Understanding how health professionals use (or don't use) electronic knowledge resources: The *Information Assessment Method*

Roland Grad MD MSc
Pierre Pluye MD PhD
Vera Granikov MLIS
Janique Johnson-Lafleur MA

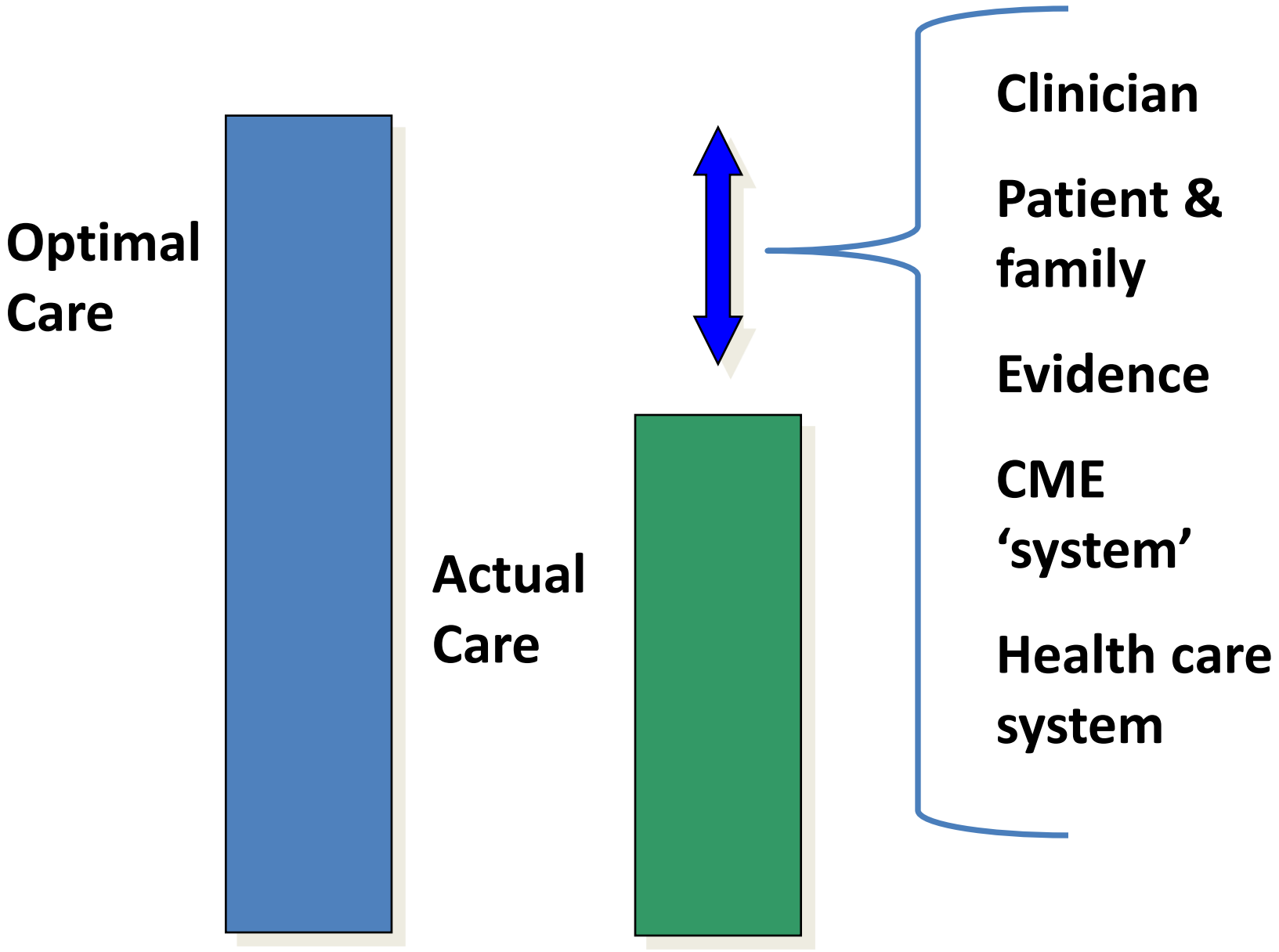
CIHR IRSC
Canadian Institutes of Health Research
Instituts de recherche en santé du Canada

Information Technology Primary Care Research Group

Objectives

- Knowledge infrastructure for medicine
- *Information Assessment Method*
- Mixed methods research

http://www.flickr.com/photos/25388219@N02/3274332856/


Optimal Care
Actual Care
Clinician
Patient & family
Evidence
CME 'system'
Health care system

Research Practice

Evaluation? Information Assessment Method

Evidence, information

Clinician-learner

Communication channels

Setting: healthcare system, team

Information Assessment Method (IAM)

Main Purpose of IAM

Systematic & comprehensive assessment of clinical information

- relevance
- **cognitive impact**
- use
- patient health outcomes

IAM: Potential applications

1. Compare electronic knowledge resources
2. Maintain quality of electronic knowledge resources
3. Document brief self-directed e-learning

Ecological Momentary Assessment

Three versions of IAM

1. PUSH context

   e.g. rating an email alert

2. PULL context, mobile device, database

   E.g. rating synopses of clinical research

3. PULL context, web, e-Book

   e.g. rating highlights retrieved from book chapters

Dexamethasone may prevent headache recurrence after treatment of acute migraine

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Clinical question
Does the addition of dexamethasone to standard therapy for acute migraine headache decrease the incidence of recurrent headache in adults?

Bottom line
This review found a significant benefit to adding dexamethasone to standard therapy for decreasing the risk of recurrent headache in adults presenting to the emergency department with acute migraine headache (number needed to treat [NNT] = 10). (LOE =)

Reference
Singh A, Alter HJ, Zaia B. Does the addition of dexamethasone to standard therapy for acute migraine headache decrease the incidence of recurrent headache for patients treated in the emergency department? A meta-analysis and systematic review of the literature. Acad Emerg Med 2008;15:1223-1233.

