

**McMASTER UNIVERSITY**  
**GRADUATE PROGRAM IN STATISTICS**

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**STATISTICS SEMINAR**

**Speaker:** Dr. Stephen Walter  
Department of Clinical Epidemiology and Biostatistics  
McMaster University

**Title:** Do You Want Your Surgeon to be an Expert?

**Day:** Tuesday, November 6, 2007

**Time:** 3:30 - 4:30 PM

**Place:** HH/217 - Deloitte Colloquium Room  
(refreshments in HH/216 at 3:00 PM)

**SUMMARY**

In the expertise-based (EB) design, clinicians (e.g., surgeons) commit to carry out only one of the comparison interventions, with which they feel more competent or experienced. Patients in an EB trial are randomized to a clinician, which then defines the intervention they will receive. In contrast, in the conventional randomized design, patients are randomized to an intervention, and the same clinicians are then responsible for executing either intervention accordingly.

The EB design avoids so-called differential-expertise bias associated with clinicians having greater competence on one technique compared to the other, and now interventions are carried out by clinicians who have greater expertise on the procedures used on all their patients. This probably leads to easier recruitment of clinicians and fewer protocol deviations, and there may also be ethical advantages. A disadvantage, however, is that the EB design is potentially less efficient because of confounding

of clinicians with treatment, and because of variation in clinician skill and in the expected outcomes in their patients.

In this talk, we will consider the relative efficiency of the EB and conventional randomized designs, assuming that expected outcomes depend on the assigned intervention, and on the clinicians expertise with either or both of the comparison treatments. We can illustrate the use of an EB analysis in a large randomized trial of two alternative types of surgery for tibial fractures. Expertise of participating surgeons has been measured according to experience with either or both interventions, and their own stated preference.

The EB design was originally proposed for surgical trials, but it is also potentially applicable whenever the likely success of an intervention depends on the expertise of the clinician involved, or if it is not feasible for the same person to be involved in both arms of a study, such as in trials of clinical education programs.

## REFERENCES

- Devereaux PJ, Bhandari M, Clarke M, Montori VM, Cook DJ, Yusuf S, Sackett DL, Cina CS, Walter SD, Haynes B, Schunemann HJ, Norman GR, Guyatt GH. Need for expertise-based randomised controlled trials. *British Medical Journal* 2005; 330(7482):88.

## ABOUT THE SPEAKER



Stephen Walter received his Ph.D. from the University of Edinburgh, Scotland, supervised by D.J.Finney. After faculty appointments at the University of Ottawa (3 years) and Yale University School of Public Health (7 years), he joined the Dept. of Clinical Epidemiology and Biostatistics at McMaster University, where he is now a Professor.

Dr. Walter collaborates with clinicians in internal medicine, evidence-based medicine, and developmental pediatrics, and with epidemiologists working in environmental

health, cancer etiology and screening. He is interested in several areas of biostatistical methodology, including: risk assessment and communication; evaluation of diagnostic and screening data; regional and temporal variation in health; and design and analysis of medical research studies. He has published widely on these topics (including over 300 refereed papers) in the biomedical literature.

His honours include: National Health Scientist Award; Canadian Institutes of Health Research Senior Investigator and Partnership Awards; elected as Member, International Statistical Institute and as Fellow, American Statistical Association; Fellow, Royal Statistical Society; Honourary Life Member, Indian Clinical Epidemiology Network; awarded the inaugural R. Tait McKenzie Medal for Research, Canadian Academy for Sport Medicine. He is also a member of the International Biometric Society, the Statistical Society of Canada, and the Society for Epidemiologic Research.

Dr. Walter was an Editor of the American Journal of Epidemiology for 11 years, and is currently a Section Editor for the Wiley Encyclopedia of Biostatistics. He has served as the Chair of Biostatistics in the International Clinical Epidemiology Network (INCLIN), and has been extensively involved with the development of clinical epidemiology in Asia, Latin America and Africa. He is a past coordinator of the Health Research Methods program at McMaster, and has worked with approximately 100 Masters and Ph.D. students.

In his leisure time, Stephen plays with the Oakville Symphony Orchestra (1st and bass clarinets). He also enjoys marathon cross-country ski events and racquet sports.

## **MORE SEMINAR INFORMATION**

Please contact Angelo Canty at (905)-525-9140 ext. 27079, email: [cantya@mcmaster.ca](mailto:cantya@mcmaster.ca).