systems used to integrate clinical and patient information and provide support for decision-making in patient care.
Odsyłacze angielskie	Clinical Decision Support Systems
Odsyłacze polskie	Systemy komputerowe wspomagające podejmowanie decyzji klinicznych
Nr MeSH:	D020000
Opracowane przez:	BG UM P-r BM CM UJ

Zasoby internetowe:

Wyszukiwanie w katalogach bibliotecznych wg tego hasła:

- [NUKAT](#) - Narodowy Uniwersalny Katalog w Warszawie
- [KaraG](#) - Katalog Rozproszony Bibliotek Polskich

Wyszukiwanie w bazach bibliograficznych:

- [PubMed](#) - a service of the National Library of Medicine

National Library of Medicine - Medical Subject Headings

2010 MeSH

[MeSH Descriptor Data](#)

[Return to Entry Page](#)

Standard View: [Go to Concept View](#); [Go to Expanded Concept View](#)

on Support Systems, Clinical
00.508.300.190
Scope Note (Computer-based information systems used to integrate clinical and patient information and provide support for decision-making in patient care.
Entry Term Clinical Decision Support Systems
Allowable Qualifiers CL EC ES HI IS LJ MA OG SD SN ST TD UT
Entry Version DECISION SUPPORT SYSTEMS CLIN
History Note 98
Date of Entry 19970620
Unique ID D020000

MeSH Tree Structures

[Information Science \[L01\]](#)

[Medical Informatics \[L01.700\]](#)

[Medical Informatics Applications \[L01.700.508\]](#)

UMLS

<http://www.nlm.nih.gov/research/umls/>

(Unified Medical Language System)

- Zestaw zasobów i narzędzi wspomagających komputerowe przetwarzanie tekstów biomedycznych rozwijany przez U.S. NLM
- Metathesaurus
 - meta-słownik łącząca wiele biomedycznych słowników, kartotek, standardów kodowania itp.
 - 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

Metathesaurus

Relations

Metathesaurus Search

Enter term

Input type: ☒ Term ☐ CUI ☐ Code

Term: Release: Index:

OK

Sources:

Relations

Relationships for C0525070- UMLS Release 2010AA (187) [Printer Friendly](#)

- Source asserted synonymy(22)
- Siblings(141)
- Parents(11)
 - MeSH (1)
 - MeSH Czech (1)
 - MeSH Finnish (1)
 - MeSH French (1)
 - MeSH German (1)
 - MeSH Italian (1)
 - MeSH Japanese (1)
 - MeSH Portuguese (1)
 - MeSH Russian (1)
 - MeSH Spanish (1)
 - MeSH Swedish (1)
- Allowable subheadings(13)
 - MeSH (13)

Relations

Metathesaurus Search

Enter term

Input type: ☒ Term ☐ CUI ☐ Code

Term: Release: Index:

OK

Sources:

Relations

Relationships for C0006107- UMLS Release 2010AA (1162) [Printer Friendly](#)

- Broader(28)
- Children(82)
 - ICD-10 Austral Mod (6)
 - ICD-9-CM (7)
 - MEDCIN (6)
 - MeSH (2)
 - Contrecoup Injury (C2717914)
 - Post-Concussion Syndrome (C0546983)
 - MeSH Czech (1)
 - MeSH Finnish (1)
 - MeSH French (2)
 - MeSH German (2)
 - MeSH Italian (2)
 - MeSH Japanese (1)
 - MeSH Portuguese (2)
 - MeSH Russian (2)
 - MeSH Spanish (2)
 - MeSH Swedish (2)
 - National Drug File - Reference Terminology (1)
 - Read Codes (7)
 - SNOMED Terminos Clinicos (19)
 - SNOMED Clinical Terms (17)
 - Labyrinthine concussion|isa| (C0395935)
 - Concussion of tooth|isa| (C1290753)
 - Spinal cord concussion|isa| (C1264421)
 - Concussion injury of brain|isa| (C0006107)

Semantic Network

The screenshot displays a Semantic Network interface with three main panels:

