

Metodologija NIR- *a*

Doc. dr sc. med. Dušan Mustur

Preporučena literatura :

1. Friedland, DF et al Evidence-Based Medicine and the Internet, In: **Evidence-Based Medicine: A Framework for Clinical Practice**. McGraw-Hill, 1996
2. Shortliffe EH, Cimino JJ. **Biomedical Informatics: Computer Applications in Health Care and Biomedicine**. Springer 2006.
3. Dačić M. **Metodologija izrade naučnostručnog rada u biomedicinskim istraživanjima**. Beograd: VMŠ Zemun, 2005.

Preporučena literatura :

4. Cucić V. **Zdravstvena zaštita zasnovana na dokazima**. Beograd: Velarta, 2001
5. Polgar S, Thomas SA. **Introduction to Research in the Health Sciences**. Fifth Edition. Churchill Livingstone Elsevier. Philadelphia, 2008.

Online resursi :

- 2001 Evidence -Based Medicine Informatics Project. Centres for Health Evidence. Users Guides to EBP. Based on the Users' Guides to Evidence-based Medicine and reproduced with permission from JAMA, dostupno na <http://www.cche.net/usersguides/main.asp>
- PubMed Tutorial Dostupno na http://www.nlm.nih.gov/bsd/pubmed_tutorial/m1001.html
- EBCP Workshop Dostupno na http://ebm.mcmaster.ca/materials_intro.htm

How to write a scientific paper

1. Focussing you research question ?
2. Mind the information gap ?
3. Search strategies and tactics ?
4. Advanced searching ?
5. Evaluating informations ?
6. Sinthesising and building upon informations
7. Plagiarism and copyright

How to write a scientific paper

1. Naslov naučnog rada
2. I Uvod
3. II Pregled literature (dosadašnja istraživanja)
4. III Cilj rada
5. IV Hipoteze rada
6. V Metodologija rada
7. VI Diskusija rezultata
8. VII Zaključak rada
9. VIII Literatura
10. Sažetak

Časopis objavljuje sledeće vrste članaka:

- Originalni naučni radovi,
- izvještaji o slučajevima,
- preliminarna i kratka saopštenja,
- pregledni članci,
- aktuelne teme,
- izvještaji sa kongresa i naučnih skupova,
- članci o ličnom pogledu,
- pozvani komentari,
- pisma uredniku,
- prikazi knjiga,
- stručne vijesti,
- In memoriam i drugo

- 1. Medicina zasnovana na dokazima** (Engl. Evidence Based Medicine, EBM) je medicina koja koristi informacije iz relevantnih visokokvalitetnih kliničkih istraživanja.
- 2. PICO analiza** - Koristan model koji pomaže da se formuliše pitanje na koje se može dobiti odgovor

EBPh, EBPhC

- Pojmovi *farmacija zasnovana na dokazima* i *farmaceutska briga zasnovana na dokazima* su oba proizašli iz medicine zasnovane na naučnim dokazima (EBM) i označavaju promišljen i metodički pristup u postupku donošenja kliničke odluke.

3. Drugi korak u procesu EBM (EMPhC) →

Traženje dokaza

- najčešće tražimo 4 vrste dokaza

- 1. Dokaze o efektima terapijskih intervencija
- 2. Dokaze o tačnosti dijagnostičkih testova
- 3. Dokaze o prognozi
- 4. Dokaze o doživljajima/stavovima pacijenata

Internet :

- Kako se uključiti na mrežu
- Hardware potreban za povezivanje na mrežu
- Software potreban za povezivanje na internetu
- Unošenje internet adrese
- Šta je HTML dokument ?
- Pretraživači
- E-pošta: slanje i primanje E-mail-a

4. Treći korak u procesu EBM (EBPhC) → kritička procjena iz prognostičkih studija

- Koja je vjerovatnoća da jedna osoba ima određeni ishod?
- Koliko će se zdravstveno stanje pacijenta poboljšati?
- Koji su dokazi o vrijednosti određenih prognostičkih faktora? Kako ih dobiti?

5. Četvrti korak u procesu EBM → **kritička procjena dokaza iz kvalitativnih studija**
→ **tumačenje dokaza iz kvalitativnih studija**
- Kliničke smjernice, „**Clinical guidelines**“ = tzv. *vodiči dobre prakse*
 - Nacionalne smjernice dobre kliničke prakse
[www.mzd.gov.me /rubrike/nacionalne smjernice](http://www.mzd.gov.me/rubrike/nacionalne-smjernice)

6. Kritička procjena dijagnostičkih studija:
dijagnostička istraživanja, koja daju odgovor
na pitanje o tačnosti i preciznosti
dijagnostičkih testova (porede se rezultati
dijagnostičkog testa sa rezultatima
referentnog standarda)

→ **tumačenje dokaza iz dijagnostičkih studija**

MEDICINA ZASNOVANA NA DOKAZIMA – EBM, MZD

- Savjesno, eksplicitno i razložno korišćenje najboljih postojećih dokaza za donošenje odluka o liječenju pojedinačnih pacijenata.
- MZD podrazumjeva integraciju individualne kliničke ekspertize sa najboljim raspoloživim činjenicama iz istraživanja (Sackett, 1996)

Komponente MZD odluke



ZAŠTO MZD?

Svrha MZD je da svi zdravstveni radnici:

