Information Searching in Evidence-Based Medicine

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www.ceb-rama.org

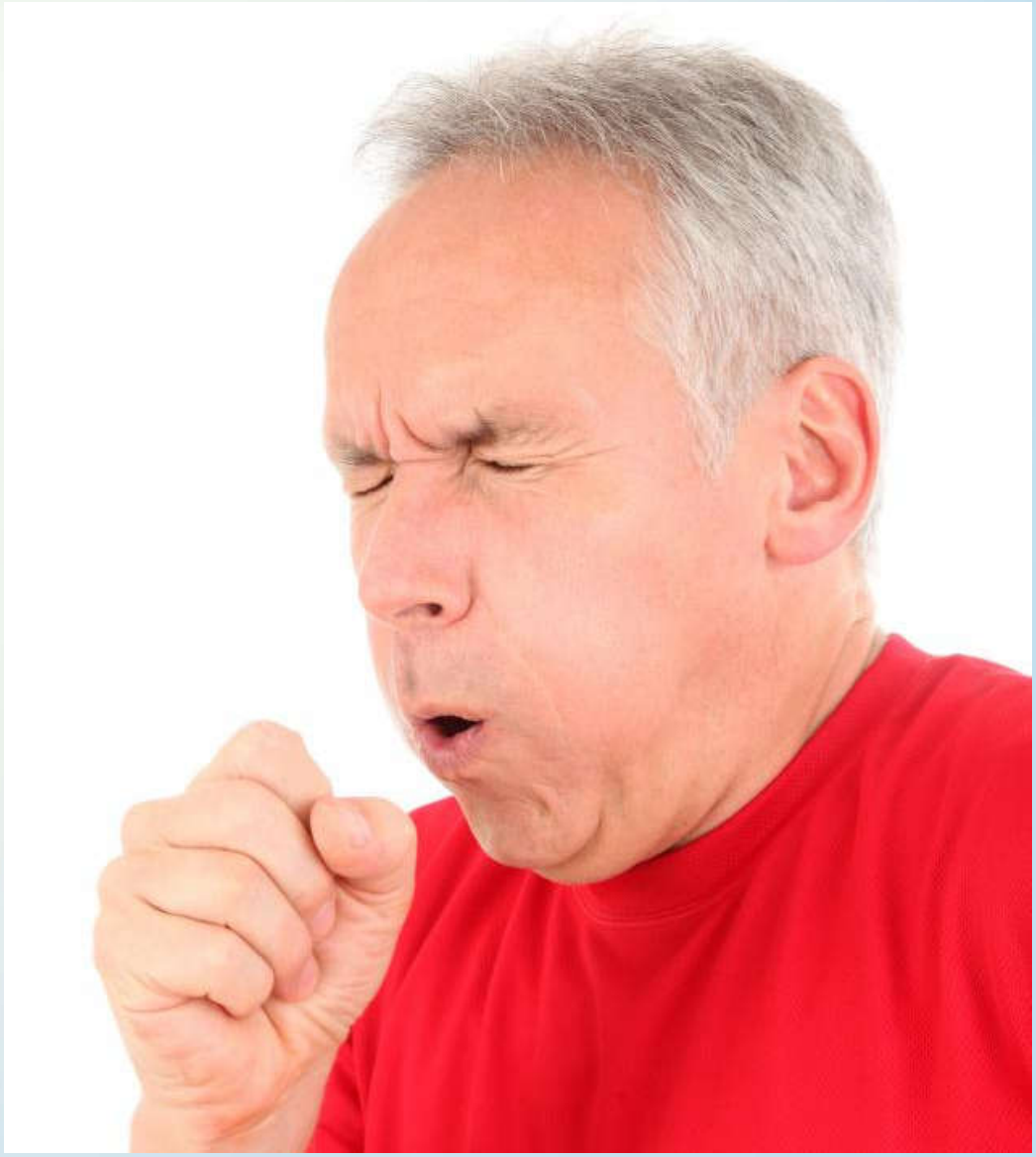
Scope of Today's Discussion

- Information sources
- Bibliographic databases
- Hand-on databases

Steps of Evidence-Based Medicine (5A)

Context:

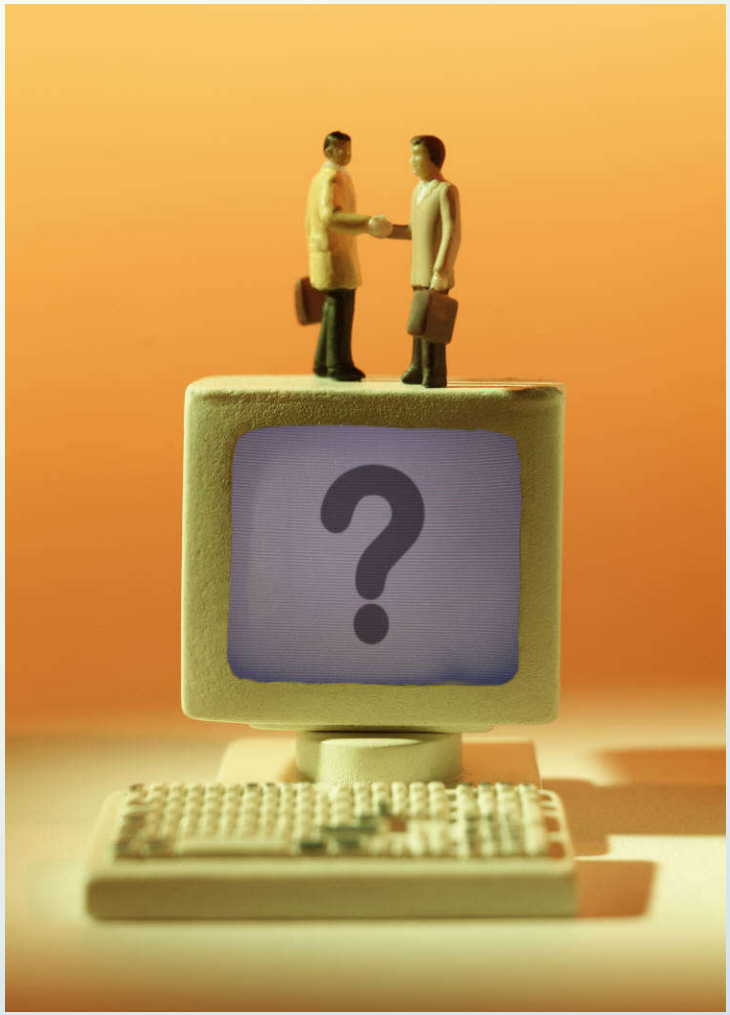
- You are working in the team of taking care of patients with acute care. Your team experience many young adult patients aged 20-40 years with diagnosis of influenza.
- The rate of prescribing **antiviral oseltamivir** is very high despite the cost and side effects of the medication. Many patients without underlying disease asked whether they really require the medication, in terms of duration of symptom
- You were given a task to make the decision.



