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## Two classes of creativity – improving systematic reviews

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In the excellent short textbook on epidemiology – PDQ Epidemiology<sup>1</sup> – the authors provide a “brief Epidemi-English Dictionary”. This dictionary translates what the researcher says in an article into what he or she actually means; for example, the phrase, “it is widely known that”, is translated as meaning, “I cannot be bothered to look up the reference”. Most people working in health service management are aware of the fact that the papers on which managerial and policy decisions are based are often stuffed full of UAs – namely, “unsubstantiated assertions”. It is, however, incorrect to think that all research papers consist only of either hypotheses or PSEs – that is, “propositions supported by evidence”. Research papers also contain many UAs, and this is particularly the case in reviews, textbooks, and overviews, even in those which seem to be authoritative. Overviews and editorials are placed in a prominent position in journals and they and textbooks are often written by respected figures, sometimes by people who have carried out first class research work. In the past five years, however, there has been an increasing awareness that medical review articles are often unsystematic in their selection and appraisal of the evidence which is used to develop the overview and that they are therefore unscientific.<sup>2,3</sup> Even sophisticated analysis of data – meta-analysis – cannot compensate for inadequate research of the published reports and failure to appraise the nature of the evidence which is included in the overview. The first principle of overview writing is, therefore, to be systematic and critical in the identification and appraisal of the evidence that supports the propositions advanced by the writer.

One reason for the poor quality of review articles is that these are regarded as being of lower status than trials and other forms of what some people refer to as “primary” research. The word “primary” implies that the research worker has a flash of insight and carries out a research project to test an original and unique hypothesis. Obviously, this type of research is important and this type of creativity must be encouraged, but the result is all too often a trial of either poor design or insufficient power to test adequately the hypothesis. This is a particular problem in medical research, where doctors in training are encouraged, indeed required, to publish and develop a long curri-

culum vitae to help with promotion. There are techniques that can be used to deal with this growth of second class “primary” research. For example, it is possible to stipulate that the applicants for jobs should cite only peer reviewed publications but, as the process of peer review is also flawed, this is not necessarily a good measure of research quality. Applicants could also be asked to list what they consider to be their three best articles, using “best” to describe the methodology rather than the perceived importance of the impact of the results. This would allow applicants to submit a well designed trial with negative results which editors had refused to publish because of publication bias.<sup>4</sup>

This type of initiative would be helpful but it would not tackle the underlying problem which is the belief that “original” or “primary” research is intellectually more demanding and of a higher scientific status than what is sometimes called “secondary” research – namely, the preparation of systematic reviews. Anyone who has carried out a properly conducted systematic review of a topic will know that this is not the case. The process starts in the same way with the development of a hypothesis, then the research worker has to create a project which will assemble the evidence that will allow the hypothesis to be tested. It may seem that one literature review is very like another but this is not the case. A literature review of a particular topic requires an understanding of that topic and how those working in the area classify their research and publications. It also requires a considerable knowledge of the subject itself, for each trial that is included in the systematic review has to be appraised, taking into account not only the epidemiological rules for appraisal<sup>5</sup> but also a knowledge of the clinical and research importance of each trial. Preparing reviews takes time, effort, intelligence, and commitment and it is a branch of scientific endeavour as important as “primary” research.<sup>6</sup>

The National Research and Development Programme in England has provided support to set up the Cochrane Centre<sup>7</sup> and this is now a node in the Cochrane Collaboration, a world wide network of people with a commitment to the identification of published and unpublished trials and the preparation of systematic reviews of the evidence presented in those trials. The agenda is immense. Thousands of

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Accepted for publication  
October 1993

trials are published every year but the number of people currently working in this area is still relatively small. Fortunately, the attitude of funding bodies is changing as they recognise that the first step in a research project must be the assessment of the state of existing knowledge, and this is best done through a systematic review. The preparation of systematic reviews is a process of scientific enquiry and in future research workers should be trained not only to carry out surveys, trials, and other forms of “primary” research but also to be able to prepare and define the quality of systematic review. Only with both types of skill can a

research worker be considered fully prepared to test hypotheses and convert “unsubstantiated assertions” into “propositions supported by evidence”: both are equally powerful forms of creative research.

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