Newsletter of the International Society for Evidence-Based Health Care
Newsletter 15, May 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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EBM Teaching Tip: Simulations in Medical Research

Zhen Wang, Khaled S. Mohammed,
M. Hassan Murad

A 76 year old man comes to you for a routine health maintenance exam, with no complaints. He had 2 negative colonoscopies in the last 20 years. He asks about his next colorectal cancer screening date. To answer the patient's question, you search for studies that evaluated different colonoscopy intervals, and all you find is a study that used simulation to answer this question.[1] You wonder how to read this type of study and how credible it is.

Simulation has gained popularity in recent decades due to the advancement of computer technology that facilitates fast computing. Statistical simulation is a technique that builds an artificial model to imitate or reproduce the operation of a real-world system in an experimental environment. Microsimulation (used in the colonoscopy study you found) is a type of simulation that focuses on activities of individual patients rather than an aggregated sample of patients.

Statistical simulation involves random sampling from probability distributions so that multiple data sets are created and then numerical values are estimated from each data set. This modelling can incorporate multiple uncertain parameters with varying sources of uncertainty. In such cases the deterministic exact methods (equations) can be unfeasible, very complex or involve making too many assumptions. In medicine, simulation can be used to test a hypothesis, evaluate the appropriateness of statistical assumptions, or help in complex decision making.

Explaining simulation to learners:
The two bucket story is an analogy[2] that can be used to explain simulation to learners. The story involves two buckets; one of which contains balls and the second is empty. Each ball represents a patient, and the outcome of the patient is written on the ball. A random sample of balls is drawn from the first bucket, and a statistic (e.g. the mean) is calculated from the information on this sample of balls and the answer is stamped on a new blank ball that is then put in the second bucket that was initially empty. This exercise is repeated a certain number of times so that there is a collection of balls in the second bucket. The balls in the second bucket (each representing a summary of a sample) serve as the simulated distribution of the statistic and can be used to generate a new mean, median, percentiles, etc, of the measure of interest.

Advanced learners who are interested in learning more can be directed to several online videos that show how to build a simple simulation using Microsoft Excel. A simple function in Excel (RAND) can generate random numbers from a uniform distribution between 0 and 1. These numbers can be used to calculate a probability distribution with a particular mean and standard deviation for 1,000 iterations. The median, 2.5 and 97.5 percentile of these outcomes can be summarized by Excel and can serve as an effect size and 95% confidence limits.

Both methods described here represent an oversimplification of simulation which has many different types; however, we find the two bucket story and the excel exercise to be helpful in conveying the concepts of modeling events using numerous iterations and resampling.

How to use a simulation study:
Several checklists exist to assess the quality of a simulation study; however, they are more technically oriented and complicated. We suggest focusing on the following questions: Was there a detailed protocol that defined, a priori, all aspects of the simulation study? What is the quality of the underlying evidence used as an input for the simulation? Are the results robust (ie, do sensitivity analysis and assumptions made in the study change the conclusions)?

In reviewing the study,[1] you cannot be confident whether a protocol existed and defined all analyses a priori. The analysis seems robust to assumptions, but you question the directness of the original data regarding the impact of colonoscopy screening on mortality because the data were extrapolated from sigmoidoscopy studies. You convey your uncertainty to the patient and inform him of the

results, that is, continuing screening after age 75 in individuals who have had regular and consistently negative screening since age 50 provides minimal incremental benefit. You also inform him that based on this simulation study, the United States Preventive Services Task Force recommended against routine screening for colorectal cancer in adults ages 76 to 85 years.[3] The patients tells you that based on this information and his values, he opts against further screening.

References

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EBM Teaching Tip: Using Analogy to Meta-Analysis to Help Explain Adjustment for Confounders

Fares Alahdab, Jehad Almasri,
Abd Moain Abu Dabrh,
Khalid Benkhadra, M. Hassan Murad

The terms adjustment or controlling for confounders are commonly used in observational studies. It remains challenging, however, to explain to learners what these terms mean. We suggested a visual approach in a previous teaching tip.[1] Here, we use analogy with meta-analysis as another way to explain adjustment. For some learners, meta-analysis is easily understood as a statistical aggregation of multiple studies; whereas, adjustment is not well understood. It is certainly not intuitive to know how you can "adjust" for age or for diabetes. Therefore, we use the Cochran-Mantel-Haenszel (CMH) method of adjustment because it is easy to demonstrate and involves pooling effect sizes, just like meta-analysis.