- Search Panel (Left):**
 - Search bar: "abdominal pain" (Go button)
 - Release: 2011AA
 - Search Type: Word
 - Source: All Sources (dropdown menu with options: AIR, ALT, AOD, AOT)
 - Search Results (173):
 - C0000737 Abdominal Pain
 - C0423651 No abdominal pain
 - C1394864 severe; abdominal pain, abdominal rigidity
 - C0000727 Abdomen, Acute
 - C0000729 Abdominal Cramps
 - C0151263 Nausea or abdominal pain
 - C0232488 Abdominal colic
 - C0232491 Chronic abdominal pain
 - C0232492 Upper abdominal pain
 - C0232493 Epigastric pain
 - C0232495 Lower abdominal pain
 - C0232496 Rebound tenderness
- Concept Details Panel (Middle):**
 - Concept: [C0000737] Abdominal Pain
 - Semantic Type: [Sign or Symptom](#) [T184]
 - Definition: [Empty]
 - Synonyms (19): [Empty]
 - Relations (289): REL | RELA | RSAB | String | CUI
 - Relations list (1-10):
 - CHD | CST | Abdomen | C0000726
 - CHD | OMIM | Abdomen | C0000726
 - CHD | OMIM | Abdomen | C0000726
 - CHD | RCD | Abdominal Pain | C0000726
 - CHD | ICD9CM | Abdominal Pain | C0000726
 - CHD | MEDLINEPLUS | Gastrointestinal Discomfort | C0000726
 - CHD | WHO | Gastrointestinal Discomfort | C0000726
 - CHD | MSH | Pain | C0030193
 - CHD | MSHCZE | Pain | C0030193
 - CHD | MSHSWE | Pain | C0030193
 - Select a Semantic Type:
 - Quantitative Concept
 - Receptor
 - Regulation or Law
 - Reptile
 - Research Activity
 - Research Device
 - Self-help or Relief Organization
 - Sign or Symptom** (selected)
 - Select a Relation Label:
 - adjacent_to
 - affects
 - analyzes
 - assesses_effect_of
 - associated_with
 - branch_of
 - brings_about
 - carries_out
- Report Panel (Right):**
 - Report | Raw Report
 - Sign or Symptom
 - Definition: An observable manifestation of a disease or condition based on clinical judgment, or a manifestation of a disease or condition which is experienced by the patient and reported as a subjective observation.
 - Properties:
 - Unique Identifier: T184
 - Tree Number: A2.2.2
 - Parents: [Finding](#)
 - Relations:
 - Sign or Symptom [diagnoses](#) [Pathologic Function](#) (DNI)
 - Sign or Symptom [isa](#) [Finding](#) (DNI)
 - Sign or Symptom [diagnoses](#) [Injury or Poisoning](#) (DNI)
 - Sign or Symptom [diagnoses](#) [Anatomical Abnormality](#) (DNI)
 - Sign or Symptom [degree_of](#) [Sign or Symptom](#) (DNI)
 - Inverse Relations
 - Inherited Relations
 - Inverse Inherited Relations

MetaMap

- System do analizy tekstów biomedycznych w języku angielskim rozwijany przez U.S. 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

```

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: "for approximately 24%"
>>>> Phrase
approximately 24
<<<< Phrase

Phrase: "of acetabular fractures."
>>>> Phrase
acetabular fractures
<<<< Phrase
>>>> Mappings
Meta Mapping (843):
623 Acetabulum [Body Part, Organ, or Organ Component]
861 Fractures (Fractures, Bone) [Injury or Poisoning]
<<<< Mappings

```

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 fractures are partial fractures of the posterior column.

Wszystkie
dostępne słowniki

```

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

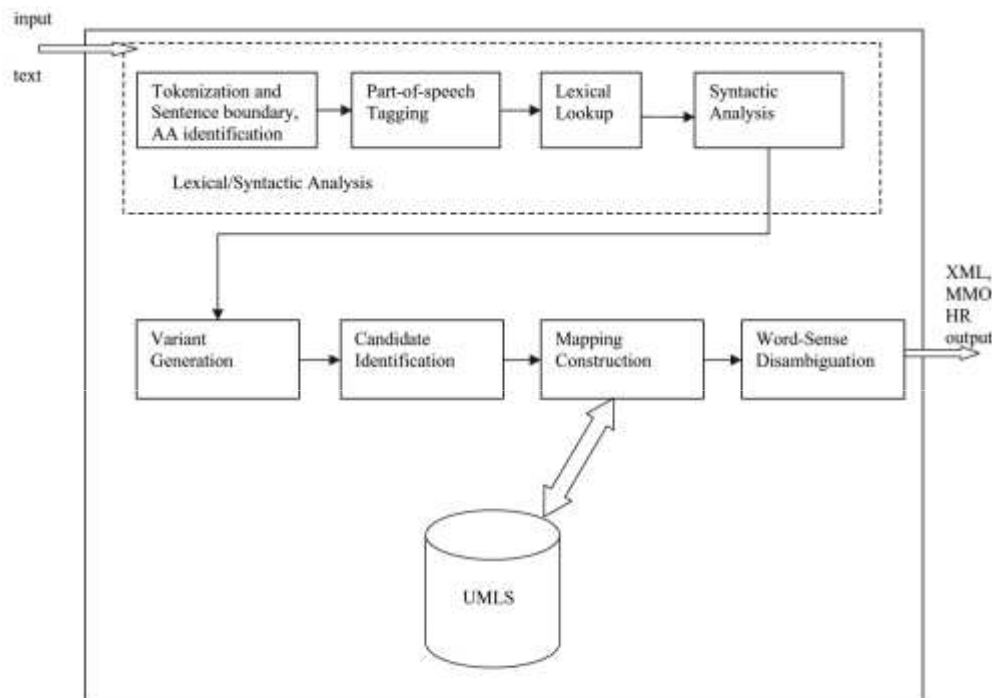
Phrase: "account"
>>>> Phrase
account
<<<< Phrase
>>>> Mappings
Meta Mapping (1000):
1000 Account # (Account number:Identifier:Point in time:Patient:Nominal) [Clinical Attribute]
Meta Mapping (1000):
1000 account (account - ActClass) [Idea or Concept]
<<<< Mappings

Phrase: "for approximately 24%"
>>>> Phrase
approximately 24
<<<< Phrase
>>>> Mappings
Meta Mapping (861):
861 Approximately (Approximate) [Qualitative Concept]
<<<< Mappings

Phrase: "of acetabular fractures."
>>>> Phrase
acetabular fractures
<<<< Phrase
>>>> Mappings
Meta Mapping (981):
981 Acetabular Fracture [Injury or Poisoning]
<<<< Mappings