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Ask a CMA Librarian

Send us your comments

Study design
Meta-analysis (randomized controlled trials)

Funding
Unknown/not stated

Allocation
N/A

Setting
Emergency department

Synopsis
Nearly two thirds of patients treated in the emergency department for severe acute migraine headache will have a recurrent headache within 48 hours. These investigators thoroughly searched -- without any language restrictions -- multiple databases, including MEDLINE, EMBASE, and the Cochrane Registry; bibliographies of retrieved articles; and abstracts from pertinent national conferences. Eligible articles included randomized controlled trials comparing adjuvant dexamethasone therapy initiated in the emergency department with standard therapy alone. Three individuals independently critically assessed each study for appropriate inclusion criteria and methodologic quality, with disagreements resolved by consensus. The diagnosis of migraine headache was based on standard criteria from the International Headache Society. Seven trials (N = 742 patients), each with a Jadad score of 5 (high quality), met the final inclusion criteria. The median dose of dexamethasone was 15 mg, given intravenously in 6 of the trials and given orally in 1 trial. Follow-up varied from 24 hours to 72 hours. Pooled results found a statistically significant benefit for adjuvant dexamethasone compared with standard therapy only (NNT= 10). The 1 small study of oral administration (8 mg) had comparable efficacy to the intravenous trials. Formal analyses found no evidence of significant heterogeneity in reported outcomes or of publication bias.

What is cognitive impact?

What is the impact of this POEM on you or your practice? (Check "Yes" or "No" for each item below)		
	Yes	No
My practice is changed and improved	☐	☑
I learned something new	☑	☐
I am motivated to learn more	☑	☐
This information confirmed I did (am doing) the right thing	☐	☑
I am reassured	☐	☑
I am reminded of something I already knew	☐	☑
I am dissatisfied, as this information has no impact on my practice	☑	☐
I am dissatisfied, as there is a problem with this information	☐	☑
I disagree with this information	☐	☑
I think this information is potentially harmful	☐	☑
If this information has no impact at all on you or your practice, check here	☐	

Comment on this POEM or this questionnaire:

Next >>

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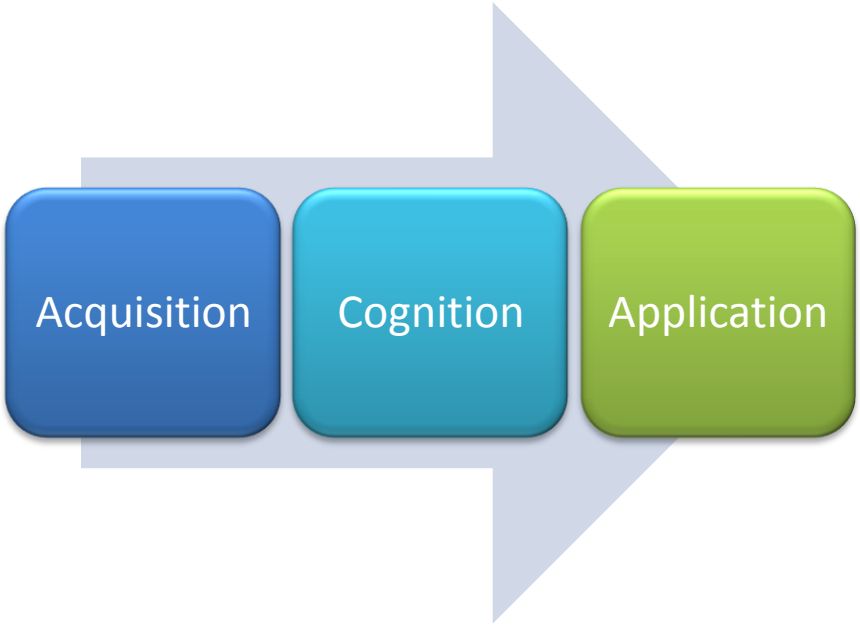
Information Assessment Method (IAM)

