A program for research and publication

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In response to comments from our readers we have decided to continue with our commentary on groups of papers in each issue, instead of just highlighting a small selection of papers. In addition, we are publishing the first in a series of discussion papers on research issues that arise from the process of reviewing and publishing public health research papers.

Many issues of method are covered in referee reports and are debated by authors, with the Editors then having to commit themselves to a firm position about the acceptance or rejection of a paper. Much of this debate goes no further than the people immediately involved. We think this is a pity. In setting out our views in six discussion papers in the six issues in 2002, our prime concern is obviously with writing papers for this Journal, but our aim is to make the series relevant across the variety of domains in public health and across an equivalent range of publications. We invite comment and discussion about these often hidden issues of method.

The papers in this issue

It might have been a popular move to start 2002 on a positive note with an issue devoted to health as a state of subjective well-being and optimal bodily functioning. Instead, the first two papers are about *untimely death* in Australia and New Zealand. In the first, Yin Paradies and Joan Cunningham report a fresh look at the patterns of Aboriginal and Torres Strait Islander mortality, using international data on life expectancy and identifying a similar profile – relatively low infant and child mortality, combined with high mortality through early and middle adult life – in only one other group of nations, the Newly Independent States of the former USSR. This paper provides a stimulus for new approaches to bridging the health divide in Australia. It also draws attention to evidence from the Newly Independent States that positive and negative changes in life expectancy can occur very rapidly indeed. Neil Pearce, Peter Davis and Andrew Sporle describe persistent social class mortality differences in New Zealand men aged 15-64, despite a large (21%) fall in mortality for this age group in the past decade. There is also an increase on the Relative Index of Inequality over the past 20 years. Both papers are informative about data limitations and methodological challenges.

In the next three papers, the common theme is the extent to which we are able to control the quality of *The Air We Breathe*. McGowan and colleagues describe the association between hospital admissions for respiratory and cardiovascular illness in the city of Christchurch and particulate air pollution, most of it from wood burners and open fires. Turrell and colleagues use the Australian 1995 National Health Survey to describe the probable exposure to cigarette smoke from parental smoking in families with a child under 12 months of age, concluding that such exposure takes place in a setting where there is already an increased risk of ill-health and death. The good news, from Caroline Miller and colleagues in South Australia, is that not only is there substantial and increasing public support for smoke-free dining, but there is also support among owners and managers of 'public dining venues', and high compliance. More good news comes in a *Letter to the Editors* from Sydney reporting an increase, among Lebanese families, in those who don't allow smoking inside the house.

Methods, this issue, is all about measurement. D'Souza describes the challenge of providing high-quality information from multiple sources, including an active surveillance system to meet one of the criteria for certification that polio has been eradicated in Australia. The problem facing Alan Clough and colleagues was a more familiar one – how to estimate the extent of something illegal – with the degree of difficulty increased by ethical, cultural and language barriers. Their title tells it all. The third paper in this group, a *Practice Note* by Andrew Milat and colleagues about measuring physical activity in public open spaces, shows that there is still a major role for the human observer.

One major strategy for preventing *Infectious Diseases* depends on the basic biomedical science contribution to vaccine development but the two papers on vaccine coverage demonstrate that having an effective vaccine is not enough. Lyndal Bond and colleagues report marked improvements in vaccine coverage of children under three in child care, along with changes in parent and provider attitudes, with a probable contribution from both surveillance initiatives and incentives. In contrast Sally Murray and Susan Skull found poor vaccination coverage of health care workers in one tertiary hospital, with low levels of knowledge and suboptimal access to vaccination despite formal guidelines. The Ross River and Barmah Forest virus article by Louise Kelly-Hope and colleagues is a warning about the probability of these viruses entering New Zealand by means of viraemic travellers returning from Queensland. They point to the possibility of these infections becoming established in the North Island given the presence of possums as intermediate hosts and certain species of mosquitoes as vectors.

Issues of Method:
1. Justifying a research problem

There are many reasons why researchers become interested in a research area. Some of us are drawn to an area because of a telling personal experience. Others are drawn to an area that presents an intellectual or practical challenge. Others still are employed to address research areas that arise from funding opportunities created in response to the commitment of members of funding bodies or health policy makers.