```

Przetwarzanie tekstu w MetaMap



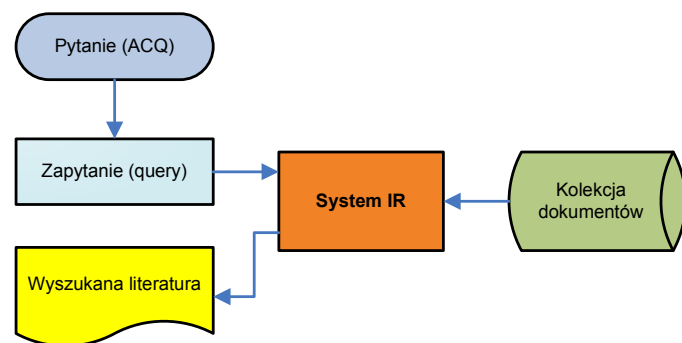
1. Podział na tokeny, wykrywanie skrótów
2. Oznaczanie części mowy
3. Uzyskanie informacji leksykalnej (składnia i morfologia słów)
4. Analiza składniowa – wykrywanie fraz
5. Generowanie wariantów fraz
6. Identyfikacja kandydatów do mapowań
7. Konstrukcja mapowań (przez łączenie kandydatów)
8. Usuwanie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

EBM a praktyka kliniczna

- Średnio 3 pytania (ACQ) 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
 - odstępianie od poszukiwania (→ zbyt duża czasochłonność)
- Elektroniczne bazy danych oraz medyczne systemy IR
 - ułatwiają dostęp do informacji (> 30 tys. nowych publikacji rocznie)
 - wyszukanie informacji jest czasochłonne (PubMed – 30 min, czas akceptowalny przez lekarzy – do 2 min)

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 Inform Assoc* 2002;9(3):283-93.

Medyczne systemy IR (information retrieval)



- Pomoc w identyfikacji i sformułowaniu pytania
- Skrócenie czasu wyszukiwania istotnej informacji

System	Sformułowanie zapytania	Prezentacja wyników
Essie	fraza	ranking
COA-1.0	pytanie (PICO)	ranking
Infobutton Manager	pytanie (szablon)	ranking
AskHERMES	pytanie (ad hoc)	podsumowanie
MET3 (Evidence Provider)	kontekst ("spotkanie")	ranking

Sneiderman C, Demner-Fushman D, Fiszman M, et al. Knowledge-based methods to help clinicians find answers in MEDLINE. *J Am Med Inform Assoc* 2007;14:772-80.

Cimino JJ. An integrated approach to computer-based decision support at the point of care. *Trans Am Clin Climatol Assoc* 2007;118:273-88.

Cao YG, Liu F, Simpson P, et al. AskHERMES: An online question answering system for complex clinical questions. *J Biomed Inform* 2011;44:277-288.

Infobutton Manager

- Odsyłacze z systemów typu EPR do potencjalnie interesujących informacji w zewnętrznych repozytoriach
- Wcześniejsza identyfikacja możliwych pytań (ACQ) → kwestionariusze, bezpośrednia obserwacja
- Przekształcenie pytań do formy szablonów wykorzystujących typy semantyczne z UMLS Semantic Network

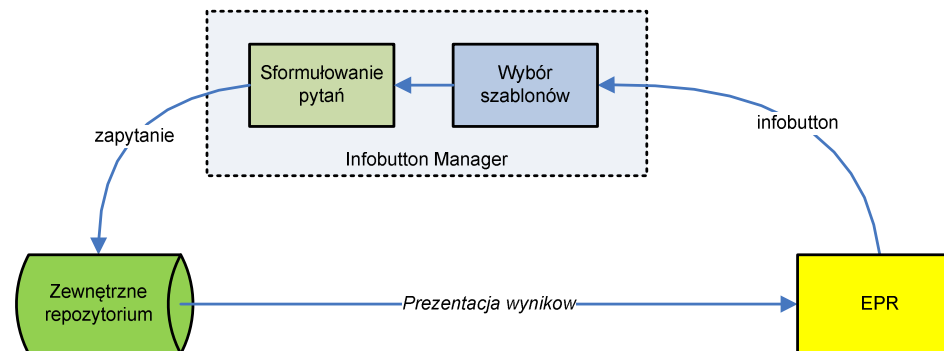
Does Norpace cause
fatigue?



Does <organic chemical>
cause <sign or symptom>?

Infobutton Manager

- Przypisanie szablonów do zewnętrznych zasobów (adres URL) oraz kontekstu (typ użytkownika, wiek i płeć pacjenta, przedmiot zainteresowania)
- Osadzenie w EPR odnośników (*infobuttons*) aktywujących proces wyszukiwania



- Włączenie do standardu HL7 (draft z 2010 r.)

