

Newsletter of the International Society for Evidence-Based Health Care

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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.



Evidence-Based Clinical Practice Office
McMaster University, Canada



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Presenting Complex Terms in Plain Language: NCCMT's Understanding Research Evidence videos

Jeannie Mackintosh

As part of its mandate to build capacity for evidence-informed public health (EIPH), the National Collaborating Centre for Methods and Tools (NCCMT) offers workshops and webinars to public health and allied professionals. Topics include a step-by-step approach to incorporating evidence into practice, and instruction regarding how to search for and critically appraise research evidence, and how to apply the EIPH process to specific issues. Despite the overall positive feedback on the workshops, facilitators have noted a recurring challenge: many participants report difficulties understanding such concepts as confidence interval, relative risk, clinical significance and number needed to treat.

The Understanding Research Evidence (URE) videos were created to explain some terms and concepts commonly encountered when reviewing the research evidence. Concepts that might otherwise be intimidating or misunderstood are presented in a non-threatening way, using concise plain language narration and cartoon visuals to illustrate application to real world public health examples.

Development

Topics for the first four videos in the series (odds ratios, confidence intervals, forest plots, and clinical significance) were chosen based on feedback from previous workshop participants and the experience of NCCMT staff members. Following the release of the initial videos, NCCMT invited users to complete an online survey and identify topics for additional videos in the series.

Development of each video begins with the writing of the script. The initial draft is often quite complex and is then edited and revised into plain language while maintaining accuracy. Throughout the editing process, the NCCMT team meets regularly with the video production team and cartoonist to discuss how best to convey the concepts visually.

Narration of the final script is recorded on camera and the cartoons inserted. Following final editing,

the video is formatted for posting online. NCCMT is committed to providing the URE videos in both English and French so all videos in this series are produced in both languages.

Evaluation

A three-part evaluation was conducted to determine the effectiveness of the first four URE videos. The evaluation included: 1) an online survey to identify who was watching the videos, how they were being accessed, and how much knowledge was gained by watching the videos; 2) an in-person pre-test/post-test to determine if knowledge about the research terms changed after watching the videos; and, 3) in-depth telephone interviews to explore participants' experiences with the delivery and content of the videos, and if and how knowledge gained from the videos was applied to public health practice. Participants in the evaluation were all public health professionals practising in Canada and represented a variety of public health roles. Participants' self-reported knowledge of statistics prior to watching the videos ranged from poor to very good.

Results

Our evaluation showed that watching the videos resulted in statistically significant increases in knowledge. A chi² test was conducted on the online survey data to determine changes in knowledge recall scores for each of the URE videos. After viewing the videos on odds ratios, confidence intervals, and clinical significance, participants achieved higher scores on the knowledge assessment questions [odds ratio, X² (2, N=46)=6.671, p=0.036; confidence intervals, X² (2, N=46)=6.671, p=0.036; clinical significance, X² (2, N=46)=6.027, p=0.049]. However, the results for the forest plot video were not statistically significant [forest plots, X² (2, N=46)=4.280, p=0.118).

Paired t-tests were conducted on in-person pre-test/post-test data to see if there were any changes in knowledge for each statistical concept from watching one of the four URE videos. A statistically significant difference was found for the forest plots and the confidence intervals videos (Forest plots, t (61)=5.710, p<0.001, Confidence intervals, t (55)=6.835, p<0.001) indicating that watching these videos increased knowledge about these statistical concepts.

Participants in the telephone interviews reported overall positive experiences with the URE videos and their intention to incorporate learnings from the videos into their practices. For example, participants suggested that the videos could help individuals interpret the results of a study or provide a quick refresher before a meeting; or they could be used for peer learning in a group setting, such as a journal club, classroom setting, or in a larger continuing education program for public health professionals. The videos were seen as appropriate for people with different levels of understanding and varied learning styles. Participants felt that, by increasing their use of research evidence, public health professionals could develop better interventions and design effective evaluations to measure the impact of public health initiatives.

Success factors

Participants identified several factors that contributed to the videos' effectiveness: hearing the words spoken rather than reading them, seeing the concepts illustrated, and being able to identify with the examples. Following their initial viewing, several participants reported that they continue to review the videos. (The full report of this evaluation is available from NCCMT.)

