Newsletter of the International Society for Evidence-Based Health Care
Newsletter 17, November 2014

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 EBCP
- 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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A Users' Guide for Reading a Systematic Review and Meta-Analysis

Mohammad Hassan Murad, Noor Asi,
Patricia Barrionuevo Moreno, Gordon Guyatt

The value of systematic reviews and meta-analyses in evidence based healthcare practice is increasingly recognized. It is clear that decision making should be based on the totality of the best available evidence and not on select studies. There are, however, two key issues in evaluating the evidence summarized in systematic reviews. First is how well the review was conducted (i.e. the credibility of the methods). Second is the trustworthiness of the evidence from the primary studies that addressed the question of interest (also called quality of evidence, confidence in estimates, certainty in evidence). Previous Users' Guides[1] didn't clearly distinguish these two issues. Therefore, the new Users guide[2] reflects a contemporary conceptualization by distinguishing between the rigor of the review methods, and the confidence in estimates that the results warrant.

We refer to the first judgment as the credibility[3] of the review: the extent to which its design and conduct are likely to have protected against misleading results[4] A review with credible methods may, nevertheless, leave clinicians with low confidence in effect estimates. The second judgment addresses the confidence in estimates and follows the GRADE framework. The guide presents criteria for judging both credibility and confidence in the estimates.

Box 1. First Judgment: Evaluate the credibility of the Methods of Systematic Review

Criteria	What to look for?
Did the Review Explicitly Address a Sensible Clinical Question?	In the studies included in a meta-analysis, decide if it is plausible that the intervention will have a similar effect across the range of patients, exposures, and outcomes.
Was the Search for Relevant Studies Exhaustive?	Searching 1 database is insufficient. Multiple synonyms and terms are needed for each concept. Restricting search language to English may also lead to missing studies
Were Selection and Assessments of Studies Reproducible?	Look for a priori protocol that specifies study eligibility criteria. Look for a measure of agreement between review authors on study selection and quality appraisal (eg, kappa statistic).
Did the Review Present Results that are Ready for Clinical Application?	1) Relative association measures (RR, OR) pose challenges to risk communication and trading off benefits and harms. Patients at high baseline risk can expect more benefit than those at lower baseline risk from the same intervention (the same relative effect). Look for both summaries of both relative effects and risk difference (absolute risk reduction or increase) and NNT. 2) Continuous outcomes (difference of means or standardized difference of means) can also be presented in more useful ways. Continuous outcomes can be: i. dichotomized (for every 100 patients treated, 11 will achieve important improvement). ii. if expressed in standard deviation units, can be

	translated back to natural units with which clinicians have more familiarity iii. reported in minimally important units (ie, the least amount of change a patient deems important)
Did the Review Address Confidence in Estimates of Effect?	Look for information that helps you make the second judgement (Box 2.). If you don't see information on the risk of bias, explanation of heterogeneity or any of the other criteria for the second judgement, then the review is seriously limited as a basis for decision making.

Once you make the first judgement and decide the review is credible and appropriate to be used for decision making, you can assess confidence in estimates.

Box 2. Second Judgment: Rate the Confidence in the Effect Estimates*	
Criteria	**What to look for?**
How Serious is the Risk of Bias in the Body of Evidence?	Tables that describe the risk of bias for each of the important outcomes measured in each individual study. Different study designs require the use of different instruments or criteria.
Are the Results Consistent Across Studies?	1) Visually inspect forest plots noting i) differences in the point estimates, and ii) the extent to which CIs overlap. 2) Statistical evaluation of heterogeneity: i) the I2 statistic (higher means more heterogeneity), and ii) P value of the test of heterogeneity (Cochran Q test) (lower means more heterogeneity) 3) When substantial heterogeneity exits, clinicians should look for possible explanations (subgroup analysis or meta-regression)
How Precise Are the Results?	Consider the upper and lower boundaries of the CI of the absolute effect. Will you advise patients were the upper boundary or the lower boundary represents the truth? If the advice is different across the range of the CI, then confidence in the evidence will decrease.
Do the Results Directly Apply to My Patient?	If populations, interventions, or outcomes in the studies differ from those of interest, the evidence can be viewed as indirect.
Is There Concern About Reporting Bias?	1) Look for tests for publication bias (funnel plot that is asymmetric, statistical tests). Important to recognize that these tests can often be unreliable. 2) Read the narrative of the review, did review authors find evidence of unpublished studies or unpublished outcomes)
Are There Reasons to Increase the Confidence Rating?	This is uncommon, but in observational studies, look for the size of the effect: RR>2 (or <0.5) is considered large, and RR >5 (or <0.2) is considered very large

*The general framework used in this guide follows the GRADE approach. GRADE categorizes confidence in 4 categories: high, moderate, low, or very low. The lower the confidence, the more likely the underlying true effect is substantially different from the observed estimate of effect, and thus, the more likely that further research would demonstrate different estimates. Randomized trials are initially assigned high confidence and observational studies are given low confidence, but the factors described in this **Box** may modify these initial ratings.

Clinical Scenario

67 years old man presents with intermitent claudication and is asking about exercise therapy. He is most concerned about being able to walk pain free and worried about amputation. You searched for a systematic review that answered this question and identified one.[5] You try to apply the credibility criteria.

Box 3. First Judgment: Evaluate the credibility of the Methods of Systematic Review
Did the Review Explicitly Address a Sensible Clinical Question?
The review evaluated several treatments; one of them was exercise therapy. Patients enrolled across studies had intermittent claudication and received exercise therapy. You expect the intervention will have a similar effect across the range of patients, interventions, and outcomes.
Was the Search for Relevant Studies Exhaustive?
Limited to 2 databases (Pubmed and EMBASE) which is probably sufficient; however, search terms for the main intervention of interest (exercise) were limited to 2 (exercise and walking)
Were Selection and Assessments of Studies Reproducible?
No protocol described. Selection was performed by one author and confirmed independently by other 2 authors. In case of disagreement a third reviewer was involved. No description of the data extraction process by reviewers. Risk of bias done by 2 reviewers, no description of disagreement or mention of kappa statistics**.**
Did the Review Present Results that are Ready for Clinical Application?
The meta-analysis presented results as a standardized difference. This limits its use for clinical application.
Did the Review Address Confidence in Estimates of Effect?
The review did not address confidence in the estimates or provide information sufficient for us to make our judgement. The review combined outcome data from randomized trials and observational studies and only provided a numeric Jadad score for each study, therefore, we are unable to determine the risk of bias.

Using the credibility criteria, you detremine that this review does not have sufficient credible or useful information to apply to patient care; therefore, you search for another systematic review and find one.[6]

Box 4. First Judgment: Evaluate the credibility of the Methods of Systematic Review
Did the Review Explicitly Address a Sensible Clinical Question?

Patients enrolled across studies had intermittent claudication and received exercise therapy. You expect the intervention will have a similar effect across the range of patients, interventions, and outcomes.
Was the Search for Relevant Studies Exhaustive?
The review utilized a broad comprehensive literature search with numerous search terms for each concept.
Were Selection and Assessments of Studies Reproducible?
The review followed an established protocol. Selection of studies done by one reviewer and checked by another. Data extraction done by at least 2 authors. Risk of bias assessment was performed by 2 reviewers and disagreements were resolved by a third reviewer. No mention of kappa statistics.
Did the Review Present Results that are Ready for Clinical Application?
The review presented the effect of exercise as improvement in walking time (in minutes) and walking distance (in meters). Results are intuitive and easy to communicate to patients. A plain language summary is also provided for patients.
Did the Review Address Confidence in Estimates of Effect?
The review described the risk of bias for every trial and reported on measures of heterogeneity and precision. Data to estimate the confidence in each estimate are available.

This systematic review better fulfils credibility criteria and you decide to use it and proceed with rating the confidence in treatment effects.

Box 5. Second Judgment: Rate the Confidence in the Effect Estimates

	Pain free walking	**Amputation**
Effect size	Data from 8 trials (371 patients), exercise was associated with increased pain-free walking distance of 82.29 meters (95% CI 71.86 to 92.72)	Data from 1 trial (177 patients), relative risk is 0.20 (0.01, 4.15)
How Serious is the Risk of Bias in the Body of Evidence?	About half of the trials had unclear randomization methods and allocation concealment, and 75% did not blind outcome assessors (blinding patients and clinicians is not possible). You rate down.	The one trial had loss to follow up rate of 15% which is much higher than the event rate (1%). You rate down.
Do the Results Directly Apply to My Patient?	The review inclusion criteria fit your patient fairly well. The outcome is patient important.	The review inclusion criteria fit your patient fairly well. The outcome is patient important.
Are the Results Consistent Across Studies?	There was moderate heterogeneity (I^2=48%) with a heterogeneity p=0.06. Point estimates of all the trials favor exercise. You do not rate down for inconsistency	Only one study reported this outcome.

How Precise Are the Results?	The absolute effect has a narrow confidence interval favouring exercise and recommending this treatment will be the same regardless of which boundary represents the truth (71.86 or 92.72 meters).	The boundaries of CI are consistent with substantial harm and benefit. You rate down two levels for imprecision.
Is There Concern About Reporting Bias?	Review authors couldn't assess publication bias (only 8 trials included). No funnel plot or statistical evaluation of this bias.	Only one study reported this outcome.
Are There Reasons to Increase the Confidence Rating?	None.	None.
Confidence in estimates	Moderate	Very low

Conclusion of the scenario

You advise the patient that it is unclear whether exercise therapy reduces the risk of amputation. In general, amputation is rare in patient with intermittent claudication and occurs mostly in patients with critical limb ischemia. However; you are moderately confident that exercise therapy improves pain free walking by a substantial distance. You recommend pursuing a supervised exercise program and the patient agrees.