PICO

- P
- I
- C
- O

Information sources

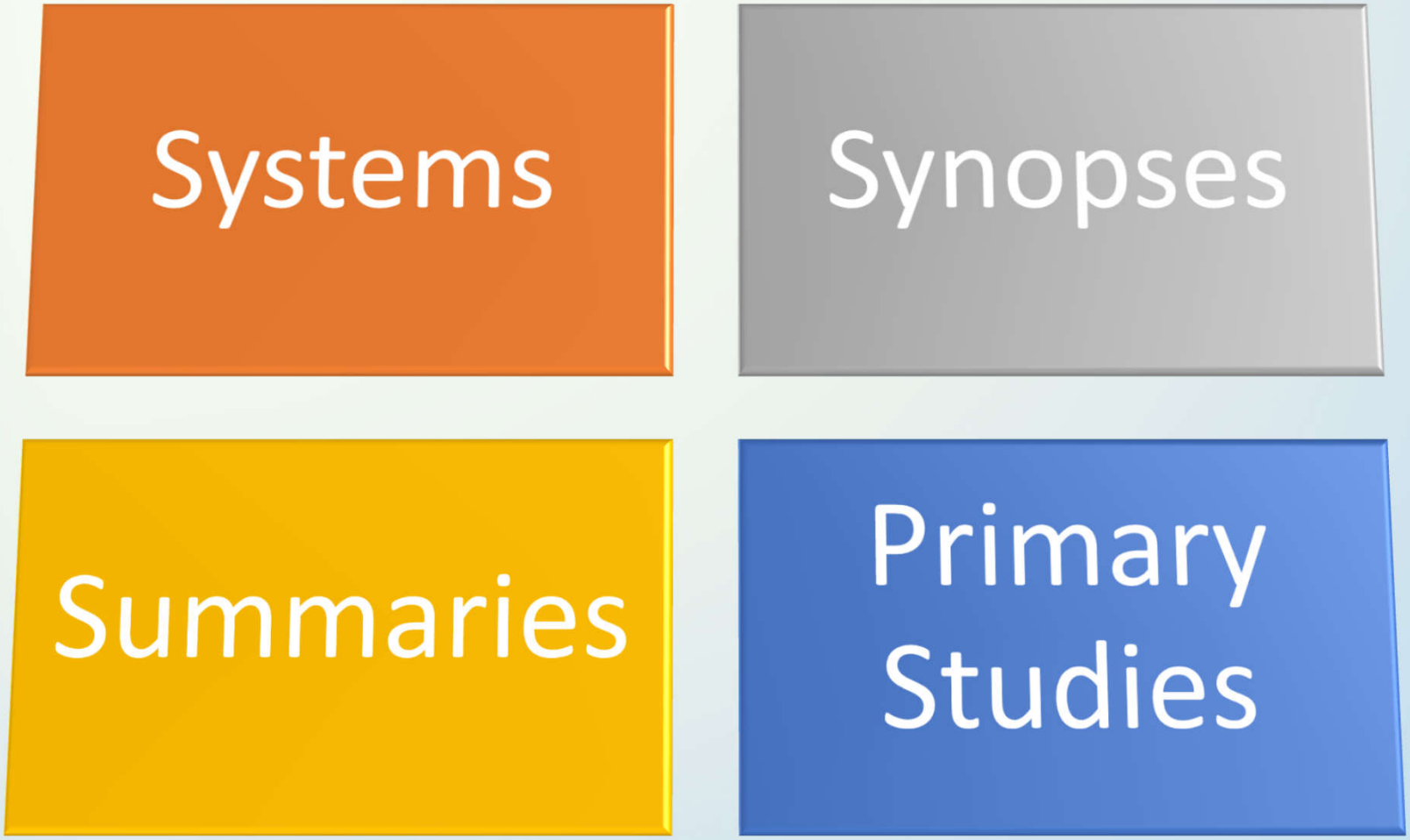


Information sources

- Secondary sources

- Primary sources

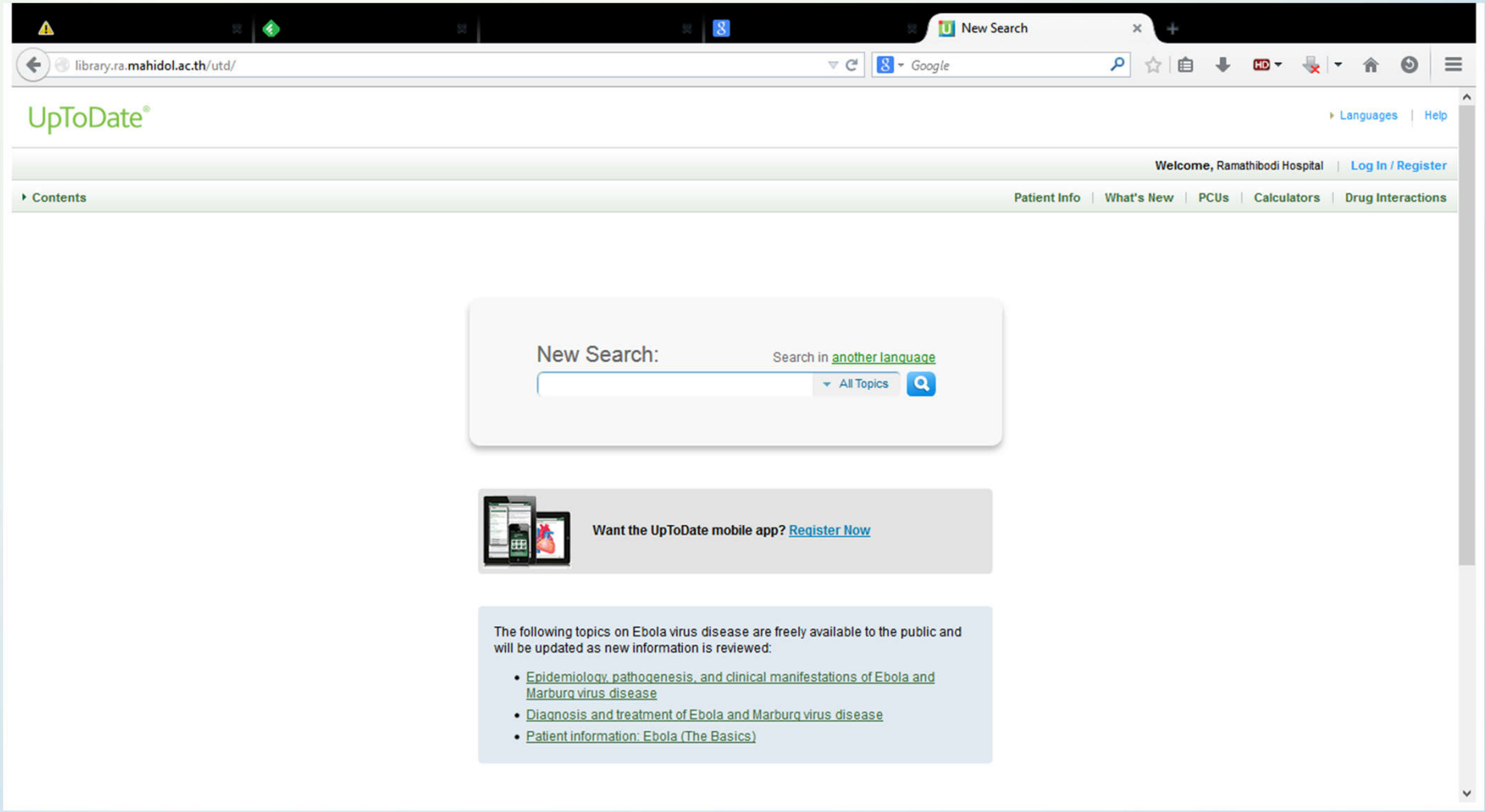
Information sources

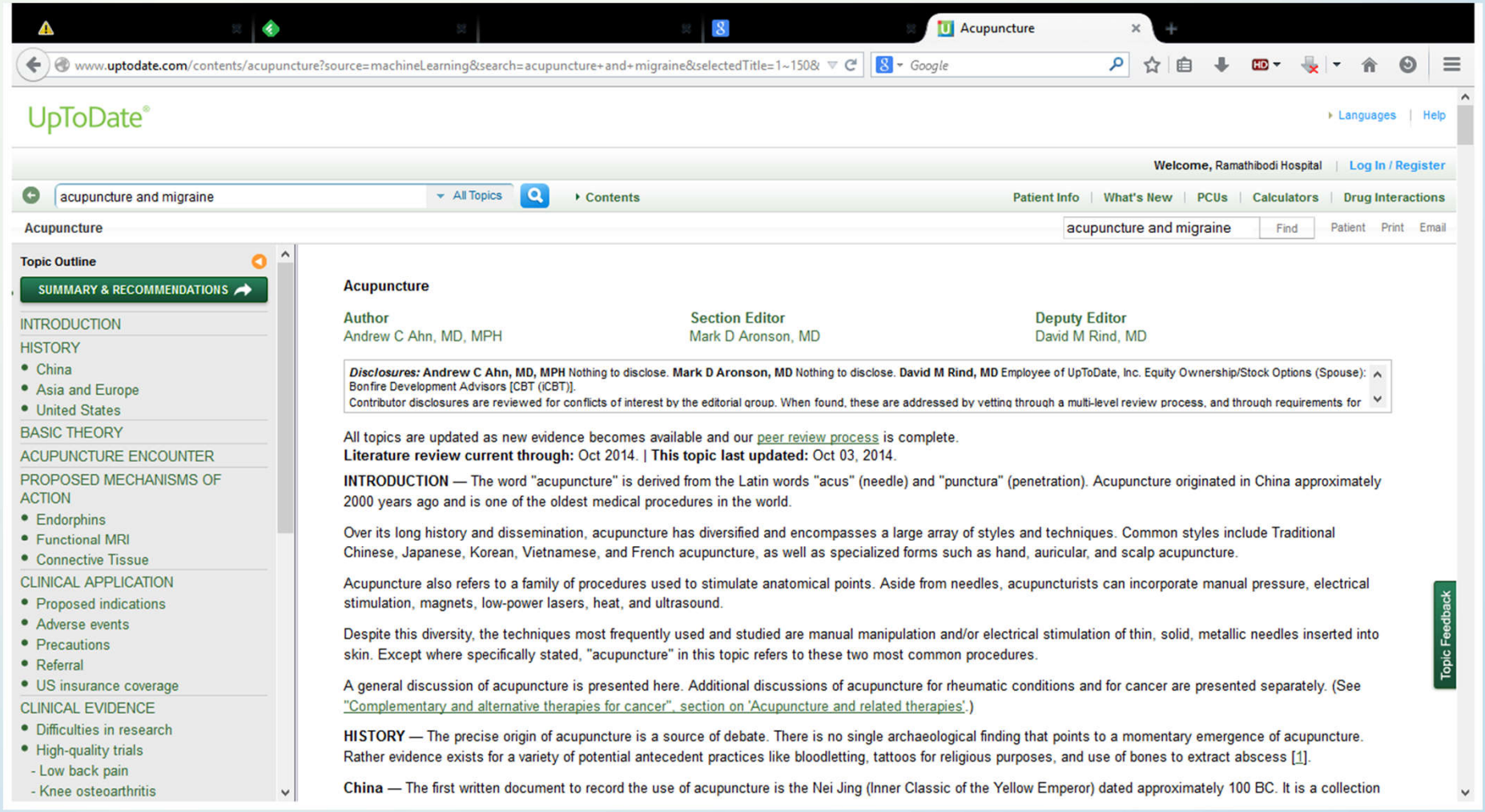


- **System**
  - Regularly updated evidence
  - Sometimes with guidance/recommendations

  - ACP Smart Medicine (Previously called PIER)
    http://smartmedicine.acponline.org
  - UpToDate
    http://www.uptodate.com
  - BMJ Clinical Evidence
    http://www.clinicalevidence.com

UpToDate
http://library.ra.mahidol.ac.th/utd/




Acupuncture
www.uptodate.com/contents/acupuncture?source=machineLearning&search=acupuncture+and+migraine&selectedTitle=1~150&
Google
UpToDate
Languages | Help
Welcome, Ramathibodi Hospital | Log In / Register
acupuncture and migraine
All Topics
Contents
Patient Info | What's New | PCUs | Calculators | Drug Interactions
Acupuncture
acupuncture and migraine
Find
Patient Print Email
Topic Outline
SUMMARY & RECOMMENDATIONS
INTRODUCTION
HISTORY
China
Asia and Europe
United States
BASIC THEORY
ACUPUNCTURE ENCOUNTER
PROPOSED MECHANISMS OF ACTION
Endorphins
Functional MRI
Connective Tissue
CLINICAL APPLICATION
Proposed indications
Adverse events
Precautions
Referral
US insurance coverage
CLINICAL EVIDENCE
Difficulties in research
High-quality trials
- Low back pain
- Knee osteoarthritis
Acupuncture
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Disclosures: Andrew C Ahn, MD, MPH Nothing to disclose. Mark D Aronson, MD Nothing to disclose. David M Rind, MD Employee of UpToDate, Inc. Equity Ownership/Stock Options (Spouse): Bonfire Development Advisors [CBT (iCBT)].
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All topics are updated as new evidence becomes available and our peer review process is complete.
Literature review current through: Oct 2014. | This topic last updated: Oct 03, 2014.
INTRODUCTION — The word "acupuncture" is derived from the Latin words "acus" (needle) and "punctura" (penetration). Acupuncture originated in China approximately 2000 years ago and is one of the oldest medical procedures in the world.