In the fictitious example in table 1 we compare a drug vs. placebo in an observational study that evaluated the mortality after 3 years of therapy.

Table 1

	dead	alive
drug	80	300
Placebo	230	390

The relative risk for death in this example is (80/380) ÷ (230/620) = 0.57, suggesting that this drug almost halves the risk of dying. We know that age is an important risk factor affecting mortality, therefore we would like to control for age. Results in table 2 are presented for older and younger patients separately.

Table 2

	old		young	
	dead	**alive**	**dead**	**alive**
drug	56	84	24	216
Placebo	224	336	6	54

Tip on making up numbers for this illustration:
Start by table 2, choose an imbalanced distribution of old and young (here 70/30) and imbalanced death rate of old and young (here 40% and 10%) and imbalanced allocation of the old and young to treatment (here 20% and 80%). Once the data in table 2 is filled, aggregate in table 1.
A similar concept to this table has been described [2] however with different values and without estimating a pooled effect of the strata

The relative risks for older patients is (56/140) ÷ (224/560) = 1.0 and for younger patients is (24/240) ÷ (6/60) = 1.0, suggesting no efficacy in neither groups of patients.

Adjustment or controlling for age using the CMH method involves obtaining a weighted average of these two odds ratio, a process similar to meta-analysis. The weight of each strata is based on its size (analogous to meta-analysis, where weight is

based on precision). Here, there were 700 old patients and 300 young patients.

The weighted (pooled) relative risk is:

$$RR = \frac{\frac{56(224+336)}{700} + \frac{24(6+54)}{300}}{\frac{224(56+84)}{700} + \frac{6(24+216)}{300}} = 1.00$$

Therefore, the adjusted treatment effect suggests no benefit and age explains the observed association. We found the following demonstration and using the analogy to meta-analysis helpful in explaining the concept of adjustment. The CMH method is not practical to use when you simultaneously adjust for several variables (e.g. adjusting for age, diabetes, 3 categories of smoking and 3 categories of race requires constructing 36 sub-strata). Therefore, it is less commonly used and more practical methods such as multivariable regression are available. However, we find it to be a useful method to explain adjustment.

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Addressing the Impact of Missing Participant Data for Continuous Outcomes in Systematic Reviews

Shanil Ebrahim, Bradley C. Johnston,
Elie A. Akl, Reem A. Mustafa,
Xin Sun, Stephen D. Walter,
Diane Heels-Ansdell,
Pablo Alonso-Coello, Gordon H. Guyatt

Background: Until recently, no methods were available for addressing missing participant data for continuous outcomes in systematic reviews. We addressed this gap by proposing an approach involving conducting a complete case analysis as the primary analysis, complemented by sensitivity analyses that apply a series of increasingly stringent assumptions about results in patients with missing continuous outcome data[(1)]. This approach was limited to systematic reviews in which all trials used the same measurement instrument.

Objective: To extend our approach to systematic reviews pooling trials using different instruments to measure the same construct.

Methods: We reviewed the available literature, conducted an iterative consultative process, and developed an approach involving a complete case analysis complemented by sensitivity analyses that apply a series of increasingly stringent assumptions about results in patients with missing continuous outcome data. This approach also applies strategies to enhance interpretability of pooled estimates using the minimally important difference (MID), the smallest difference that patients perceive as either an important benefit or harm[(2,3)].

Results: Our approach involves the following steps:

1. Choosing the reference measurement instrument, typically the one that is most familiar to the target audience and/or has the best measurement properties.

2. Converting scores from different instruments to the units of the reference instrument.

3. Using our four increasingly more stringent imputation strategies for addressing missing participant data (Table 1), and calculating a pooled mean difference for the complete case analysis and imputation strategies.

4. If the MID is available, calculate, for the complete case analysis and each imputation strategy, the proportion of patients who experienced an important treatment effect.