Conclusion

Applying the results of a systematic review and meta-analysis includes first judging the credibility of the methods of the systematic review and then determining confidence in the estimates of effect.

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Evidence-based Online Learning Course for Population and Public Health Nutrition contributes to competent practice

Lynda Corby

With the support of a grant from the Public Health Agency of Canada, Dietitians of Canada (DC) is leading an initiative to develop web-based bilingual (French and English) materials and tools focusing on population and public health needs assessment with regards to nutrition. These resources will support university and practicum students and new public health practitioners in Canada in gaining consistent entry-level knowledge and skills in public/population health nutrition as identified in the Integrated Competencies on Dietetic Education and Practice (ICDEPs) http://www.pdep.ca/files/Final_ICDEP_April_2013.pdf .

Our group conducted an online needs assessment between June and August of 2013 to gather input

from dietetic educators and practitioners on the kinds of web-based resources and tools that would facilitate core training consistent with the ICDEPs. Over 90% of academic/internship programs (32 of 35) and 98 community-based practitioners/preceptors responded to our survey, providing a nation-wide cross section of feedback to help shape tool development.

An evaluation framework is an integral component of our initiative, including a project logic model with process and outcome indicators and defined data sources. We formed a National Advisory Committee to guide the project, with representatives chosen from settings for which web-based learning tools were to be offered. Three volunteer Reference Groups comprised of dietitic students, educators and practitioners were recruited to peer-review drafts of all resource materials.

A set of six evidence-based, interactive, self-paced, bilingual online modules has been developed by an instructional design specialist. The modules centre on a real-life scenario in which a newly registered dietitian, Marie, works with community stakeholders to develop the knowledge and skills to plan, conduct, synthesize, organize and prioritize the findings from a community nutrition needs assessment. By working along with Marie and completing the interactivities in each module, learners will gain basic entry-to-practice knowledge and skills. Other learning supports include an integrated glossary of terms and links to additional reading material. Upon successfully completing an end-of-course exam, learners can print a certificate of completion.

Course registration provides access to the web-based modules, as well as a facilitators' guide, an off-line version of the course and a student workbook.

Find out more at www.dietitians.ca/ecourses
or contact Lynda Corby, Project Consultant at Lynda.corby@shaw.ca

Teaching GRADE (Grading of Recommendations Assessment, Development and Evaluation) to medical students

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Three years ago we incorporated the GRADE approach as a teaching tool for our internal medical students at the Buenos Aires University. For a period of four months every year, 5th year internal medicine students attended twice weekly 90-minutes sessions with a tutor knowledgeable in evidence based medicine. Every week students chose one to three medical foreground questions and individually searched for relevant evidence among the peer-reviewed literature.

In the first session of the week, students worked in small groups and analyzed the evidence they had found. They were guided by the tutor to complete the following tasks: 1) Identify patient-important outcomes for each clinical question, 2) Interpret the results (this involved calculating absolute risk differences from relative risks and base risks in the control group, when not available), 3) Determine the confidence in the estimate of effects (evaluation of directness, consistency, precision, risk of bias due to methodological flaws and publication bias), 4) Make a treatment recommendation considering patient's values and preferences.

During the second session of the week, the tutor performed the same analytical process for each clinical question, using a whiteboard and a computer presentation, based on the publications he considered most relevant. Results were openly discussed with the students. This process was repeated every week. After the four month period, students took a test in which they had to solve a clinical question constructing a recommendation, using evidence that was provided to them. At the end of each course, each group of students provided unstructured feedback about their experience with using the GRADE approach to inform clinical decision-making. Qualitative analysis of this information suggested that at the end of the

training period most of the students felt comfortable using the GRADE approach.

In order to quantify the skills that students' acquired through our GRADE course, we analyzed three cohorts of students (years 2012, 2013 and 2014). Two observers trained in the GRADE approach, independently and in duplicate, assessed several aspects of the student´s competence with a score of 1-5 (1: completely incorrect to 5: completely correct evaluation). The following items were evaluated: the assessment of risk of bias (RoB) due to methodological flaws, consistency (C), precision (P), directness (D), publication bias (Pb), the overall confidence in the results (Oa), the interpretation of the results (IR) and the construction of a recommendation (CR). Satisfactory competence (SC +) was considered with a threshold ≥ 4. We calculated the inter-rater agreement for each item using the kappa coefficient (k) . Forty one students and 82 evaluations were included. Overall SC ratings (+/-) were:

RoB = 66/16 (81%)	Pb = 70/12 (85%)
C = 71/11 (87%)	Oa = 66/16 (81%)
P = 65/17 (79%)	IR = 65/17 (79%)
D = 73/9 (89%)	CR = 66/16 (81%)

The inter-rater agreement was: RoB, k = 0.6 (good), C, k = 0.7 (good), P, k = 0.5 (moderate), D, k= 0.7 (good) Pb, k = 0.7 (good) Oa k= 0.6 (good) IR k = 0.5 (moderate) and CR, k = 0.5 (moderate).

Our experience suggests that teaching internal medicine residents to use the GRADE approach to inform clinical decision-making was feasible, effective and well received.

How To Find a Good Mentor?: Doubts and Evidence

Ramon Puchades

Academic and research medicine have some peculiarities compared to clinical medicine. One of these peculiarities is to find a mentor or a tutor who can guide you in the process of developing your faculties and personal skills. In this process, especially when you are a beginner, a good mentor can accelerate the process (if you have positive attitudes, it means: vocation, workability, humility and modesty e.g.). How to find a good mentor is not a minor aspect. It is a key point in your career. Based on experience of colleagues in different disciplines, we could summary that there are three ways to find a mentor:

-Passive: you accept a mentor because he/she is your chief or has some grade of hierarchy for you

-Active: a principal investigator that you don´t know is searching for a predoctoral candidate

-Proactive: a doctor that you know (with which you have an affinity) and that you think it is the indicate person (independently of speciality, age and academic grade)

In the three cases doubts can surround your election, but commonly in the real world this situation is unusual and you don´t have the option to select. An active search of mentoring, probably, is the uncommon way to find it. Then, usually procrastination experiences between colleagues are frequents: not write the articles and not complete the Doctoral Thesis for example. One of the things that can influence to err in the mentor selection is ingenuity and excessive expectations. Ingenuity related to idealize academic world (forgetting strong competition and unrecognized work) and expectations (non rational ambition and influence to reach a stable job)

In this scenario a conflict between academic merits and personal capacities is a gap that we need to resolve. To develop specific clinical research programs including mentors previously evaluated by protégés could improve this relationship and to diminish the procrastination. Moreover, a change from passive to proactive attitude can be more risky, but probably could increase the likelihood ratio of success.

Within this uncertainty, a huge amount of these doubts can be solved with the Clinical Trialist Rounds[1-4] published by Dr Sackett and Dr Straus in the Clinical Trials journal. They include a series in relation to mentoring. This series of four articles explains in detail the key points of the topic. The first article[1] underscore the importance of mentoring for clinical researchers, summarizing the

evidence and responding to the question of why is better to get mentored for a clinical researcher. The second and third articles[2,3] describe how the mentoring process can be effective. To achieve this effectiveness, they recommend that the mentorship programme should be explicit, it means at the first contact (online or personal). Moreover, they define a step approach to incorporate as a mentee and an 'active listening'-'reiterate and review' for mentors. The fourth article[4] deepen when to determine if you are ready to be a mentor. Through a systematic review, identified several qualities (personal attributes, behaviours toward mentees, and professional stature) of really effective mentors. In consequence, these articles provide the basis and evidence of how to deal with this complicated topic from a critical literature review and the clinical teaching experience. It´s important to remark that the mutual goal of this process, as described Dr Sackett and Dr Straus in the Clinical Trialist Rounds[3], is your development as an independent thinker.

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How to use a Subgroup Analysis

Xin Sun, Gordon Guyatt

In systematic reviews and randomized controlled trials (RCTs), researchers often use subgroup analyses to investigate whether treatment effects differ across patient populations (e.g. younger vs. older) or intervention options (e.g. higher vs. lower dose). Such analyses offer an opportunity for clinicians to individualize treatment and improve care. However, findings from subgroup analyses are often misleading[(1)]. Users of medical literature face challenges in distinguishing real from spurious subgroup findings. Here, we present general issues and criteria for clinicians to assess credibility of subgroup findings.

General Issues about Subgroup Analysis

There are several important premises for the conduct and interpretation of subgroup analysis. First, one should always use relative measures for conducting subgroup analysis, because relative effects (e.g. risk ratio, odds ratio, hazard ratio) generally remain consistent across subgroups, whereas absolute effects (e.g. absolute risk reduction or risk difference) have far greater variability. Second, we are usually interested in subgroups identified at the start – rather than at the interim – of a study; subgroups identified after randomization in an RCT risk losing the balance in prognostic factors between treatment groups achieved at randomization. Third, one should always remain skeptical about subgroup findings from studies at high risk of bias. Fourth, rather than considering the credibility of subgroup analysis as a "yes" or "no" decision, it is preferable to consider a continuum ranging from "very unlikely" to "highly plausible". The more criteria a particular subgroup analysis meets, the more likely the effect is real.