Infobutton Manager – przykład

3131313 • SANDIEGO, CARMEN • 1951-05-26 • 52y F • (-) • (No attending) [MRN](#) • [Name](#) • [List](#) • [Add to list](#)

[Logout](#)

[Lab summary](#)
[Lab update](#)
 12h | 36h | 72h | Days
[Admin summary](#)

☒ All results
☐ Before date

[Laboratory](#) Feb 12
[Radiology](#) Nov 12
[Pathology](#) Nov 14
[Disch Sum](#) 2002
[Op/Clinical](#)
[Operative](#) Oct 30
[Consult](#) 1997
[Cln Sum](#)
[Neurophys](#) 1995
[Ob/Gyn](#) Nov 17
[GI Endo](#) 2002
[Cardiology](#) 2003

[HEEN](#)
[Pharm](#)
[PFT](#)
[Non-c](#)
[Alert](#)
[Signs](#) [See entire document](#)
[Notes](#)
[DOP](#)
[Self](#)

Laboratory • (2004-02-12 to 2002-02-01) • [Newer](#) • [Older](#)

Test	Result	Range	Unit
CHEM 7 PROFILE			
DIGOXIN			
LI			
FSH			
DIGOXIN			
ABC			
BASIC METABOLIC PANEL			
MEASLES IGG			
CHOLESTERYL ESTERS			

DIGOXIN 2002-05-25 03:52

Test	Result	Range	Unit
DIGOXIN	2.9	0.5-2.0	ng/ml

Status: Final, Accno: 359200DIG 025P
 3131313 • SANDIEGO, CARMEN • 1951-05-26 • F

INFOBUTTON MANAGER

Select the Concept of Interest: [Serum Digoxin Level Measurement](#)
[Digoxin](#)

Drug Info

- [Adverse Effects](#)
- [Micromedex Digoxin](#)
- [Contraindications](#)
- [Dosage](#)
- [Drug Interactions](#)
- [Forms](#)
- [Indications](#)
- [Precautions](#)
- [RxList](#)
- [Toxicity](#)

Guidelines

- [National Guidelines](#)

Lab Info

- [Lab Manual](#)

Patient Ed

- [English](#)
- [Spanish](#)

Reference

- [Harrisons](#)
- [Lab Tests Online](#)
- [Micromedex](#)
- [PubMed](#)
- [UpToDate](#)

What question did you wish you could ask but it wasn't listed:
 [Suggest this Question](#)

MICROMEDEX® 2.0 [MICROMEDEX GATEWAY](#)

Digoxin
 DrugPoint® Summary
[View Detailed information in DRUGDEX](#)

Adverse Effects
[View Detailed information in DRUGDEX](#)

Common [Top of Page](#)

- Neurologic: Headache

Serious [Top of Page](#)

- Cardiovascular: Cardiac dysrhythmia
- Hematologic: Thrombocytopenia (rare)

Infobuttons – przykładowa realizacja



HOME

OVER



Methods and Results: From Concept to Implementation

1 The target system was RetroGuide^{3,4}, a retrospective analysis tool whose Individual Patient View (IPV) component displays observations of interest for a single, anonymized research subject. Originally the IPV only displayed codes and descriptions.

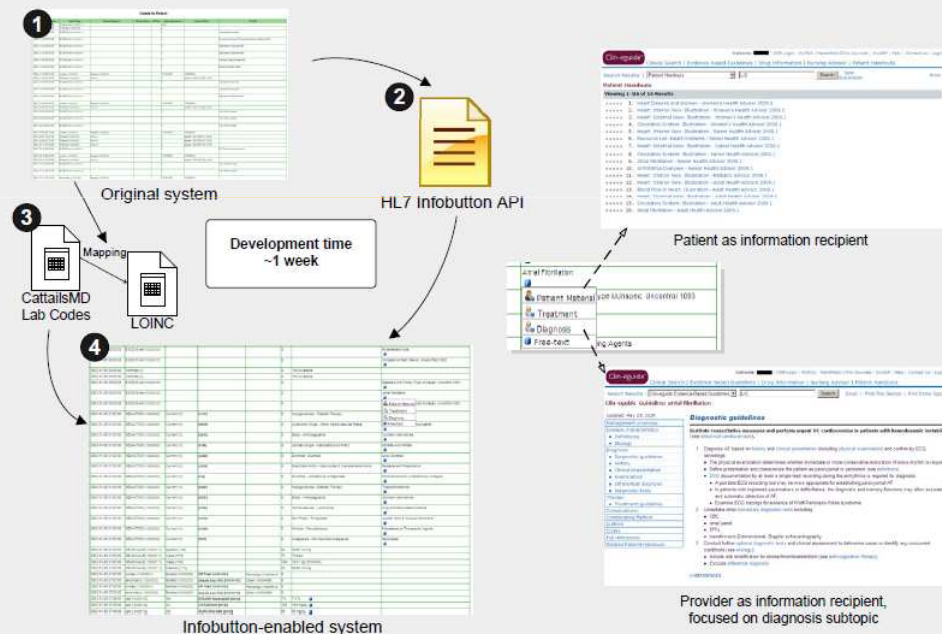
2 Using the Clin-eguide manual⁵ URLs were constructed to link to the appropriate resource within Clin-eguide, according to the HL7 Infobutton API.

3 Infobuttons were added to each diagnosis utilizing the ICD9-CM code. Infobuttons for laboratory items utilized a mapping between the CattailsMD (EHR system developed at Marshfield Clinic) lab terms and LOINC terminology for the 40 most frequent laboratory items.

4 Given the exploratory nature of the RetroGuide system, the context of each infobutton was not known. To accommodate this, separate infobuttons were offered and provided context of:

- Information recipient (patient or provider)
- Task context (conditions or medications)
- Subtopic (treatment or diagnosis)

Each generated link also included context information for age, and severity observation for lab results.