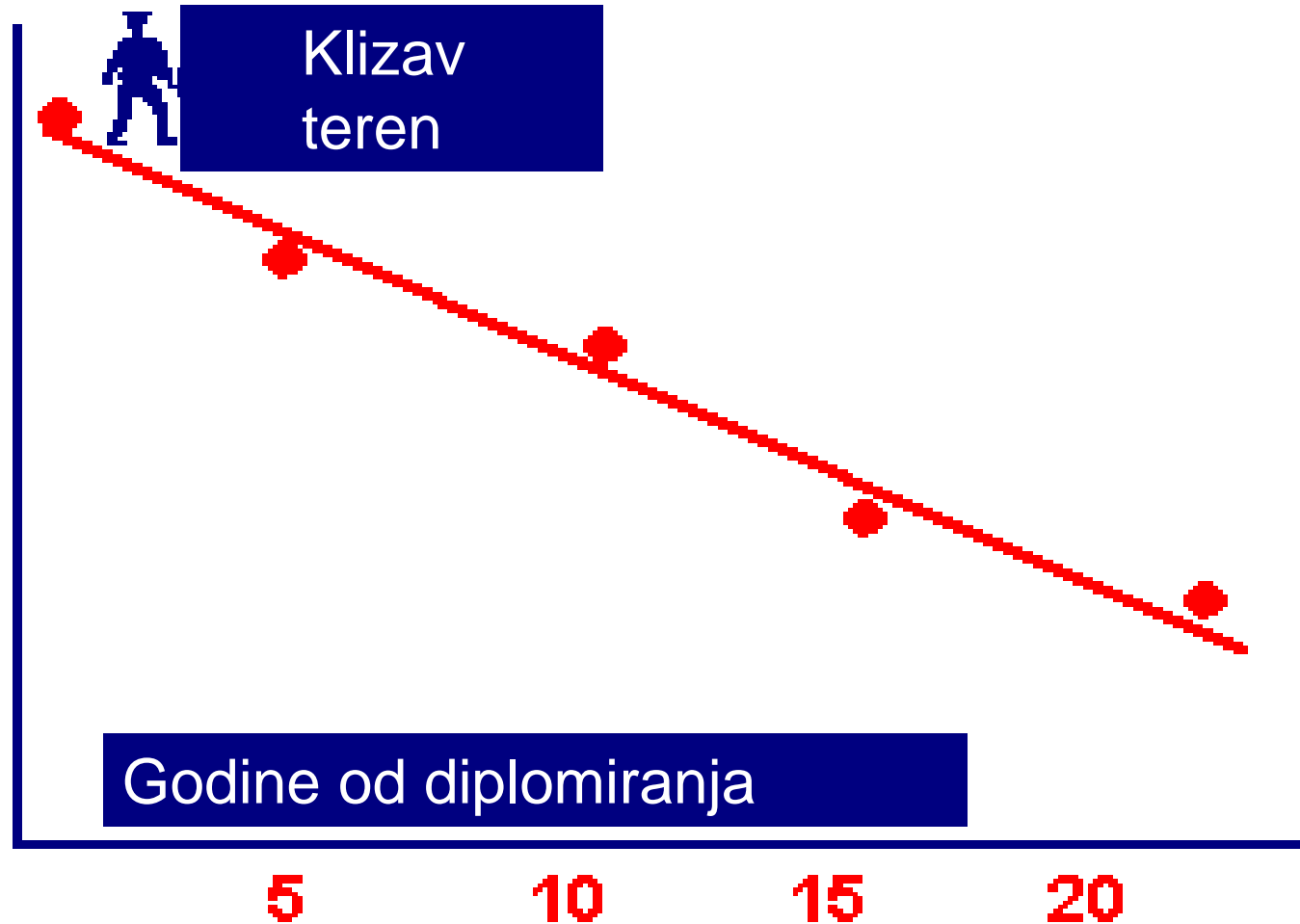
1. Budu u toku sa novim dostignućima ;
2. Uštede vrijeme ;
3. Spasu što više ljudskih života ;
4. Dopune svoje kliničko rasuđivanje koje koriste pri donošenju odluka o načinu liječenja svakog pojedinačnog pacijenata

1. Biti u toku sa novim dostignućima

Znanje ljekara
o savremenoj
terapiji
hipertenzije

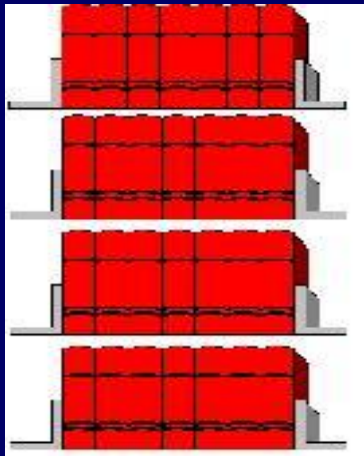
Shiri et al,
CMAJ, 1993

$r = -.54$
 $p < 0.001$

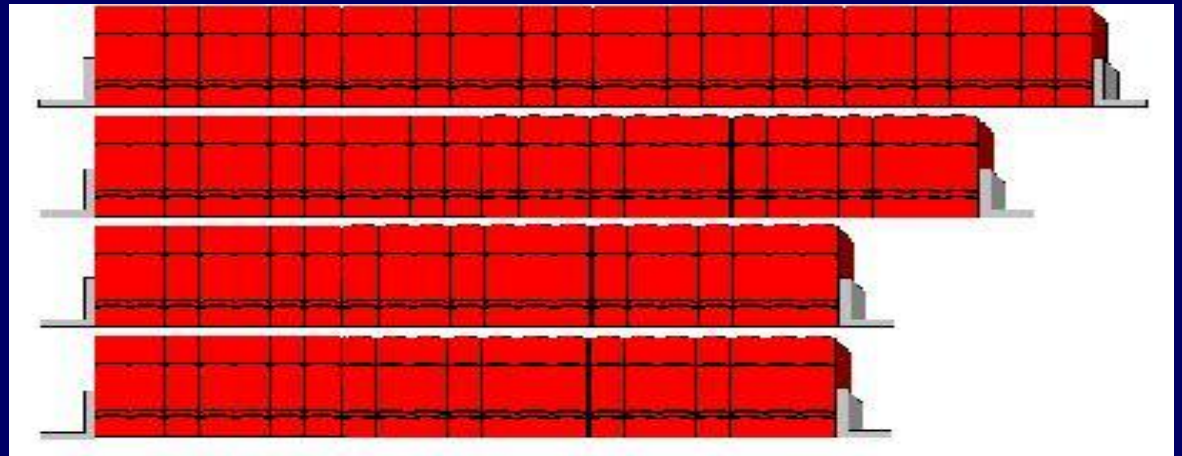


2. Uštediti vrijeme

Više nije potrebno da znate sve, već da ste u stanju da pronađete informacije kada je to potrebno vama i vašim pacijentima (*Medline*)

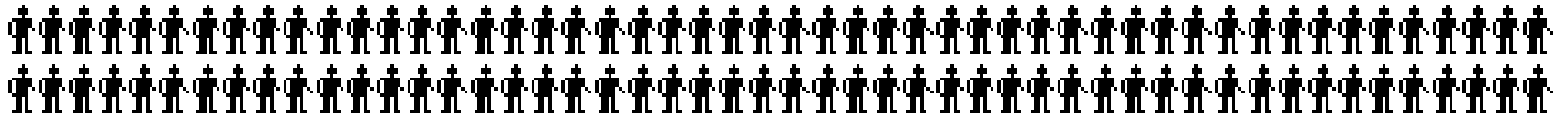


Časopisi o starenju
u 1974. god. – 28

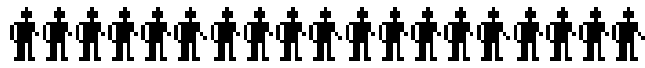


Časopisi o starenju
u 2019. god. – 175

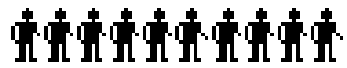
3. Spasiti ljudske živote



Od 100 pacijenata sa simptomima **teške stenozе**



19 će dobiti šlog ili umrijeti ukoliko se ne uradi **karotidna endarterektomija**



Samo 10 će dobiti šlog ili umrijeti ako se operacija uradi

Ipak, samo 20 % ljekara iz primarne zdravstvene zaštite će preporučiti operaciju!



