3.1: Introduction to reviewing the literature

Systematic reviews are increasingly recognized as an essential step in health care research. They are a method designed to produce an objective, unbiased, up-to-date summary of available evidence. In this chapter, an outline is given of the methods used to systematically review the medical literature and to assess the risk of bias in the identified studies. Results from a systematic review may be summarized as a narrative or a summary estimate produced from a quantitative meta-analysis. In either case, systematic reviews are usually a necessary step in preparing to conduct intervention trials and in setting the results of trials into context.

Before embarking on an intervention trial, it is essential to review what is already known about the questions to be addressed in the trial. The most objective way to do this is to conduct a systematic review of all similar studies that have been published previously on the topic. Such a review should enable an assessment to be made of whether (1) sufficient evidence for the effect of the intervention already exists, or (2) there is a clear scientific rationale for an effect of the intervention, but there is insufficient evidence that the intervention works in practice, or (3) there is an insufficient rationale for an intervention effect. If the review of the published evidence supports (1) or (3), then there may be little justification for conducting a (further) trial. Furthermore, funding agencies may require a systematic review to provide evidence that a new trial is justified, and some journals (including, for example, the Lancet (Clark and Horton, 2010)) now require authors to include, in papers reporting the results of a trial, a summary of the findings from a recent systematic review, in order to put their trial into context, or to report their own up-to-date systematic review. For example, before proposing a trial of a new school-based behaviour change intervention to reduce the incidence of HIV infection, it would be essential to review the literature on the effectiveness of previous school-based interventions, and also to review the literature on the rationale underpinning the mechanism by which such an intervention might be expected to be effective.

A proposed trial is worthwhile if the conclusions from a systematic search of the literature provide a strong rationale that the proposed intervention will work, but there is currently insufficient evidence to know how effective, if at all, it is likely to
be in the target population for the trial. In addition to wasting time and resources, a trial of an intervention which has already been proven effective may be considered unethical, as participants in the control arm would not receive a beneficial intervention, and conducting a further trial may delay scale-up of the intervention to those who would benefit from it.

In this chapter, we describe methods for conducting systematic reviews of epidemiological studies (including observational studies as well as intervention trials) to judge whether a new intervention trial is justified. We also include sections on assessing the risk of bias in studies and on providing a narrative and quantitative summary of the findings.

Systematic reviews are not trivial undertakings, and not all investigators will have the time or resources to conduct the kind of review that we outline in this chapter. Ideally, other investigators will have conducted a recent review, and it will be possible to utilize their findings. For example, an agency such as the World Health Organization (WHO) might have commissioned a review in order to assist them in setting priorities for disease control or to highlight important areas for research. Those planning to conduct a trial might not need to conduct their own systematic review but could build on the previous work. However, even if an investigator is not going to undertake their own review, it is important that they understand how such reviews are conducted and indeed can assess the quality of published systematic reviews. This chapter should facilitate this.

The insights that a systematic review can give to the reviewers on the effects of an intervention and the quality of previous studies are invaluable. It is highly recommended that all those conducting trials participate in at least one systematic review fairly early in their careers!