

Newsletter of the International Society for Evidence-Based Health Care

Newsletter 6, January 2012

Mission

The mission of the International Society for Evidence-Based Health Care is to develop and encourage research in evidence-based health care and to promote and provide professional and public education in the field.

Vision

The society is inspired by a vision to be a world-wide platform for interaction and collaboration among practitioners, teachers, researchers and the public to promote EBHC. The intent is to provide support to frontline clinicians making day-to-day decisions, and to those who have to develop curricula and teach EBHC.

Key objectives of the Society

- To develop and promote professional and public education regarding EBHC
- To develop, promote, and coordinate international programs through national/international collaboration
- To develop educational materials for facilitating workshops to promote EBHC
- To assist with and encourage EBHC-related programs when requested by an individual national/regional organization
- To advise and guide on fundraising skills in order that national foundations and societies are enabled to finance a greater level and range of activities
- To participate in, and promote programs for national, regional and international workshops regarding EBHC
- To foster the development of an international communications system for individuals and organizations working in EBHC-related areas
- To improve the evidence systems within which health care workers practice.



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In this Issue: ISEHC Conference

The main news for this issue is that the first conference of the International Society for Evidence-Based Health Care will be held in New Delhi in October this year – on the 7th and 8th (with workshops on the 6th preceding the conference). A stellar group of speakers – including Gordon Guyatt – will be there. But it will also be a chance to hear the latest research in EBM and network with colleagues. Costs have been kept low to let everyone interested attend. So get your abstracts polished now – the timelines and registration details are at the end of this newsletter.

We have also started to include abstracts of research relevant to the practice of EBM after the Research section. This issue mostly arises from the Journal of Clinical Epidemiology, but in future we would like to include a wider range of journals and add commentaries. If you are willing to help out with this process, please contact the editors.

Editorials

Not a medical course, but a life course

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(reprinted with permission from *Academic Medicine*).

"The hardest conviction to get into the mind of a beginner is that the education upon which he is engaged is not ... a medical course, but a life course, for which the work of a few years under teachers is but a preparation" - Sir William Osler (1849-1919), from: The Student of Medicine

Even the best medical course can only cover a fraction of current- and none of future - medical knowledge. Beyond a foundation in medical knowledge and skills an effective medical education must also develop student's ability to recognize and fill current and future knowledge gaps. Given the flood of information and innovation – often from commercial interests such as pharmaceutical companies or device manufacturers - our medical

students and trainees will need to become not only to be reflective, but also sceptical, life-long learners, lest they unwittingly prescribe ineffective treatments to those who cannot afford them. This need is universally recognized but widely ignored. The temptation to cram one more fact into the curriculum pushes out the generic skills of life-long learning. The disastrous consequences for medicine have been well documented: a systematic review of 62 studies showed an inverse association between years in practice and quality of health care, concluding that "Physicians who have been in practice longer may be at risk for providing lower-quality care"(1). Even good clinicians fail to recognize areas of knowledge deficits, are poor at searching for, and being appropriately critical of, the information they find, and are poor at integrating new knowledge into practice. The subsequent cost in health for individuals and populations is enormous.

The clinician's lifelong task is daunting. Faced with over 13,000 known diseases, over 2,000 new MEDLINE articles per day, and a deluge of commercially-conflicted information it is not surprising we struggle. An analysis of 100 systematic reviews(2) showed that their useful "half-life" was 5.5 years before a clinically important change occurred. Coping with this information chaos requires some well-honed skills requiring hundreds of hours of practice. The skills required include recognition of knowledge gaps, formulation of answerable questions, searching and critical appraisal skills, and self-learning skills. These are partially "covered" in medical courses, but rarely with much practice or assessment: akin to being shown a stethoscope without any opportunity for practice or feedback.

So what changes should be made? We suggest five:

1. *Teach early skills* in question recognition and formulation, searching, and critical appraisal, which should be taught and assessed as seriously as anatomy or pathology,
2. *At the bedside*, teach the application and integration of these basic skills, for example by giving students "educational prescriptions" – to formulate clinical questions and find answers before the next teaching session - and involve them in team journal clubs,

3. *Teach students to explain evidence* – about diagnosis, prognosis, treatment and their uncertainties – to patients. This should include, but extend, shared decision making.

4. *Prepare students for the challenging task* of integrating innovation and research into the realities of their clinics - by teaching them how to link evidence from systematic research with their personal experience and with patients' individual needs and hopes.

5. *Since medical practice is open-book*, to test and foster real world skills, all exams in all subjects should be open-book (except for some medical emergencies).

The recent Global Independent Commission on health professional education(3) listed as one of three fundamental changes needed was to shift “from memorisation to searching, analysis, and synthesis of information for decision making.” Unless these skills are taught early, at both the basic and clinical levels, few will learn to adopt them in practice. Integration of these skills at the bedside, by modelling and teaching, is vital for students to grapple with the complexities and subtleties of integrating patient care and evidence – to connect the external evidence of research with the internal evidence of their experience and their patient’s circumstances and values. Leaving the learning of these skills to chance or to after the initial curriculum is too late.

We recognise these changes would need a large cultural shift which will require Deans to cut the Gordian knot of ever expanding curriculums. We think it is time for Osler’s advice to medical students to be taken seriously by teaching staff.

References

1. Choudhry NK, Fletcher RH, Soumerai SB. Systematic review: the relationship between clinical experience and quality of health care. *Ann. Intern. Med.* 2005 Feb 15;142(4):260-273.
2. Shojania KG, Sampson M, Ansari MT, Ji J, Doucette S, Moher D. How quickly do systematic reviews go out of date? A survival analysis. *Ann. Intern. Med.* 2007 Aug 21;147(4):224-233.
3. Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *Lancet.* 2010 Dec 4;376(9756):1923-58.



Title: Statistically funny - commenting on the science of unbiased health research with cartoons

Author: Hilda Bastian

Background: The comedic possibilities of clinical epidemiology are known to be limitless

Methods: A new cartoon every week or two in Blogger, a Google application which can be followed

Results: Can be found at <http://statistically-funny.blogspot.com/>

Conclusions: Systematic reviewers do it robustly, but more cartoons are needed

Teaching & Practice Tips

“Journal Clubs” are commonly used in evidence-based practice, but the purpose and format differs enormously across different disciplines and groups: how are questions and papers identified? Who does the appraisal? And how is it done? Is a record kept? Etc. We are interested in how readers run their journal clubs and would welcome submissions.