**DA LI ĆE ME
KOMPJUTER ZAMJENITI?!**

Neuralna mreža za akutni infarkt miokarda

Trajanje
bola

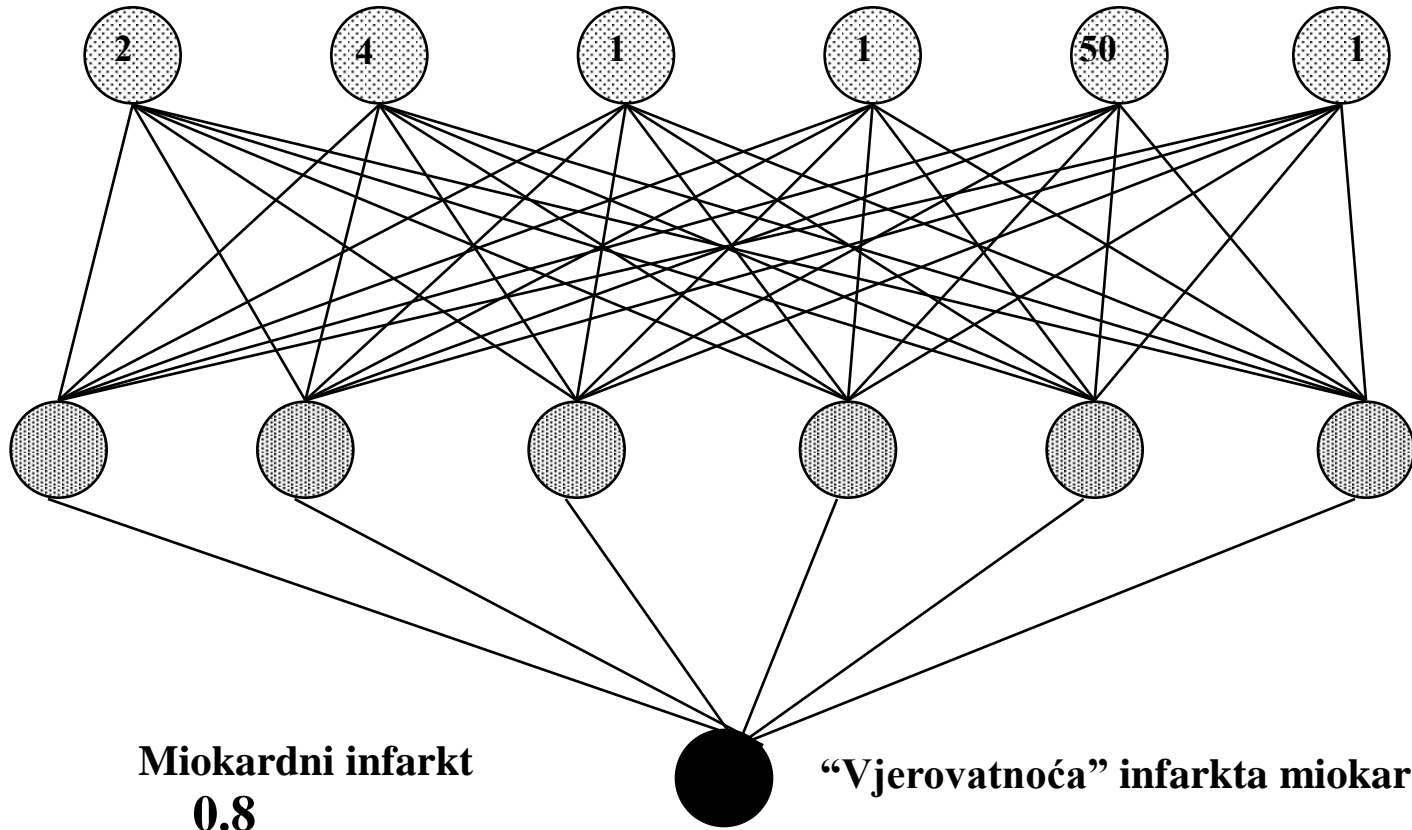
Intenzitet
bola

Elevacija ST
EKG

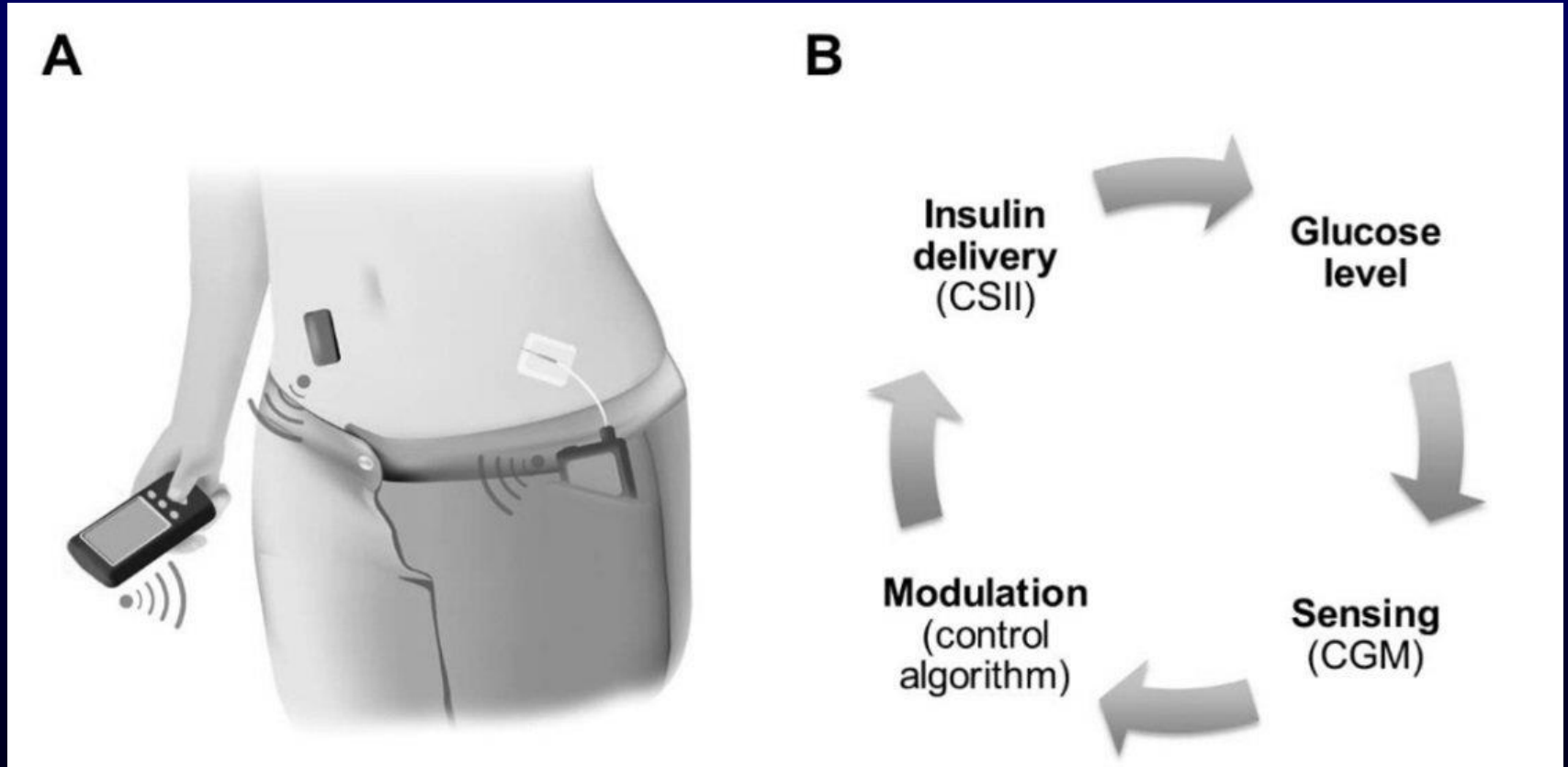
Pušač

Dob

Muškarac



Pankreas



Senzor ispod same površine kože abdomena kontroliše nivo šećera i šalje informacije na računar, koji izračunava koliko je insulina potrebno.