Anatomy of the HL7 Infobutton API in Clin-eguide

[http://\[BASE_URL\]/hl7?mainSearchCriteria.c.cs=2.16.840.1.113883.6.103&mainSearchCriteria.c.cs=427.31&informationRecipient=provider&subTopic.c.cs=Q000175](http://[BASE_URL]/hl7?mainSearchCriteria.c.cs=2.16.840.1.113883.6.103&mainSearchCriteria.c.cs=427.31&informationRecipient=provider&subTopic.c.cs=Q000175)

This example shows the URL that would search for the ICD9-CM code for atrial fibrillation, and targets the resource for a healthcare provider interested in the diagnosis of the condition.

Denotes the code system that you are interested in searching under. Currently supported systems include:

- ICD9-CM
- LOINC
- SNOMED CT
- RxNorm

Based on the code system being used, this is the exact code within that system that you are interested in.

Allows you to specify who the targeted recipient of information will be:

- Patient
- Provider

A defined MeSH qualifier code to specify which subtopic is of interest:

- Treatment
- Diagnosis

AskHERMES

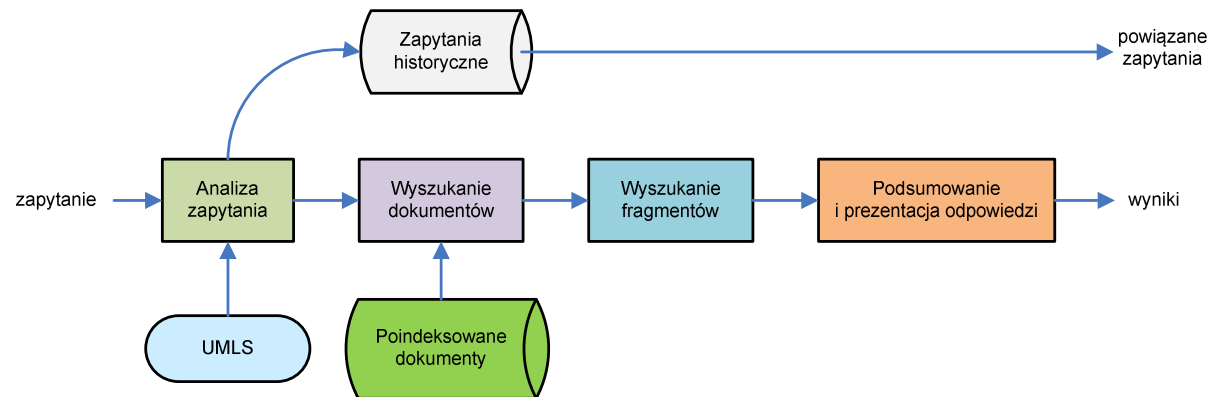
<http://www.askhermes.org>

AskHERMES (Helps physicians Extract and aRticulate Multimedia information from literature to answer their ad hoc clinical quEstionS)

- Możliwość zadawania pytań ad hoc w języku naturalnym
 - brak ograniczeń związanych z predefiniowanymi szablonami
- Skupienie się na fragmentach dokumentów
 - szybszy dostęp do istotnej informacji
 - dowody II poziomu mogą wciąż wymagać czasochłonnego przeglądania (średni czas wyszukania informacji w UpToDate – 4 min, czyli powyżej dopuszczalnego progu)

Cao YG, Cimino JJ, Ely J, Yu H: Automatically extracting information needs from complex clinical algorithms. *J Biomed Inform* 2010;43:962-971.
Cao YG, Liu F, Simpson P, et al. AskHERMES: An online question answering system for complex clinical questions. *J Biomed Inform* 2011;44:277-288.

AskHERMES



- Indeksowanie dokumentów
 - specjalne postępowanie w przypadku tabel i list
 - lista traktowana jako jeden fragment
 - łączenie etykiet, nagłówków oraz poszczególnych wierszy tabeli w oddzielne fragmenty
 - łączenie tytułów sekcji z poszczególnymi zdaniem tekstu

AskHERMES

- Analiza zapytań
 - wykrycie typów semantycznych z UMLS
 - identyfikacja grupy tematycznej zapytania – zestaw binarnych klasyfikatorów SVM
 - identyfikacja terminów kluczowych
- Wyszukiwanie dokumentów
- Wyszukiwanie fragmentów
 - fragment – jedno lub więcej sąsiednich zdań, które zawierają terminy kluczowe z zapytania
- Grupowanie wyników
 - grupowanie dwupoziomowe na podstawie terminów kluczowych
 - wykorzystanie Lingo (PP)

AskHERMES – przykład

Clinical Question Answering System - Mozilla Firefox

http://snake.ims.uwm.edu:8080/qaseam/answer.seam?actionMethod=home.xhtml%3Aanswer.answer&q=how-to-decrease

Clinical Question Answering Tools: Home Browse Questions Classify Question Generate Query Term About

Time taken: 3479ms

Question: *

ask

how to decrease anxiety

Related Questions

is there any drug to decrease male sex-drive in a patient who requests it?
 how do you tell the difference between treating anxiety and treating benzodiazepine withdrawal symptoms when someone is trying to decrease their benzodiazepine intake?
 in an anorexic, amenorrheic patient, now cycling on hormones, when or should you change or decrease her estrogen dose because she is perimenopausal and she shouldn't be on this dose of estrogen after menopause?
 this is a little girl with chronic developmental problems and a seizure disorder. she's had an increase in her seizures. when we increase her medicine, she gets tired. when we decrease it, she gets more seizures. the question is what to do next. patient at 38 weeks gestation, gravida 1 para 0, blood pressure 140/80 (baseline 70), 2+ protein, swollen ankles, 9 pound weight gain in 1 week, unfavorable cervix. I think she has preeclampsia. should I wait 24 hours? is it really preeclampsia? how should I proceed? should I induce or go straight to cesarean section due to unfavorable cervix. how much protein in urine are you looking for as a marker? didn't know whether to hold off on magnesium sulfate since it might decrease success rate of induction. is it safe to hold magnesium once you make the diagnosis. how dependable is uric acid?