We also need better names to represent this variety. Below is one example – called “search-appraisal sessions” from the Royal Melbourne Hospital who have been running fortnightly sessions for several years. – The Editors.

Fortnightly Search-Appraisal sessions in a busy Medical Unit

Peter Greenberg and Raymond Martyres.

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In recent years we have tried to promote a culture of enquiry, while simultaneously improving both the care of our patients and also the knowledge and skills of evidence-based practice within small groups of undergraduate medical students, interns, physician-trainees, consultant physicians and clinical librarians.

We practise general internal medicine in a large public teaching hospital in Melbourne, Australia, which is linked with the University of Melbourne. Our unit is one of 4 within the department of general medicine at RMH. Most of the ~ 1000 patients admitted to our unit each year have acute medical diagnostic and/or management problems. These problems are commonly associated with our patients’ complex and often multiple medical, social and psychological comorbid conditions.

Across the medical staff within our unit there are differences in the age and duration of attachment to the unit. There are 3 interns and 1 physician-trainee, who have 3-4 month rotating terms and senior medical staff (SMS) comprising 6 consultant physicians and 1 general practitioner, all with long-standing appointments. There are also differences in clinical experience and in evidence-based practice knowledge and skills between unit members. In spite of extensive clinical experience most of our SMS, in contrast to our interns, trainees

and medical students, have received no formal training in the basic skills of evidence based practice. Several medical students may also be attached to the unit for periods of 1-2 months.

We were keen to utilise the opportunities provided by these differences to share and hence learn together from our individual evidence-based health care skills. Given that learning outcomes were found to be superior in clinical rather than classroom settings¹, we considered that we had a unique opportunity for worthwhile mutual “learning on the run”, especially in formulating clinical questions, searching published literature for answers and critically appraising key publications for validity, relevance and applicability.

As a consequence, for the last 6 years, unit interns, trainees and SMS have met with a clinical librarian in a computer laboratory for 1.5 hours every 2 weeks.

The procedure during these unit-based “search-appraisal” sessions has been periodically modified, to better suit the needs of interns and trainees. For example, explicit critical appraisal – in addition to questioning and searching - was introduced 4 years ago.

The current process for sessions is:

- 1) **QUESTIONS:** The interns and trainee develop 3-4 structured clinical questions using the “PICO” format². These relate to issues such as diagnosis, management, prognosis, risk and aetiology, which have arisen in admitted and ambulatory patients prior each session. These questions are forwarded to the session coordinator, one of the SMS. The coordinator chooses 2 questions to be addressed during the session and details of these are sent by email to the whole group, 2 days before each session.
- 2) **SEARCH:** Approximately 0.75 hours is allocated to each of the 2 questions during each session. Either individually or within small groups, by choice and with mutual agreement, following a brief outline of the clinical issues leading to each question, participants search for publications addressing “answers”, from the primary sources of publications or from derivatives of these such as published

synopses, summaries, appraisals and electronic texts. Participants are requested to record and to subsequently discuss their individual search strategies, so that these can be compared and contrasted, as well as the results of their searches.

- 3) SELECTION: By mutual agreement, the most relevant research or review publication for each of the 2 questions is chosen for subsequent appraisal.
- 4) APPRAISAL: The participants divide into 2 groups, each with a similar mix of clinical experience and evidence-based health care skills. One group briefly appraises each publication, using web-based "tools" if they wish, to specifically address the type of study, the results, the validity of these results and their applicability to the particular patients' problems.
- 5) PRESENTATION: A verbal summary of each of the 2 appraisals is briefly presented at the end of the session to the whole group. This is followed by mutual discussion.
- 6) RECORD: The 2 questions addressed and the appraisal results are summarised and then sent by email to all participants, within several days of each session. (An example of the results of a recent "search/appraisal" session is provided below.)

Most of the questions of interest to the interns concern treatment decisions but there have also been questions related to diagnostic and prognostic issues. Some questions, of particular interest to the interns have arisen repeatedly.

The sessions have been well attended, especially by interns, trainees and students but the program has not been formally evaluated. Furthermore, opportunities to set up a searchable database of questions and answers within and beyond RMH have not yet been explored.

References:

1. Coomarasamy A, Khan KS. What is the evidence that postgraduate teaching in evidence based medicine changes anything? A systematic review. *BMJ* 2004; 329:1017
2. Centre for Evidence Based Medicine (Oxford, UK) 2011. See www.cebm.net/index.aspx?o=1036

An example of questions and answers arising from a recent "search-appraisal" session:

Does inhaled tobramycin reduce hospital admissions in patients with bronchiectasis with acceptable risks?

P: Patients with bronchiectasis (excluding cystic fibrosis)

I: Inhaled tobramycin

C: Placebo

O: Decreased hospital admissions: safety outcomes

We retrieved a small double-blind cross-over study with inhaled tobramycin or placebo inhaled for 6 months, published in 2005, which addressed this specific issue.

We were unable to obtain the full text of the publication and cannot therefore comment fully on the quality of this small study.

The abstract, however, which is pasted below, suggests that there do seem to be benefits in the number and duration of admissions, but that bronchospasm could be problematic with tobramycin.

Inhaled tobramycin in non-cystic fibrosis patients with bronchiectasis and chronic bronchial infection with *Pseudomonas aeruginosa*.

Drobnic ME et al. *Ann Pharmacoth.* 2005 Jan; 39(1):39-44. Epub 2004 Nov 23. (PMID 15562142).