Over its long history and dissemination, acupuncture has diversified and encompasses a large array of styles and techniques. Common styles include Traditional Chinese, Japanese, Korean, Vietnamese, and French acupuncture, as well as specialized forms such as hand, auricular, and scalp acupuncture.
Acupuncture also refers to a family of procedures used to stimulate anatomical points. Aside from needles, acupuncturists can incorporate manual pressure, electrical stimulation, magnets, low-power lasers, heat, and ultrasound.
Despite this diversity, the techniques most frequently used and studied are manual manipulation and/or electrical stimulation of thin, solid, metallic needles inserted into skin. Except where specifically stated, "acupuncture" in this topic refers to these two most common procedures.
A general discussion of acupuncture is presented here. Additional discussions of acupuncture for rheumatic conditions and for cancer are presented separately. (See "Complementary and alternative therapies for cancer", section on 'Acupuncture and related therapies'.)
HISTORY — The precise origin of acupuncture is a source of debate. There is no single archaeological finding that points to a momentary emergence of acupuncture. Rather evidence exists for a variety of potential antecedent practices like bloodletting, tattoos for religious purposes, and use of bones to extract abscess [1].
China — The first written document to record the use of acupuncture is the Nei Jing (Inner Classic of the Yellow Emperor) dated approximately 100 BC. It is a collection
Topic Feedback

- **Synopses**
  - Pre-appraised journals and databases

  - ACP Journal club: http://www.acpjc.com
  - InfoPOEMs: http://www.infopoems.com
  - EBM Journal (by BMJ): http://ebm.bmj.com/

Randomised controlled trial

The therapeutic value of hypertonic saline in acute bronchiolitis remains unclear

10.1136/ebmed-2014-110082

Jay Pershad

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Commentary on: Wu S, Baker C, Lang ME, *et al*. Nebulized hypertonic saline for bronchiolitis: a randomized clinical trial. *JAMA Pediatr* 2014;168:657–63 and Florin TA, Shaw KN, Kittick M, *et al*. Nebulized hypertonic saline for bronchiolitis in the emergency department: a randomized clinical trial. *JAMA Pediatr* 2014;168:664–70.

