ADVANCED EPIDEMIOLOGY: SYSTEMATIC ERROR AND QUANTITATIVE BIAS ANALYSIS ***Short course, 22-24 February 2011, Wellington***

Overview

This 3 day Summer School course will cover intermediate to advanced-level epidemiological methods. The main focus of the course is gaining an in-depth, and 'modern', understanding of the three sources of systematic error in epidemiological studies: selection, confounding and information biases. Quantitative bias analysis methods will also be demonstrated and run as class exercises, the premise being that it assists a deeper understanding of systematic error as well as equipping course attendees with methods to correct for these biases. Additional selected topics are also covered. The course is suited to students who have completed an introductory level course in epidemiology (e.g. Diploma or Masters of Public Health paper in epidemiology and biostatistics), through to practicing epidemiologists wanting an update.

Topics covered

- A comprehensive overview of systematic error (confounding, selection and information biases), using contemporary approaches such as a counterfactual model and directed acyclic graphs (DAGs).
- An introduction to quantitative bias analysis methods to correct for systematic error in epidemiological studies. (Sometimes called sensitivity analyses.) Methods taught range from simple to probabilistic methods.
- Quantitative bias analysis exercises using Excel spreadsheets. Understanding and applying bias analyses not only enables you to undertake your own analyses in the future, but also means you have a deeper understanding of systematic error.
- Selected topics e.g.: interaction and effect measure modification, regression model building strategies, imputation, direct and indirect effects (i.e. mediation analysis), propensity scores, instrument variables, fixed versus random effects.

What do previous participants say about the course?

About 20 participants completed the inaugural 2011 course, ranging from: recent students of a Diploma/Masters-level taught paper in epidemiology; to lecturers of the same; to senior epidemiologists. All participants would recommend the course to other colleagues, and at least three quarters rated the course 5 out of 5 on 'content' and 'presentation'. Summary comments about the course included:

"This was by far the most useful short course I have ever done. It was an excellent summary of epidemiological advances. I would recommend it to anyone working in, or studying, epidemiology at a moderate to advanced level."

[Lecturer and convenor of Diploma/Masters-level epidemiology taught course.]

"I found the course highly useful in that it grounded what I had learnt in [Diploma/Masters course] and extended on this. Bits of the [Diploma/Masters course] were still a bit foggy; this course has definitely provided clarity. I also feel much better equipped to consider systematic error and how to address it."

[Recent student of Diploma/Masters-level epidemiology taught course.]

Teaching staff

Tony Blakely's research has included pioneering the development of methods to link census and health data (New Zealand Census-Mortality Study; CancerTrends). He directs two HRC-funded research programmes: the Health Inequalities Research Programme (HIRP); the Burden of Disease Epidemiology, Equity and Cost-Effectiveness programme (BODE^3). He has authored about 150 peer-reviewed publications, including many that include critique, development or application of epidemiological methods. Tony is well known for his enthusiastic and engaging style of presentation and teaching.