Background:

Non-cystic fibrosis (CF) patients with bronchiectasis usually develop chronic bronchial infection with *Pseudomonas aeruginosa* (PA) that is related to worsening lung function and increased morbidity and

Searching Tip

Most EBM courses – undergraduate or postgraduate – will include a few sessions on searching the literature, and usually focus on PubMed and Cochrane. However, it is also helpful to teach one of the “meta-search” engines, particularly something based on Brian Haynes “4S” structure of studies, systematic reviews, synopses or systems (or his more recent 6S* structure!). One that does, and is free access, is the TRIP database. So we have included a detailed review of TRIP for teachers and clinicians who are looking for a broad range search engine. - The Editors

DiCenso A, Bayley L, Haynes RB. Accessing pre-appraised evidence: fine-tuning the 5S model into a 6S model. *Evid Based Nurs* 2009;12:99-101

* <http://ebn.bmj.com/content/12/4/99.2.extract>

The TRIP Database

Jon Brassey

Background

The TRIP Database¹ was created in 1997 as a result of my work on answering clinical questions for the ATTRACT service². The aim of the ATTRACT service was to receive questions from primary care health professionals and rapidly answer them using the best available evidence. The high-quality evidence was spread across the internet and it took a relatively long time to go through all the evidence-based sites (such as Cochrane, SIGN and Bandolier). It made sense to create a tool that allowed ATTRACT to search all the resources in one go. To start, this consisted of an Excel spreadsheet with all the document titles and URLs for all the articles in the EBM sources. So, if we had a question on heart failure we would use Excel's 'Find' function to look for relevant articles.

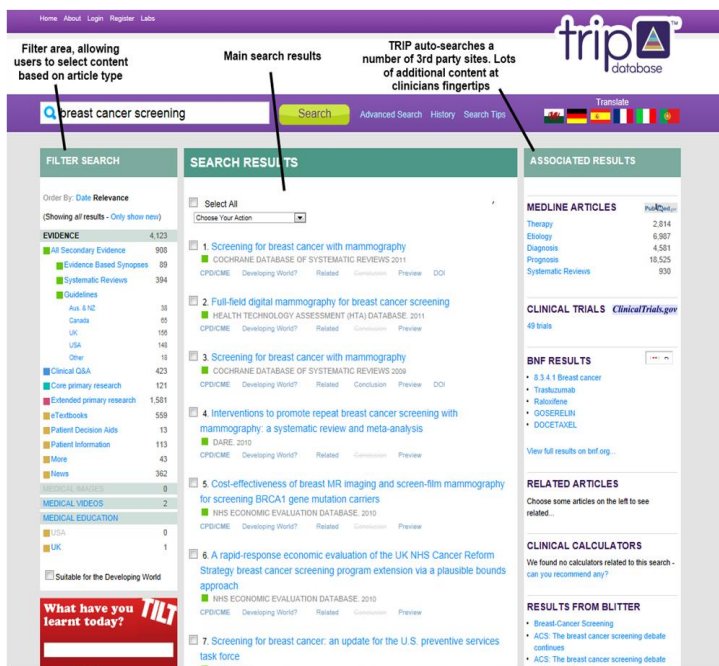
Shortly afterwards a colleague said he could make it searchable and available over the internet and within months Bandolier had mentioned it³. The site grew rapidly from then with new features added making the content more searchable. However, the site continued to only include secondary research (e.g. systematic reviews, clinical guidelines) which caused some concern. TRIP had continued to

grow with my work in clinical question answering. However, I had observed that secondary sources answered less than 25% of all the clinical questions. So, what did I want TRIP to become, a tool for secondary research only or a tool to help clinicians answer questions using the best available evidence? I decided that the latter option was appropriate and extra content was added including primary research and eTextbooks. Ultimately, we want to create a clinically useful tool and if there is no recent secondary research we try and serve up the next highest quality content. The aim, then as now, is to create a tool that allows clinicians to get answer to their questions using *the best available evidence*.

Over the years TRIP has changed dramatically with regard to functionality and content. TRIP has been searched over 55 million times and has a global user base and over 25,000 registered users. User surveys have indicated the potential impact of TRIP^{4,5} with estimates of helping over 20 million cases of patient care. As well as being freely available on the internet TRIP appears in a number of electronic medical records, clinical portal sites and a variety of other websites with an interest in evidence-based care. A major challenge for TRIP is to remain free and viable, something we are passionate about. The constant search for a viable business model, to ensure funds for wages development and hosting fees, can be a distraction at times.

The TRIP website

The homepage of the site is a simple page with a central search box (not dissimilar to Google) where users can add their search terms. The results page (shown below) is highly structured revealing the site's depth.



systematic reviews, they click the appropriate filter and only systematic reviews are displayed. This filtering area shows the depth of coverage of TRIP, including patient information, clinical images and videos. In addition, at the bottom is the ability to select content suitable for the developing world. This crowdsourcing initiative is of great personal interest and allows users of TRIP to identify content suitable for a resource-poor setting. Further information on this initiative can be seen via the TRIP Database blog⁶.

If we move to the right-hand side of the screen there is a recent addition, the 'Translate' function. Currently limited to 6 languages, it allows for the results page (and subsequent articles viewed) to be translated, via Google Translate, into the relevant language. Beneath that is a section of 'Associated results', content from third-party sites. From the screenshot you can see that we include automatic searches of PubMed (via their clinical queries interface⁷), clinical trials⁸, the BNF⁹, clinical calculators and others.

TRIP typically releases a major upgrade every year and released our latest upgrade around 4 months ago. We're already planning on next upgrade with a large user survey and discussions with various partners. This upgrade will be out around May 2012. The survey results have been published on our blog^{10, 11, 12} which helps indicate where we will improve TRIP further. In short, the main areas of improvement will be around:

- Full text – help users get access to full-text documents.
- Transparency – help users understand how the site works, what content is searched etc.
- Refine search – once a user has conducted a search how can TRIP help the user refine the search to give a more focussed set of results.
- Advanced search – improve the power and flexibility of this facility.
- Emails – registered users get a monthly email with new content that matches their

The main results are shown in the central column of the site. The TRIP search algorithm uses three main components when deciding the order of results:

- The age of the article – the more recent the article the higher the score.
- The quality of the publication – a secondary review institution (e.g. Cochrane) will receive a higher score than a peer-reviewed journal (e.g. the BMJ). All publications have a score, the higher the quality the higher the score.
- Text score – slightly more complex but if the search terms appear in the title of the document it'll score more highly than if it appears only in the body of the text. Also, if one document mentions the search term fifty times it'll score more highly than if it's mentioned just once.

All these components are combined and articles displayed, highest scored at the top.

In the right-hand column there is the ability for a user to select content from a particular publication type. For instance if a user only wants to see

clinical interests. Users want it to look nicer and also to appear more frequently.