Context

Bronchiolitis is common in children below 2 years of age and is a leading cause of infant hospitalisation, accounting for $1.73 billion in hospital charges in the USA annually.[1] The putative effect of hypertonic saline (HTS) in bronchiolitis is to absorb mucosal water, hydrate the airway–surface liquid in the bronchioles and enhance mucociliary clearance.[2] However, the therapeutic value of HTS in acute bronchiolitis remains unclear.

Methods

Both randomised controlled trials (RCTs) were conducted in urban, tertiary level, paediatric emergency departments (ED) in the USA. They excluded children with significant comorbidity, and compared the effect of nebulised 3% HTS with normal saline (NS) controls. Both studies used albuterol, given either just prior to or within 90 min of HTS.

Findings

Florin and colleagues enrolled 31 patients in each group, concluding that improvement in Respiratory Assessment Change Score (RACS; primary outcome) 1 h after intervention was less in the HTS group than the NS group (difference in mean RACS=2.5, 95% CI 0.5 to 4.6). A change in RACS of three points was deemed clinically significant. Wu and colleagues enrolled 231 and 216 patients into the HTS and NS groups, respectively. They concluded that the HTS group had a lower admission rate (28.9% vs 42.6%; OR=0.45, 95% CI 0.28 to 0.86), but did not observe a statistically significant difference in length of stay (LOS) or RACS. In both studies, additional therapies were administered at physician discretion and no significant difference in secondary outcomes (eg, adjunctive therapy with oxygen, use of steroids or adverse events) was noted. Mean duration of illness in each study was 3.4 and 5 days, respectively.

Commentary

These RCTs were well designed, with low overall risk of bias, albeit with some imperfections. Wu and colleagues' study was underpowered to detect a planned difference of 30% in admission rate or 24 h in LOS. There was no objective severity of illness criteria for inclusion, admission or discharge readiness, making clinician bias a potential issue. Florin and colleagues included a wide severity-of-illness range (Respiratory Distress Assessment Index (RDAI)4–15) and utilised the RACS (calculated using change in RDAI and respiratory rate), as short-term proxy outcome for need for hospitalisation. Their study was not powered for detection of a change in admission rate.

The RDAI has poor discriminative and construct validity in predicting hospitalisation and LOS in bronchiolitis, in part because it does not include respiratory rate or O_2 saturation, both important variables for a clinician to determine disposition.[3] Wu and colleagues reaffirm this limitation—although they reported no significant difference in mean pretreatment and post-treatment RDAI scores in the two groups, the difference in admission rate was statistically significant.

The most recent meta-analysis on HTS in bronchiolitis seems promising in terms of LOS reduction for mild-to-moderate disease (mean=1.15 days, 95% CI 1.49 to 0.82). However, the benefit appears to be concentrated in European studies in which mean LOS was relatively long (5–7 days), rendering data less generalisable to US populations where mean LOS is 2–3 days.[4] This same meta-analysis included four ED-based trials that did not show any significant short-term (30–120 min) improvement in clinical score and oxygen saturation with up to three doses of nebulised 3% saline. Trials published since this meta-analysis have also not demonstrated benefits of using HTS. What we can glean from the literature is that no significant adverse events were noted with use of 3% or higher concentrations of HTS.[5–9]

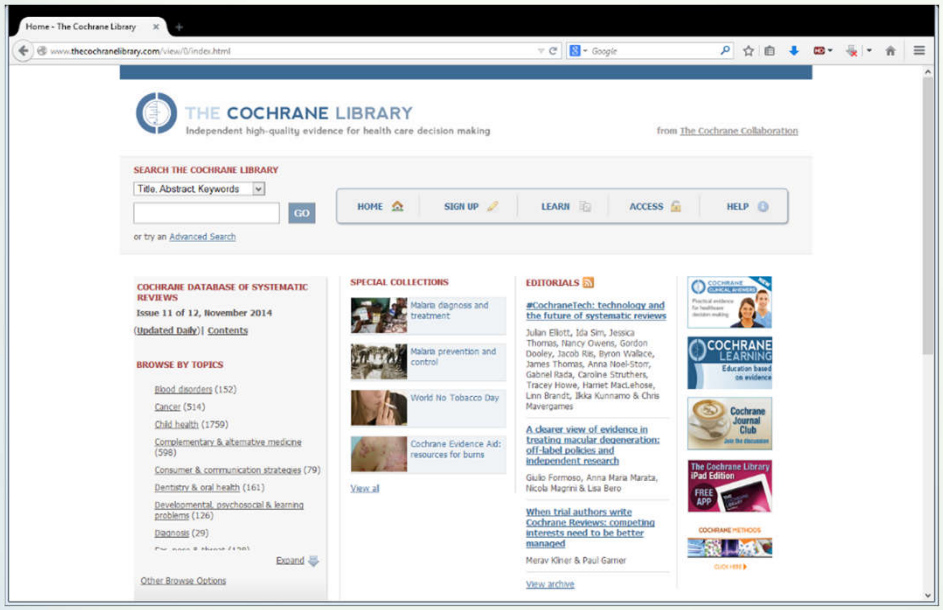
Bronchodilators have been used in conjunction with HTS in several trials in an effort to mitigate bronchospasm purportedly related to HTS, even though by themselves they have not been shown to improve outcomes.[1 4] Indeed, we cannot rule out a possible contribution of HTS effect on increasing albuterol action. It has also been suggested that those with an individual or close family history of atopy may preferentially benefit from β-agonists, with NS or HTS. In an RCT conducted on infants with moderate bronchiolitis in the ED setting, although the combination of salbutamol with HTS did not lead to an improved bronchiolitis severity score, atopic children preferentially benefited from combined salbutamol/NS.[9]

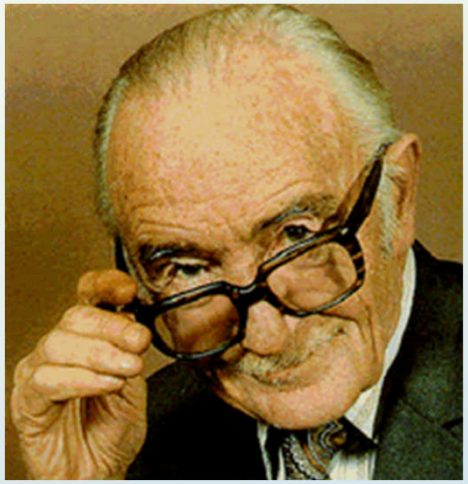
Where does this leave acute care clinicians? There are three questions we need to ask. First, what are the confounding issues in interpreting RCTs of HTS in acute bronchiolitis? There is much heterogeneity with regard to study setting (ED vs inpatient), severity of illness, HTS concentration, adjunctive bronchodilator use, severity of illness scoring systems, frequency of drug administration, co-interventions such as suction or supplemental O_2, and criteria for admission or discharge readiness. Second, what is a measurable, objective and relevant clinical outcome? In a disease expected to last several days, a short-term improvement in clinical score is less important than an impact on admission rate and LOS. Finally, how do clinicians manage acute bronchiolitis when the season changes and we get inundated with patients?