Mozak

- **Implanti u mozgu** danas se već koriste kako bi se snaga uma iskoristila **za pomoć paralizovanim osobama**.
- Poznato je da **mozak proizvodi elektromagnetne talase koji pokreću mišiće u tijelu**, a danas naučnici to saznanje koriste kako bi obezbijedili pristup pacijentovom mozgu i omogućili pokretanje mišića.

Mozak

brain-computer interface, BCI



Zahvaljujući elektrodama u mozgu, Džoni Rej je snagom misli pokretao kursor na ekranu i tako komunicirao

RFID Implanti

- Prvi RFID implant ugradjen je još **24. Avgusta 1998 – u Reading-u** (Dr. George Boulos)
- Omogućava identifikaciju/informacije
- Omogućava/onemogućava pristup
- Poput implantirane „pametne kartice“
- ...hmm, da li je to Bionika ?



An x-ray image of Dr. Mark Gasson's left hand shows how small microchip implants can be



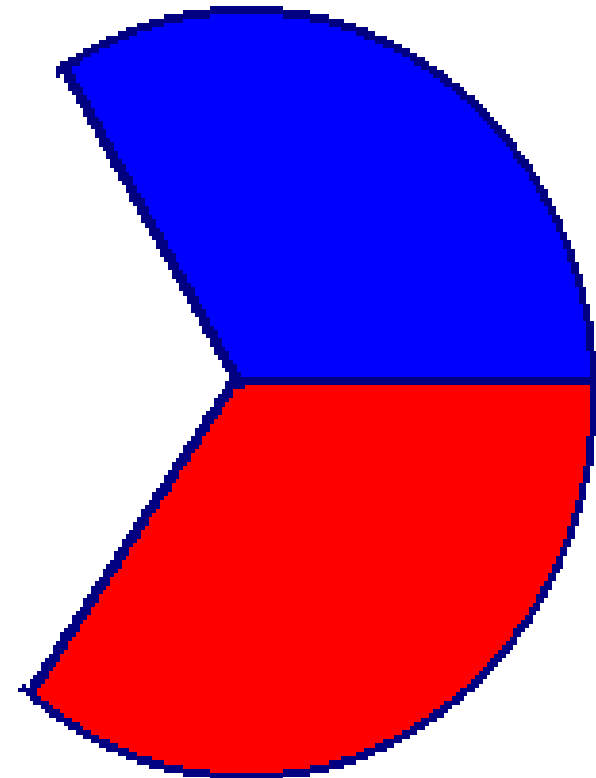
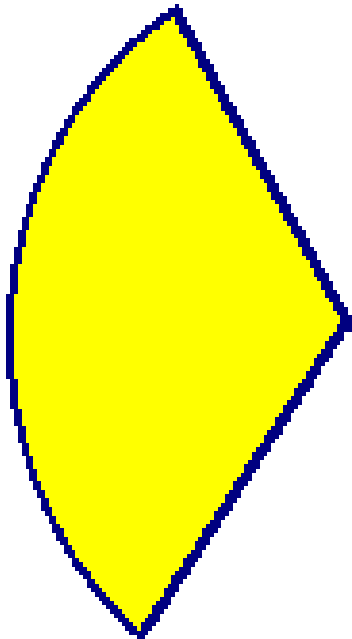
RFID Implanti danas

- Nekoliko hiljada implantirano kod ljudi
- Najpoznatiji u svijetu je **Amal Graafstra** – amater biohaker iz Sijetla koji je ugradio RFID ispod kože.
- Meksička Vlada
- *Prisons in California, Virginia, Michigan, Illinois, Ohio and Minnesota deploy RFID tracking*
- 2004 OK by US FDA – Diabetes, Epilepsy etc !!!

4. Dopuniti kliničko rasuđivanje u donošenju kliničke odluke

Dokazi iz istraživanja

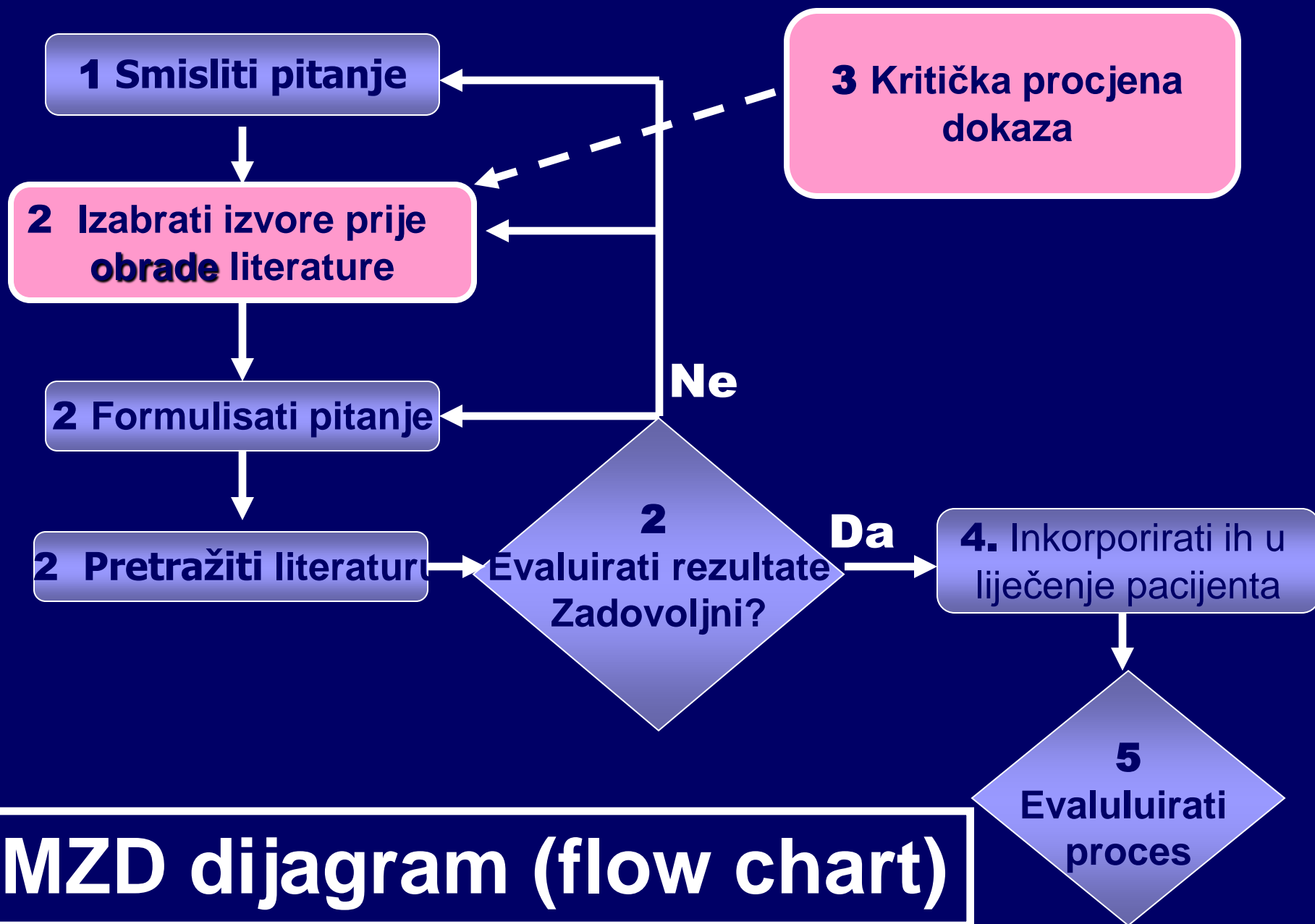
Okolnosti vezane za pacijenta, njegove želje, vrednosti i prava