CONCEPTUAL / THEORETICAL FOUNDATION

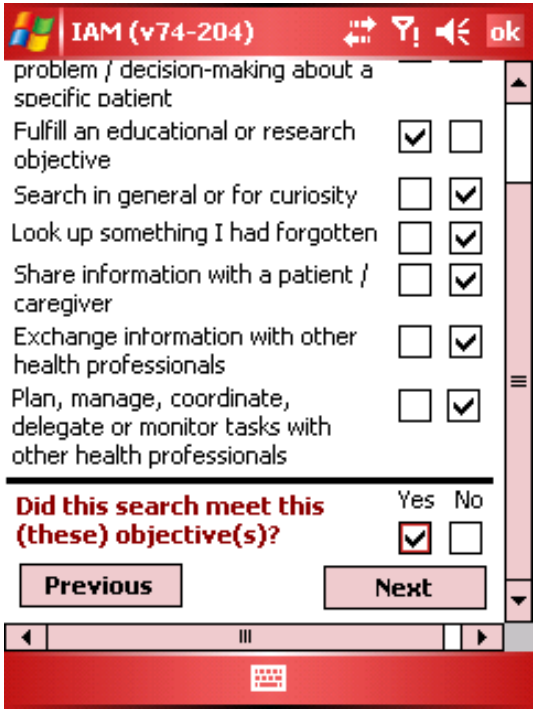
Research Practice



Acquisition

Cognition

Application

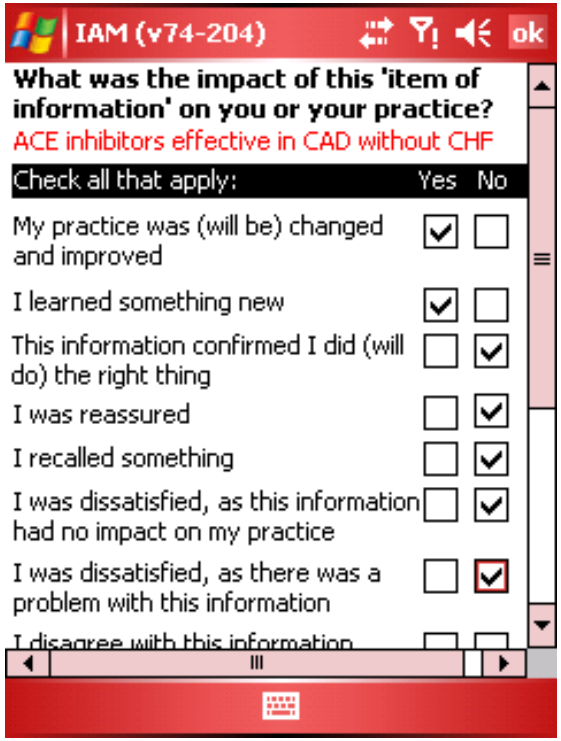


Relevance

Acquisition

Cognition

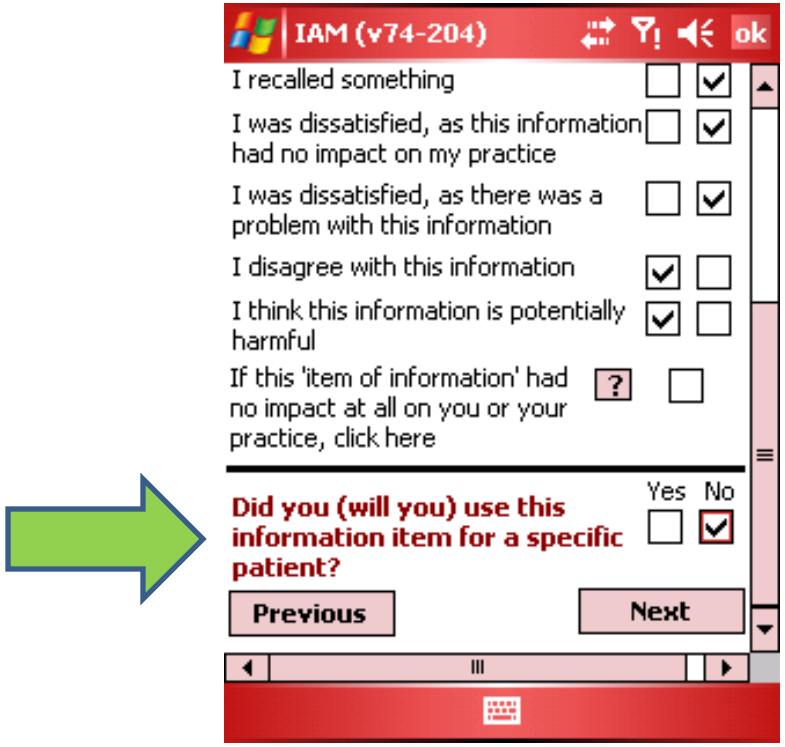
Application



Acquisition

Cognition

Application



Information Assessment Method (IAM)

Developmental Procedures

History and development of IAM

Major steps

1. Pilot study: Separate qualitative & quantitative studies
2. Residents study: Cohort & multiple case
3. Systematic mixed studies review
4. PUSH mixed methods study: IAM usage & Validity
5. PULL mixed methods study: IAM usage & Validity
6. PUSH-PULL feedback to information providers

8-year research program

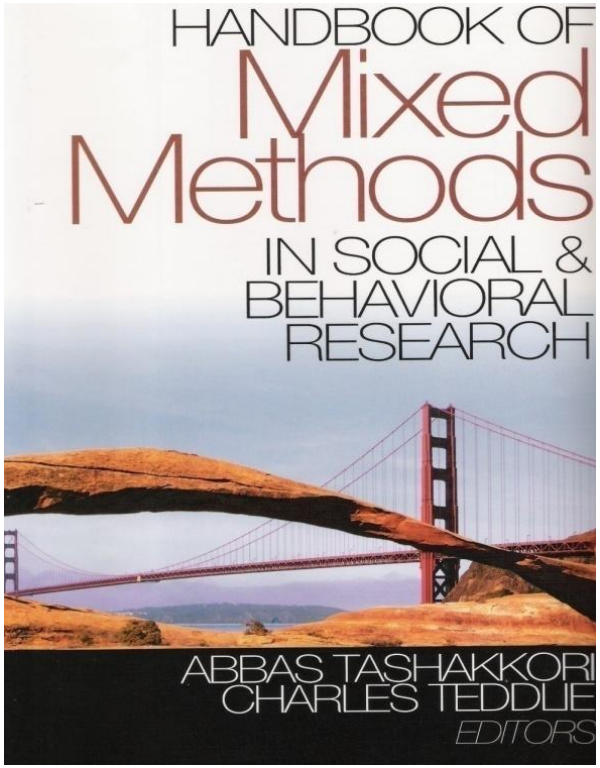
- Real world clinical settings
- Physicians, Residents, Pharmacists, Nurse practitioners
- Implications: Communication, information, CME, and KT

WHAT IS MIXED METHODS RESEARCH?