My recommendation—part evidence-based and part experiential—for infants without significant comorbidity is as follows: for mild disease, masterly inactivity with close observation at home is prudent. For patients with severe respiratory distress, dehydration or hypoxaemia, hospitalise and provide necessary supportive care. Infants with moderate disease are the focus of controversy. In general, if symptom duration is 72 h or more, and the infant is feeding well and maintaining adequate oxygenation, doing less may be most effective. Other than nasal suction for the obligatory nose breathers, the additional cost and resources of nebulisation may not be justified. If symptom duration is less than 72 h, with predominant wheeze (rather than rales) and features of atopy, a trial of β-agonist with 3% or 5% HTS may be justified. If there is improvement after 30–60 min,

- **Summaries**
  - Systematic reviews that are well conducted
  - The Cochrane Library: http://www.cochrane.org/
  - There are systematic review beside Cochrane groups published in many journals

Cochrane Library





Professor Archibald Leman Cochrane, CBE FRCP FFCM, (1909 - 1988)
From "Cardiff University Library, Cochrane Archive, University Hospital Llandough".

- thecochranelibrary.com
- cochrane.org
- The Cochrane Collaboration founded with respected to Archie Cochrane (1909-1988)
- Database of Systematic Review

Intervention Review

Endoscopic pneumatic dilation versus botulinum toxin injection in the management of primary achalasia

Jan E Leyden[1,*], Alan C Moss[2], Padraic MacMathuna[3]

Database Title: The Cochrane Library

Editorial Group: Cochrane Upper Gastrointestinal and Pancreatic Diseases Group

Published Online: 18 OCT 2006

Assessed as up-to-date: 31 DEC 2008

DOI: 10.1002/14651858.CD005046.pub2

Abstract

Background

Achalasia is an oesophageal motility disorder, of unknown cause, which results in increased lower oesophageal sphincter (LOS) tone and symptoms of difficulty swallowing. Treatments are aimed at reducing the LOS tone. Current endoscopic therapeutic options include pneumatic dilation (PD) or botulinum toxin injection (BTX).

Objectives

The objective of this review was to compare the efficacy and safety of two endoscopic treatments, pneumatic dilatation and intrasphincteric botulinum toxin injection, in the treatment of oesophageal achalasia.

Search methods

Trials were identified by searching MEDLINE 1966 to August 2008, EMBASE 1980 to September 2008, ISI Web of Science 1955 to September 2008, The Cochrane Library Issue 3, 2008. Searches in all databases were conducted in October 2005 and updated in September 2008. The Cochrane Highly Sensitive Search Strategy for identifying randomized trials in MEDLINE, sensitivity maximising version, Ovid format, was combined with specific search terms to identify randomized controlled trials in MEDLINE. The MEDLINE search strategy was adapted for use in the other databases searched.

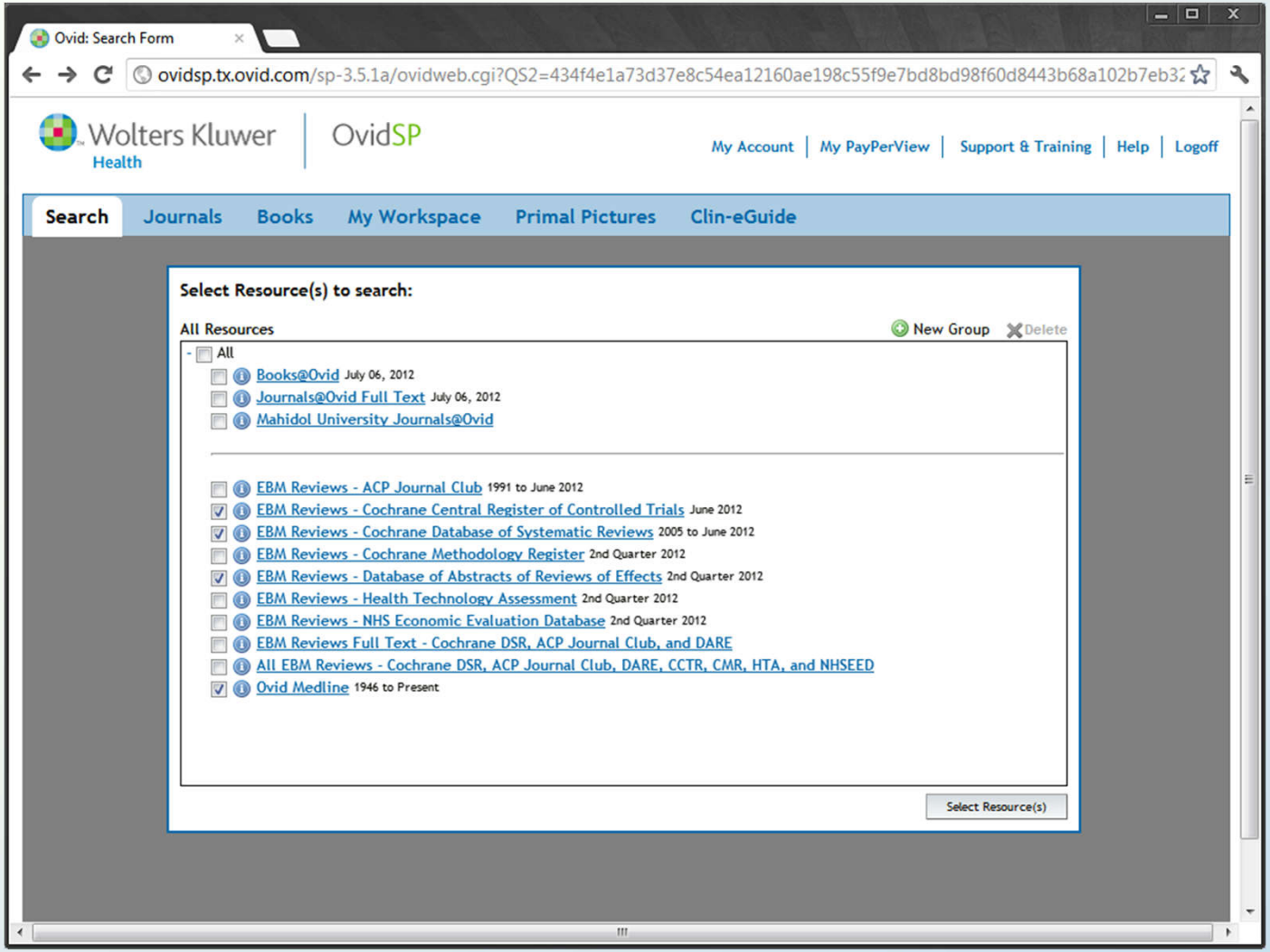
- Studies
  - Database of original primary studies (Primary sources)
  - Medline, Embase, CINAHL, Psychinfo, Sciencedirect, etc.
  - These databases collect mostly archives of Journal articles in computerized searchable format

Which information sources?