Summary

TRIP is a powerful, widely used clinical resource. We're very proud of it and the impact it has had on global health. We're committed to growing it and making it a more useful tool. This growth is aided by our work on clinical question answering and a wonderfully loyal user base that is always exceptionally helpful in letting us know how they think TRIP should be improved. Our guiding 'mantra' is to create a tool that allows clinicians to *answer their questions using the best available evidence*. This mantra hasn't changed for over ten years and I cannot see it ever changing.

Finally, one question I frequently get asked is what does TRIP stand for: the answer - **Turning Research Into Practice**

References

- 1) www.tripdatabase.com
- 2) www.attract.wales.nhs.uk
- 3) www.medicine.ox.ac.uk/bandolier/band49/b49ads.html
- 4) blog.tripdatabase.com/2010/11/impact-of-trip_12.html
- 5) blog.tripdatabase.com/2010/11/impact-of-trip-part-2.html
- 6) blog.tripdatabase.com/2010/03/using-trip-to-help-identify-content.html
- 7) www.ncbi.nlm.nih.gov/pubmed/clinical
- 8) <http://clinicaltrials.gov/>
- 9) <http://bnf.org/bnf/index.htm>
- 10) <http://blog.tripdatabase.com/2011/10/survey-ended-start-of-analysis.html>
- 11) <http://blog.tripdatabase.com/2011/10/survey-more-results.html>
- 12) <http://blog.tripdatabase.com/2011/10/survey-final-section-of-analysis.html>

Are you on the EBHC Email List?

The **Evidence-Based Health Care email list server** has been running since September 1998 and now has around 1,800 subscribers globally. The topics posted – about 20 per month - are all relevant to EBM and range over clinical issues, searching, statistics, and the politics of EBM. To join the Evidence Based Health Care email discussion list go to:

www.ijsmail.ac.uk/lists/EVIDENCE-BASED-HEALTH.html

It is free and anyone can join. And you usually get a variety of helpful answers, or you can just observe the fascinating and informative discussions.

Here is a example of a recent exchange:

THE QUESTION – Scopus for searching?

Hi! My questions are related to searching for articles for systematic reviews and which databases to search.

According to the Cochrane handbook, "CENTRAL and MEDLINE should be searched, as a minimum, together with EMBASE if it is available to either the CRG or the review author." I also search other databases which are more specific: for example, CINAHL if nursing related, PsycINFO if the question has a psychological focus, AMED if alternative therapy related.

I have noticed that more authors of systematic reviews are searching Scopus. Scopus does have wide coverage (including 100% MEDLINE coverage) and I can see the usefulness of Scopus for 'forward' searching for articles which have cited relevant articles. However, I'm not convinced of the benefit of searching Scopus in addition to the databases mentioned above.

In order to gain a sense of how databases are being searched, my specific questions are:

1. Do many SR authors search Scopus in addition to CENTRAL, MEDLINE, Embase, CINAHL/PsychINFO/AMED? What is the advantage of doing this?

2. Does anyone search Scopus alone?

I would appreciate answers/thoughts/suggestions.

With many thanks and kind regards,
Jane Reid (jane.reid@acu.edu.au)

SOME RESPONSES

Dear Jane,

CENTRAL contains clinical trials which are the main studies should be included in most of Cochrane SRs. They provide this database to make retrieval of clinical trials easier for the authors. Most

of, perhaps all of, these trials were gathered from MEDLINE and EMBASE. See Chapter 6 in Cochrane Handbook of SRs for more info. Also, MEDLINE and EMBASE use controlled human-oriented subject vocabulary i.e. MeSH and EMTree respectively. This vocabs helps in retrieval of subject-relevant records.

CENTRAL, MEDLINE and EMBASE let us to use reproducible search strategies and strings (search steps), too. They allow us to manage and navigate complicated searches which contains many strings of steps (occasionally more than 100 steps).

Scopus may search all of MEDLINE and even EMBASE but not using controlled vocabulary and I could not find any policy how they assign an article to a certain topic or subject. It does not contain search filters for trials, which are the main source of data for most Cochrane SRs. Also, I think it could not support search strategies as well as MEDLINE and EMBASE sp. via Ovid SP. And the main concern is its time coverage (primarily post-1996)! Scopus is comprehensive for general scientific searches for new emerging topics in particular. As part of my work, I can see that many researchers especially multidisciplinary ones are satisfied by Scopus searches. It may be because it claims to contain MEDLINE and maybe EMBASE and ScienceDirect too! (EMBASE, Scopus and ScienceDirect are all Elsevier's products).

What SRers could do with Scopus?

Sometimes, it was mentioned that Scopus was created by Elsevier to challenge Citation Indexes of Thomson Reuters (formerly ISI). So, it could be good for citation tracking. We sometimes, depending on our protocol, have to check references of related papers (Retrospective Approach) beside tracking citations (Prospective Approach) for comprehensiveness of SRs. Citation Indexes via WOS, Scopus and Google Scholar could be our options for citation tracking in SRs.

Bless,

Farhad Shokrane, Academic Member and Research Instructor, Research Center for Pharmaceutical Nanotechnology, Tabriz University of Medical Sciences, Tabriz, Iran

Jane,

I'll try not to repeat what Amy and Farhad said so I will give you some practical, front-line tips. Searching for evidence is not a perfect science and each database uses a different algorithm for searching for articles. Studies have been done

comparing Medline being searched via PubMed and Ovid and there are slight differences in the results produced even though they both are really searching the same database.

Practical point #1: If you are doing an SR, then I highly recommend you search Medline, EMBASE, CENTRAL (call it the 'Axis of Medical Knowledge' if you may). You can (and should) supplement these with databases that cover non-English languages (e.g. LILACS), regional databases (e.g. KoreaMed), and content-specific databases (e.g. CINAHL). You should spread your net as far as practically possible.

Practical point #2: Scopus and ISI Web of Knowledge are relatively new players in the area (to the best of my knowledge). They do offer more 'grey literature' searching (e.g. conference abstracts) and the wonderful ability to do forward searching (very beneficial, especially when updating a search). These unfortunately are not a replacement for other literature databases.

Practical point #3: Over the years, I have used or have seen from one to over 25 databases being searched for citations. Most common is the big three, and I highly discourage only one and think that high numbers are great if you have the resources, but not particularly necessary.