Application to practice

The videos help build capacity for incorporating evidence into practice decisions among teams of public health practitioners. The videos empower those with little or no prior understanding of statistical terms to contribute to evidence-informed practice and policy decisions. One respondent wrote, "Even though a lot of public health professionals do have graduate training ...statistics are not always used every day. [The video is] a refresher but it also reminds people how doable it really is. [The video] actually makes somebody feel like they could actually just take a pen and paper and do some simple ratios, instead of having SPSS software to do any kind of calculations."

Those for whom statistical terms and concepts are well understood can also benefit from the URE videos. The videos provide language to discuss data or justify decisions to colleagues and community partners. Accessible language gives stakeholders a common understanding of and appreciation for the available research evidence related to public health interventions under consideration. One practitioner wrote, "[The video]

gave me language to explain [the term] to others in my workplace... [I]t's always helpful to have a different way to ... explain a concept than what you have used in the past. ... I found the videos gave me some of those clear examples and language [so] that I could help explain it to others."

Post-secondary educators incorporate the URE videos in the classroom and online resources they offer students. For example, a professor from the University of North Texas wrote, "I use two of your ... videos in an online class I teach on Community Health Information Resources. They cover much the same material and are more interesting than my PPT slides."

Conclusion

With increased comfort and competence in interpreting and using the best available evidence, practitioners are empowered to contribute to decisions that can improve health outcomes of clients/patients/community. The National Collaborating Centre for Methods and Tools continues to develop and expand the Understanding Research Evidence video series and other resources to help build capacity for evidence-informed decision making among Canadian public health professionals. For more information on the resources available from NCCMT, please visit the website (www.nccmt.ca) or contact nccmt@mcmaster.ca.

The Role of Evidence Based Medicine at Different Career Levels

Ramon Puchades

The application of evidence-based medicine (EBM) in clinical practice is influenced by the specific stage in one's training: student-clerk, resident-fellow or attending physician (junior and senior). My point of view is from the perspective of a junior attending physician. As has been suggested by Sackett¹, the ability of most physicians to remain up to date with the scientific literature tends to decrease over time. According to this observation, in general, the practice of junior doctors may be driven by limited clinical experience and more by research evidence, whereas clinical practice of senior physicians' may be driven more by their practical experience and less by the scientific literature. Accordingly, the following strategies may be helpful for tailoring instruction regarding evidence based medicine (EBM) based on career level:²

Student-clerk: Introducing the basic concepts of EBM is essential. The goal at this stage should be to prepare learners to ask focused clinical questions

Resident-Fellow: a previous background of EBM at the University, remains crucial to apply concepts in clinical practice. The goal: to find a good mentor with a solid basis in EBM, a huge topic of the learning process

Attending physician: first, the junior attending physician. At this stage, the contact and relationship with mentor to define a critical attitude as well as feet on floor. The goal: to incorporate advance knowledge in EBM. Second, the senior attending physician: the curve goes down. What to do?. Probably, the best example was Dr David Sackett, who returned at age 49, to a two year "retreading" residency in Hospitalist Internal Medicine. As his Trout Research and Education Center webpage noted: "conviction is a greater foe of truth than is a lie".

But, how to determine what type of teaching could be the most appropriate at every stage? To select between an academic or nonacademic approach, is a question, but probably both are useful, depending

on the context and individual characteristics-preferences. Furthermore, the value of teaching basic or advanced concepts of EBM are unlikely to be related with the specific stage career or, perhaps, inversely associated.

In this context, the EBM at each step career remains a "continuum". At every stage, clinicians need to maintain an active and positive attitude. This is a key point to develop clinicians' potential, and to avoid prejudicial judgments, and excessive pride and vanity. Excessive conviction, and excessive pride, represent obstacles for learning and teaching EBM activities. The contribution of EBM to recognize when one is wrong or when information is not completely valid-applicable, is a powerful tool. As Dr William Osler said: "one special advantage of the sceptical attitude of mind is that a man never vexed to find that after all he has been in the wrong". Definitely, EBM not only provides a systematic and a rational approach to clinical medicine (observations, statistics, critical appraisal, meta-analysis). It is crucial for the progress of Medicine as an humanistic science³.