5. Judging the impact of the imputation strategies on the confidence in the estimate of effect by a) considering and applying the

most plausible imputation strategies for the systematic review under consideration, and b) testing a reasonable range of thresholds that guideline panels may adopt as an important effect.

We applied our approach to an example systematic review of respiratory rehabilitation for chronic obstructive pulmonary disease[4]. Applying Strategy 1 to 3 resulted in some loss of effect but maintained statistical significance. Strategy 4 (the most stringent) resulted in loss of statistical significance. Figure 1 presents the summary effects of each strategy (showing the proportion of patients who achieved an improvement equal to or greater than the MID of 0.5 CRQ units on a scale from 1 to 7 [5]) and provides a range of thresholds that guideline panels may adopt as an important effect.

Conclusions: Our extended approach provides quantitative guidance for addressing missing participant data in systematic reviews of trials using different instruments to measure the same construct. This approach will facilitate increased rigor in the conduct of systematic reviews of continuous outcomes with missing participant data.

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Table 1. Matrix of assumptions for participants with missing data for continuous outcomes in intervention and control arms

		Assumptions about the means of participants in intervention arm		
		C. Mean score from the control arm of the same trial	D. Worst mean among the intervention arms	E. Worst mean among control arms of included trials
Assumptions about the means of participants in control arm	A. Best mean among intervention arms			Strategy 4
	B. Best mean among the control arms		Strategy 2	Strategy 3
	C. Mean score from the control arm of the same trial	Strategy 1		

The Role of Patient Registries in Clinical Research

Samuel A Berkman

Randomized controlled trials (RCTs) are considered the highest quality study design for informing the effect of treatment because they are less subject to bias and confounding. However these trials often follow patients for a relatively short period of time, enroll a limited number of patients with many exclusion criteria, and implement rigidly controlled interventions. Consequently, RCTs may have limited generalizability to real world practice, and are not ideal for detecting rare adverse events.

A Registry study is a prospective observational study that uses a large data base of 'real world' patients to study adverse events over a long period of time. Some registries are organized for the purpose of follow-up of people with a variety of diagnoses and treatments in a certain geographic area. Others are established to follow a specific disease such as the Global registry program on long-term warfarin anticoagulation called the Gloria A. fib Registry, which only follows patients diagnosed with non valvular atrial fibrillation. Pharmaceutical companies, many of whom are instrumental in starting such registries can obtain helpful feedback on their product with this kind of study. For example Boehringer Ingelheim established the Gloria registry in atrial fibrillation to determine those factors causing doctors to prescribe or reject Dabigatran in atrial fibrillation[(1)].

Another example applies to the optimal antiplatelet management of patients with acute coronary syndromes who also have an indication for systemic anticoagulation, such as atrial fibrillation. Such patients receive double anti platelet therapy for their coronary artery disease to prevent occlusion or reocclusion after interventional procedures. They concurrently receive full dose systemic anticoagulation for their atrial fibrillation to prevent an embolic stroke. Such patients receiving “triple therapy” have developed high rates of bleeding which frequently necessitate temporarily stopping the treatment.

Only one RCT of 573 patents, the WOEST trial,[(2)] has looked at this situation comparing two drugs versus three. The WOEST trial found that patients on two drugs, one antiplatelet agent Clopidogrel and a vitamin K antagonist , had a significantly lower incidence of hemorrhage (19.4% vs 44.4%HR.36, CI 0.26-.50, p< 0.0001) with no decease in efficacy than triple therapy including aspirin . Major bleeding was decreased but not significantly. However, bleeding even when not considered major by the various bleeding scales is very important in coronary artery disease because it may necessitate stopping the antiplatelet treatment and make the patient vulnerable to an arterial occlusion.

A registry cohort study in Denmark [(3)] examined the same problem. In Denmark all residents are provided with a permanent registration number that enables linkage between four nationwide registries. One registry was used to identify patients with atrial fibrillation hospitalized for myocardial infarction or percutaneous coronary intervention between January 2001 and December 2009. They collected information on warfarin, aspirin and clopidogrel use in these cases. They came to the same conclusion as the WOEST trial that a combination of Clopidogrel and Coumadin was as efficacious as triple therapy and had significantly less bleeding issues, including major bleeding.