Practical point #4: Quality over quantity: Search strategies need to be tailored to each database, if you want to get reliable results for an SR. Scopus strategies are the most complex I have ever seen. If you would like to see how different search strategies look for different databases asking the same PICO the link to a report that I authored is as follows:

www.effectivehealthcare.ahrq.gov/hippain.cfm. In Appendix B, we report the full search strategy displayed for the 25 databases searched. The full search was prepared, and adapted for each database, by our research librarian and co-author (Lisa Tjosvold). Page B-9 contains the search for Scopus and ISI Web of Science. As you can see they are a lot different than the Medline or Embase search strategies.

Hope this helps.

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Research & Reviews

MAKING SYSTEMATIC REVIEWS FEEL MORE WANTED

John Wallace, Mike Clarke

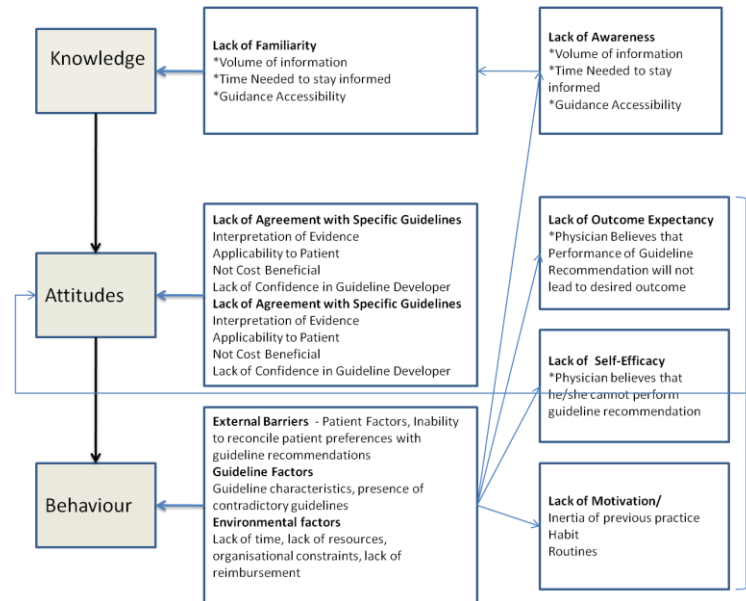
DPhil programme in international evidence-based healthcare, University of Oxford

A common finding from health research is the failure to routinely translate research findings into daily practice. Merely publishing studies can't guarantee the use of their results. Bridging the knowledge-to-practice gap entails multiple challenges and the process involves an evaluation of the many barriers to change (Straus et al. 2009). The increased uptake of evidence from up-to-date systematic reviews is particularly advocated because of their potential to improve the quality of decision making for patient care. Systematic reviews – if read and used - can do this by decreasing inappropriate clinical variation and by speeding up the application of current, effective advances to everyday clinical practice. However, research suggests that evidence from systematic reviews has not been widely adopted by health professionals. Little is known about the specific barriers inhibiting uptake of evidence from systematic reviews and meta-analyses.

We set out to review barriers to the uptake of research evidence by decision makers from systematic reviews by searching 19 databases, using three search engines, and also personally contacting investigators. We were interested in studies that reported on the views and perceptions of decision makers on the uptake of evidence from systematic reviews, meta-analyses, and the databases associated with them. Using a pre-established taxonomy adopted from Cabana and colleagues, the barriers were organized into a framework according to their effect on knowledge, attitudes, or behaviour (Cabana et al. 1999).

Our results show that research on barriers continues to be dominated by surveys, with the majority of the participants (n=10,218) being physicians (64%). Perceived barriers to the use of evidence from systematic reviews varied across 91 countries. Up to 66 potential barriers to systematic

review uptake have been investigated. Lack of awareness and familiarity with systematic review methods, are much cited barriers. Lack of access continues to be an obstacle to systematic review use not just in under-resourced countries but also a barrier for certain members of clinical teams in relatively highly-resources settings.



Our wider findings here have relevance for trying to improve uptake of the best available evidence and promote its use. While facts do not speak for themselves, studies can increase the likelihood of their use. This systematic review reveals that interventions to foster uptake of evidence from meta-analyses must address a broad range of barriers, but that more is known about physicians behaviour and needs than for other user groups. These findings provide a useful foundation on which to plan future interventions for enhancing uptake of evidence from systematic reviews among decision makers. We hope to report on the results of our research on these interventions in the next newsletter.

References

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2. Cabana M, Rand CS, Powe NR, Wu AW, Wilson MH, Abboud PAC, Rubin HR. Why don't physicians follow clinical practice guidelines? A framework for improvement. *JAMA* 1999; 282(15):1458-1465

Sensitive Clinical Queries retrieved relevant systematic reviews as well as primary studies: an analytic survey

Abstract

Objective: To determine how well the previously validated broad and narrow Clinical Queries for treatment, diagnosis, prognosis, and etiology studies, retrieve not only primary studies but also relevant systematic reviews.

Study Design and Setting: Using the Clinical Hedges Database housed at McMaster University, we tested the retrieval performance of the Clinical Queries.

Results: For most purpose categories (therapy, diagnosis, prognosis, and etiology) and most databases (MEDLINE, EMBASE, CINAHL, and PsycINFO), the sensitive (broad) Clinical Queries search terms had sensitivities higher than 90% for retrieving relevant systematic reviews as well as primary studies. When testing specific (narrow) Clinical Queries, in 8 of 12 cases, specificity was 94% or higher, but sensitivity dropped below 50%. For all purpose categories and all databases, performance was improved when combining the sensitive or specific Clinical Queries with our existing sensitive or specific systematic review search filter using the Boolean OR; sensitivities ranged from 90.7% to 99.7% and specificities ranged from 92.4% to 98.0% with sensitivities higher than 50%.

Conclusion: The sensitive Clinical Queries for therapy, diagnosis, prognosis, and etiology perform well in retrieving not only primary studies but also systematic reviews. Search performance can be improved by combining the Clinical Queries with our sensitive or specific systematic review filter.

Nancy L. Wilczynski, K. AnnMcKibbin and R. Brian Haynes. *Journal of Clinical Epidemiology*, 64 (2011) 1341-1349.

Statistically significant meta-analyses of clinical trials have modest credibility and inflated effects.

Abstract

Objective: To assess whether nominally statistically significant effects in meta-analyses of clinical trials are true and whether their magnitude is inflated.