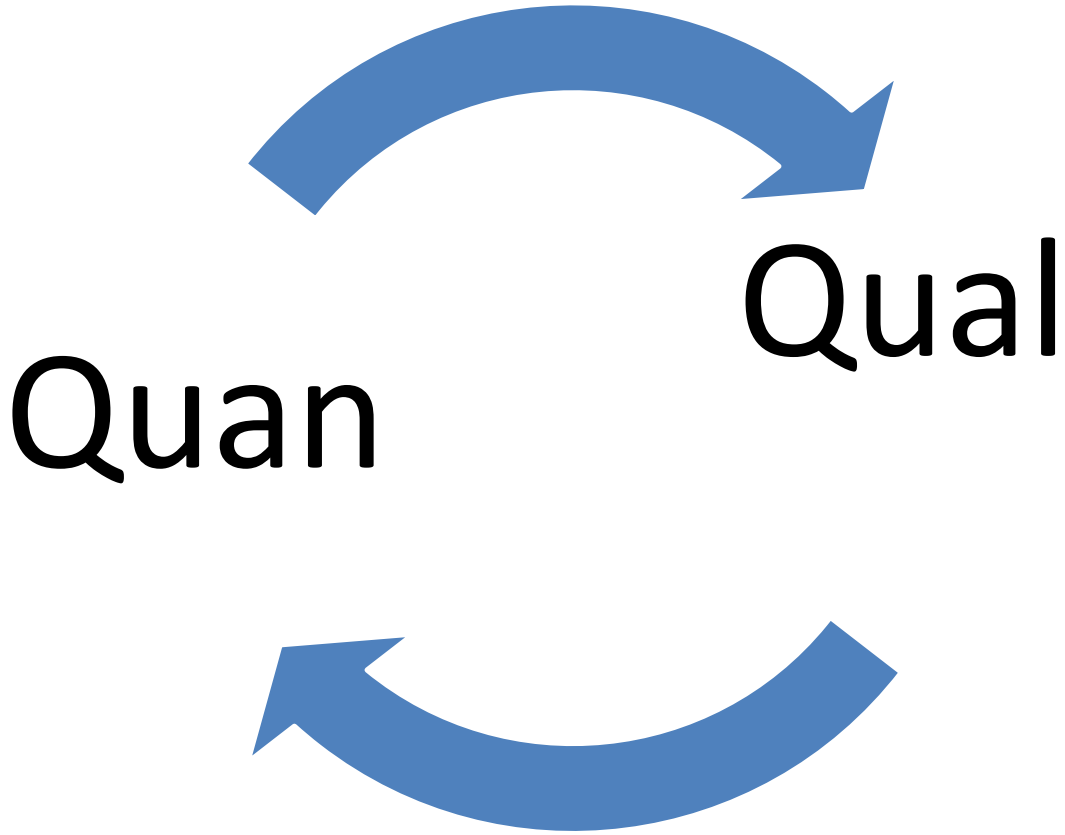
Combination of quantitative and qualitative methods to answer complex research questions

Helpful in medical informatics (crucial socio-technical issues)

First handbook in 2003



Qualitative (QUAL) and quantitative (QUAN)



Portfolio of practice-based learning and practice improvement

Participant : Roland G

Search ID	Search Date	Search Keyword	Article Hit ID	Article Identifier	Date Rated	Article Title	Objective	Relevance	Impact	Specific Patient ?	Imp Conse
3162	2/4/2009 9:39:24 AM	Anti-coagulation and anti-coagulant use	5964	E100324	2/5/2009 4:55:37 PM	Vitamin K supplementation improves stability of anticoagulation	Address Clin Quest; Something I Forgot	Yes	Recalled; Dissatis - no imp	No	
3163	2/2/2009 3:31:54 PM	Peptic ulcer disease	5965	R46	2/5/2009 5:00:31 PM	Dyspepsia: probability of ulcer	Address Clin Quest; Fulfill; Something I Forgot; Exchange	Yes	Recalled	Yes	
3164	2/2/2009 2:23:44 PM	Dementia (any)	5966	R252	2/5/2009 4:59:01 PM	Dementia screening (Time and Change test)	Address Clin Quest; Something I Forgot	Yes	Improved; Learned	Yes	Diag -

WHY DO WE MIX METHODS?

- QUAL data improved by QUANT data

  (e.g., IAM-derived interview guide stimulates memory of searches for clinical information)
- QUANT data improved by QUAL data

  (e.g., refinement of IAM cognitive items)
- How to interpret QUANT results (see “dyad” example)

**7* reasons for mixing QUAL and QUAN, see *Creswell & Plano Clark, Designing and conducting mixed methods research, 2007, Sage*

HOW DOES MIXING METHODS HELP US ANSWER OUR RESEARCH QUESTIONS?

Combining strengths of qualitative and quantitative evaluation

Research question: To what extent does *PUSH* lead to *PULL*? How?

Example

- QUANT: 22 “push-pull dyads” tracked
- QUAL: Interviews to explore dyads
- Understand why these rare events happened

Information Assessment Method (IAM)