Criteria for Assessing Subgroup Credibility

Different sets of criteria[(2,3)] – designed for varying purposes – are available for assessing credibility of subgroup analysis. We discuss a limited number of critical criteria that we believe are crucial for clinicians to consider:

√ ***Can chance explain the subgroup difference?***

Investigators sometimes claim subgroup effects when results reach conventional levels of significance in one subgroup but not another. This represents mistaken reasoning. The real issue of interest in subgroup analysis is identifying whether treatment effects differ among subgroups. Various statistical tests are available to examine the likelihood that the null hypothesis – that treatment effects are actually the same among subgroups – is false. Such statistical tests are usually called a test for interaction. The smaller the p-value associated with the test of interaction, the less likely that chance explains an apparent subgroup effect, and the more likely the subgroup effect is real.

√ ***Was the subgroup hypothesis specified a priori?*** Post hoc subgroup analyses are much more likely to be due to the play of chance. Researchers may not report subgroup analyses that fail to yield significant subgroup findings, and report only those that do. In contrast, subgroup analyses based on hypotheses specified a priori – ideally with citation of a previously accessible protocol documenting the a priori specification – are more credible.

√ ***Was the subgroup difference one of a small number of subgroup hypotheses tested?*** Trial researchers or systematic reviewers may often conduct a number of subgroup analyses in their studies. The possibility of false positive findings increases with the number of tests, thus decreasing the credibility of subgroup analysis. A practical rule is that users should become alarmed when more than seven subgroup analyses are conducted.

√ **Is the subgroup difference consistent across studies?** Presence of a subgroup difference that is consistent across studies (e.g. trials) addressing the same research question enhances confidence in the effect; failure to demonstrate consistency diminishes credibility. Examining consistency of subgroup effect often requires systematic collection of individual studies. A systematic review of such studies offers a great opportunity for assessing consistency of subgroup differences across studies.

√ ***Is there a strong preexisting biological rationale supporting the apparent subgroup effect?*** The credibility of subgroup analysis increases if a strong preexisting biological rationale exists to support an apparent subgroup difference. Absence of such information weakens credibility of a subgroup effect.

√ ***Is the subgroup difference suggested by comparisons within rather than between studies?*** In contrast to individual trials, subgroup analyses in systematic reviews are derived from multiple studies, in which characteristics such as patient population, interventions, and potentially outcome measures usually differ across trials. Therefore, an apparent subgroup effect may be a result of the subgroup hypothesis under testing or a consequence of other varying characteristics. An exception is a subgroup analyses derived from individual participant data meta-analysis (IPDMA), in which comparison of treatment effect between subgroups is available within studies.

To illustrate the application of these criteria, we present two subgroup examples from the SPRINT study, a randomized trial of 1319 patients with open or closed fractures of the tibial shaft that underwent intramedullary nailing. The main result of the primary outcome – a composite of reoperations to promote healing, infection, or preserve the limb within 1 year of follow-up – was not statistically significant (RR 0.92, 95%CI 0.74 to 1.14). We conducted five pre-specified subgroup analyses on the basis of strong biological rationale and evidence from previous studies, and found that treatment effects differed significantly between open and closed fractures (test for interaction, p = 0.011; open fractures [RR 1.27, 95%CI 0.91 to 1.78; closed fractures [RR 0.67, 95%CI 0.47 to 0.96). Although results were not consistent across studies, chance was an unlikely explanation, the hypothesis was one of a small number of a priori hypotheses with a pre-specified direction and a strong biological rational and we therefore judged the subgroup effect as highly credible. In contrast, we conducted seven additional post hoc subgroup analyses; one suggested that treatment effects differed between current smokers compared with nonsmokers or former smokers (interaction p = 0.0013, current smoking [RR 1.56, 95%CI 1.04 to 2.36; non-smoking or ever-smoking [RR 0.68, 95%CI 0.50 to 0.92). Despite a significant test of interaction, the failure to meet criteria of an a priori hypothesis with a specified direction and a plausible biological rationale makes the credibility of this subgroup finding very low.

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An Evidence-based Practice Faculty Development Program

Viju John, Gina Lowell and Jisu Kim

We have been teaching third year medical students to formulate foreground questions (ask), search the literature to find appropriate articles to answer their questions (acquire), critically appraise these articles and apply the results to patient care. Although they have learned these skills, Evidence Based Medicine (EBM) has not been consistently modeled clinically. Barriers to practicing EBM cited in the literature include lack of time, EBM skills and availability of evidence.

We developed a five month faculty development course based on the McMaster University Evidence Based Clinical Practice (EBCP) Workshop to help attending physicians practice and teach EBM. We present material using Power Point, the Rush library website, the whiteboard and handouts. Participants formulate foreground questions about clinically relevant scenarios and learn literature search strategies from our educational librarian. The topic and objectives for each of the 9 sessions are listed in the table below.

Session	Objectives
Overview of EBM/ EBCP	1. Understand what evidence based practice is. 2. Discuss appropriate study designs to answer different types of clinical questions.
Formulating a PICO Question and Performing a Literature Search	1. Formulate answerable clinical questions. 2. Perform a literature search to find appropriate articles to answer clinical questions.
Critical Appraisal of Diagnostic Study	1. Critically appraise a diagnostic study. 2. Explain and calculate sensitivity, specificity, positive predictive value, negative predictive value, likelihood ratio, pretest and posttest probabilities and odds.
Critical Appraisal of Exposure Study	1. Understand the various study designs that assess exposure risk. 2. Critically appraise an exposure study. 3. Explain and calculate relevant measures of association.
Critical Appraisal of Prognosis Study	1. Critically appraise a prognosis study. 2. Explain relevant measures of prognosis.
Critical Appraisal of Screening Study	1. Critically appraise a screening study.
Critical Appraisal of Therapeutic Study: Session 1	1. Critically appraise a therapeutic study. 2. Explain and calculate absolute risk reduction, relative risk reduction, number needed to treat, relative risk and odds ratio.
Critical Appraisal of Therapeutic Study: Session 2	1. Differentiate between a noninferiority study and a superiority study. 2. Critically appraise a meta-analysis of therapeutic studies.
Communicating Evidence to Patients	1. Communicate evidence to patients.

The course is offered twice a year to small groups of about ten attending faculty from General Internal Medicine, Hospital Medicine and Pediatrics. Twenty clinicians are participating in the inaugural courses in 2014-2015 Sessions are scheduled every two to three weeks for 1.5 hours, enabling participants to attend sessions without missing clinical activities. Participants can make up missed sessions since the course is offered twice a year. Participants have been thoughtful, enthusiastic and interactive.

We plan to evaluate the success of the program using the validated Fresno Questionnaire.[1-2] We administered the questionnaire to all interested faculty before the first course and plan to administer it again one month after

the first course before the second course starts. We will compare improvement in EBM knowledge and skills in the faculty who completed the course with those who have not yet taken the course. We hope to include attendings from other departments in future programs.

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The Guideline Development Tool for Guideline Aadaptation

Airton Stein, Helena Cramer,
Maria-Elisa Pazos, Pedro Chrispim,
Suzana Alves da Silva, Eddy Lang

Emerging health care systems face significant hurdles when developing clinical practice guidelines (CPGs) that are tailored to local circumstances. In response to their limited capacity to conduct systematic reviews and develop de novo CPGs adherent to current standards1 there has been a movement to adapt existing CPGs developed elsewhere. The risks of this approach are adopting recommendations that were developed using values, preferences and contextual factors that may or may not be generalizable to other health care systems. While ADAPTE and CAN-IMPLEMENT® offer helpful frameworks for guideline adaptation, there are no specific tools available to operationalize this task.

In August of 2014, a group of healthcare providers, researchers and administrators attending the implementation track of the 8th annual Evidence-Based Clinical Practice Workshop in Rio de Janeiro trialed the GRADE working group's Guideline Development Tool (GDT - www.guidelinedevelopment.org). Importing data from GRADE evidence profiles created for the American College of Chest Physicians (ACCP) Antithrombotic Guidelines on venous thromboembolism prophylaxis for non-surgical patients, workshop participants used the evidence to recommendations interface available through the GDT. This process included consideration of the importance of the clinical problem addressed, the balance of risks and benefits, patient values and preferences, resource considerations, practicality and feasibility.

The GDT interface encourages recording justification of each decision to optimize transparency. The recommendations adapted by the Brazilian panel differed somewhat from ACCP guidance for weak/conditional recommendations, highlighting the utility of the tool. For example, in a theoretical exercise involving patient representation and the experience of family members of workshop participants, mechanical prophylaxis with compression stockings was deemed to be particularly challenging and uncomfortable in tropical climates and hence a conflict with patient values and preferences in light of an alternative. As a result a weak recommendation in favour was converted to a weak recommendation against by the Workshop panel. Our initial experiences suggest that the GDT tool is an easy to use and valuable asset for those in need of guideline adaptation.