Selection is based on:

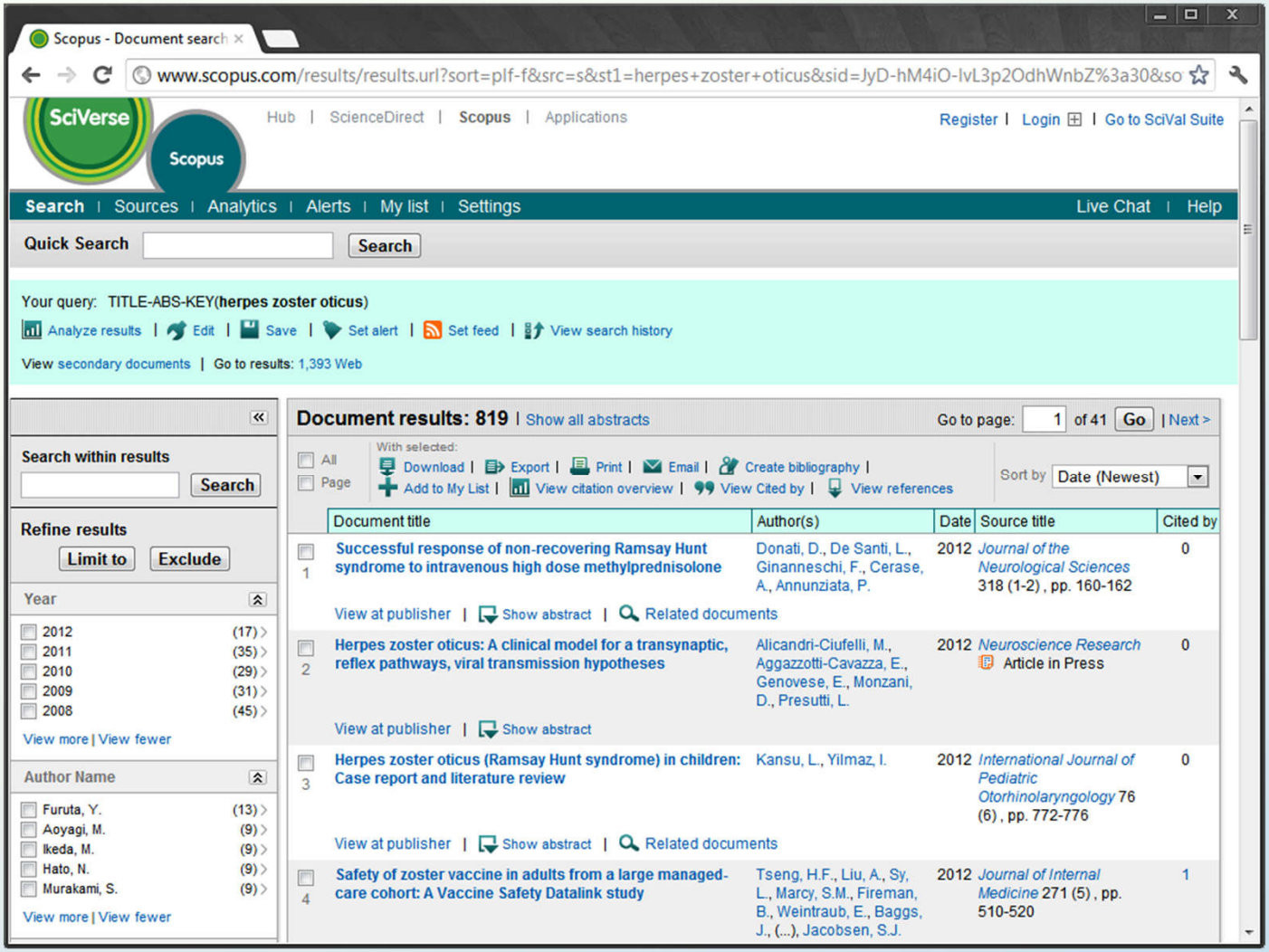
- Soundness of Evidence-based approach
- Comprehensiveness and specificity
- Ease of use
- Availability

Ovid



http://gateway.ovid.com

SCOPUS



http://www.scopus.com

Search Engines & Database

- Database
  - MEDLINE
  - EMBASE
  - CINAHL
  - SCOPUS
  - Cochrane
  - Trip
  - …
- Search Engines
  - PubMed
  - Ovid
  - SCOPUS
  - Cochrane
  - Google Scholar
  - …

Search Engine and Database

Search Engine	Database(s)
PubMed	MEDLINE
Ovid	MEDLINE, EMBASE, …
Scopus	SCOPUS

Unpublished sources may also be identified

Journal Articles Databases

- MEDLINE
- EMBASE
- SCOPUS
- Cochrane databases
- DARE (Database of Abstracts of Reviews of Effects)
- Web of Science
- CINAHL
- PsycINFO
- Etc.

Grey Literature

- Organization reports
- Governmental reports
- Conference Proceedings
- Dissertation & Theses
- Web

Primary Databases Searching Techniques

Defining question

- Based on PICO format

- P = Patient
- I = Intervention
- C = Comparison
- O = Outcome

- For comprehensive search, you should think of synonyms of terms
- If possible, search for “keyword term” in the database

Defining Terms

- Write terms in a post it and show how you can combine the terms

Keyword term

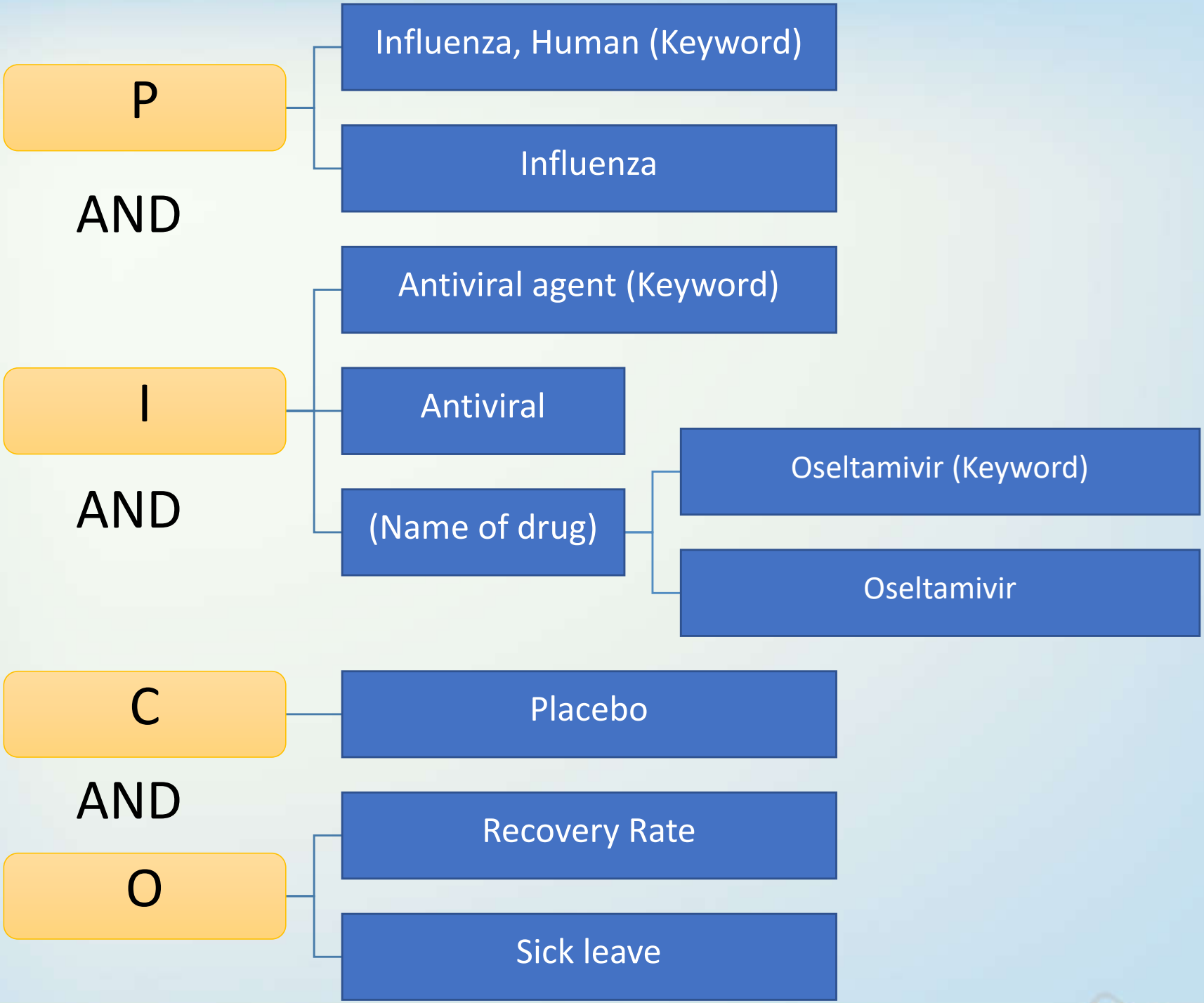
- Many databases have “keyword” features
- Example: Medical subject heading (MESH) in Medline (Pubmed), Emtree in Embase
- Keyword terms are chosen to group similar synonyms together in a single entry
- Search using keyword terms will yield closer match to your question
- However, for comprehensive searching (e.g. in Systematic Review), you’ll need to use both keyword term and normal text (text word)