This trial, unlike WOEST, had the advantage of much higher power since there were 12165 patients in the study and the data was studied over an 8 year period (each patent was studied over one year for bleeding). The only exclusions were those patients with an MI or PCI within one year before the index date. The risk of bleeding was lower with clopidogrel and vitamin K antagonists (HR.78, CI 0.55-1.12); and this included major bleeding. The conclusion of both studies is that we should be looking to eliminate aspirin and administer double therapy rather than triple therapy for patients requiring both antiplatelet and anticoagulation therapy.

Both randomized and registry trials have contributed to helping resolve the conundrum of what is the optimal anticoagulant regimen for people with both atrial fibrillation and acute coronary syndrome. The randomized trial was helpful in establishing the treatment effect and the

registry trial provided valuable evidence towards understanding long term risks of bleeding.

References

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Cochrane Connect

Caroline Mavergames

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Current editions of newsletters from Cochrane Review Groups, Centres, Fields, Networks, Methods Groups and core teams are also available at that URL. For more information, contact the Cochrane Communications team at news@cochrane.org.

Advancing Surgical Research: The IDEAL Collaboration

Philipp Dahm, on behalf of the IDEAL Collaboration

An exciting development in evidence-based surgery has been the increased uptake and further refinement of the Idea, Development, Exploration, Assessment and Long-term follow-up (IDEAL) framework. IDEAL aims to improve how research in surgery and other forms of interventional therapies are conducted by defining a framework of development stages. It further makes specific recommendations how to conduct surgical research in these settings by mapping each stage to suitable study designs. In brief, IDEAL recognizes an Idea stage (1) as the starting point of surgical innovation, at which time a given procedure is first applied to patients. Irrespective of a positive or negative outcome, these experiences should be reported in case reports or series. Further development should then occur in prospectively planned developmental (2a) and exploration (2b) stage studies with key aims of further refining the procedure and addressing the surgical learning curve, respectively. The objective of the assessment stage (3) is to determine the therapeutic effectiveness and potential complications of the procedure, which is ideally accomplished in a randomized controlled trial (when appropriate). Lastly, there is an important role for the long-term study (stage 4) of procedure outcomes to identify rare adverse events and provide quality control.

The IDEAL framework has its origin in the efforts of the Balliol Collaboration, a group of surgeons, researchers, journal editors, methodologists, statisticians, and other individuals committed to advancing the production, dissemination and evaluation of high quality research in surgery that met on several occasions in Oxford, UK. The

central product of these efforts was three Lancet publications in 2009 describing the IDEAL stages and recommendations. [1-3] Since that time, several meetings have followed, resulting in refinements, which have been reported in a series in the BMJ.

Important to the success of IDEAL has been the engagement of different stakeholders, including industry. An active partner in the further development has been the Food and Drug Administration (FDA) that has recognized many parallels in surgical research and medical device investigations. An IDEAL meeting in 2011 was hosted by the FDA and aimed to bridge the IDEAL framework with its ongoing efforts to reform the device approval process. The most recent meeting, held at Weil-Cornell University in New York, once again assembled a diverse group of surgeons, methodologists, journal editors, device-makers and regulators. Participants explored the specific implications of the IDEAL recommendations for a variety of medical devices, ranging from anti-infective coated implants to transcatheter valve therapy and endoluminal surgical platforms. It was the participants' consensus opinion that the IDEAL recommendations are highly applicable to the evaluation and approval of medical devices, and should undergo further formal testing in this setting.

Meanwhile, the IDEAL Collaboration has become actively engaged with several professional organizations, including the American College of Surgeons (ACS) that will feature a plenary presentation by Peter McCulloch as Chair of the IDEAL Steering Group at their upcoming Clinical Congress this year in San Francisco. An increasing number of surgical research studies designed and reported according to IDEAL principles provide further witness of the positive impact the Collaboration is having in changing the culture of surgical research. Individuals and organizations interested in promoting high quality research are encouraged to become involved with the IDEAL Collaboration (http://www.ideal-collaboration.net), which also maintains an active social media presence on twitter (@IDEALCollab).