You asked how to decrease anxiety

Clustered Answers Ranked Answers Content Clustered Answers

[anxiety, anxious, decrease]

[Depression Group]

- On admission the patients with **anxiety** neurosis and all of those with depressive disorders were significantly more **anxious** than the psychiatric reference group, whereas the phobic patients were only slightly more **anxious**. As was to be expected, the depressive groups showed the greatest depressivity, whereas the group with **anxiety** neurosis differed only slightly from the psychiatric reference group and the patients with phobias were actually below this reference group. During the treatment period there was a marked **decrease** in **anxiety** among the depressive patients but not in those with **anxiety** neurosis. The **decrease** in depressivity in the neurotic depressive patients was much less than in those with endogenous depression. Mixed **anxiety** depression was found with about the same frequency in both the neurotic and the endogenous depression groups. In

Clinical Question Answering System - Mozilla Firefox

http://snake.ims.uwm.edu:8080/qaseam/answer.seam?actionMethod=home.xhtml%3Aanswer.answer&q=how-to-decrease

Clinical Question Answering Tools: Home Browse Questions Classify Question Generate Query Term About

Time taken: 3479ms

Question: *

ask

how to decrease anxiety

Related Questions

is there any drug to decrease male sex-drive in a patient who requests it?
 how do you tell the difference between treating anxiety and treating benzodiazepine withdrawal symptoms when someone is trying to decrease their benzodiazepine intake?
 in an anorexic, amenorrheic patient, now cycling on hormones, when or should you change or decrease her estrogen dose because she is perimenopausal and she shouldn't be on this dose of estrogen after menopause?
 this is a little girl with chronic developmental problems and a seizure disorder. she's had an increase in her seizures. when we increase her medicine, she gets tired. when we decrease it, she gets more seizures. the question is what to do next. patient at 38 weeks gestation, gravida 1 para 0, blood pressure 140/80 (baseline 70), 2+ protein, swollen ankles, 9 pound weight gain in 1 week, unfavorable cervix. I think she has preeclampsia. should I wait 24 hours? is it really preeclampsia? how should I proceed? should I induce or go straight to cesarean section due to unfavorable cervix. how much protein in urine are you looking for as a marker? didn't know whether to hold off on magnesium sulfate since it might decrease success rate of induction. is it safe to hold magnesium once you make the diagnosis. how dependable is uric acid?

You asked how to decrease anxiety

Clustered Answers Ranked Answers Content Clustered Answers

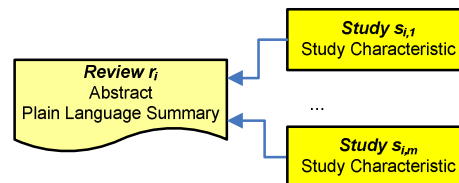
- Preclinical studies have shown that n-3 PUFAs **decrease** anxietylike behaviors, but there is a paucity of information about their effects on **anxiety** in humans. In light of our observation that substance abusers have poor dietary habits and the strong association between **anxiety** disorders and substance use disorders, the possibility that the administration of supplements of n-3 PUFAs would **decrease** the **anxiety** level of a group of substance abusers was explored. [Laure:2006](Human)
- The post-consultation **anxiety** test revealed a significant **decrease** in situational **anxiety**; this was not related to the patient's information needs or her attitude to the decision-making concerning treatment. Our study demonstrates that a significant **decrease** in **anxiety** may be achieved via a consultation tailored to the needs of the patient.. [Szuzsanna:2006](Human)
- The purpose of this article is to provide clinical nursing faculty with the current literature related to humor, peer instructors and mentors, and mindfulness training as strategies to **decrease** undergraduate student nurse **anxiety** in the clinical setting. [Linda:2009](Human)
- Thus, it is vital to test interventions to improve this behavior, but at the same time it is essential that interventions not increase **anxiety**. To determine the impact on **anxiety** and perceived control of an individual face-to-face education and counseling intervention designed to **decrease** patient delay in seeking treatment for acute coronary syndrome

MET3

- System wielo-agentowy do zintegrowanego wspomagania decyzji klinicznych
- Oferuje wsparcie podczas całego procesu diagnostyczno-terapeutycznego (zebranie danych, diagnoza, terapia)
- Podczas planowania terapii automatyczne wyszukiwanie przeglądów systematycznych z The Cochrane Library istotnych dla aktualnego kontekstu
- Wyszukiwanie realizowane przez specjalizowanego agenta – *Evidence Provider*