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1. Sackett DL. The sins of expertness and a proposal for redemption. *BMJ* :2000;320(7244):1283.
2. Swennen MH, van der Heijden GJ, Blijham GH,. Career stage and work setting create different barriers for evidence-based medicine. *J Eval Clin Pract.* 2011 Aug;17(4):775-85.
3. Godlee F. Milestones on the long road to knowledge. *BMJ* 2007; 334:s2.

Everybody needs Insurance Medicine to be Evidence-Based

Regina Kunz, Jason W. Busse

Are you familiar with insurance medicine? No? Perhaps you know someone who had to leave work because of poor health, or someone with depression or chronic pain who applied for disability benefits. Perhaps a friend of yours underwent an independent medical evaluation or work capacity assessment when they applied for disability or

accident benefits. Or a colleague with a severe occupational or recreational accident that received support from their insurer in order to return to work? Did you ever ask your doctor for a sick leave certificate? If so, your friends, colleagues or you were at some level involved with healthcare professionals working in the area of insurance medicine.

Health professionals and policy makers working in the context of group or individual disability, motor vehicle accident, or other types of insurances render influential decisions regarding treatment, prognosis, and functional capacity that affect the health and social functioning of millions of individuals worldwide, but there is limited research evidence to inform many of these decisions. For example, a recent systematic review of randomized controlled trials assessing the effect of opioids, physiotherapy, or chiropractic care for acute low back pain identified 40 trials – none of which focussed on patients receiving disability benefits, and many explicitly excluded such patients.¹ E.g.:

"Subjects who... were involved in claims for compensation or litigation because of the back injury...were also excluded"

Cherkin DC, Deyo RA, Battie M, Street J, Barlow W. A comparison of physical therapy, chiropractic manipulation, and provision of an educational booklet for the treatment of patients with low back pain. *N Engl J Med* 1998; 339: 1021-1029.

Much of the evidence that does exist is hard to find and, even when located, professionals working in the area of insurance medicine often lack the skills to critically appraise the literature.

We, a group of clinical and public health researchers with a focus on insurance medicine and occupational health, from the Netherlands, Switzerland, Canada and Sweden* believe there is an urgent need for change. In 2010 we formed an international evidence-based insurance medicine research group, and in December 2014 the Cochrane Collaboration accepted our application for a Cochrane field group in the area of Insurance Medicine.

In contrast to Cochrane review groups, Cochrane field groups are much more involved in knowledge translation. Cochrane Insurance Medicine provides links to topics of relevance to insurance medicine from Cochrane review groups, such as Cochrane Work, Back and Neck, Depression, Anxiety and Neurosis, Effective Practice and Organization of Care (EPOC), and Public Health. We compile systematic reviews related to insurance medicine and promote the production of relevant, high-quality reviews by Cochrane Review groups. We train insurance medicine professionals, contributors and stakeholders to critically appraise and apply research knowledge. We highlight research priorities in insurance medicine and conduct methodological work regarding optimal conduct and reporting of systematic reviews.

Transforming the practice of insurance medicine from largely eminence-based to evidence-based is an enormous undertaking, and we are keen to collaborate with interested stakeholders. Interested in learning more on what we are doing? Please check our website and visit us at the Cochrane Colloquium in Vienna (3.-7.October). You will find us at the **"Meet the Group" Session** on Sunday, the 4th October from 12:30 – 14:00. Or visit our website at: www.insuremed.cochrane.org. Rebecca Weida, the coordinator of our group, is very interested to learn your views and to answer any questions (rebecca.weida@usb.ch).

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Reference:

1. Busse JW, Ebrahim S, Heels-Ansdell D, Wang L, Couban R, Walter SD. Association of worker characteristics and early reimbursement for physical therapy, chiropractic and opioid prescriptions with workers' compensation claim duration, for cases of acute low back pain: An observational cohort study. *BMJ Open*. 2015; 5(8): e007836.

Natural Language Processing

Mouaz Alsawas, Noor Asi, Fares Alahdab,
Ding Cheng Li, M Hassan Murad, Zhen Wang

We have increasingly seen, in the medical literature, studies using natural language processing (NLP). These studies usually contain NLP jargons with which most evidence-based medicine (EBM) users are not familiar. NLP is a component of artificial intelligence that explores how computers can be used to understand and analyze linguistic dialect that humans naturally use. In the context of medical literature, NLP is most commonly used to extract information from unstructured text available in electronic health records (EHRs), pathology or other laboratory or clinical databases, and transform unstructured text into coded data element that can be analyzed.