Study Design and Setting: Data from the Cochrane Database of Systematic Reviews 2005 (issue 4) and 2010 (issue 1) were used. We considered meta-analyses with binary outcomes and four or more trials in 2005 with $P < 0.05$ for the random-effects odds ratio (OR). We examined whether any of these meta-analyses had updated counterparts in 2010. We estimated the credibility (true-positive probability) under different prior assumptions and inflation in OR estimates in 2005.

Results: Four hundred sixty-one meta-analyses in 2005 were eligible, and 80 had additional trials included by 2010. The effect sizes (ORs) were smaller in the updating data (2005-2010) than in the respective meta-analyses in 2005 (median 0.85-fold, interquartile range [IQR]: 0.66-1.06), even more prominently for meta-analyses with less than 300 events in 2005 (median 0.67-fold, IQR: 0.54-0.96). Mean credibility of the 461 meta-analyses in 2005 was 63-84% depending on the assumptions made. Credibility estimates changed $>20\%$ in 19-31 (24-39%) of the 80 updated meta-analyses.

Conclusion: Most meta-analyses with nominally significant results pertain to truly nonnull effects, but exceptions are not uncommon. The magnitude of observed effects, especially in meta-analyses with limited evidence, is often inflated.

Pereira TV and Ioannidis JP. *Journal of Clinical Epidemiology*, 64 (2011) 1060-1069.

Different methods of allocation to groups in randomized trials are associated with different levels of bias. A meta-epidemiological study

Abstract

Objective: Insecure hiding of the treatment allocation in randomized trials is associated with bias. It is less certain how much bias is associated with different methods of treatment allocation.

Study Design and Setting: Meta-epidemiological study of 389 randomized trials from 19 systematic reviews and 65 meta-analyses with differing methods of treatment allocation. Pooled ratios of odds ratios (RORs) and 95% confidence intervals (95% CI) were calculated from trials with different methods of treatment allocation. An ROR less than one shows exaggeration of treatment effect.

Results: There is no evidence that the use of sealed envelopes with enhancement was different from central randomization (ROR 1.02, 95% CI: 0.85e1.23). Sealed envelopes without enhancement were associated with an exaggeration of the estimate of effect (ROR 0.87, 95% CI: 0.76e1.00). Where allocation concealment for double-blind trials was unclear, the ROR is 0.86 (95% CI: 0.78e0.96) and if not hidden, the ROR is 0.89 (95% CI: 0.70e1.15).

Conclusion: Sealed envelopes with some form of enhancement (opaque, sequentially numbered, and so forth) may give adequate concealment. Description of a study as "double blind" does not imply a lack of bias when concealment of allocation is unclear.

Peter Herbison, Jean Hay-Smith and William J. Gillespie. *Journal of Clinical Epidemiology*, 64 (2011) 1070-1075.

Longitudinal administrative data can be used to examine multimorbidity, provided false discoveries are controlled for

Abstract

Objective: This article presents methods for using administrative data to study multimorbidity in hospitalized individuals and indicates how the findings can be used to gain a deeper understanding of hospital multimorbidity.

Study Design and Setting: A Dutch nationwide hospital register (n54,521,856) was used to calculate age- and sex-standardized observed/expected ratios of disease-pairing prevalences with corresponding confidence intervals.

Results: The strongest association was found for the combination between alcoholic liver and mental disorders due to alcohol abuse (observed/expected 539.2). Septicemia was found to cluster most frequently with other diseases. The consistency of the ratios over time depended on the number of observed cases. Furthermore, the ratios also depend on the length of the time frame considered.

Conclusion: Using observed/expected ratios calculated from the administrative data set, we were able to (1) better quantify known morbidity pairings while also revealing hitherto unnoticed associations, (2) find out which pairings cluster most strongly, and (3) gain insight into which diseases cluster frequently with other diseases. Caveats with this method are finding spurious associations on the basis of too few observed cases and the dependency of the ratio magnitude on the length of the time frame observed.

Albert Wong, Hendriek C. Boshuizen, Francois G. Schellevis, Geert Jan Kommer and Johan J. Polder. *Journal of Clinical Epidemiology*, 64 (2011) 1109-1117.

Self-perceived competence correlates poorly with objectively measured competence in evidence based medicine among medical students

Lai NM and Teng CL

Abstract

Background: Previous studies report various degrees of agreement between self-perceived competence and objectively measured competence in medical students. There is still a paucity of evidence on how the two correlate in the field of Evidence Based Medicine (EBM). We undertook a cross-sectional study to evaluate the self-perceived competence in EBM of senior medical students in Malaysia, and assessed its correlation to their objectively measured competence in EBM.

Methods: We recruited a group of medical students in their final six months of training between March and August 2006. The students were receiving a clinically-integrated EBM training program within their curriculum. We evaluated the students' self-perceived competence in two EBM domains ("searching for evidence" and "appraising the evidence") by piloting a questionnaire containing 16 relevant items, and objectively assessed their competence in EBM using an adapted version of the Fresno test, a validated tool. We correlated the matching components between our questionnaire and the Fresno test using Pearson's product-moment correlation.

Results: Forty-five out of 72 students in the cohort (62.5%) participated by completing the questionnaire and the adapted Fresno test concurrently. In general, our students perceived themselves as moderately competent in most items of the questionnaire. They rated themselves on average 6.34 out of 10 (63.4%) in "searching" and 44.41 out of 57 (77.9%) in "appraising". They scored on average 26.15 out of 60 (43.6%) in the "searching" domain and 57.02 out of 116 (49.2%) in the "appraising" domain in the Fresno test. The correlations between the students' self-rating and their performance in the Fresno test were poor in both the "searching" domain ($r = 0.13$, $p = 0.4$) and the "appraising" domain ($r = 0.24$, $p = 0.1$).

Conclusions: This study provides supporting evidence that at the undergraduate level, self-

perceived competence in EBM, as measured using our questionnaire, does not correlate well with objectively assessed EBM competence measured using the adapted Fresno test.

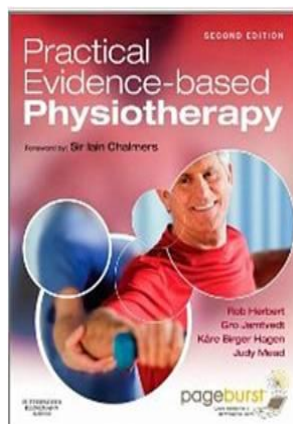
Study Registration: International Medical University, Malaysia, research ID: IMU 110/06.