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Guidelines Adaptation and Implementation in Developing Countries

Maria Elisa Cabanelas Pazos, Airton Stein

There are many barriers involving the adaptation and implementation of clinical practice guidelines in developing countries, such as Brazil. Most of them relate to knowledge gaps in evidence based medicine for clinical and management decision support. Many guidelines developed in Brazil are not methodologically rigorous and score poorly with the AGREE II instrument. Adapting high quality guidelines for clinical practice in Brazil is a potential solution; however, some groups that undertake this process simply translate guidelines into Portuguese. Implementation is treated as a bureaucratic process. In general, outcomes evaluation is not undertaken.

The primary barriers to adapting and implementing guidelines for use in Brazil are:

- Lack of standards for developing trustworthy guidelines. There is a large variability of methodologies applied and some are mislabelledd as “evidence based” when they are not.
- Lack of knowledge in scientific methodology. In Brazil there are few professionals with in depth knowledge on guideline development methodology. In general, expert physicians work part time to develop guidelines.
- Low capacity for critical analyses of scientific literature. Confidence in publications is usually based on credibility of the developer institution and journal that has published the article. The limitations in critical appraisal skills results in increased vulnerability to conflict of interest.
- Brazilian health managers do not, in general, recognize that use of high quality guidelines can improve healthcare outcomes and reduce costs. As a result, they are often unwilling to invest resources to encourage guideline implementation.

In order to provide high quality guidelines and successful implementations – including knowledge translation for health professionals and patients - developing countries need political support and resources. Although controversial and poorly supported by evidence, it is possible that payment models considering performance may encourage implementation of evidence based guidelines.

Therefore, there is a need to support methods for efficient guideline adaptation and other sources of evidence syntheses. GRADEpro (http://www.guidelinedevelopment.org/) can facilitate customizing an existing guideline to suit the local context using GRADE methodology.

The Iberoamerican Guideline Network (http://www.iberoamericanagpc.net/), along with the Guideline International Network, facilitates communication and exchange within the iberoamerican region. Goals of the organizations include facilitating guideline adaptation and validating tools for implementation of guidelines in the clinical context. These activities may help to overcome barriers to adaptation and dissemination of guidelines in the developing countries of Central and South America.

There are organizational and provider-specific obstacles that interfere with implementation success. There are also factors intrinsic to the guideline such as ambiguity, inconsistency, and incompleteness that have contributed to implementation failure.

The implementation of clinical practice guidelines is not straightforward. There are several examples in the developed and developing world, in which failure to implement has resulted in substantial waste of time and resources.

Measures of successful implementation include improved adherence to guideline-prescribed processes of care and ultimately, improved relevant patient-important outcomes. A high quality implementation plan for adapted clinical practice guidelines in developing countries is essential.

Narrative Accompaniment to Optimize Interpretation of GRADE Evidence Profiles

Russell Griffin, Bill Montgomery, Peter Morley, Jerry Nolan, Mary Fran Hazinski, Eddy Lang

The International Liaison Committee on Resuscitation (ILCOR) is currently undertaking a scientific review that will be one of the largest to date using the GRADE approach. As part of a 5-year cycle, the ILCOR evaluation of science and treatment recommendations will shape the international care of patients in cardiac arrest and those in need of critical resuscitation. Organizations like the American Heart Association, the European Resuscitation Council, and Resuscitation Council of Asia use the ILCOR "International Consensus on CPR and ECC Science with Treatment Recommendations" (CoSTR) that are published simultaneously in Circulation and Resuscitation to inform council resuscitation guidelines that are tailored to regional considerations.

In previous publications the ILCOR consensus on science used standardized language to communicate the quality of evidence available to inform a specific clinical question framed in the PICO format (Patient, Intervention, Comparator, Outcome). An example of the 2010 CoSTR language summarizing the science is: One level of evidence (LOE) 4 study of in-hospital cardiac arrest patients showed that a chest compression rate >80/min was associated with higher rate of return of spontaneous circulation than compression rates <80/minute. In the 2010 ILCOR framework, prior to adoption of GRADE, LOE 4 designation represented studies without a control group (i.e. a case series) while LOE 1 evidence was informed by randomized controlled trials (RCTs) or meta-analyses of RCTs.

With the 2014-2015 transition to the GRADE approach, a new format will be used to summarize the quality of evidence which will be presented in evidence profiles (EPs). The EP is a table that summarizes the critical characteristics of each study reviewed, using separate rows for each outcome. This format requires interpretation by readers, which may present a barrier to uptake. To mitigate this issue, we suggest an accompanying narrative statement to describe each row of the EP (and, hence, the evidence for each outcome); for example: For the important outcome of return of spontaneous circulation we identified very low quality evidence from one observational study with 210 patients, downgraded further for imprecision, showing that compression rates > 80/min were associated with improved return of spontaneous circulation (RR = 1.3 95% CI 0.6 – 3.0).

While EPs provide invaluable summaries of the relevant evidence base that informs clinical guidance, we believe that an accompanying narrative summary will further ensure appropriate interpretation. ILCOR's use of a narrative assessment represents an innovation that may be useful to some guideline groups who use GRADE.

The ILCOR International Consensus on CPR and ECC Science with Treatment Recommendations will be published simultaneously in Circulation and Resuscitation during the fall of 2015.

Are Child Mental Health Services stuck in a Research-practice Gap?

John D. McLennan

The need to improve and expand mental health services, particularly for children, appears to be receiving increased attention from multiple sectors and, in some cases, is paired with increased funding. Unfortunately, it is unclear whether any of these expansion efforts are being shaped by empirical evidence. This despite (i) the identification of serious gaps in the evidence for effectiveness of typical treatment offered in child mental health services, and (ii) the continued generation of new empirical knowledge within the child mental health field that could inform service reform. While the research-practice gap in child mental health services is underpinned by many of the same factors as in other areas of health services, it does have some unique features that may substantially decrease the odds that the research-practice gap will be bridged. Three factors are considered in this article.

Comorbidity in child mental health, which is more the rule than the exception, may be one factor impeding advances in transferring research findings into practice. While extensive comorbidity in child mental health is thought to be in part an artefact of the leading current diagnostic systems, it is the current reality in the field. Unfortunately, much of the research field has examined the impact of interventions on isolated disorders. This has fuelled dismissal of empirical evidence by some practitioners under the rationale that evidence generated by such studies is not applicable to the complex comorbid patients seen in typical practice. Such sceptics may be interested in a recent randomized controlled trial (RCT) in which youth who received flexibly delivered components of different evidence-based interventions to address comorbid mental health disorders had better outcomes than those receiving usual care or established treatment protocols for single disorders (Weisz et al., 2012).

The lack of a lead professional body within child mental health may be a second potential contributing factor. There are many diverse players in child mental health without a single dominant group which might spearhead more rapid advances in the adoption of evidence-based practice. Clinical stakeholders include physicians (e.g., paediatricians and psychiatrists), nurses, psychologists and social workers, as well as para-professionals (e.g., facilitators of various parenting programs). However, whether a single lead professional body would prioritize and successfully championing a rise in evidence-based practice is an empirical question.

These varied actors who are providing child mental health services fall under multiple service systems that are funded by different agencies and government ministries. This may constitute a third unique and impeding factor. While some service and funding components fall under formal and traditional health services, there is typically a linked and/or separate formal mental health service system, which may have a linked and/or separate drug and alcohol abuse service system. A substantial additional component of child mental health services typically falls under social service ministries, with complex connections, overlaps, and separations from the health system. Significant additional components fall under the educational system, juvenile justice system, and, at times, a separate rehabilitation sector. While several components of this complex array fall under the public sector, a significant portion can be in the private sector including charitable, not-for-profit, and for-profit domains even within social welfare states. A more simplified service delivery and funded system may allow more specific targeted efforts to advance evidence-based practices throughout the system. This assertion may be speculative given the apparent absence of examples whereby simpler systems have successfully tied funding to expanded evidence-based practice.

While this complex arrangement may facilitate a richer and more diverse approach to child mental health difficulties which may, in some cases, benefit some children, an associated challenge may be slower than desirable adoption of evidence-based practices. In some situations, the belief that an intervention has evidence or labelling an intervention as evidence-based or effective may be adequate to move forward with intervention adoption within child mental health programming, whether or not the given intervention has these qualities (McLennan, 2010). Given the dispersal of responsibilities and what appears to be extensive autonomy with little oversight, there is a resulting great deficit in accountability for clinical outcomes in this field. At times the future looks bleak.

One approach forward in this complex setting, and offering some glimmer of hope, is the notion of implementing Measurement Feedback Systems (MFS) into our clinical services. Leonard Bickman, a prominent child mental health service researcher, has proposed that “mental health services for youth are unlikely to improve without a system of measurement that is administered frequently, is concurrent with treatment, and provides feedback” (p. 1114; Bickman, 2008). He and his research group have even provided preliminary evidence of the effectiveness of this approach based on a RCT field trial of MFS in child mental health (Bickman et al., 2011). While in need of replication, this early finding is encouraging. To be sure, there will be battles on what constitutes important outcomes and other associated issues, but if we can agree that we ought to focus some of our efforts on implementing informative outcome monitoring within our real-world services, there would be some

reason to be optimistic about the potential for child mental health services to bridge the research-practice gap.

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Improving Judicial Accountability: Providing EBM training to members of the Constitutional Supreme Court of Costa Rica.