Iskustvo ljekara (klinička ekspertiza)

Koraci u MZD

1. Formulisanje kliničkog pitanja na koje treba odgovoriti
2. Pretraživaje literature
3. Kritička procjena dokaza (validnost i klinička primjenljivost)
4. Integrisanje dobijenih rezultata u kliničku odluku o zdravstvenoj zaštiti pacijenta
5. Evaluacija krajnjeg ishoda



MZD dijagram (flow chart)

MZD – Pretraživanje literature

- Tražiti termine date u formulaciji pitanja
- Klasifikovati problem: etiologija, dijagnoza, terapija, prognoza
- Tražiti odgovarajuće studije
- Odštampati i pažljivo pregledati dizajn studija, napraviti tabelarni pregled
- Pronaći najkorisnija istraživanja u najkraćem periodu, analizirati ih

Kliničko pitanje

Primjer: Da li je voda podjednako efikasna kao i alkohol u prevenciji infekcije pupka kod novorođenčadi?

P opulacija: novorođenčad

I ntervencija: voda

K ontra intervencija: alkohol

O utcome - ishod: infekcija pupka

- Kako u mnoštvu literature pronaći baš ono što vam treba?
- **Gdje pronaći relevantne i validne dokaze?**
- Kako brzo doći do informacija?



Korist od medicinskih
informacija

=

Relevantnost x
validnost / uloženi napor



Adapted from Slawson et al,
J Fam Pract 1994; 38:505-513

**Sve činjenice nisu
jednake!**



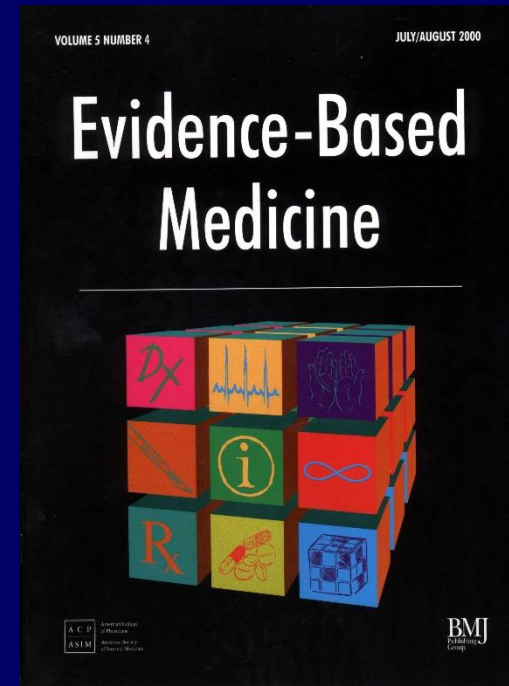
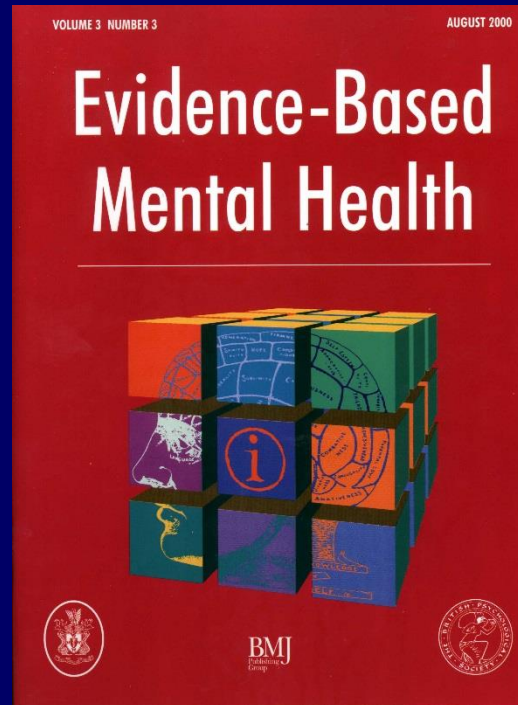
Hijerarhija dokaza za donošenje odluka u medicini



Piramida dokaza

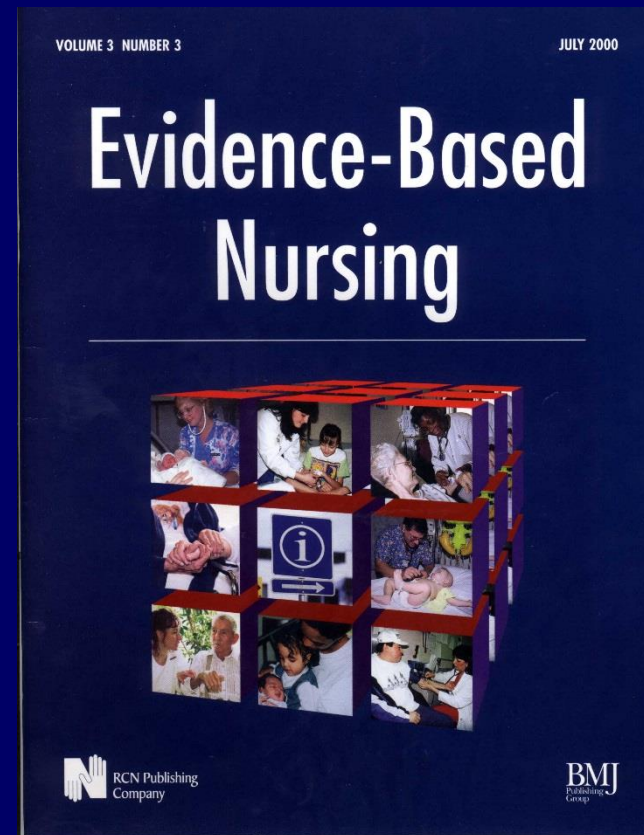
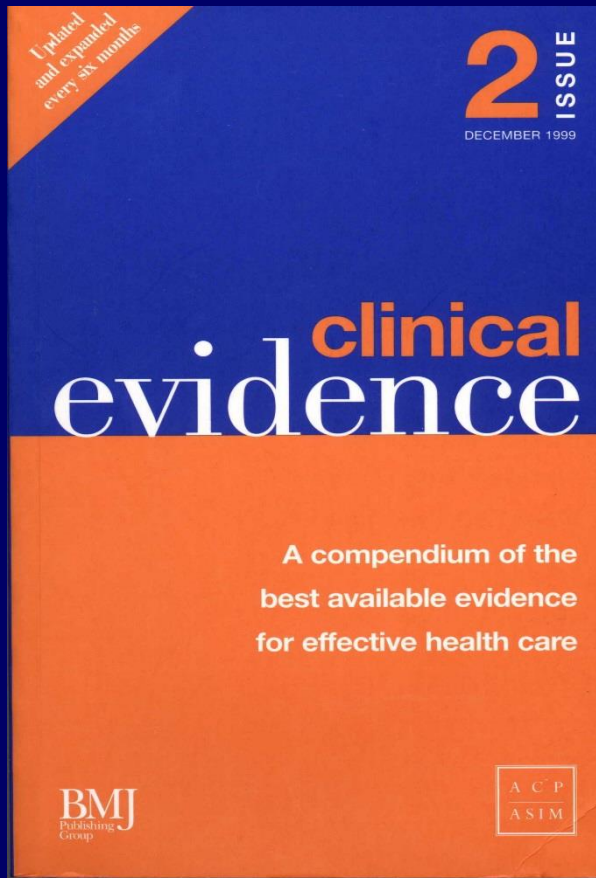