Validity

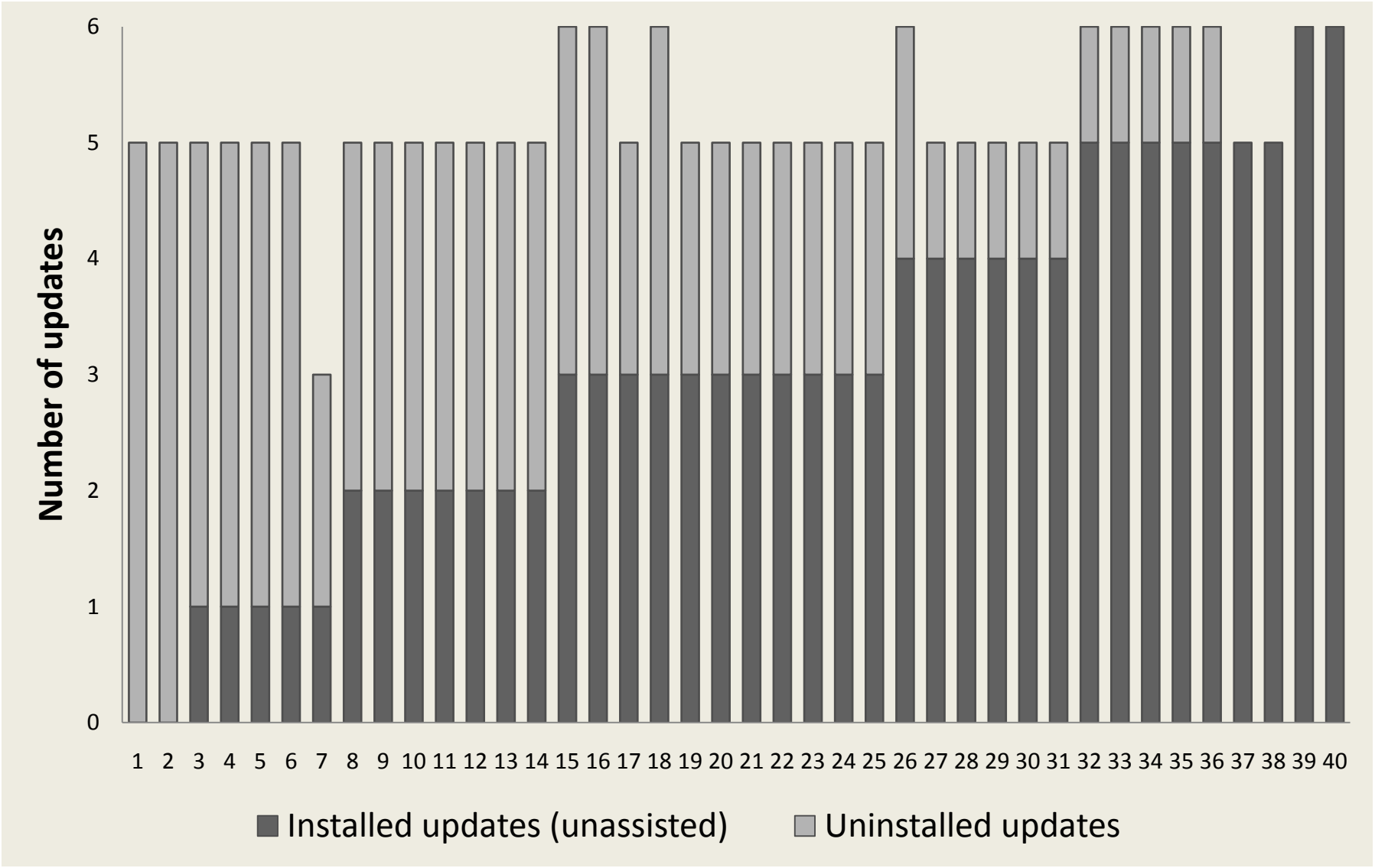
The Canadian KTpush project

- 40 FPs
- 1-year prospective observational study
- “the real world”
- 1,800 rated searches
- 3,500 rated information hits
- Downloadable software for Pocket PC

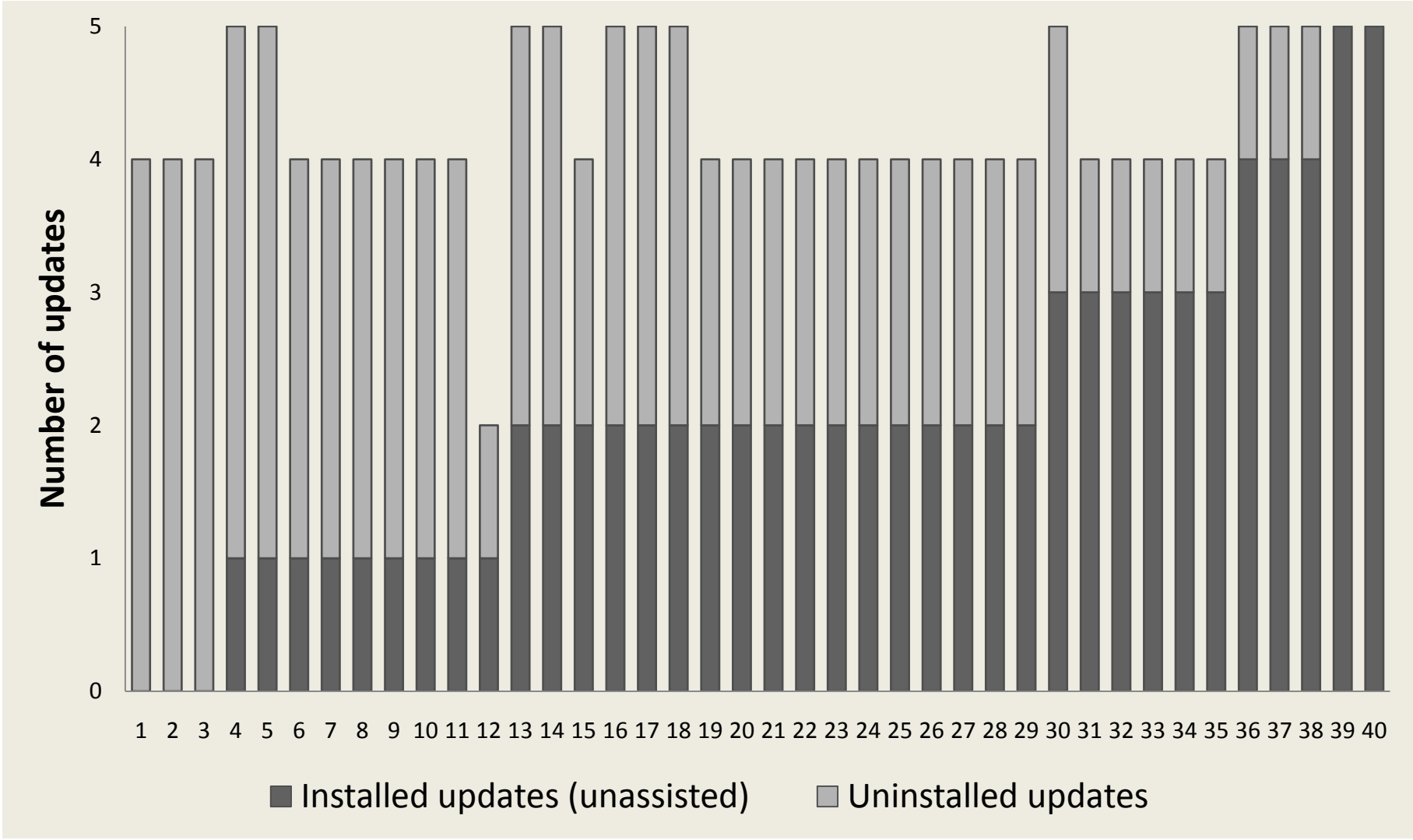
Do physicians manually update downloadable software on PDA?