Mario Tristan, Tjitske Vreugdenhil, Sigrid Morales, Cinthya Aguero, Leonardo Cubillos-Turriago, Roberto Iunes, Yuri Baidal

In Costa Rica, the Constitutional Court of the Supreme Court of Justice has ruled that the right to life, as recognized in the Constitution, is the cornerstone on which rests all fundamental rights of the Republic's inhabitants. One of the fundamental rights related to the constitutional right to life is the right to health and appropriate health care. Consequently, any refusal or delay in treatment provided by the National Health Service (NHS) may be considered a violation of this constitutional standard, making this issue a justiciable matter.

Similarly, other Latin American courts are holding health systems accountable for the inadequate realization of the individual's right to health. Patients, who feel that the NHS does not provide them appropriate or timely care, can submit their case for legal review.

Presently in Costa Rica, the Court bases judicial decisions on information provided by the patient's physicians, the staff from the NHS, and physicians engaged to consult to the courts. With a rising number of cases concerning access to new treatments, the Courts have increasingly recognized the need to base judgment not only on medical expert opinion, but on current scientific evidence as well. Accordingly, the Courts have begun to take steps to become familiar with the methods and tools of Evidence-Based Medicine (EBM).

At the request of the Court, SaluDerecho.net (a World Bank supported initiative) and the Cochrane Central America and Spanish Caribbean Branch provided in May and June 2014 an 80-hour course regarding EBM for 13 Constitutional Court lawyer-consultants and 4 judicial-physicians. They received a training in the basics of EBM, what evidence is and on how to search for it in databases and medical search engines such as PUBMED, the Cochrane Library and DynaMed using the PICO framework to formulate appropriate questions, how to appraise and interpret evidence.

At the end of course, using a recent court case, the participants demonstrated that they were able to identify current relevant evidence and incorporate this information in their legal decision.

It is worth noting, however, that magistrates and physicians may differ in valuing the evidence and weighing its relevance against arguments based on medical expertise or patients´ values. For physicians, to decide to prescribe a treatment or not, the strength of an effect is usually essential, whereas for magistrates any significant effect, however small, in favour of the requested treatment by the patient may be sufficient for them to advocate on behalf of the patient's request. In addition, while the NHS authorities consider cost-effectiveness relevant to make decisions on the choice of treatment, the Court does not consider arguments of costs in their decisions.

It remains to be seen if lawyer-consultants and magistrates will be able to incorporate EBM in their

daily work. In a systematic review of barriers to use of EBM by General Practitioners in several countries the following challenges were identified: (1) limited access to evidence, (2) lack of time and skills to search and appraise evidence, and (3) problems in assessing the applicability of the evidence (Zwolsman S et al, 2012). It seems likely that trained lawyer-consultants will encounter similar problems integrating EBM in their work. Therefore, the Cochrane Central America Centre will remain available to the courts for any questions and will participate in case discussions with the lawyers-consultants. Over the next two years, the impact of the EBM-training course will be evaluated assessing the use of scientific evidence in the judiciary decision-making processes in a sample of closed court cases.

As far as we are aware, Costa Rica is the first country to provide formal training in EBM to lawyer-consultants and judicial-physicians of a Constitutional Court. We are hopeful that this training will improve (judiciary) accountability in Costa Rica and consequently may help to increase the fairness of decisions made by the National Health Service.

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Time to Create Guidelines we can Trust, Use and Share

Per Olav Vandvik

Some problems with current guidelines

To succeed in evidence-based diagnosis and treatment at the point of care, health care personnel need access to the best current research evidence. One source, that has the added benefit of recommendations for clinical action, is trustworthy clinical practice guidelines. Most guidelines, however, suffer from methodological weaknesses (e.g., limitations in identification and assessment of research evidence, and in development of recommendations), suboptimal presentation formats and infrequent updating of content. New standards developed by the Institute of Medicine and the Guideline International Network and advanced systems for trustworthy guidelines (Grading of Recommendations Assessment, Development and Evaluation: GRADE) provide guidance for development of guidelines but also illuminate the demand for methodological competence, clinical expertise and time.

Equally important as providing trustworthy content in guidelines is achieving effective dissemination at the point of care and performing timely updates of content. One example, the 9th iteration of the American College of Chest Physicians Antithrombotic guidelines (AT9 hereafter) [(1)] , illustrates advances through rigorous use of the GRADE system and innovations related to management of conflict of interest and assessment of values and preferences. These guidelines include 600 recommendations and provide authoritative recommendations for antithrombotic therapy. Preparation of these guidelines required substantial time, methodological competence and clinical expertise with 128 international experts working for two years to update recommendations. Given the substantial amount of work required to develop such guidelines, facilitation of national and local adaptation of the recommendations to avoid unnecessary duplication becomes key. Moreover, the AT9 guidelines were published in lengthy PDF formats in the journal CHEST leaving them hard to find and efficiently use at the point of care.

Solutions through MAGIC

Our participation in the AT9 guidelines resulted provided the motivation to develop solutions to current problems with creating, disseminating and updating guidelines. Our work has been operationalized through the MAking GRADE the Irresistible Choice (MAGIC) research and innovation program and non-profit initiative (www.magicproject.org) [(2)] .

A key innovation in the MAGIC program is a web-based authoring- and publication-platform (MAGICapp) that allows parallel development and publication of guidelines on the web, in tablets and smartphones, as well as integration of guidelines into electronic health records. The MAGICapp also allows automated creation of decision aids linked to recommendations in the guidelines. Doctors and patients can use these decision aids in clinical consultations to create discussions and share knowledge about benefits and harms of treatment alternatives.

Figure 1 shows the conceptual framework in MAGIC. Importantly, the MAGICapp includes structured content of all guideline content in a database based on the PICO questions that underlie all recommendations. Structured guideline content facilitates not only the development and publication of the guidelines but also facilitates dynamic updates of the guidelines on a recommendation per recommendation basis once new evidence emerges.

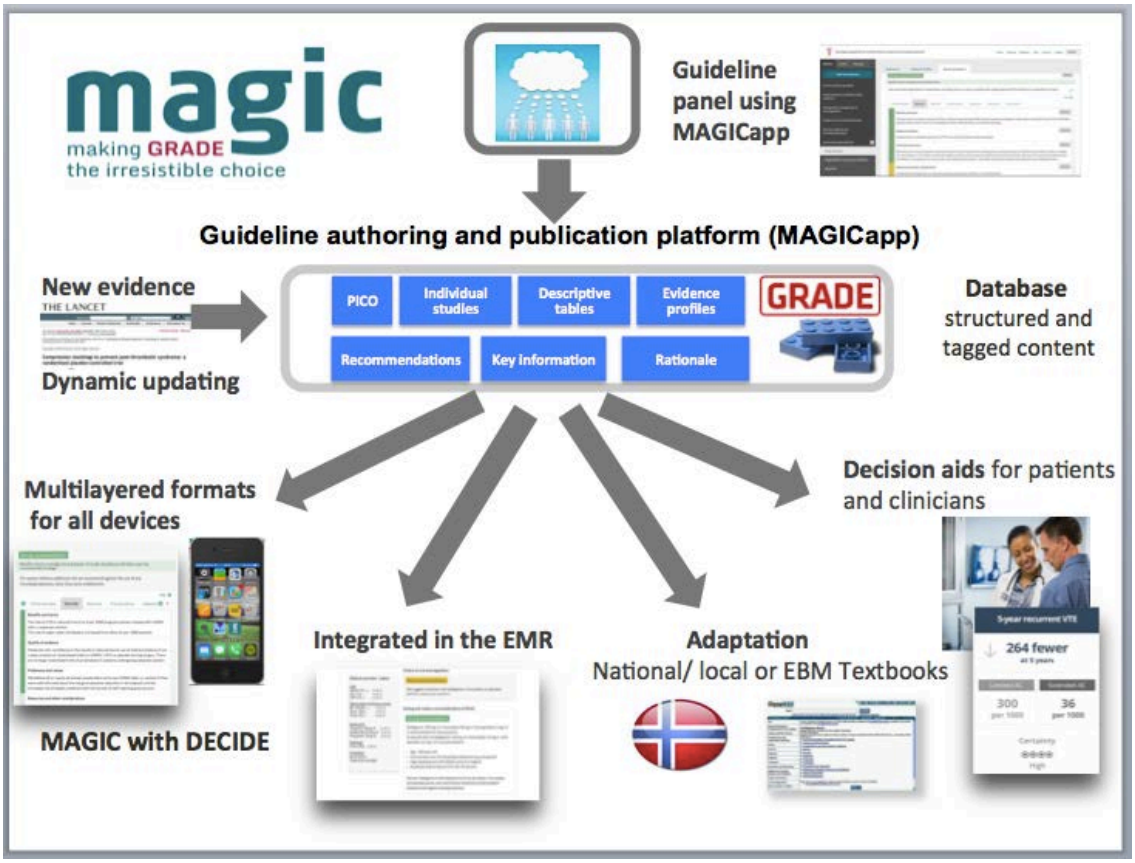

Figure 1: Authoring, publishing and updating guidelines and decision aids through MAGICapp