The importance for researchers in having strong personal or intellectual commitments is not to be under-estimated: it helps to sustain interest over the years devoted to a project. Similarly, fund-

ing for a research area sustains both research and researchers. However, neither personal commitment nor funding justifies the research done in an area.

Whatever their reasons for choosing to work in a research area, researchers have to focus on a research question that is of public health significance and that has not already been answered by somebody somewhere else. From the perspective of a journal, it is only worth publishing a research report if it satisfies these two conditions. A research question that is trivial, or one that has been addressed and resolved in another discipline, cannot be rescued by an impeccably designed study with conclusive results.

The traditional way of establishing both the significance of a project and its contribution to knowledge is a literature review. The standard expected of literature reviews has risen steadily and here we outline some of the expectations that researchers now face – and some of the opportunities for turning the mundane literature review into a central part of each research project.

Twenty, even 10 years ago, a systematic review of the literature required days in the library, combing through the Index Medicus or the annual indices of journals. This no longer applies. Online databases bring this information to our desktops. As a result, the standard required of a review has risen. Reviews that are idiosyncratic in what is selected from the literature will raise questions of bias about the conclusions and cast doubt on the subsequent research project. Reviews need to identify all key articles relevant to a research question. As it is now possible to search for relevant research articles in any of the constituent disciplines of public health, it is expected that researchers will cover the literature in all disciplinary areas that are relevant to the research question. Included in the literature there may be reviews done by others and the quality of these reviews has to be assessed.

After a set of articles is collected, the task is to generate an overview of the field to show that the particular research problem is both important and addresses an area where there is a gap in our knowledge or where there are contradictory findings. The justification for the research is that it will contribute to this clearly defined gap in our public health knowledge base.

The emphasis on systematic reviews of the literature in a field has also grown in tandem with the development of computer databases. A review simply synthesises the knowledge in a field. In the past, it was difficult to distinguish a good review from a rigorous one as there was little emphasis on the need to be systematic in generating conclusions. What we now require is a specified systematic approach both to the collection of material and the generation of an overview. At the very least, researchers need to show that they have looked for relevant material, selected from this collection in a specified way, and have employed a method for synthesising the material and drawing conclusions. The way in which this is done varies from field to field.

At one extreme are reviews that cover a number of studies using different methods and approaches, including qualitative studies or even theoretically based cultural analyses. The principles for conducting a review of this kind of material is that authors outline the scope of the relevant literature, specify the criteria for what is included in the review and what is excluded and use a systematic way of generating the conclusions. Qualitative methods of data analysis involving categorising data and generating explanatory accounts are suited to a systematic review of this kind. What such a systematic review produces is a narrative account of where views are coherent, where views are discordant and the reasons for the differences. A research project may then attempt to strengthen either the coherent view or the discordant view or attempt to resolve the differences between them.

At the other extreme are meta-analyses based on a statistical synthesis of the primary data from similar randomised controlled trials with the aim of producing an overall result. In between the two extremes are quantitative systematic reviews that also use explicit criteria for defining a research question, conducting a literature search, applying inclusion and exclusion criteria and conducting analysis. Conducting a review of this kind is in itself a research project and may involve searching for published as well as unpublished data in order to exclude publication bias. One well-used source of methods for conducting quantitative systematic reviews is the *Reviewers' Handbook of the Cochrane Collaboration*. It describes the methods for conducting the kind of review they publish and provides a list of journal references for this method (http://www.cochrane.org/cochrane/hbook.htm).

The focus of the Cochrane Collaboration and the textbooks that deal with the methods of evidence-based medicine is on assessing the impact of medical or health interventions. Their outline of methods covers general principles that can be adapted to any other method of research synthesis. They have also generated systematic reviews that represent a dedicated worldwide research effort. These are available through the Cochrane Library and, where relevant, should be taken into account in any other reviews.

A systematic review of the literature provides the justification for conducting, and publishing a research study. From a journal's perspective, every original article should carry such a review. While some of the more detailed discussion of methods and conclusions may be published elsewhere, the literature review should provide sufficient detail to justify the project. This increasing emphasis on systematic literature reviews may seem like an unnecessary hurdle for researchers focused on the already demanding task of collecting and analysing data. Funding bodies have been reluctant to fund 'literature reviews' as part of a research project or even as a stand-alone project. There are clear signs that these views are changing. A thoroughly researched review makes an important contribution to focusing a research project on the exact and important research question that still needs to be resolved.

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