Izvori podataka za MZD

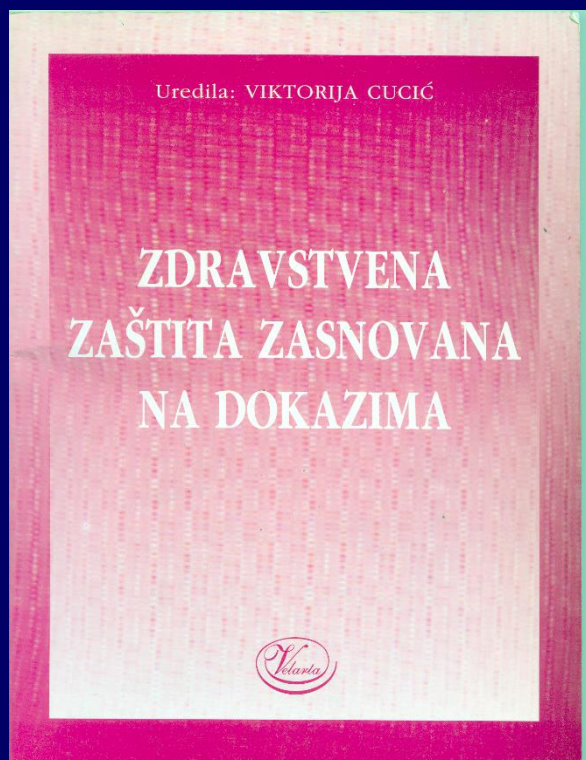


American College of Physicians

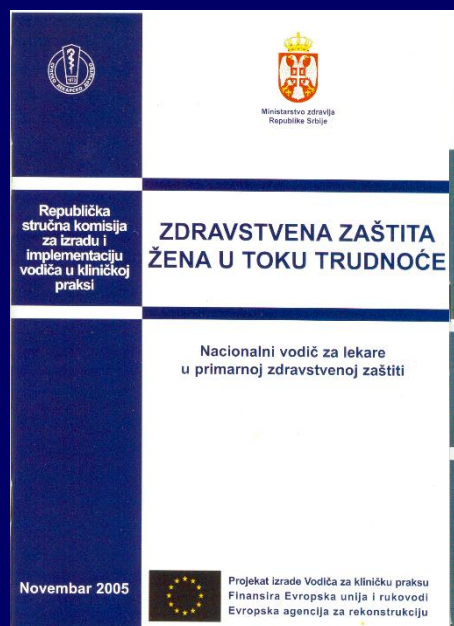
Izvori podataka za MZD



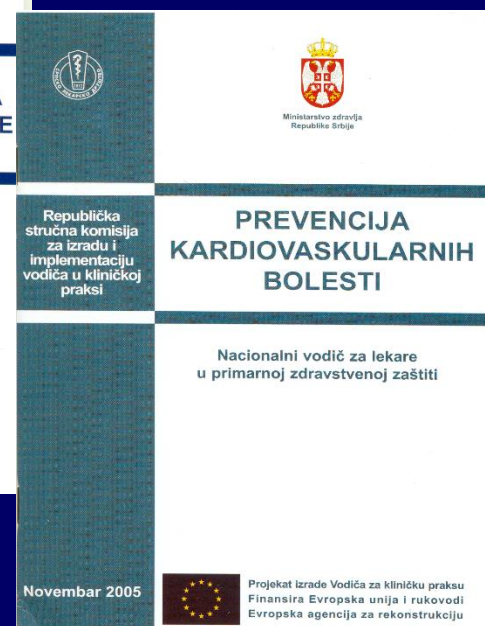
Izvori podataka za MZD



2001

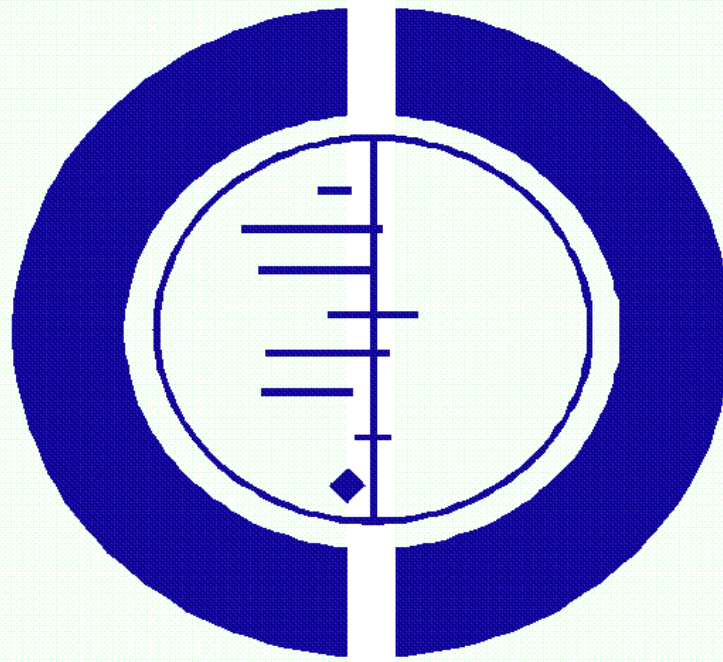


2005



Kohranova kolaboracija

<http://www.cochrane.org>



The Cochrane Collaboration

Osnivana 1993, nazvana po epidemiologu

Archi Cochrane (1909-1988)

Kohranova kolaboracija

- Međunarodna neprofitna i nezavisna organizacija koja produkuje i distribuira precizne i ažurirane informacije (sistematske preglede) o efektima intervencija u zdravstvenoj zaštiti, širom sveta.
- Tim: eksperti iz različitih oblasti zdravstvene zaštite
- Publikacija: Kohranova baza sistematskih pregleda