Example of what a guideline developed in MAGICapp looks like

Figure 2 shows how guideline users in Norway can access recommendations for thromboprophylaxis in orthopedic surgery on the web, in smartphones and tablet computers through the MAGICapp. This guideline constitutes an adapted and updated version of the AT9 guidelines developed by the Norwegian Society for Thrombosis and Hemostasis.[4] The guideline content is presented in what we call “top layer formats” that defines the most critical information clinicians need to apply recommendations in practice. This multilayered presentation format has been developed through extensive research in the DECIDE project and MAGIC program. [3]

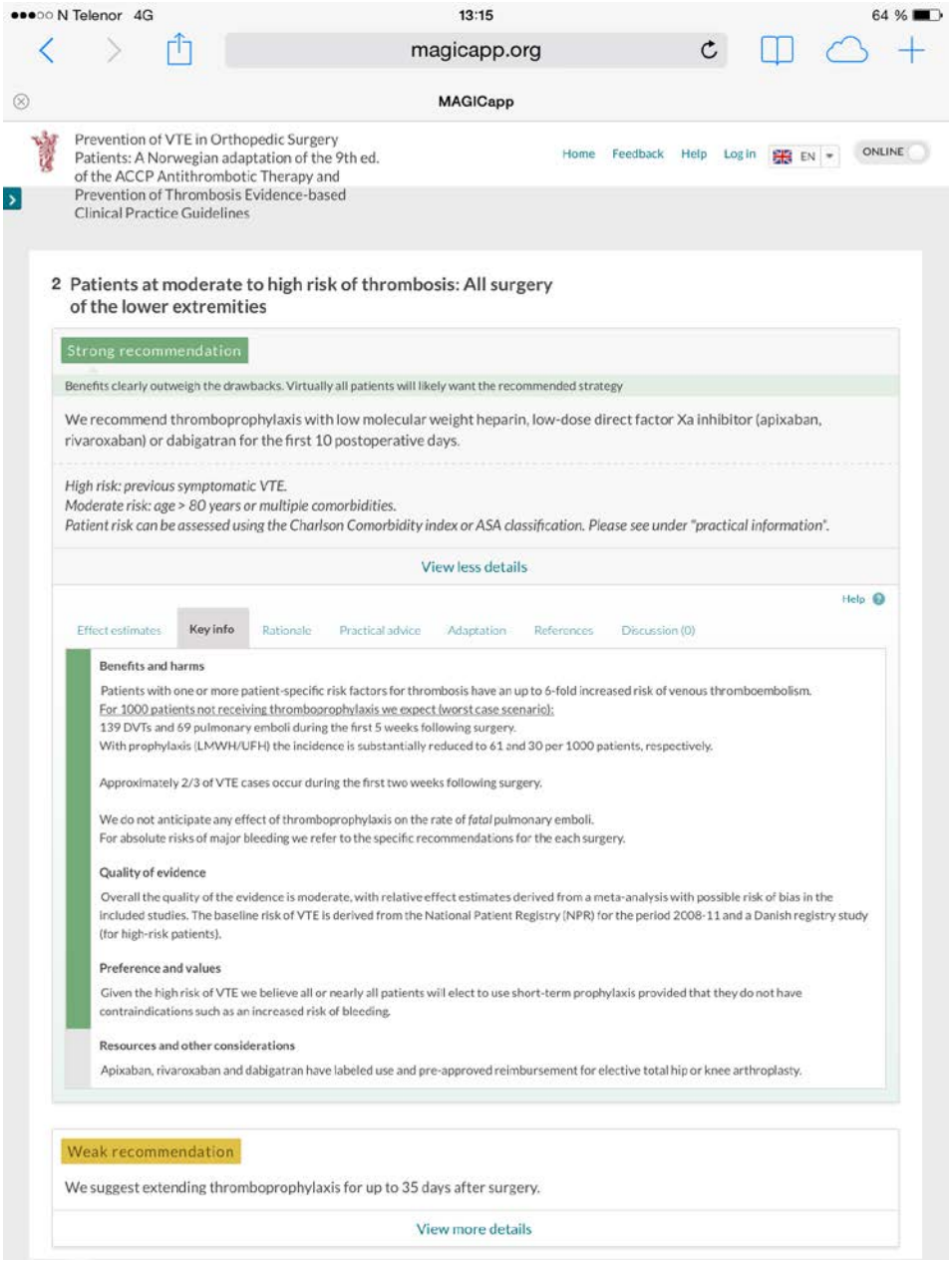

Figure 2: Top layer of guidelines, here showing key information available by clicking on one of the recommendations.

In this case, the Norwegian guideline panel issued a strong recommendation for thromboprophylaxis in the first 10 postoperative days and a weak recommendation for extended thromboprophylaxis in patients at moderate to high risk of thrombosis. The weak recommendation reflects that although the majority of patients would likely elect to use extended prophylaxis if they were well informed about the benefits and harms of therapy an appreciable minority would not. In this situation shared decision making is mandated, and the clinician could potentially create a discussion with the patient through the use of a decision aid on a tablet computer. The decision aid visualises anticipated benefits, harms and practical consequences of treatment alternatives.

What next for MAGIC?

The MAGICapp (www.magicapp.org) is available for use for organizations charged with development of guidelines. We are now - in addition - expanding our scope to include the development of multilayered

evidence summaries in the context of trustworthy systematic reviews. Indeed, it is the evidence from systematic reviews that informs the decision aids that facilitate shared decision making in individual patient care. We welcome you to test MAGICapp and provide feedback to further improve functionality of the authoring process and publication outputs, to the benefit of clinicians and patients at the point of care.

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Propensity Matching in Observational Studies

Samuel A. Berkman

Randomized clinical trials are considered to be at the top of the hierarchy of clinical studies for questions of therapy or prevention because they minimize both open and hidden sources of bias through the process of randomization.

However prospective observational studies, such as those done through a registry or other large prospectively accumulated database, may sometimes carry some advantages over randomized trials. For example, they tend to follow a larger number of patients over longer periods of time and produce results that are more generalizable to real world patients due to less rigid exclusion criteria. In addition, prospective observational studies can detect rare side effects of medication due to the larger patient population and longer follow up. However, there are bias related issues with such studies in that that one cannot be sure that the two groups are prognostically balanced from the start, as they would in a randomized trial. It is therefore uncertain whether the results observed in these observational studies are due to initial differences between groups, clinicians' knowledge of prognostic factors which could lead to treatment selection bias, or the actually treatment being evaluated.

There are two main ways of controlling for prognostic imbalance in the absence of randomization. One is through regression analysis and another is through propensity matching.(1) With regression analysis investigators examine the relationship between known prognostic factors otherwise known as covariates and the outcome of interest. For example, if one studied a group of 500 people who are 70 years old and placed them on a lipid lowering medication to improve their survival at age 80, one would have to control for the influence of several other measurable prognostic variables that would influence their survival over the ten-year period aside from lipid levels.

In order to isolate the effect of lipid lowering medication investigators have to perform a regression analysis using a mathematical formula to control for the effect of blood pressure, diabetes, BMI and other factors, which, if not be evenly balanced in both groups, could spuriously affect subsequent survival.

In a propensity-matched study, investigators also compare two groups receiving different treatments, but this type of study focuses on the relationship

between prognostic variables and the assignment of patients to treatment or control group. This strategy uses propensity scores to reconstruct a situation as similar as possible to random assignment to treatment. Regression and propensity matching have the same goal of attempting to ensure that observed results can be attributed mainly to the treatment being tested and not the composition of the two groups. In observational studies the patients allocated to treatments by their doctors based on clinical judgment, usually based on prognostic factors and not through a randomization process therefore one has to make sure the two groups are balanced for known prognostic factors aside from the treatment being tested.

An example of a propensity-matched study involved the comparison of anticoagulation alone versus catheter directed thrombolysis plus anticoagulation in the treatment of proximal deep venous thrombosis. This controversial question has drawn different recommendations from the American College of cardiology, which favors catheter directed thrombolysis in proximal deep venous thrombosis (DVT) and the American College of chest physicians, which recommends anticoagulation. A recent observational study compared two groups of patient with proximal deep venous thrombosis and found that the group, which received catheter directed thrombolysis despite having comparable survival to anticoagulation alone treated patients, were at increased risk of major bleeding, blood transfusion, pulmonary embolism, intracranial hemorrhage and vena cava filter placement. In addition, they had longer hospital stays and higher hospital charges.(2)

There were 3649 patients who received catheter-associated thrombolysis and 86,969 from the database who received anticoagulation alone. The authors then performed propensity matching. They calculated the probability of receiving the catheter directed thrombolysis – i.e. the propensity score – as predicted by the following factors: age, sex, race, whether the clot involved the inferior vena cava, smoking status, diagnosis of thrombophilia, history of coronary artery disease, cancer, history of DVT, history of stroke and each center's experience in catheter directed thrombolysis. Investigators matched patients on their propensity score to receive the intervention, which resulted in 3594 well-matched patients in each group, from the initial sample. In other words, they assembled two groups, which were as comparable as possible, except for the allocation to different treatment arms.

However, despite all of the above, one problem is that only these known factors could be included in the matching and, as in a conventional regression analysis, unknown factors could result in residual bias. For example, people who have catheter-associated thrombolysis frequently have stents placed and may thus be on aspirin. This may increase the bleeding risk, and could have contributed to the increased bleeding observed in the catheter directed group. However, neither the conventional adjustment nor propensity matching controlled for aspirin use, as the authors did not have access to medication information from the database.