Modern NLP methods are based on statistical machine learning, a type of artificial intelligence that examines and uses patterns in data to improve a program's own understanding. These methods are predicated on the availability of large volumes of annotated training data for supervised learning and model development.

Most of the research being done based on NLP revolves around EHRs and searching of the medical literature. Researchers, for example, used NLP to automatically search and extract thousands of pathology records to track quality of colonoscopies¹ [1]. NLP was found to achieve an accurate report of adenoma detection in those patients despite the variety of methods used by different colonoscopy units.

We have proposed a set of criteria to evaluate the quality of studies that used NLP methods (Table 1). Evaluation of an example study¹ using these criteria is also explained in the table. These criteria can be easily adopted by most EBM learners. More advanced evaluation of the validity of NLP algorithms is likely beyond the ability of most EBM learners.

Criterion	Description	Example ¹
Sample selection	The sample of data which can be used to develop and evaluate the algorithm should be chosen randomly (preferred method to decrease the risk of selection bias).	Investigators chose a random pathology records sample to train and test the NLP algorithm.
Domain coders	High quality manual annotations are necessary for building statistically robust NLP processes. Independent duplication of domain coders and linguists may reduce error and bias.	Annotators were paired in a blinded manner such that each document was reviewed by two annotators.
The gold standard	The output of the NLP program needs to be verified by content experts	Five board-certified gastroenterologists from multiple sites participated in creation of the reference standard.
Software training	Software training should be conducted to ensure performance of the NLP program	Software training was done on randomly-chosen 250 records.
Testing	Testing of the NLP program after training ensures training sufficiency and high accuracy. Good testing would utilize gold standard data point comparisons.	Testing was done on 500 records before processing the whole sample (42,569 records).

The use of NLP has also expanded to include production of evidence, such as in conducting systematic reviews. Specifically, screening references and extracting relevant data can be fed into an NLP program to automate that process saving time and effort^{2,3}.

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1. Imler TD, et al. Multi-center colonoscopy quality measurement utilizing natural language processing. The American Journal of Gastroenterology 2015; 110(4): 543-52.
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The New Evidence Pyramid

M. Hassan Murad, Mouaz Alsawas, Noor Asi, Fares Alahdab

The first principle of evidence-based clinical practice holds that a hierarchy of evidence exists. Early interpretations of this principle focused on study design. For example, randomized controlled trials incorporate methodologic safeguards that reduce the risk of bias compared to observational studies. This principle was first proposed in the early 1990s and what better conceptual structure than a pyramid to depict a hierarchy? Evidence-based health care practitioners became familiar with this pyramid when reading the literature, applying evidence or teaching students.

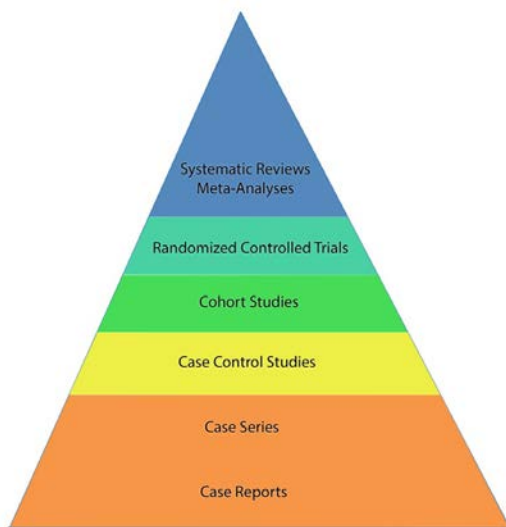
Various versions of the evidence pyramid have been described but all of them have focused on showing weaker study designs in the bottom (basic science and case series), followed by case-controlled and cohort studies in the middle, then randomized control trials, and at the very top systematic reviews and meta-analysis. This description is intuitive and likely correct in many instances. Most versions of the pyramid clearly represented a hierarchy of validity (risk of bias), but at least one version also incorporates applicability (N-of-1 trials on the top).

In the early 2000's, the GRADE Working Group presented a framework in which the certainty in evidence was based on a combination of study design and other factors (eg, imprecision, inconsistency, indirectness) challenging the pyramid concept.¹ In 2014, a User's Guide on systematic reviews and meta-analysis challenged the notion of positioning systematic reviews on the top of the evidence pyramid and presented a 2-step approach in which the credibility of the process used to generate a systematic review is evaluated first, followed by evaluation of the certainty in evidence based on the GRADE approach.² Here we present a schematic of a revised evidence pyramid that reflects these two contemporary changes (Figure).

