INVITED SPEAKERS

Professor Nick Buckley (MD FRACP) is Professor of Clinical Pharmacology at the University of Sydney, a consultant clinical toxicologist at the NSW Poisons Information Centre and RPA Hospital, Chair of the Editorial Advisory Board of the Australian Medicines Handbook, a past President of The Asia Pacific Association of Medical Toxicology, and Research Director of the South Asian Clinical Toxicology Research Collaboration (SACTRC- http://www.sactrc.org). SACTRC does clinical and public health research on pesticides, plant & pharmaceutical poisoning, snakebite, translation into practice, neurotoxicity and kidney biomarkers. In Australia, his research has largely been clinical, epidemiological and pharmaco-epidemiological studies on analgesic and psychotropic drug poisoning & misuse.

Using Toxicoepidemiology to Influence Diagnosis and Management

Most current evidence for diagnostic and prognostic criteria and management in clinical toxicology comes from observational data rather than randomised clinical trials. Designing and comparing studies producing such evidence requires a strong appreciation of the weaknesses of these study designs and the best ways to analyse these data.

For example, ECG risk stratification for tricyclic antidepressant poisoning and the paracetamol nomogram were products of observational research. Many commonly used interventions such as urinary alkalinisation for salicylate and chlorphenoxy herbicide poisoning, alkalinisation for tricyclic antidepressant induced arrhythmias and acetylcysteine in early paracetamol poisoning were based on interpreting observational data.

It is common to be asked to review observational studies where analysis has focussed solely on differences generating p values that show statistical significance. These often ignore key covariates (time, age, sex) and other sources of bias. Most studies are also underpowered and lack comparators or exploration of alternative hypotheses. Many do not report on the absolute differences and confidence intervals or other quantitative estimates of error. Post-hoc selection of outcomes or criteria is very common and will routinely overestimate the extent of association and examples of bold claims that have been unable to be reproduced elsewhere abound in the literature. Many would be impossible to replicate as the methods are unexplained 'black box' models.

In this talk I'll provide some simple strategies to get the most from observational data analysis, including focusing on incorporating 'causal evidence', where consideration of the dose and time response and impact of predefined prognostic variables is built into the analysis.