These limitations highlight why randomize trials can result in more trustworthy estimates of effects that even well-conducted propensity-matched observational studies. A randomized trial called the ATTRACT trial is in progress to try to definitively answer this question.

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Innovative Process gathers Citizens' Informed Judgments about How to Address Health-System Challenges

John Lavis, Sue Johnston, Ileana Ciurea

The McMaster Health Forum has implemented an innovative method for engaging citizens in discussions about how to address pressing health-

system challenges. This process attempts to identify the values and preferences that underpin citizens' informed judgments and that can inform government decisions about how to strengthen health systems and how to get the right mix of cost-effective programs, services and drugs to those who need them.

Key to this process is the formation of an issue-specific citizen panel that brings together a diverse group of people who share their views and experiences on an issue, and learn from research evidence and the views of others.

The process begins with the selection of a high-priority health-system challenge that government or other agencies are facing. A steering committee of key stakeholders, including citizen representatives, is established to guide the process leading up to the one-day panel discussion.

Interviews are conducted with 15 to 20 key informants to gather insights on the underlying problem and its causes, options for addressing it, and key implementation considerations. Searches of research databases are performed to find systematic reviews and other types of research evidence that address any of these domains.

The findings from the literature review are summarized into a citizen brief written in consumer-friendly language that outlines the problem, options and implementation considerations. The brief is circulated to participants prior to the panel discussion, so they can be fully informed about the complexities of the issue before they come to the table to share their own views and experiences.

Each citizen panels is composed of approximately 14 citizens likely to be affected directly (e.g., patients and caregivers) or indirectly (e.g., tax payers) by future decisions regarding the issue under discussion. Participants for the panels are selected to ensure diversity from ethnocultural, socioeconomic and other perspectives and, depending on the desired focus, to ensure local, provincial or national balance.

To date, the Forum has held one or more citizen panels on each of the following topics: (1) improving end-of-life communication and decision-making; (2) improving access to palliative care; (3) care and support for people with multiple chronic conditions; (4) meeting the future home and community care needs of older adults; and (5) improving the delivery of complex cancer surgeries. Future topics of panels include care and support for informal and family caregivers, sharing health information with older adults using online resources, and nutritional risks for older adults.

Following each panel discussion, a summary of the proceedings is prepared that outlines the views and experiences shared by participants, and suggestions for taking action to address the particular challenge. The citizen briefs that inform the panels, and the panel summaries, are available to governments, healthcare organizations and the public through the Products page on the Forum's website.

The findings from citizen panels have been used to directly inform the work of key healthcare stakeholders, such as the Ontario and Canadian medical associations, with their work on improving end-of-life communication, decision-making and care. The entire process is also being continuously evaluated – through a combination of survey-based formative and summative evaluations and follow-up interviews -- so we can learn in real-time how best to systematically solicit the values and preferences of citizens about complex health-system challenges.

Taking stock of Systematic Reviews on teaching Evidence-based Health Care(EBHC): Overview of Systematic Reviews

Taryn Young, Anke Rohwer,
Jimmy Volmink, Mike Clarke

Introduction

We used systematic approaches to gather, evaluate and organise systematic review-level evidence on teaching evidence-based health care (EBHC), taking into consideration factors such as type of teaching and target audience, in order to improve access to the evidence and to inform EBHC teaching approaches.

Methods
Systematic reviews which evaluated educational interventions for teaching EBHC compared to no intervention or a different strategy were eligible. Searches were conducted in April 2013 in seven databases with no language restrictions. Two reviewers independently selected reviews, extracted data and evaluated methodological quality using the 'assessment of multiple systematic reviews' (AMSTAR) instrument. The effects of strategies to teach EBHC were compared.

Results
Sixteen completed systematic reviews had evaluated different educational interventions of varying duration, frequency and format to teach various components of EBHC. Outcome assessment tools varied within and between these reviews.

The median AMSTAR score was 5 (range 3 to 10 out of a possible maximum of 11). Aspects which scored poorly included lack of a comprehensive search, not providing lists of both included and excluded studies, inappropriate methods to combine studies, not using scientific quality appropriately in formulating conclusions, not assessing publication bias and not declaring conflicts of interest. Sometimes, AMSTAR items were not reported in the review and were assessed as 'unclear'.

Collectively, 171 studies were included in the reviews but these relate to a total of only 81 separate studies, of which 37 are included in more than one review. We therefore also examined the findings of the individual studies in an effort to organize and present a clear picture of the review level findings, while avoiding double counting of studies, which would have given extra weight to those that had been used in more than one review.

The evidence showed that multifaceted, clinically integrated interventions, with assessment, led to improvements in knowledge, skills and attitudes. These interventions improved critical appraisal skills and integration of results into decisions, and improved knowledge, skills, attitudes and behaviour among practicing health professionals.

Conclusions
Teaching and learning strategies to enhance EBHC competencies should consider implementing multifaceted clinically integrated approaches. Future studies and systematic reviews should avoid unnecessary duplication, and focus on minimum components for multifaceted interventions, assessment of EBHC knowledge, attitude, skills and behaviour in the medium to long term using validated assessment tools, and how best to implement these interventions.

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SOURCE Evidence-based Surgery Program Update

Achilles Thoma

The Surgical Outcomes Research Centre (SOURCE, McMaster University) Evidence-based Surgery (EBS) Working group continues to develop its "Users' Guides to the Surgical Literature" article series that is being published in the Canadian Journal of Surgery (CJS). Each article is prefaced with a surgical scenario, and the series is intended to educate surgeons and residents regarding how to find, assess and incorporate evidence from the surgical literature. Currently 15 articles in this series have been published in CJS and 2 are in preparation: (visit www.cma.ca/cjs to obtain series articles for free).

List of manuscripts currently in preparation:

1. Thoma A et al. Users' Guide to the Surgical Literature: How to Conduct a High Quality Literature Search
2. Thoma A et al. User's Guide to the Surgical Literature: How to Appraise an Article Evaluating Harm

EBS Workshops for McMaster Faculty- Hamilton, ON, Canada
SOURCE has also developed an interactive EBS Workshop based on the article series. The workshop consists of small group tutorials led by trained surgeon tutors addressing the various topics covered in the EBS articles (tutors: Dr. Achilles Thoma, Dr. Luis Braga, Dr. Michelle Ghert and Dr. Forough Farrokhyar). The most recent workshop was held in February 2014 and addressed the topic of clinical practice guidelines in surgery. Over 20 surgeon faculty registered for this half-day workshop, which was accredited by The Royal College of Physicians and Surgeons of Canada.

3rd Annual EBS Workshop for Surgeons- King Faisal Specialists Hospital & Research Center, Jeddah, Saudi Arabia
SOURCE was invited for the third consecutive year to organize a 3-day workshop (April 22-24, 2014) regarding EBS principles, attracting over 50 surgeons, surgical residents and research students from across the Middle East. This workshop was conducted in collaboration with King Faisal Specialist Hospital and Research Centre (KFSH&RC) in Jeddah, Saudi Arabia. The workshop was led by Dr. Achilleas Thoma, Director of SOURCE and co-tutored by Dr. Forough Farrokhyar and Dr. Charles H. Goldsmith.

The topics presented during the 3-day workshop included randomized controlled trials, confidence intervals, systematic review & meta-analysis, health-related quality of life, economic analysis and clinical practice guidelines. Workshop tutors facilitated small groups encouraging an interactive, problem based learning format.

For more information about SOURCE and the EBS workshops, visit their website:
www.fhs.mcmaster.ca/source/ or email Manraj Kaur at kaurmn@mcmaster.ca.

McMaster Optimal Aging Portal
(http://www.mcmasteroptimalaging.org/)

Brian Haynes on behalf of the Portal Team[1]

As we age, we aim to move through life's stages with health, strength and vitality. Optimal aging results from enhancing resilience, management of health conditions and adapting to life's stresses and challenges with confidence. It involves mitigating potential health risks and identifying strategies to move ahead with the help of trusted information. Optimal aging means remaining as healthy, active and engaged as possible for as long as possible as we age.

The McMaster Optimal Aging Portal, officially launched on National Seniors Day, October 1, 2014, is a continuously updated website (http://www.mcmasteroptimalaging.org/) that shares trustworthy and understandable information about optimal aging and the management of health conditions experienced by older adults. Individuals interested in optimal aging can personalize the way they use the site to learn about new information as it becomes available and hear what experts think about important issues. The site plans to be a trusted voice on optimal aging and has sections that are designed for different audiences, including citizens (older adults and caregivers), clinicians, public health professionals and policy makers.

The Portal includes evidence-rated information from a number of established resources. The McMaster Premium Literature Service (McMaster PLUS;

http://hiru.mcmaster.ca/hiru/HIRU_McMaster_PLUS_projects.aspx) provides age-relevant, quality-rated, original and review articles on the nature and management of health disorders; Health Evidence (http://healthevidence.ca) provides quality-rated systematic reviews concerning health promotion and disease prevention; and Health Systems Evidence
(http://www.mcmasterhealthforum.org/hse/)
provides quality-rated systematic reviews and economic evaluations about how to strengthen health systems and how to get cost-effective programs, services and drugs to those who need them.

The Portal contains three types of content prepared specifically for citizens: 1) Evidence Summaries (key messages from scientific research that's ready to be acted on); 2) Web Products (ratings that tell you whether free resources on the internet are based on scientific research); and 3) Blog Posts (expert views on what the scientific research on a topic actually means and why good science matters).