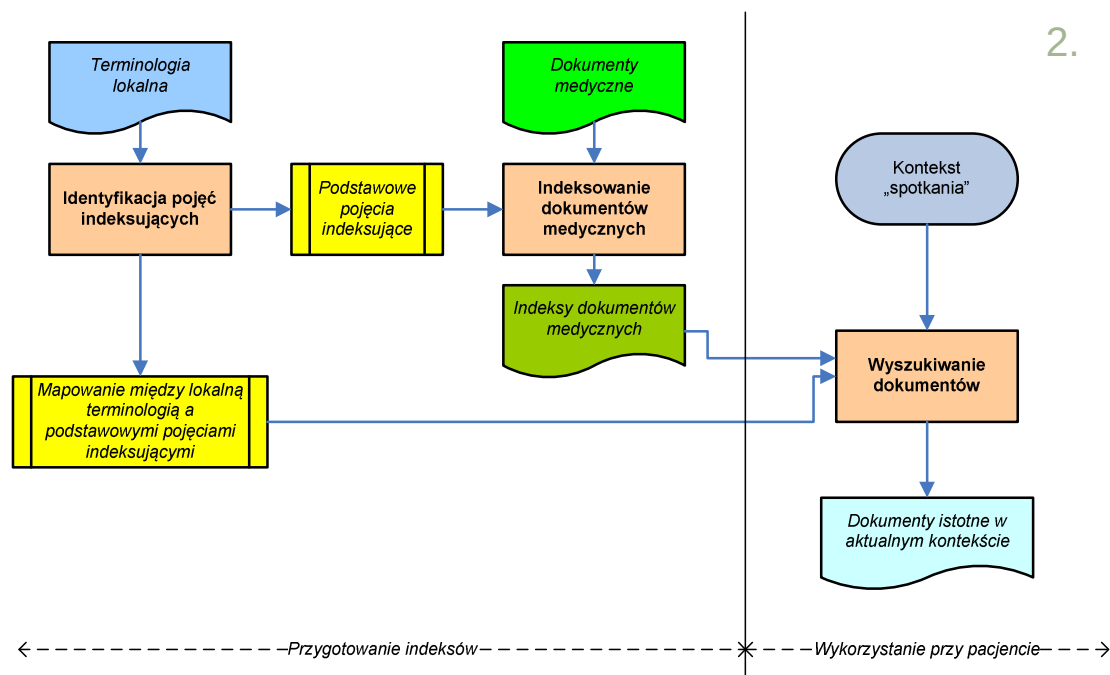
Zaproponowane podejście

- Uwzględnienie lokalnej terminologii w indeksowaniu i wyszukiwaniu dokumentów
- Automatyczne wyszukiwanie dokumentów istotnych w danym kontekście „spotkania” (opis pacjenta, diagnozy, terapii)
- Dwupoziomowa struktura dokumentów medycznych, charakterystyczna dla przeglądów systematycznych (ang. *systematic reviews*) badań klinicznych



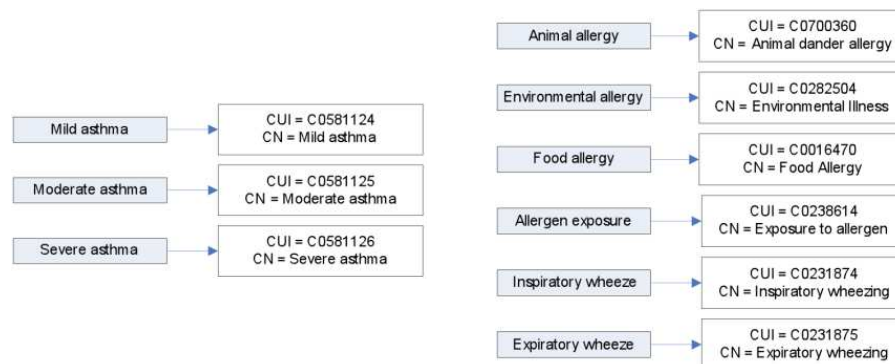
Schemat podejścia

1. Przygotowanie indeksów dla zbioru dokumentów medycznych
2. Wykorzystanie przy pacjencie – wyszukiwanie dokumentów istotnych dla kontekstu



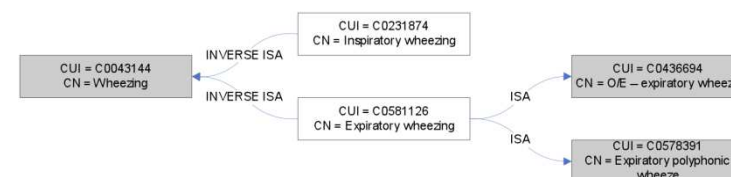
Identyfikacja terminów indeksujących

- Odkrycie podstawowych terminów indeksujących (Metathesaurus)
- Stworzenie mapowania między lokalną terminologią a podstawowymi terminami indeksującymi