Combination of Search Terms

- Use “AND” between domains (P/I/C/O)
- Use “OR” inside domains for similar terms or terms that have several synonyms

Group Your Question into Terms

• Terms #1	Influenza
• Keyword term	“Influenza, Human”
• Text words	“Influenza”, …
• Terms #2	Antiviral
• Keyword term	“Antiviral agents”
• Text words	“Antivirus”, “Antiviral drug”, “oseltamivir”, “neuraminidase inhibitors,…


P
Influenza, Human (Keyword)
Influenza
AND
I
Antiviral agent (Keyword)
Antiviral
(Name of drug)
Oseltamivir (Keyword)
Oseltamivir
AND
C
Placebo
AND
O
Recovery Rate
Sick leave

Very sensitive query

	Query Number	Search Query	Number of Results
P	1	Facial nerve.mp. or exp Facial Nerve/	13645
	2	Paralysis.mp. or exp Paralysis/	73267
	3	1 and 2	4306
	4	Facial Nerve Paraly$.mp.	727
	5	exp Facial Paralysis/	8942
	6	Fac$ Paralys$.mp.	9465
	7	Idiopath$.mp.	64950
	8	(3 or 4 or 5 or 6) and 7	430
	9	Palsy.mp. or exp Palsy/	475
	10	$ Pals$.mp.	1619
	11	8 or 9 or 10	1828
I	12	Antiviral Agents.mp. or exp Antiviral Agents/	216400
	13	Antivir$.mp.	59495
	14	Ac?clovir.mp. or exp Acyclovir/	11784
	15	Valac?clovir.mp.	758
	16	11 and (12 or 13 or 14 or 15)	149
	17	limit 16 to randomized controlled trial	9

Keyword system

Database	Keyword system
MEDLINE	MeSH
EMBASE	EMTREE
CINAHL	CINAHL Headings
Cochrane Library	MESH
PsycINFO	Thesaurus of Psychological Index Terms
SCOPUS	N/A
Web of Science	N/A

PubMed Searching

PubMed

- Free search engine
- Comprises of MEDLINE database
- Maintain by US National Library of Medicine, National Institutes of Health
- First released in 1996
- Accessed from “http://www.pubmed.gov”

MEDLINE

- 1946 to present material
- 5,600 journals in 39 languages
- 2,000 - 4,000 references added each day
- Biomedicine and health

Frequently Used Functions in PubMed

1. MESH
2. Search Operators
3. Limits
4. Clipboard
5. Save searches
6. Advanced search
7. Citation matcher
8. Clinical Queries
9. Retrieval of full text paper

MESH

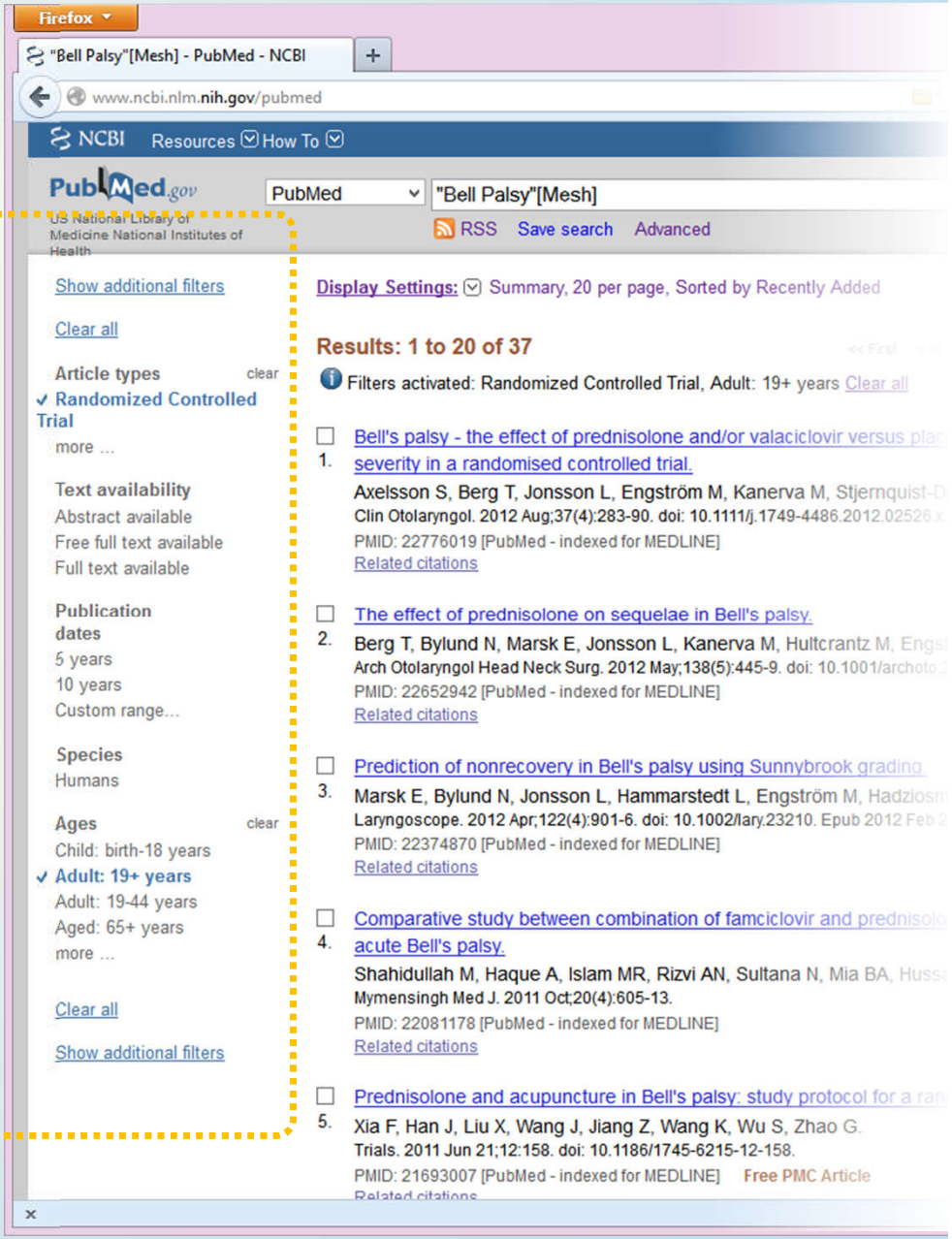
- Medical Subject Heading
- “Tag” of subject in database