Thus, the Portal provides

- easy access to evidence-based information and expert opinions about how to stay healthy, active and engaged as we grow older,
- the best available evidence concerning the management of health problems as they arise,
- content designed specifically to inform citizens, clinicians, public health professionals and policymakers, and
- access to customizable email alerts on topics of interest.

We invite your use, comments, and dissemination of the Optimal Aging Portal.

1 Maureen Dobbins, Brian Haynes, John Lavis, Anthony Levinson, Parminder Raina, McMaster University. We gratefully acknowledge the generous donation by Suzanne Labarge to create the Labarge Optimal Aging Initiative.

Online Learning Resources from the National Collaborating Centre for Methods and Tools An Effective way to Promote and Support Skill Development in Evidence-informed Practice

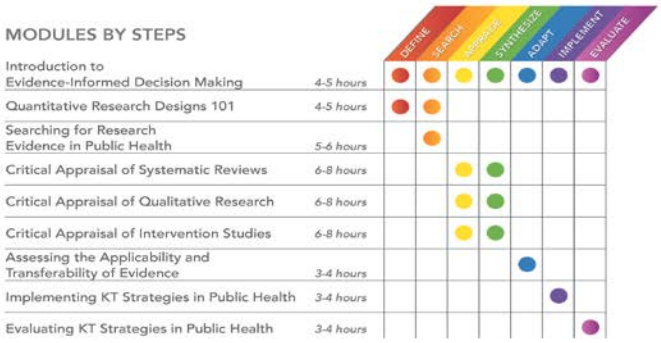
Jeannie MacIntosh, Jennifer Yost

When promoting evidence-informed practice, we must acknowledge the barriers to using research evidence in practice identified by many practitioners, including a shortage of time, a lack of access to research evidence, and inadequate skills necessary to critically appraise, interpret and apply the research found. The National Collaborating Centre for Methods and Tools (NCCMT) is committed to supporting evidence-informed public health by providing resources to address each of these barriers. The NCCMT website includes time-saving tools, links to credible sources of research evidence, and learning resources to help develop competence and confidence in finding, appraising and applying research evidence in practice.

One key resource offered by the NCCMT is a suite of free, self-paced modules that provides a solid foundation in the principles and skills required to implement NCCMT's seven-step process of evidence-informed public health. The modules are based on material provided in NCCMT's popular in-person workshops but reach beyond the limits of geography and time, providing access to remote learners and those on limited budgets. Learning is enhanced by interactive elements and realistic public health scenarios. Users create and login to an account in NCCMT's Learning Centre to access the modules.

The suite includes the following titles:

- Introduction to Evidence-Informed Decision Making in Public Health,
- Quantitative Research Designs 101: Addressing Practice-Based Issues in Public Health
- Searching for Research Evidence in Public Health
- Critical Appraisal of Intervention Studies
- Critical Appraisal of Systematic Reviews
- Critical Appraisal of Qualitative Studies
- Assessing the Applicability and Transferability of Evidence
- Implementing KT Strategies in Public Health
- Evaluating KT Strategies in Public Health



Time required to complete the modules varies from an estimated three to four hours to an estimated six to eight hours for the critical appraisal modules. Learners can stop whenever they need to and continue where they left off when they next login. Feedback from participants has shown that users appreciate the self-paced format, the easy navigation and interactive elements of the modules. A typical comment received through online feedback states, “I could complete the module at my own pace, and I could come back to parts of it when I wanted.” Another user appreciated the interactive elements that provide opportunities to practice new skills based on real-world scenarios, stating “I was able to apply the information to an actual activity. The hands-on practice was perfect for me.” To date, 2,199 NCCMT users have started at least one of the nine modules and many users have started multiple modules. While most module users are from Canada (52%) and the United States (35%), module users come from over 59 countries. They represent numerous roles and positions and varied levels of education with students and public health nurses making up the two largest user groups.

How are the modules used?

Practitioners complete modules to demonstrate professional development. One learner from Manchester, UK, shared, “Even though I have worked in the NHS for 33 years, working through the [modules] has really been eye opening, excellent study material without the jargon etc. - it has made me want to start studying again.”

Some organizations require incoming staff to complete the Introduction to Evidence-Informed Decision Making module as part of their orientation. A nurse educator in Washington, D.C. who has “been actively involved on our Nurse Research Council for several years,” states that “[t]he modules created here are the best I have seen anywhere.”

The modules are also used by university and college educators at institutions in Canada, the US, Europe. One professor states, “I'm registered with and using the Learning Centre. I'm asking the students to register as well and go through part of the searching module. I hope this will create a long relationship between the students and the NCCMT.”

Users wanting to earn a certificate of completion for a module are required to complete the pre-assessment and must score at least 75% on the knowledge post-test. Of the modules started, on average across all modules,50% have been successfully passed. The modules are seen as useful resources to support evidence-informed practice; even after earning their certificates, many learners continue to access the modules.

Are the modules effective?
Knowledge is assessed before starting and after users complete each module. Before starting a module, users are asked 12 questions about the subject of the module. The questions are in the format of multiple choice, true/false, or ask the user to put responses in order of importance. After completing all sections of the module (post-module), users are again asked the same knowledge questions. Across all modules, a statistically significant increase in knowledge has been shown from pre- to post-module completion [+24.9%, 95% CI (22.9 to 24.9) $P < 0.05$; $n = 1528$].

Conclusion
NCCMT's modules address some of the barriers to evidence-informed practice. Learners work at their own pace; interactive elements and realistic scenarios allow learners to develop and practise new skills; and supplementary resources further enhance learning and understanding. Use of the modules has been shown to increase knowledge. Furthermore, user feedback indicates that the online format provides an effective way to learn about evidence-informed public health practice.

To enquire about how you can use these online modules for your own professional development, for team training, or to augment classroom learning, please contact the National Collaborating Centre for Methods and Tools. To explore the modules in the Learning Centre, create and login to your free account. For more information about the products and services available from the, please visit the NCCMT website.

The McMaster Evidence Based Clinical Practice Workshops

Alonso Carrasco-Labra, Deborah Maddock

Evidence-based clinical practice (EBCP) is an approach to health-care practice that explicitly incorporates scientific evidence into patient management decisions, taking into account the strength of evidence, the benefits and risk of alternative management strategies, and the role of patients' values and preferences.

The 21st Annual McMaster Evidence Based Clinical Practice Workshop was held in June 2014 at McMaster University, the birthplace of evidence based medicine (EBM). This popular workshop sponsored by the Department of Clinical Epidemiology & Biostatistics is led by world renowned clinical epidemiologists and EBM practitioners from McMaster University and abroad.

This international workshop caters to all those interested in evidence-based practice and in medical education, and may be of particular interest to clinicians working in academic environments, program directors, chief residents, hospitalists, and educators with a focus on continuous quality improvement/quality assurance
The workshop offers two streams to help participants advance their EBCP skills:

Improve Your Practice / Fundamentals of EBCP stream: To acquire an understanding of common epidemiological concepts (e.g. interpreting hazard ratios, confidence intervals, critical appraisal of systematic reviews) and advance their skills in using the literature for quality assurance, improving practice, and judging comparative effectiveness of health care interventions.
Learn How to Teach / Teaching stream: To help participants learn how to teach EBCP using a variety of educational models in different settings, with different types of learners.
Another exciting development is the recent launch of the McMaster EBCP Workshop TWITTER account on September 20, 2014. This account focusses on emerging evidence and innovations relevant to EBCP, and has already gained a large number of local and international followers who are engaged in discussion, learning and sharing of important ideas and information. To learn more, please follow us on twitter @EBCPMcMaster

The next dates of the McMaster Evidence Based Clinical Practice Workshops are Monday June 8 – Friday June 12, 2015. We hope that you will join us at the Workshop on McMaster University's beautiful campus.

Registration information is available online: http://ebcp.mcmaster.ca

$200 DISCOUNT IF REGISTERED BEFORE Dec. 31, 2014. DETAILS INCLUDED

McMaster EVIDENCE-BASED Practice Workshops

EBCP WORKSHOP

McMaster Evidence-Based Practice Workshops

June 8-12, 2015

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 8th — Friday, June 12th, 2015

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, JAMAevidence, 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, 2014.		
One member from an institution	$2800	$2885
Two members from an institution	$2500 each	$2575 each
Three or more members from an institution	$2200 each	$2270 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 (North American registrants please send cheque or money order; non-North American registrants please send international money order drawn on a USA or Canadian bank).

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

Regular Mail

Laurel Grainger
EBCP Workshop registrar
McMaster University
1280 Main Street West
Room: HSC 2C12D
Hamilton, ON
L8S 4K1 Canada

Courier

Laurel Grainger
EBCP Workshop registrar
McMaster University
1200 Main Street West,
Room: HSC 2C12D
Hamilton, ON
L8N 3Z5 Canada

PLEASE DIRECT ANY INQUIRIES TO:

Deborah Maddock
EBCP Workshop Coordinator *or*

Laurel Grainger
EBCP Workshop Registrar

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McMaster Evidence-Based Practice Workshops | June 8-12, 2015 | http://ebm.mcmaster.ca
CONTINUING HEALTH SCIENCES EDUCATION PROGRAM

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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!

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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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