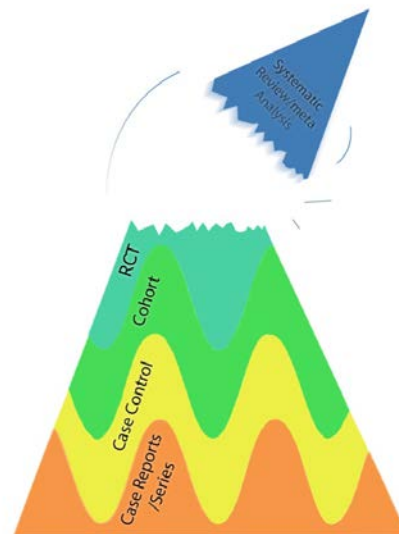
The revised pyramid emphasizes two concepts: 1) the lines separating study design are wavy going up and down (thus, reflecting the GRADE approach of rating up and down), and 2) systematic reviews are "chopped off" from the top of the pyramid and used as a *lens* through which other types of studies should be viewed (ie, appraised and applied). The way we see this pyramid used is as a teaching tool. Teachers of evidence-based clinical practice can compare the original and revised pyramids to explain the GRADE approach, the User's Guide to systematic reviews, and to demonstrate the evolution in evidence-based clinical practice thinking and the modern understanding of certainty in evidence.

References:

1. Guyatt GH, Oxman AD, Vist GE, et al. GRADE: An emerging consensus on rating quality of evidence and strength of recommendations. *BMJ* 2008; 336(7650):924-6.
2. Murad MH, Montori VM, Ioannidis JP et al. How to read a systematic review and meta-analysis and apply the results to patient care: Users' Guides to the Medical Literature. *JAMA* 2014; 312(2):171-9.



The traditional pyramid

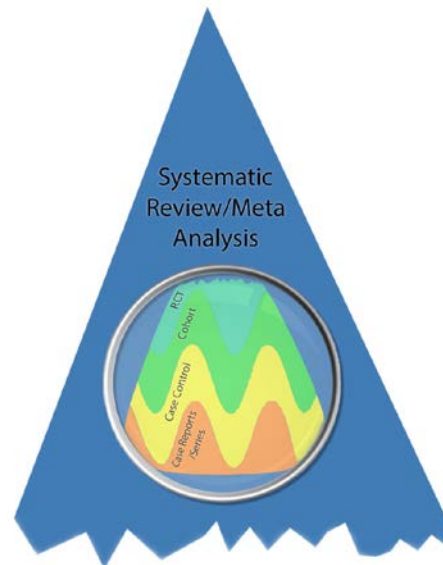


Revising the pyramid

- 1) Lines separating study design become wavy (GRADE)
- 2) Systematic reviews are “chopped off” the pyramid

The revised pyramid

Systematic reviews are a lens through which evidence is viewed (applied)



A New Tool from the Cochrane Collaboration to Assess the Risk of Bias in Non-Randomized Studies

Wigdan Farah, Mouaz Alsawas, Khaled Mohammed,
Rebecca L. Morgan, M. Hassan Murad

Assessment of the risk of bias (RoB; i.e., internal validity) of studies included in a systematic review is a critical step in determining the certainty/confidence in a body of evidence. Studies at high RoB may exaggerate the estimate of the treatment effect or increase the variability of pooled effect estimates¹. Typically, randomization of study arms balances the prognostic factors between treatment and control arms, thereby reducing bias due to confounding. Observational interventional studies cannot always account for the balance of known or unknown confounding, which may lead to prognostic imbalance between treatment and control groups (i.e., systematic selection bias)². In 2010, a systematic review identified more than 46 individual tools for RoB assessment of non-randomized studies; however, many lacked information regarding their development, validity, and reliability³. Of these tools, the Cochrane Collaboration identified the Downs and Black and the Newcastle-Ottawa Scale (NOS) as the two most appropriate for assessing RoB^{1,4,5}. Recently A Cochrane Risk of Bias Assessment Tool for Non-Randomized Studies of Interventions (ACROBAT-NRSI) was published⁶. A rigorous, standardized, and transparent RoB tool is needed for researchers and methodologists when developing systematic reviews that include non-randomized studies. This document summarizes the similarities and differences between ACROBAT-NRSI and the NOS and compares their application with a sample study. With the increased use of non-randomized studies in systematic reviews, evidence based medicine (EBM) learners will need to learn about the available tools to assess RoB of observational studies.