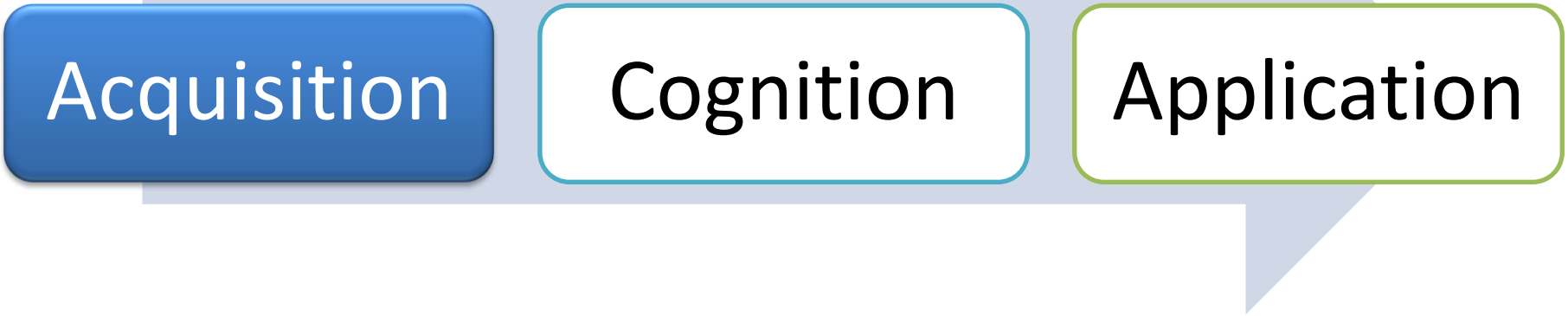
- About 25% of FPs never or rarely updated on their own
- Many software updates were never installed
- Only a small number of FPs made all requested updates on their own

Semi-automated updating



Manual updating



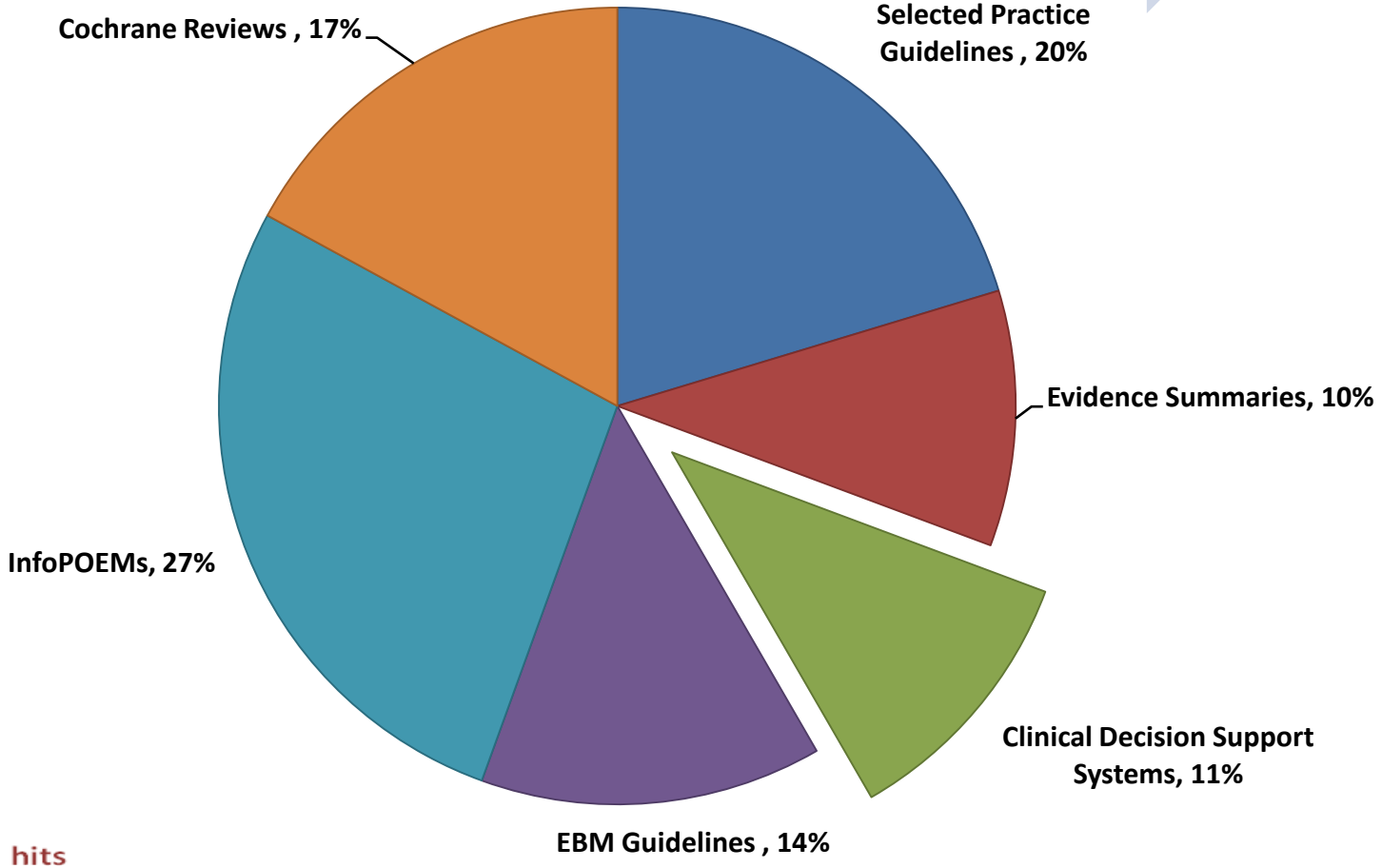


Task Analysis: Reasons for Searches in Family or General Practice	
Address a clinical question/problem/ decision making about a specific patient	1,324
Look up something I had forgotten	677
Share information with a patient/caregiver	635
Exchange information with other health professionals	534
Search in general or for curiosity	500
Fulfill an educational or research objective	446
Plan, manage, coordinate, delegate or monitor tasks with other health professionals	199

Acquisition

Cognition

Application



N = 3405 rated hits

Acquisition → **Cognition** → Application

Types of Cognitive Impact N = 7,650 reported cognitive impacts linked to 3,435 rated hits	
Confirmed	1595
Reassured	1557
Learned	1307
Recalled	1206
Changed and Improved	1020
No Impact	791
Negative Impact	174