References

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Evidence-Informed Public Health: an Introduction from the National Collaborating Centre for Methods and Tools

Jeannie Macintosh

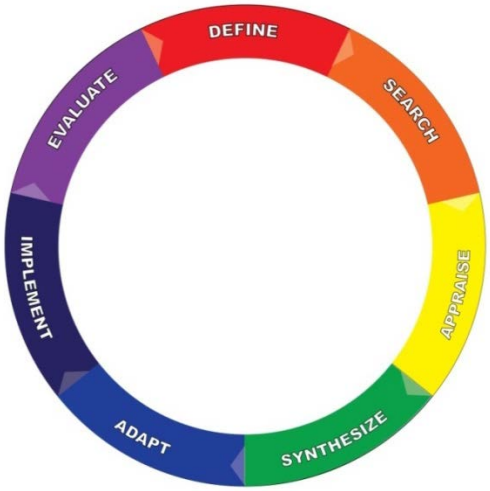
Public health decisions are made every day – decisions about practice, programs and policies. Whether related to chronic disease prevention, promotion of healthy behaviours, or prevention of injury, the use of the best available research evidence to inform public health decisions has the potential to produce better health outcomes for communities.

What is evidence-informed public health?
Evidence-informed public health (EIPH) is the process of distilling and disseminating the best available evidence, and using that evidence to inform and improve public health practice and policy.

EIPH builds on the concept of evidence-based medicine, a term that was originally coined by Gordon Guyatt *et al.* in 1992 and subsequently developed by the Evidence-Based Medicine Work Group under his leadership (Cullum, Ciliska, Marks & Haynes, 2008). In EIPH, the word "informed" is used to acknowledge the many factors, beyond the research evidence, that influence decision-making (see Box) (Ciliska, Thomas & Buffet 2010).

The National Collaborating Centre for Methods and Tools (NCCMT) has developed an approach to EIPH that can help decision makers consider the best available research evidence for the issue at hand. The NCCMT website includes a dedicated EIPH section where you will find a dynamic

representation of the seven steps of EIPH. Each step includes an explanation, a few example questions, and links to recommended resources such as relevant methods and tools as well as additional background information.



Steps of Evidence-Informed Public Health

Most public health professionals recognize that the best decisions are not based on research findings alone. By considering evidence from a range of sources, your can increase the chances that your decisions will result in programs and actions that are both effective and appropriate for your communities and target populations.

A Model for Evidence-Informed Decision Making in Public Health

A Model for Evidence-Informed Decision Making in Public Health

This model for evidence-informed decision making in public health is particularly relevant at the fifth step of evidence-informed public health: *Adapt the information to a local context.* Ultimately, decision makers must draw on their explicit and tacit public health knowledge and expertise to incorporate all the relevant factors into the final decision, conclusion or recommendation. (See the NCCMT fact sheet for more details on the model for evidence-informed decision making in public health http://www.nccmt.ca/registry/index-eng.html

Implementing a systematic process of EIPH ensures that you:

- create programs and actions that are both effective and appropriate for your communities and target populations;
- effectively transfer knowledge from both quantitative and qualitative research and other sources into practice and policy;
- strengthen public health practice and policy.

Barriers and Bridges

There are barriers to using research evidence in practice, including a shortage of time, a lack of access to research evidence, and inadequate skills necessary to critically appraise the research found. NCCMT provides resources and strategies that can help you overcome these challenges:

NCCMT's Registry of Methods and Tools includes knowledge translation resources to help you at each step of the process. Methods and tools in the Registry can be sorted by the step of EIPH or by the particular knowledge translation task you are working on (for example: program planning, communication or policy development).

NCCMT has developed a series of self-paced, interactive online learning modules related to EIPH. Login to the Learning Centre to access a suite free online learning modules, including:

- 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

In addition to the modules, the Learning Centre also houses Search Pyramids, customizable tools designed to help structure and support your search for research evidence.

Understanding Research Evidence is a series of short videos that explain some important terms that people are likely to encounter when looking at research evidence. These concise videos explain each term in plain language using realistic public health examples and engaging visuals.