ACROBAT-NRSI was developed to systematically present the available evidence relating to RoB by comparing them to a theoretical well-conducted RCT (called the target trial)¹. The two-stage process starts by developing a protocol for the target trial, and identifying possible confounders and co-exposures. The second stage assesses each individual study, regardless of study design, across seven domains (Table 1). ACROBAT-NRSI has distinct judgment categories for RoB per domain and for reaching an overall categorical RoB judgment (“low,” “moderate,” “serious,” “critical,” and “no information”). The NOS assesses individual studies based on three domains and contains tailored questions specific to case-control or cohort studies⁵. Studies are assessed individually and assigned up to eight “stars” to give a quantitative score. There is no instruction for determining RoB per outcome.

Table 1: Domains of the Cochrane Risk of Bias Assessment Tool for Non-Randomized Studies of Interventions (ACROBAT-NRSI) and the Newcastle-Ottawa Scale (NOS)*

RoB Tool*	Domain
ACROBAT-NRSI	Bias due to confounding
	Bias in selection of participants into the study
	Bias in measurement of interventions
	Bias due to departures from intended interventions
	Bias due to missing data
	Bias in measurement of outcomes
	Bias in selection of the reported result
NOS	Selection of patients for inclusion in each study arm
	Comparability of the two study arms
	Exposure and outcome ascertainment (for case controlled and cohort studies; respectively)

* ACROBAT-NRSI uses a categorical rating of “low”, “moderate”, “high”, and “critical” for each domain. NOS employs a quantitative scoring system for which a study can be awarded a maximum of one star for each numbered item except comparability (2 stars), for a maximum of 9 stars

Example: Independent reviewers applied both tools to a cohort study that showed a reduction in the risk of breast cancer in postmenopausal women using bisphosphonate.⁷ There was higher proportion of women taking hormonal replacement therapy and oral contraceptive pills (OCPs) among women using bisphosphonates. The analysis was adjusted for hormonal therapy use, but not for OCPs use. The study also had co-interventions (calcium and vitamin D) that significantly differed (greater use among bisphosphonate users) and were adjusted for in their analysis. Results from the application of ACROBAT-NRSI suggested an overall “moderate” RoB due to likely confounding. Using the NOS, the study was judged to have increased risk of confounding for the same reasons; thus receiving 8/9 stars (at worse, a score of 7/9 could be given), which could reasonably be interpreted as low risk of bias (recall that there are no established cut offs).

Based on this example, both instruments downgraded the quality based on the same finding; however, ACROBAT-NRSI assigned a greater penalty yielding a more conservative judgment that also appeared to be more transparent. Interestingly, 2 subsequent RCTs showed findings that contradict the observational study (i.e., no association between bisphosphonate and breast cancer)⁸; thus, furthering this argument favoring the risk of bias determination made using ACROBAT-NRSI.

Benefits of using ACROBAT-NRSI may include: 1) the ability to make and describe decisions regarding RoB assessment, instead of providing a score; and 2) guidance for assessing RoB per outcome (with an option of assessing RoB across outcomes) instead of only providing a single judgment for the whole study. ACROBAT-NRSI was clearly more difficult and took more time to complete with over 20 signaling questions that required supporting text (versus eight questions in the NOS not requiring written justification). Another important issue is that ACROBAT-NRSI is intended to be used for observational studies evaluating interventions (whereas many observational studies evaluate exposures). Both tools require operationalization (i.e., tailoring to a specific topic or question), piloting, and training of reviewers.

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Incorporating Intention to Treat into Trial Design

Samuel A Berkman

Randomized clinical trials (RCTs) are viewed to as the gold-standard for establishing whether a new treatment is better than control, either placebo or the standard treatment for a given condition. This is because successful randomization ensures a balance of prognostic factors between treatment groups and so one can attribute differences in outcome to the treatment applied and not baseline differences between groups. However RCTs may be affected by a number of issues, including noncompliance and missing outcome data.