Acquisition → **Cognition** → Application

2.8% of All Rated Hits Contain Reports of Negative Impact N=3,435 rated hits	
Dissatisfied-no impact	45 (1.3%)
Dissatisfied-problem with this information	26 (0.8%)
Dissatisfied-no impact, Dissatisfied-problem	13 (0.4%)
Learned, Dissatisfied-no impact	6 (0.2%)
Learned, Dissatisfied-problem	4 (0.1%)

Acquisition | Cognition | Application

- 1,041 rated hits used for a specific patient

IAM, CME and EMR: The Future

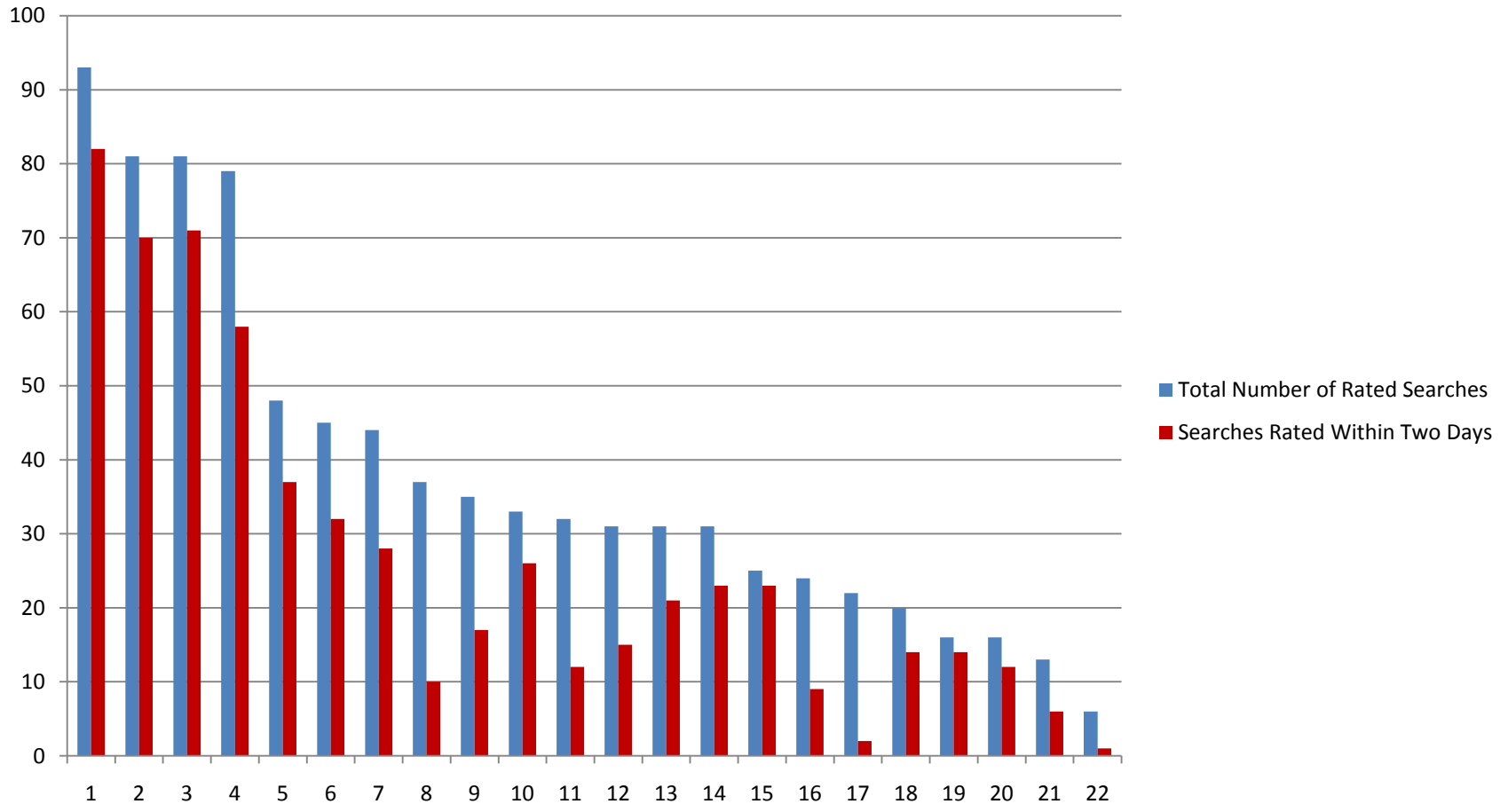
- IAM and CME
  - We need more effective CME, using most effective methods
  - Learner-centred
  - Setting-sensitive: ‘point-of-care’ learning
- EMR, Infobuttons and IAM