Want to learn more?
Create an account with NCCMT. Login to the Learning Centre. Watch for the NCCMT Weekly Round-up to hear about upcoming events and new resources as they become available. All the materials on the NCCMT website are available in both English and French.

RESOURCES:

Ciliska, D., Thomas, H., & Buffet, C. (2010). *An Introduction to Evidence-Informed Public Health and A Compendium of Critical Appraisal Tools for Public Health Practice (Revised)*. Hamilton, ON: National Collaborating Centre for Methods and Tools. Retrieved from http://www.nccmt.ca/pubs/2008_07_IntroEIPH_compendiumENG.pdf.

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McMaster EVIDENCE-BASED Practice Workshops

EBCP WORKSHOP

McMaster Evidence-Based Practice Workshops

June 9-13, 2014

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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 9th — Friday, June 13th, 2014

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 aquire 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

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CONTINUING HEALTH SCIENCES EDUCATION PROGRAM

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.

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1280 Main Street West
HSC 2C12
Hamilton, ON L8S 4K1
Canada

Courier

Laurel Grainger
EBCP Workshop Registrar
McMaster University
1200 Main Street West,
HSC 2C12
Hamilton, ON L8N 3Z5
Canada
Tel: 905-525-9140 X23162

PLEASE DIRECT ANY INQUIRIES TO:

Deborah Maddock
EBCP Workshop Coordinator *or*

Laurel Grainger
EBCP Workshop Registrar

Telephone: 905.525.9140 X22900, X23162
Fax: 905.524.3841
E-mail: maddock@mcmaster.ca
E-mail: graing@mcmaster.ca

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CONTINUING HEALTH SCIENCES EDUCATION PROGRAM

GUEST CONTRIBUTORS

Abd Moain Abu Dabrh
abuDabrh.AbdMoain@mayo.edu

Elie A Akl
ea32@aub.edu.lb

Fares Alahdab
Alahdab.fares@mayo.edu

Jehad Almasri
jalmasri@icloud.com

Pablo Alonso-Coello
PAlonso@santpau.cat

Khalid Benkhadra
Benkhadra.Khalid@mayo.edu

Samuel Berkman
sberkman@ucla.edu

Philipp Dahm
Philipp.Dahm@urology.ufl.edu

Shanil Ebrahim
shanil.ebrahim@utoronto.ca

Gordon Guyatt
guyatt@mcmaster.ca

Diane Heels-Ansdell
ansdell@mcmaster.ca

Bradley Johnston
bradley.johnston@sickkids.ca

Jeannie Mackintosh
mackint@mcmaster.ca

Caroline Mavergames
Caroline.Mavergames@cochrane.org

Khaled S Mohammed
Mohammed.khaled@mayo.edu

M. Hassan Murad
Murad.mohammad@mayo.edu

Reem A Mustafa
ramustafa@gmail.com

Xin Sun
sunx79@hotmail.com

Stephen D Walter
walter@mcmaster.ca

Zhen Wang
Wang.zhen@mayo.edu

EDITORS

Jason Busse
Assistant Professor, Clinical Epidemiology & Biostatistics
McMaster University, Faculty of Health Sciences
Clinical Epidemiology & Biostatistics
1280 Main Street West, HSC-2C12
Hamilton, ON L8S 4K1
j.busse@rogers.com

Paul Glasziou
Professor of Evidence-Based Medicine
Director of the Centre for Research in Evidence-Based Health Care,
Bond University
Qld, Australia 4229
pglaszio@bond.edu.au

Gordon Guyatt
Professor, Clinical Epidemiology & Biostatistics
McMaster University, Faculty of Health Sciences
Clinical Epidemiology & Biostatistics
1280 Main Street West, HSC-2C12
Hamilton, ON L8S 4K1
guyatt@mcmaster.ca

EDITORIAL ASSISTANTS

Laurel Grainger and Deborah Maddock
McMaster University, Faculty of Health Sciences
Clinical Epidemiology & Biostatistics
1280 Main Street West, HSC-2C9
Hamilton, ON L8S 4K1
graing@mcmaster.ca
maddock@mcmaster.ca

MAILING LIST

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

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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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