The intention to treat approach analyses participants in the group that they were randomized to irrespective of noncompliance, protocol deviations, withdrawal or cross-over. Such participants are typically excluded in a “per protocol” analysis. By including these patients, the estimate of treatment effect is conservative. This is because these patients are often sicker, less compliant and harder to treat effectively and their inclusion in the analysis will reduce the magnitude of treatment effect.

Therefore If an RCT achieves a positive result with an intention to treat analysis, it is probably a true positive study, which is why it is acknowledged to be the most rigorous type of study design and has been designated the standard of practice in clinical trials at least for superiority studies by CONSORT (consolidated standards of reporting trials) . Also including patients who are post randomization dropouts or non-compliers increases the power of the study and makes it more precise by narrowing the confidence interval.

Disadvantages to using intention to treat are that if the patient is included in the study and may never receive treatment that does not really tell us much about the efficacy of treatment among compliant individuals. ITT analysis has also been criticized for being too cautious and being more susceptible to false negative results.

However the measure of any treatment is not simply efficacy but actually whether someone will actually take the drug. This is best measured in intention to treat.

More and more, however, “modified intention to treat” analysis is being used in clinical trials. The exact definition of modified intention of treat varies but typically excludes some patients post randomization (e.g. those who did not receive at least 1 dose of trial medication) and has been criticized as an extension of per protocol analysis. For that reason the motivations for the use of modified intention to treat in studies are sometimes called into question.

Other means of designing a trial include “on treatment” or per protocol where only the people who actually received treatment are counted and if someone stops taking the treatment they are excluded from analysis. Trials sometimes report both an intention-to-treat analysis and a per-protocol analysis, which may show different results. One example is the Rocket trial in non valvular atrial fibrillation involving Rivaroxaban versus Warfarin¹. Another is a recent study involving closure devices for patent foramen ovale². Both trials reported a significant treatment effect in their per-protocol analysis, but not in an intention-to-treat analysis. The advantage of reporting both types of analysis is that the per protocol analysis tells us exactly how the people being treated are doing. Comparing results with intention to treat tells to what degree noncompliance and missing outcome data influenced the results. An intention to treat analysis is more reflective of treatment in a real world clinical setting.

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1. Patel M, Mahaffey K, Garg J, et al. Rivaroxaban versus warfarin in nonvalvular atrial fibrillation. *NEJM* 2011;365: 883-91.
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McMaster EVIDENCE-BASED Clinical Practice Workshops



EBCP WORKSHOP

McMaster Evidence-Based Clinical Practice Workshops

June 6-10, 2016

McMaster University

Come to McMaster, the birthplace of evidence-based health-care, to join in one of two closely related workshops.

The first caters to clinicians who wish to improve their clinical practice through enhanced skills in reading, interpreting, and applying the medical literature.

The second is designed for clinician educators interested in enhancing their skills for teaching the principles of evidence-based practice to others.

Both workshops are tailored to faculty and community internists, hospitalists, and senior and incoming chief residents.

To experience the BEST in EVIDENCE-BASED Health Care Education at McMaster University
Monday, June 6th — Friday, June 10th, 2016

WHAT IS EVIDENCE-BASED CLINICAL PRACTICE / EVIDENCE-BASED MEDICINE?

Evidence-based clinical practice (EBCP) is an approach to health-care practice that explicitly acknowledges the evidence that bears on each patient management decision, the strength of that evidence, the benefits and risk of alternative management strategies, and the role of patients' values and preferences in trading off those benefits and risks.

WHY ARE EVIDENCE AND VALUES OR PREFERENCES IMPORTANT?

Clinicians are confronted daily with questions about the interpretation of diagnostic tests, the harm associated with exposure to an agent, the prognosis of a disease in a specific patient, the effectiveness of a preventive or therapeutic intervention, and the relative costs and benefits associated with these decisions. Both clinicians and policy makers need to know whether the conclusions of a primary study or a systematic review are valid, and whether recommendations in clinical practice guidelines are sound.

Members of the Department of Clinical Epidemiology and Biostatistics at McMaster University, in collaboration with other colleagues trained in both medicine and in clinical epidemiology, have developed a set of common sense strategies

to assist in the critical appraisal of evidence. They have also developed approaches to explicitly considering values and preferences in clinical decision-making, thereby encouraging the practice of EBCP.