Information Assessment Method*

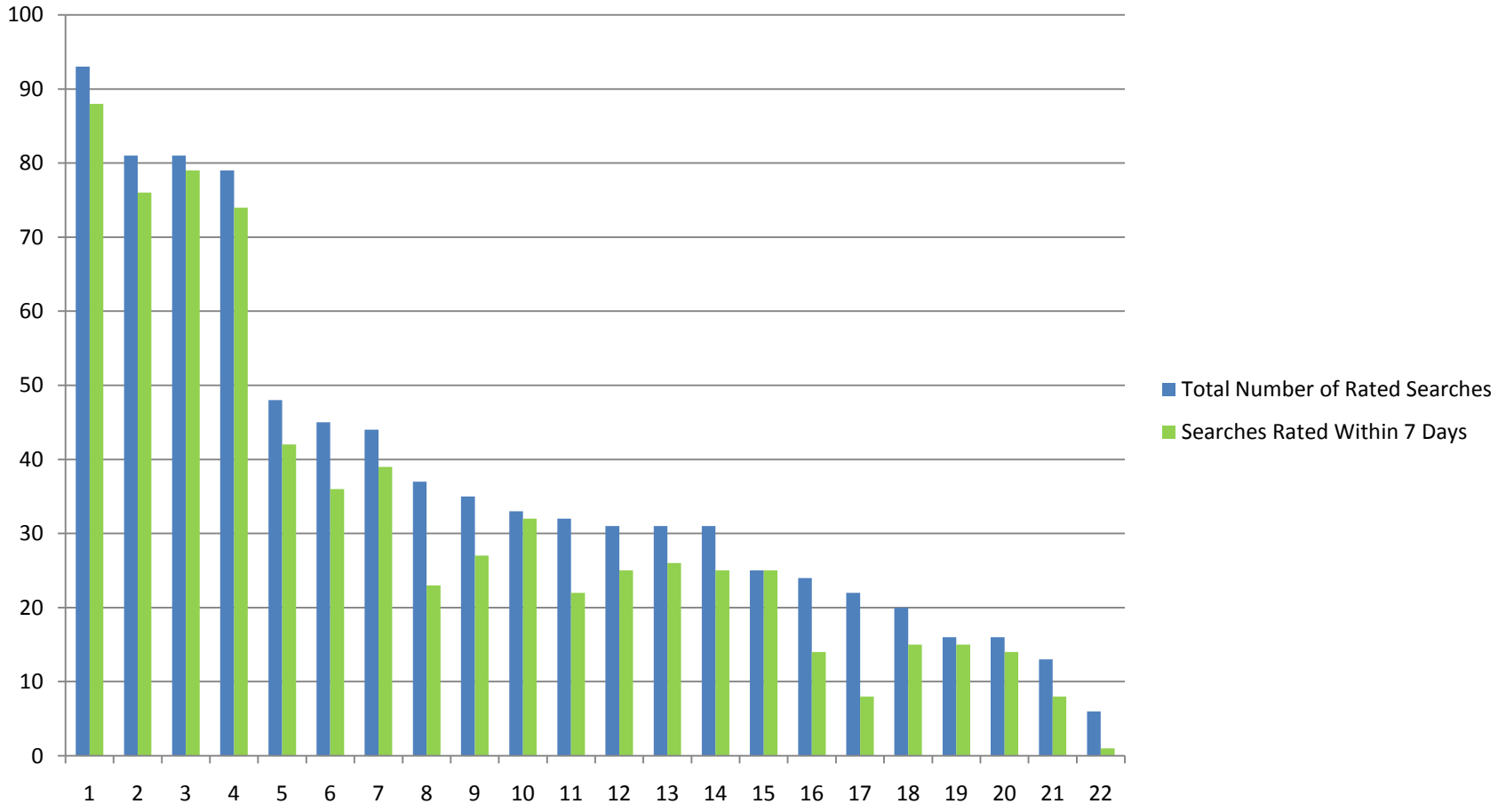
http://iam2009.pbwiki.com/FrontPage#

*United States patent pending: http://www.techtransfer.mcgill.ca/industry/show_ato.php?109

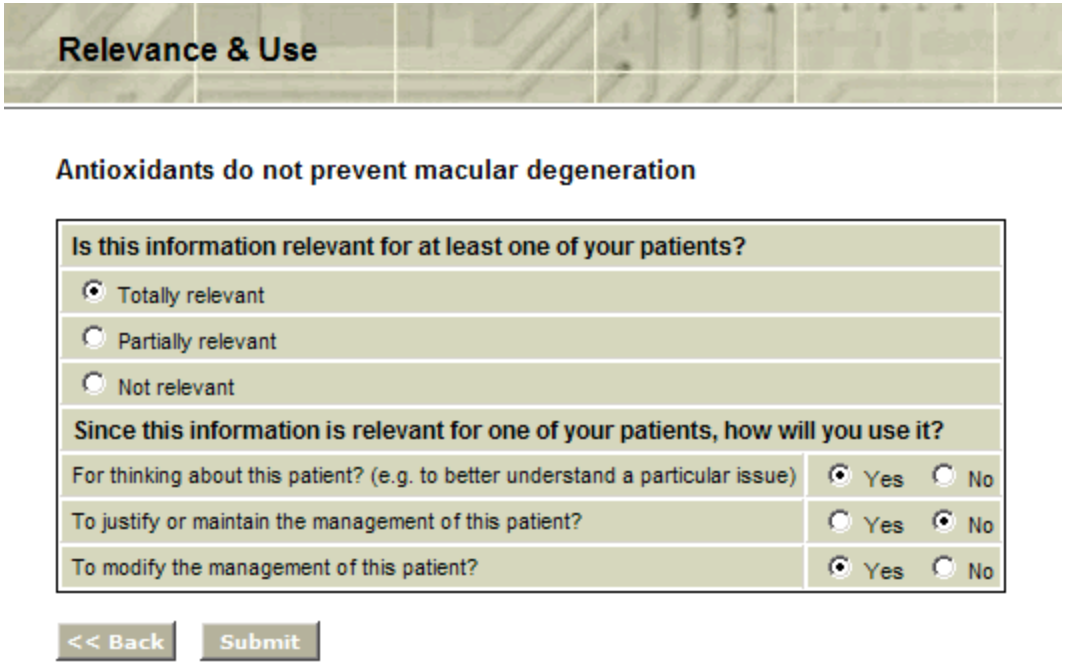
When are searches rated?



When are searches rated?



PUSH


Relevance & Use
Antioxidants do not prevent macular degeneration
Is this information relevant for at least one of your patients?
Totally relevant
Partially relevant
Not relevant
Since this information is relevant for one of your patients, how will you use it?
For thinking about this patient? (e.g. to better understand a particular issue)
Yes
No
To justify or maintain the management of this patient?
Yes
No
To modify the management of this patient?
Yes
No
<< Back
Submit

Patient health Outcomes

Q4. Do you expect any health benefits from applying this e-Therapeutics Highlight to a particular patient? ◉ Yes ○ No

If YES, what are these benefits? Check Yes or No for each item.

	Yes	No
Increasing patient knowledge about health or healthcare	○	○
Avoiding unnecessary or inappropriate treatment, diagnostic procedure or preventive intervention	○	○
Increasing patient acceptability of treatment, diagnostic procedure or preventive intervention	○	○
Preventing disease or health deterioration (including acute episode of chronic disease)	○	○
Improving patient health or functioning or resilience (i.e., how well the patient faces difficulties)	○	○