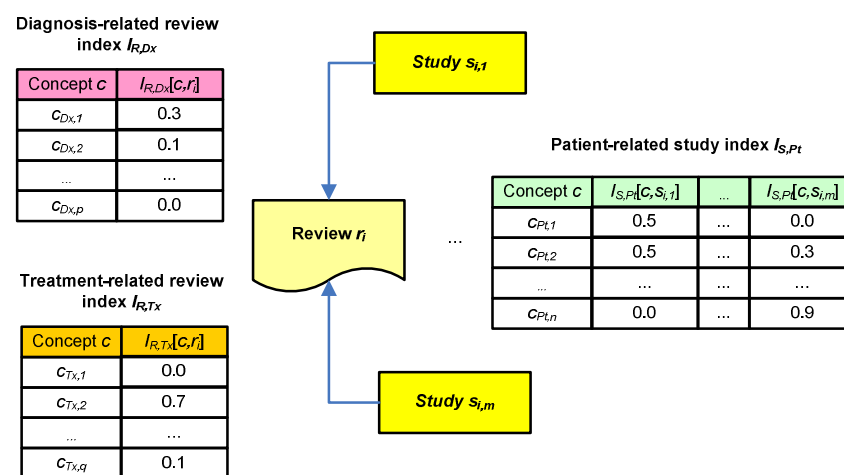


Indeksowanie przeglądów

- Identyfikacja rozszerzonych terminów indeksujących – synonimy, hypernimy i hyponimy dla terminów podstawowych (Metathesaurus)

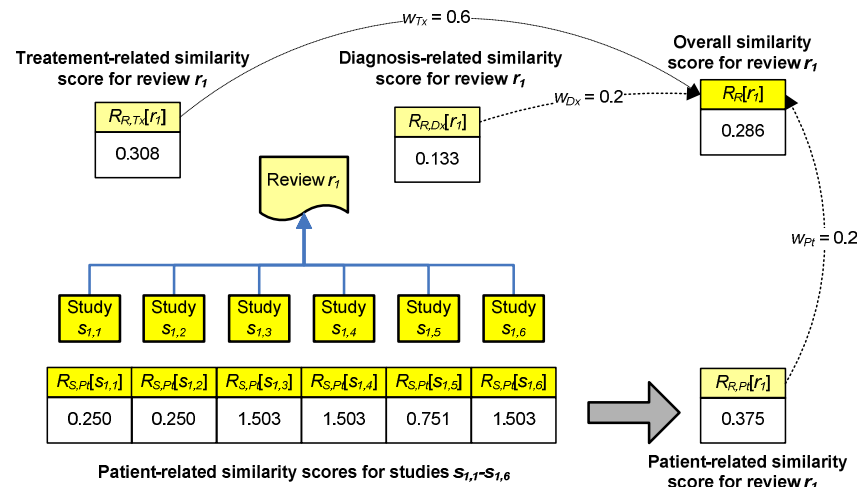


- Wykorzystanie terminów rozszerzonych do indeksowania przeglądów systematycznych (MetaMap)



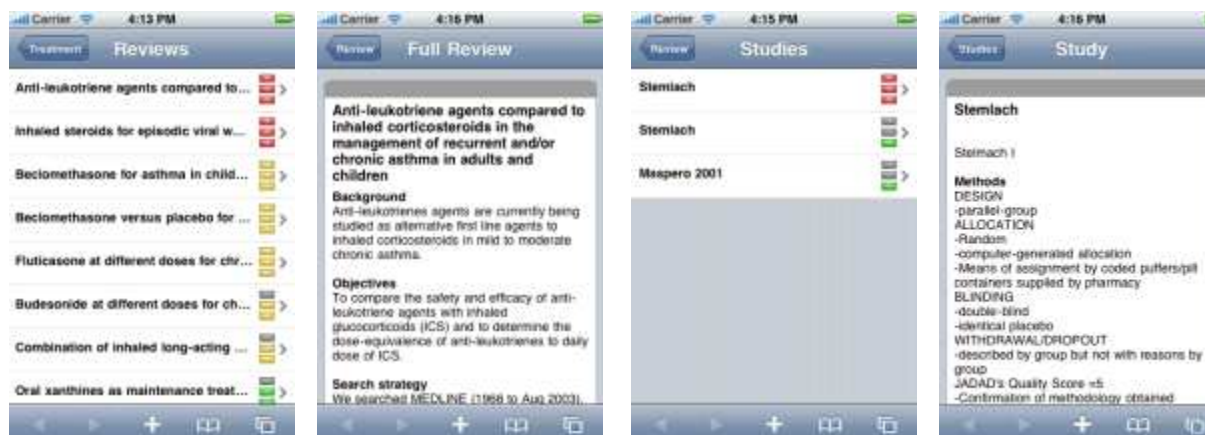
Wyszukiwanie dokumentów

- Tłumaczenie kontekstu na podstawowe terminy indeksujące
- Automatyczna budowa zapytania z terminów indeksujących
- Wyszukanie dokumentów odpowiadających zapytaniu (możliwość uwzględnienia preferencji użytkownika)



Implementacja

- Apache Lucene 
 - elastyczny i wydajny mechanizm indeksera i wyszukiwarki
 - oparty na *vector space model* (TF-IDF) oraz modelu boole'owskim, z możliwością dostosowania do specyfiki problemu
- Dostęp do dokumentów na urządzeniach mobilnych (prezentacja wykorzystująca dwu-poziomową hierarchię)

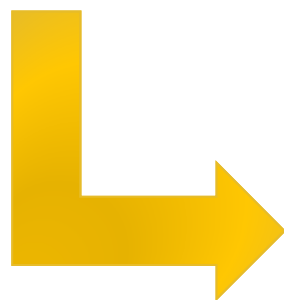


Wpływ EBM i systemów IR na podejmowane decyzje

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

Pluye P, Grad RM, Dunikowski LG, Stephenson R. Impact of clinical information-retrieval technology on physicians: a literature review of quantitative, qualitative and mixed methods studies. *Int J Med Inform* 2005;74(9):745-68.