WORKSHOP OBJECTIVES

- Both streams: To help participants advance their skills in critically appraising the literature, and their skills in acknowledging and incorporating values and preferences in clinical decision making
- Improve your practice stream: To acquire an understanding of common epidemiological concepts (e.g. interpreting hazard ratios, confidence intervals, critical appraisals of a systematic review) and advance their skills in using the literature for quality assurance, improving practice, and judging comparative effectiveness of health care interventions.
- Teaching stream: To help participants learn how to teach EBCP using a variety of educational models in different settings, with different types of learners.

WORKSHOP FORMAT

The workshop is offered as a one-week intensive course.

Participants will be learning in interactive small groups led by clinical epidemiologists and

practitioners from McMaster and other institutions. The workshop will consist of small and large group sessions, individual study time and, for the teaching stream, opportunities for workshop participants to lead teaching sessions using their own ideas, materials, and reflecting their own experiences.

WORKSHOP MATERIALS

Prior to and at the workshop, participants will have access on-line to educational materials that include literature on critical appraisal and EBCP, the small group learning format, a set of clinical problems, JAMA evidence, and a variety of other EBCP aids.

WHY COME TO MCMASTER UNIVERSITY?

McMaster University is not only the birthplace of evidence-based medicine, and has produced the definitive evidence-based health care texts. We also continue to lead the world in innovation and advances in EBHC practice and teaching. McMaster's workshop, running for more than 25 years, has provided the model for EBHC workshops throughout the world. Over this time, we have developed a cadre of the best EBHC educators in North America who return to the workshop year after year because of the intensely stimulating and educational environment. Come to experience the best in EBHC education!

TRAVEL, FACILITIES AND ACCOMMODATION

The workshop will be held at McMaster University. Upon confirmation of a definite placement in the workshop, you will receive a formal letter, access to the website and background and introductory materials will be provided with general information regarding specifics of the workshop, accommodation and travel. TRAVEL AND ACCOMMODATION ARRANGEMENTS ARE THE RESPONSIBILITY OF THE REGISTRANT. Modest accommodation is available on campus, other accommodations are available in city hotels, 10-30 minutes away by foot, bus or car.

REGISTRATION FEES	Cdn \$*	US \$
\$200 DISCOUNT IF REGISTERED BEFORE DEC. 31, 2015.		
One member from an institution	\$2800	\$2400
Two members from an institution	\$2500 each	\$2140 each
Three or more members from an institution	\$2200 each	\$1885 each

*Includes 13% Harmonized Sales Tax (HST # r119-035-988). Tuition includes all workshop materials, photocopying services, access to computer literature searching and dinner on the first and last evenings.

REGISTRATION ON-LINE AT:

http://ebm.mcmaster.ca/registration_online.htm

Please return the completed application form and registration fee (Cheque only) and reference your registration number on all correspondence.

PLEASE NOTE THAT CREDIT CARD PAYMENT IS NOT ACCEPTABLE.

Please make the registration fee payable to MCMASTER UNIVERSITY, and send to:

Regular Mail	Courier
Laurel Grainger EBCP Workshop registrar McMaster University 1280 Main Street West Room: HSC 2C12D Hamilton, ON L8S 4K1 Canada	Laurel Grainger EBCP Workshop registrar McMaster University 1200 Main Street West, Room: HSC 2C12D Hamilton, ON L8N 3Z5 Canada

PLEASE DIRECT ANY INQUIRIES TO:

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MAILING LIST

We would like to keep our mailing list as up to date as possible. If you are planning to move, have moved, or know someone who once received the newsletter who has moved, please e-mail maddock@mcmaster.ca or write your new address here and send to Deborah Maddock, CE&B, HSC 2C12, McMaster University Health Sciences Centre, 1280 Main Street West, Hamilton, ON L8S 4K1, Canada. Thank you!

NAME: _____

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E-MAIL: _____

SIGN UP A COLLEAGUE!

If you would like to encourage a colleague to attend the workshop next year, please e-mail maddock@mcmaster.ca or write the address here and send to Deborah Maddock, CE&B, HSC 2C12, McMaster University Health Sciences Centre, 1280 Main Street West, Hamilton, ON L8S 4K1, Canada. Thank you!

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RECOMMENDED BY: _____