BMC Med Educ. 2011 May 28;11:25.

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Resources & Reviews



R Herbert, G Jamtvedt, KB Hagen, and J Mead. **Practical Evidence-Based Physiotherapy**, Second Edition. Churchill Livingstone - Elsevier, 2011. ISBN 978-0-7020-4270-6; 173 pages; Hardcover \$102.00. Includes access to complete contents online.

In 2005, I organized and directed the first evidence-based physiotherapy (EBP) workshop in Saudi Arabia aimed at introducing this concept on a local level. The most valuable book I used and advised the trainees to obtain was the *Practical Evidence-Based Physiotherapy*. In 2012, if a reader would like the short answer about this book without reading this review, I still recommend it strongly as an excellent resource. It can be used to learn and expand one's knowledge on all subjects that are, in any way, related to evidence-based health care. The preface suggests that the book is intended as a practical guide and reference for clinicians and physiotherapy students.

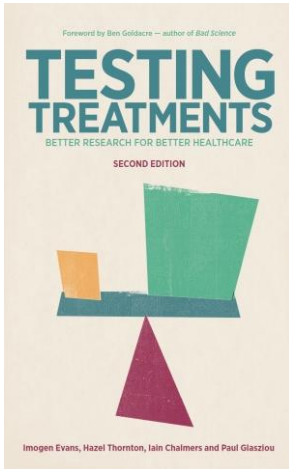
The book is in its second edition; the preceding, was published in 2005, but, given the huge progress and continuous evolution of physiotherapy profession in the last few years; this latest update became indispensable and could not be delayed. The two-column format was followed for the current edition compared to the first edition with the one-column format. Thus, it approaches 173 pages and contains 10 chapters as compared to 233 pages and 9 chapters, in the first edition.

The book begins (Chapter 1) with an introduction to the Evidence-based physiotherapy in terms of definition, importance and history. Chapters from 2 to 6 are devoted to the steps of practicing EBP. A wide range of topics is covered in these chapters pertinent to the physiotherapy profession especially the effects of intervention, experiences, prognosis and diagnosis. However, most of the contents of these chapters are kept the same as in the

preceding edition. The next chapter (Chapter 7) offers a description of the clinical guidelines as a resource for EBP and answers why they are important in current health care. The new chapter (Chapter 8) focuses on how innovative therapy becomes incorporated into clinical practice. The authors also proposed 6-stages protocol for introduction of new therapeutic interventions into practice. Furthermore, toward translation of research into practice, chapter 9 deals with implementing the steps of EBP. In the context of continues quality improvement, the authors suggested some helpful strategies for clinicians in filling the gap between research and practice. The issue of evaluating the effects of care is outlined in the last chapter (Chapter 10) using methods such as auditing, peer review and reflective practice. For becoming and succeeding as a practitioner of evidence-based physiotherapy, authors advised physiotherapists to routinely do self-reflection along with integrating the three rudiments of EBP: evidence from high quality-research, patient preferences and practice knowledge.

Certainly, this book does not give all the answers about EBP, but it undoubtedly provide the readers with a map and compass to help navigate the journey of implementing and practicing EBP. I think, given its completeness and incorporation of the most emerging issues in EBP, this book is directed to expert and novice physiotherapists. Nevertheless, the figures and tables are generally of extremely high quality and the references extend to 2010 along with the pageburst feature make it also recommendable as a textbook to physiotherapy students. It is hard to believe that there is an organizer or a leader for a continuous professional development course or workshop who will not want to possess a copy or having obtained it, will not want to reread some of the chapters. The practical EBP book by Herbert and colleagues is perhaps the classical book about evidence-based physiotherapy.

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Testing Treatments Better research for better healthcare

Imogen Evans,
Hazel Thornton,
Iain Chalmers and
Paul Glasziou

2nd Edition, Pinter &
Martin, 2011

Testing Treatments aims, as stated by the authors, at bringing research into medical treatments closer to meeting the needs of patients. They hope that it will point the way to wider understanding of how treatments can and should be tested fairly and how everyone can play a part in making this happen. This is the 2nd edition of Testing Treatments. The 1st edition was published in 2006 and received a high level of interest by both lay and professional readers. It has been translated into many languages and used as a teaching aid in many countries. Both editions and several full translations are available for free download from www.testingtreatments.org.

This book is about patient participation; it urges patients to take an active role in their healthcare, and proposes that patients may play this role at three levels. At the first level, patients should not demand or accept treatments just because they are new, well-publicized or licensed by some health authority. Treatments, including “alternative” and “supplementary” therapies, should not be used until they are based on sound evidence derived from fair tests of every old and new treatment. Evidence is cumulative, and systematic reviews are the means for cumulating and evaluating the best available research evidence. In order to be active participants at this level, patients need to learn about fair tests and systematic reviews, and about statistical numbers, biases, risks and probabilities. Anybody facing a problem in understanding these concepts is advised to read Testing Treatments. It explains the benefits and harms of early diagnosis via screening, but its main focus is treatment; it highlights fundamental issues in the critical assessment of treatments; issues that are

important to the public and should be included in school curricula. It also emphasizes the importance of the media in educating the public, or at least in not misleading them.

At the second level, patients should play their active role in the three player game of practicing evidence-based medicine (EBM); doctors’ expertise, research evidence and patients’ values and preferences. They should always ask their clinicians about the evidence supporting prescribed treatments, but should also be prepared to accept that some of their questions will have no ready answers. While the cumulative evidence is conclusive in some instances, systematic reviews of the cumulative evidence, in other instances, often pinpoint uncertainties surrounding the benefit and harm of new and old treatments. Clinicians have an essential role to play in practicing EBM, and need to develop better communication skills in order to establish a two way communication about current evidence and uncertainties. A main premise of Testing Treatment is to encourage clinician-patient dialogue while making shared decisions. At the third level, patients have a role to play in dealing with uncertainties through becoming equal partners in designing, conducting and publishing systematic reviews and research studies. The two ends of EBM meet in Testing Treatments; using evidence and generating evidence. While emphasizing that health decisions should be based on well conducted systematic reviews of the best available evidence, this book also invites everybody to generate evidence by preparing systematic reviews and by conducting more research to address existing uncertainties. Clinicians should not be ashamed of admitting that they are not all knowing, and are encouraged to seek patients’ help in sorting out existing uncertainties. Patients should be ready to help clarify current uncertainties for their and everybody’s good. However, it is essential to establish that new research is necessary and well conducted. Unnecessary and bad research may harm and even kill people, and waste effort and money.