Kohranova biblioteka

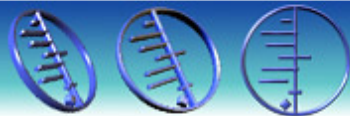
<http://www.thecochranelibrary.com>



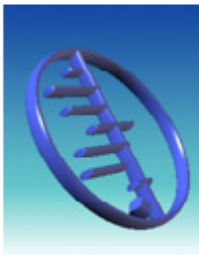
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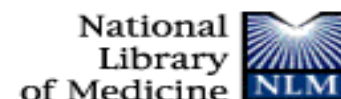
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The Cochrane Central Register of Controlled Trials (CENTRAL)	427807
The Cochrane Database of Methodology Reviews (Methodology Reviews)	18
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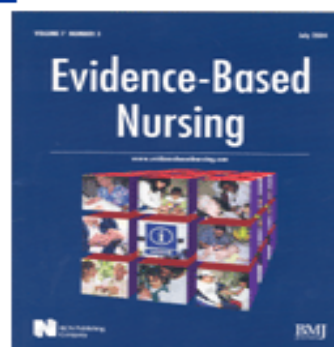
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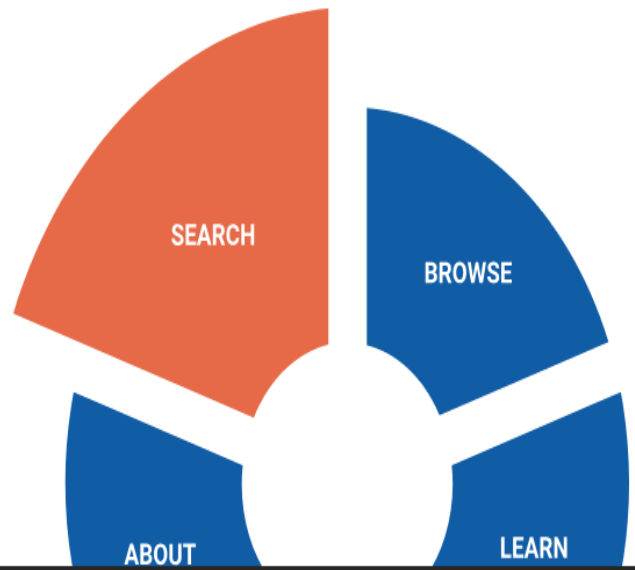


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PEDro

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- Baza podataka iz randomizovanih kontrolisanih istraživanja, sistematskih pregleda i vodiča kliničke prakse zasnovanih na dokazima u fizioterapiji
- <https://pedro.org.au/>



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To search for evidence about physiotherapy for a specific problem, select an appropriate term to complete the following statements. You do not need to make a selection in every search field. If your search retrieves too many irrelevant articles, try selecting more terms. If your search retrieves very little information, try selecting fewer terms.

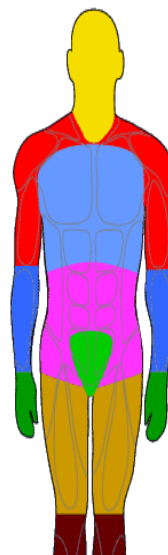
The health problem...

The symptom or difficulty experienced...

The treatment I'd like to know about is...

You can also search by entering a specific term or abbreviation in the box below. This term may relate to the:
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symptom (eg, lymphoedema, ataxia, VBI, insomnia, depression),
treatment (eg, treadmill training, rehabilitation, hydrotherapy), or
body part (eg, Achilles tendon, SIJ, spinal cord, femur, TMJ).

You can enter the term or abbreviation below:



- head, neck
- shoulder, upper arm, shoulder blade
- chest, rib, heart, lung, breast
- elbow, forearm
- wrist, hand
- back, pelvis
- bladder, genitals
- hip, thigh
- knee, lower leg
- foot, ankle
- the whole body
- not described above

MZD - web sajt pedijatrije

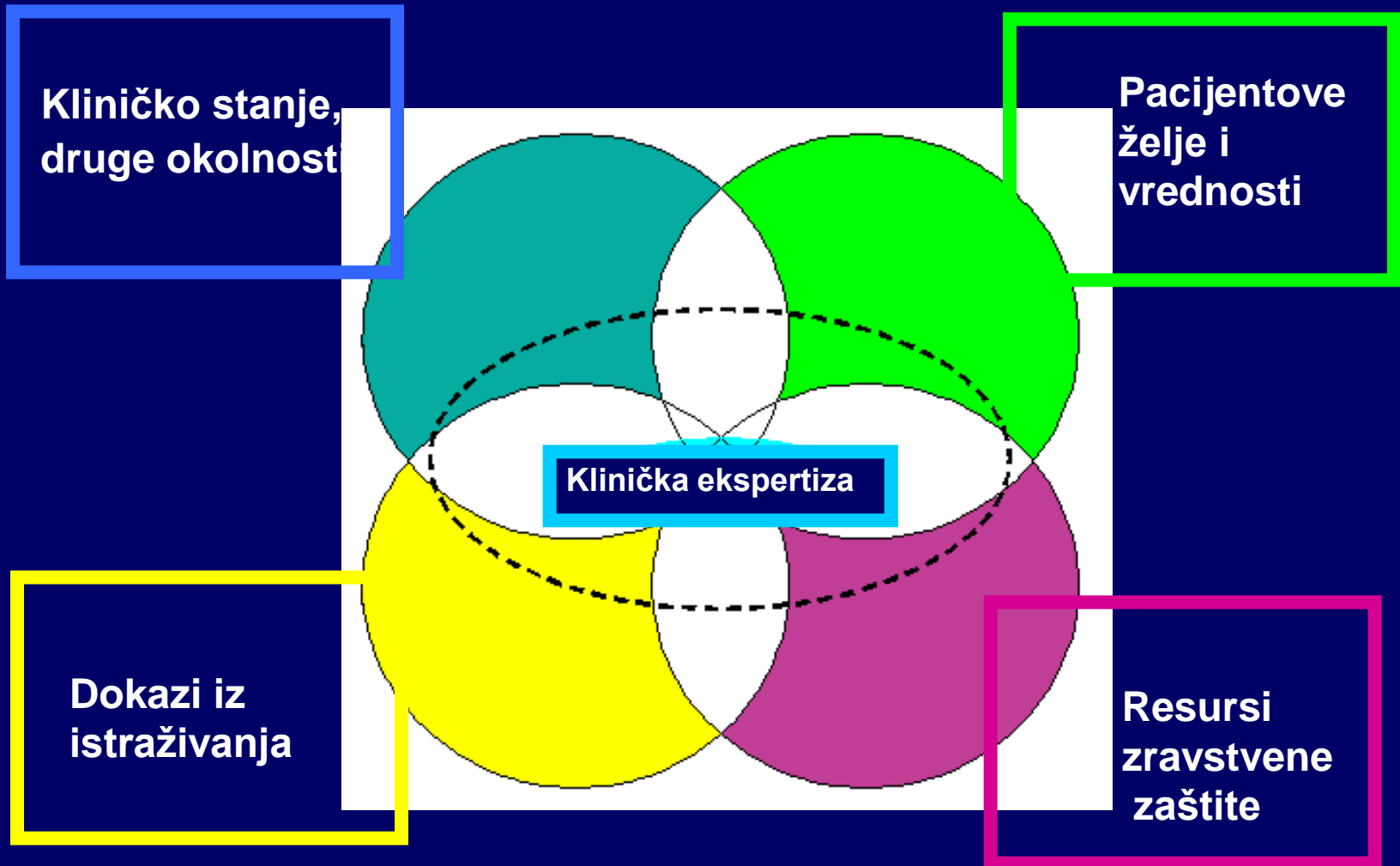
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<http://www.med.umich.edu/pediatrics/ebm>