Search Operators

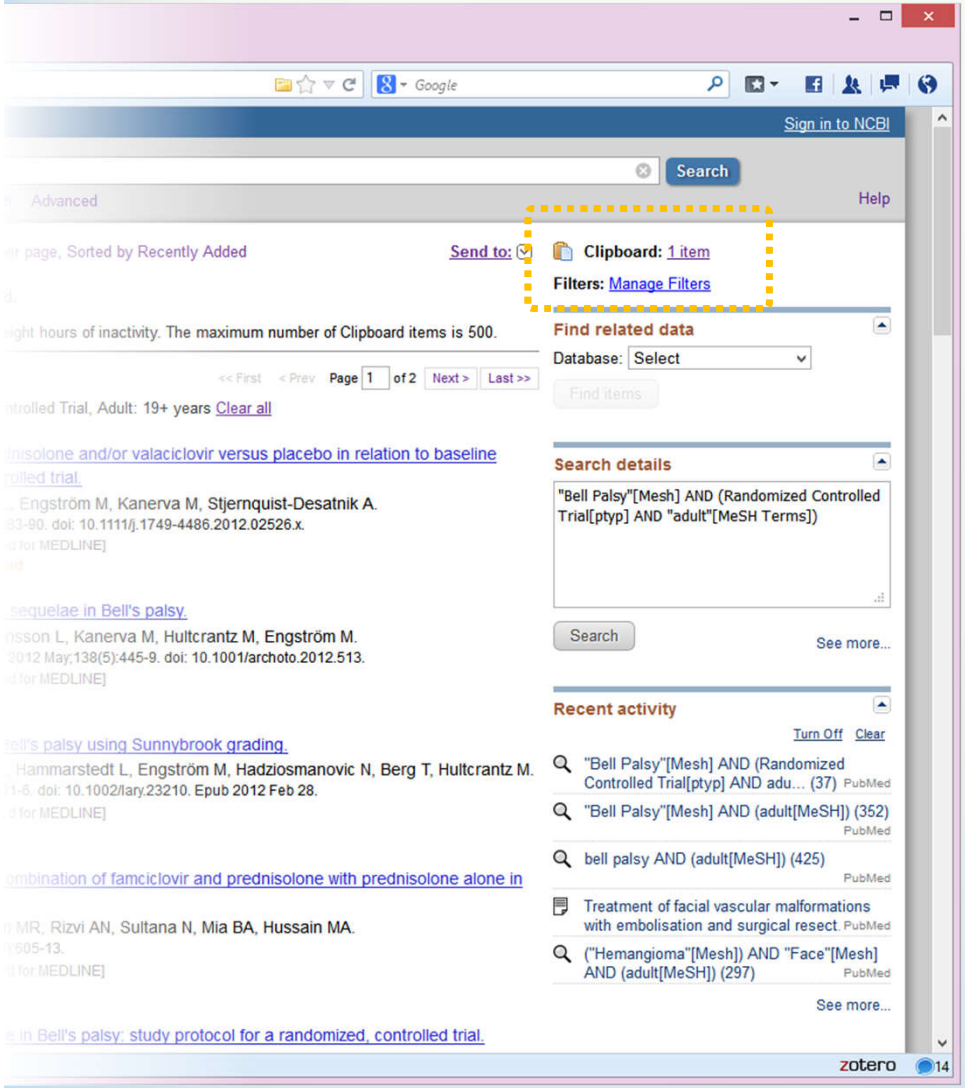
- Combining search terms
  - AND
  - OR
  - NOT
  - ( )

Limits

- Filter unwanted results
  - Age: infants, adults, …
  - Article types: original studies, RCTs, Meta-analysis, …
  - Article language
  - Human/animal
  - Recently published



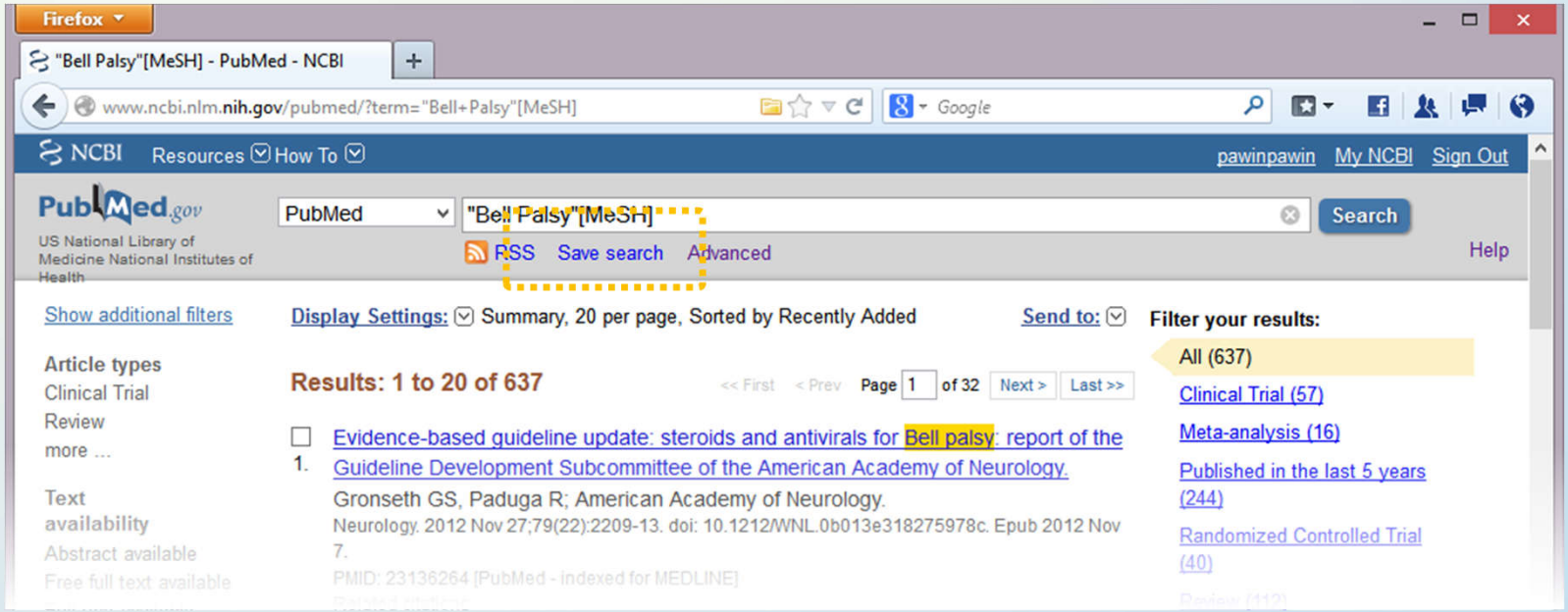
Clipboard



- Stored items for later review
- Max 500 items
- 8 hours before deleted
- Send to ‘collection’ instead if you want to permanently stored
- (Need *My NCBI account*)

Saved search

- Save for later updates
- Useful when you're doing systematic review
- Can also automatically e-mail updates



Citation Matcher

- Locate an article when you know the author name / title / journal name / volume / pages
- http://www.ncbi.nlm.nih.gov/pubmed/citmatch or visit pubmed.gov and look for Single Citation Matcher