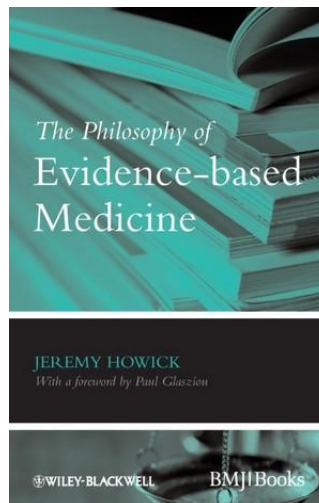
Necessary research can be identified through promoting more critical assessment of the effects of treatments, and this is best done through a partnership between patients, the public, the media, and health professionals. This partnership is reflected by the authorship of this book; a medical doctor and journalist and research ethicist (Imogen Evans), a patient and independent lay advocate for

quality in research and healthcare (Hazel Thornton), a health services researcher and an inventor of systematic reviews (Iain Chalmers) and a general practitioner and researcher and a teacher of EBM (Paul Glasziou). Such a partnership makes research more patient-oriented, attempting to achieve outcomes that are important to patients, and deserves the support of health authorities. In particular, health research authorities should be more understanding of the particularity of testing already available and freely prescribed treatments. Testing Treatments contains 13 Chapters, each chapter has a theme supported by illustrative examples and a list of references. The first chapter demonstrates that newer treatments are not necessarily better than old ones. On the contrary, hoped-for effects of new treatments may not materialize, as described in Chapter 2. Patients may not derive more benefit, and may in fact be harmed, from more treatment or from earlier diagnosis, as explained in Chapter 3 and Chapter 4, consecutively. Dealing with uncertainty about the effects of treatments is the theme of Chapter 5. This is done through fair tests of treatments while taking account of the play of chance as described in Chapters 6 and 7. Chapter 8 demands that new research should not be started before assessing all the existing evidence, and this strategy should be observed by authorities regulating tests of treatments, as explained in Chapter 9 which also describe how research can become over-policed to the detriment of patients. The aim is to encourage good research and to avoid conducting bad or unnecessary research, as outlined in Chapter 10. Chapter 11 argues that getting the right research done is everybody's business, and Chapter 12 outlines what makes for better healthcare. The final chapter is a blueprint for a better future and an action plan for carrying out research for the right reasons.

The authors dedicate this book to William Silverman (1917–2004), “who encouraged us repeatedly to challenge authority”, however, they seem to challenge all of us to ensure that research is designed to answer questions that matter to patients, the public, and health professionals, and is properly conducted.

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Jeremy Howick.
The Philosophy of Evidence-Based Medicine,
 Oxford: Wiley-Blackwell, (2011).

In *The Philosophy of Evidence-Based Medicine* Jeremy Howick (Centre for Evidence Based Medicine, University of Oxford) expands our understanding of the arguments that justify the EBM philosophy of evidence. The book is not an evidence-based medical textbook, nor a guidebook on how to practice EBM; its aim is properly philosophical. The concern is with the epistemological foundations of EBM. Consequently the audience to which it is most directly relevant to is philosophers of science, however the fact that it is the first thorough and sustained analysis of the reasons for practicing EBM make it valuable to any medical professional interested in those debates and perhaps confused by the array of (mis)interpretations of EBM in the literature(1,2). The book is divided into four parts. The first part serves to introduce the general issues in the philosophy of EBM (Chapter 1), gives a brief account of what EBM is qua an epistemological thesis (Chapter 2), and what good evidence is supposed to be evidence for (Chapter 3). Howick emphasises firstly that he is concerned with the E in EBM, rather than historical, political or sociological questions that have also been raised; and secondly that clinical relevance should be built into an account of good evidence, which shows Howick's commitment to the close relationship between epistemology and ethics (a continuing theme in the book).

Parts two and three make up the majority of the book; Howick examines some of the key epistemological issues that EBM throws up. Part three focuses on randomised trials: Do randomised trials provide more evidential support than studies ranked lower on evidence hierarchies? Under what

circumstances do randomisation (Chapter 5), double-blinding (Chapter 6), and placebo-control (Chapters 7 and 8) add epistemic value to a research design? Part four focuses on the other end of 'evidence hierarchies' and asks: What kind of evidence do mechanisms provide? (Chapter 10), and what is the proper role for clinicians' expertise? (Chapter 11). Part four summarises and points the way forward, suggesting a natural extension of the philosophy of EBM into the field of public health (Chapter 12).

Howick answers each of these questions with clarity and insight. The arguments are illustrated with all the 'classic', and more, examples from the medical literature. In general, Howick argues for three claims: (1) that one has good evidence when the effect size observed outweighs the effects of plausible confounding, (2) that observational and mechanistic evidence often aren't, but certainly can be good evidence, and (3) that clinicians' expertise whilst often not good evidence never the less plays important but underappreciated non-evidential roles. Notably Howick's suggested refinement of the 'definition' of EBM shows how the relationship between expertise and evidence should stand: 'EBM requires clinical expertise for producing and interpreting evidence, performing clinical skills, and integrating the best research evidence with patient values and circumstances' (p. 188).

It would have been interesting for the relationship between epistemology and ethics to have been drawn out more explicitly. And additionally for the notion of what clinician's find 'plausible' and their 'scientific common sense intuitions' (Chapter 4) to have been probed deeper. However, it is a virtue of the book that it is not too philosophically dense. It is accessible to anyone who is interested in evaluating the evidence for evidence-based medicine.

1. Straus SE, Haynes RB, Glasziou P, Dickersin K, Guyatt GH. Misunderstandings, misperceptions, and mistakes. *Evidence Based Medicine*. 2007;12:2-3.
2. Straus SE, McAlister FA. Evidence-based medicine: a commentary on common criticisms. *Canadian Medical Association Journal*. 2000 Sep;163(7):837-841.

Prepared by: Andrew Turner
Institute for Science & Society
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