OBLASTI

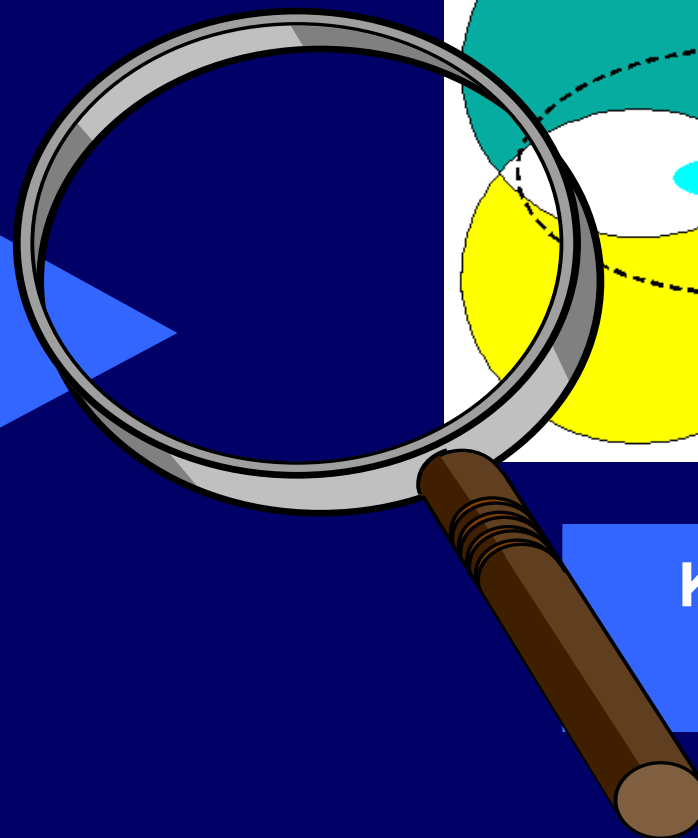
- Kardiologija
- Gastrologija
- Infektivne bolesti
- Urologija
- Nefrologija
- Urgentna stanja
- Opšta pedijatrija
- Neonatologija
- Pulmologija
- Reumatologija
- Endokrinologija
- Onkologija
- Neurologija
- Hirurgija

Donošenje kliničke odluke :



Propust u distribuciji dokaza u zemljama u razvoju

Dokazi iz
istraživanja

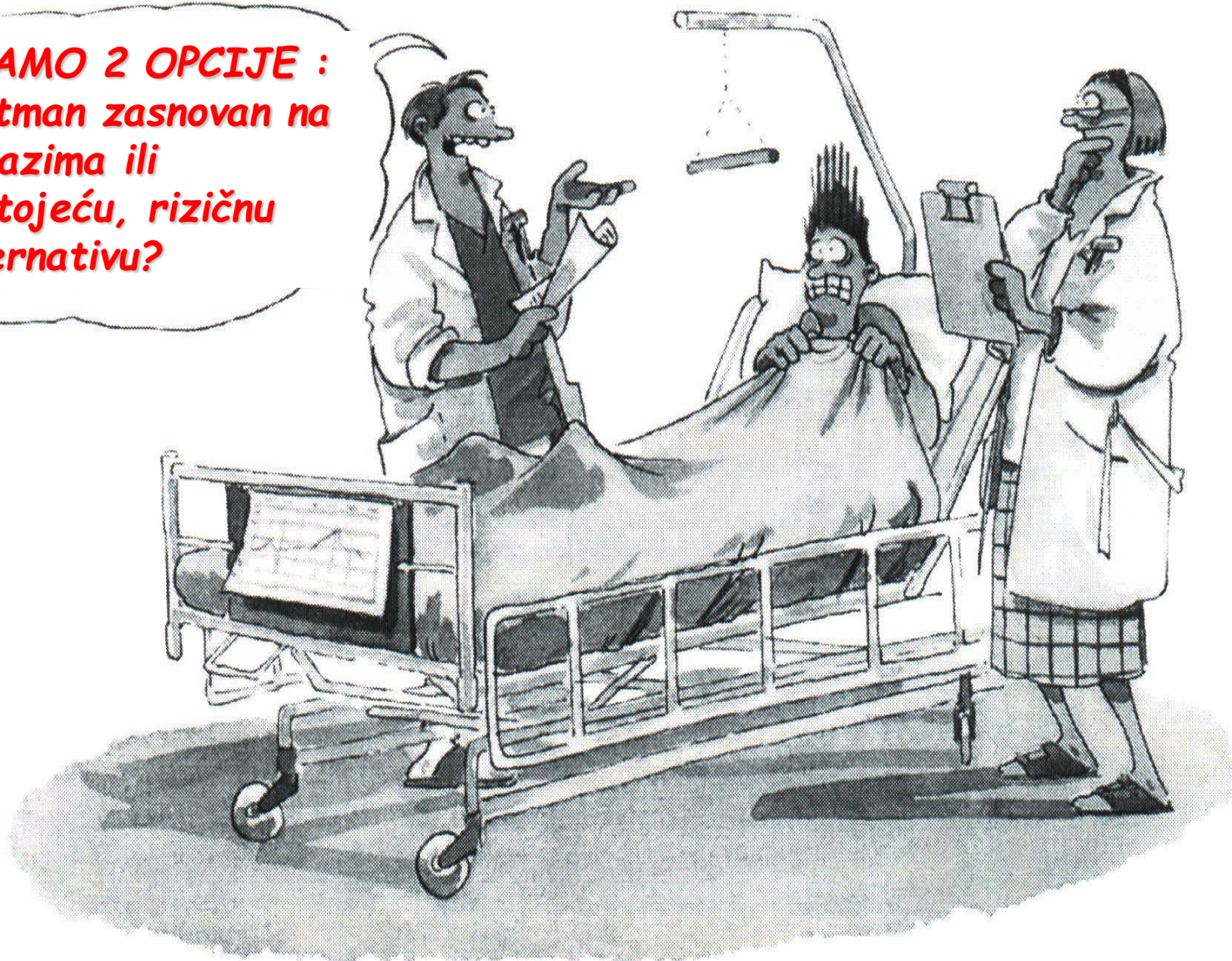


Kliničke
odluke

Zaključak

MZD je relativno nova paradigma u medicini koja naglašava značaj relevantnih dokaza iz istraživanja, ne smatrajući više dovoljnim donošenje odluka samo na osnovu intuicije i nesistemizovanog iskustva iz prakse.

IMAMO 2 OPCIJE :
tretman zasnovan na
dokazima ili
postojeću, rizičnu
alternativu?





**HVALA
NA
PAŽNJI**