How members of the Cochrane Collaboration prepare and maintain systematic reviews of the effects of health care

This issue of Evidence-Based Medicine contains a systematic review (overview) of the effectiveness of specialisation stroke units for patients with acute stroke. The abstract is taken from the first edition of “The Cochrane Database of Systematic Reviews,” released in April 1995 by the Cochrane Collaboration, the international organisation dedicated to preparing and maintaining systematic reviews of the effects of health care.

The conception, formation, and objectives of the Cochrane Collaboration are well described elsewhere (1). Many of those who prepare and read this journal already are members of the Collaboration, and we hope that many more will join this enterprise. But the focus of this journal is the Collaboration’s products rather than its principles, so this EBM Note will describe the process that leads to the creation and release of a Cochrane Review.

The process starts with people—clinicians, consumers, and researchers—interested in a particular health problem or group of problems: What is the best treatment for stroke, and can we reduce the risk for its recurrence? How should we minimise the harm from malaria in pregnant women living in areas of the world where the disease is endemic? How can persons who want to give up smoking be helped? One way or another, some of these people learn of the Cochrane Collaboration. This may happen by word of mouth, journal browsing, or discovering the Collaboration’s published materials. Its Handbook (2) is available in both electronic and print versions, and readers interested in learning more about the Collaboration can contact their nearest Cochrane Centre.

On the basis of this discovery, some of these people decide that the objectives and framework of the Collaboration provide an important opportunity to address their particular health problem. Exploring how to take part begins by asking their local Cochrane Centre to add their names, interests, and contact information to an electronic directory that is shared with other Centres around the world and with the Collaboration as a whole. In return, they can discover other like-minded people who have registered with the Collaboration, and eventually 1 or more of them volunteer to act as facilitators and establish a network of persons with this common interest. When their exchange of information and ideas indicates that they might wish to work together collaboratively, 1 or more of them, liaising with 1 or more Cochrane Centres, invite all the others to an exploratory meeting. Although they involve people from all over the world, exploratory meetings are usually run on shoe-string budgets, without subsidy for travel or accommodation (often they are held just before or after a gathering of many of their participants). But just getting to them is testimony to both the commitment and the ingenuity of those who attend them!

At those or subsequent exploratory meetings, a group of participants agrees they would like to work together and are prepared to assume responsibility, throughout their foreseeable futures, for preparing and maintaining systematic reviews of the effects of health care on their chosen health problem or group of problems. In consultation with the nearest Cochrane Centre, they prepare a plan that defines the scope of their Collaborative Review Group, identifies who will be responsible for planning and monitoring its work (called editors), proposes how the group will identify and assemble all the relevant studies, and identifies who will take responsibility for preparing and maintaining the specific individual reviews; every Group appoints an administrator to organise and manage their day-to-day activities. The Group’s plan, together with a supporting letter from the reference Cochrane Centre, is submitted to an international panel of persons who represent the various elements of the Cochrane Collaboration (the Steering Group). This process promotes high scientific standards, avoids duplication, and ensures that Collaborative Review Groups are both multidisciplinary and international. If their plan is approved, the group becomes registered as a Collaborative Review Group.

The Group now gets down to work! As exemplified in the stroke review in this issue of Evidence-Based Medicine, the reviews usually are based on the results of randomised controlled trials (RCTs), but information derived from research using other designs is used when necessary and appropriate. Finding all of the relevant evidence is a daunting task because existing bibliographic databases not only exclude most unpublished evidence (which often is negative, and whose absence may lead to overly optimistic conclusions about efficacy) but also may fail to identify 50% or more of the relevant published reports (3). The Cochrane Collaboration helps Groups meet this challenge in several ways. First, it has developed an efficient search strategy for MEDLINE and is working with the U.S. National Library of Medicine to improve the identification of both old and newly published trials. Second, through a database maintained at the Baltimore Cochrane Centre, the Group can identify journals that have been, are, or will be hand-
searched for all trials. Cochrane Centres are responsible for searching general health care publications, and Groups share responsibility for hand-searching specialist journals, each searching those relevant to its specific health problems (and reporting any RCTs it finds on any topic). A third group in the Cochrane Collaboration, rather than focusing on specific health problems, has coalesced around settings of health care (e.g., primary health care), classes of intervention (e.g., vaccines), or kinds of health service users (e.g., elderly persons). These collections of contributors, called Fields, also organise searches of their specialist literature and contribute to the register of RCTs.

Having identified all relevant trials, Groups are ready to take on the challenge of assembling and appraising the evidence, synthesising it into Cochrane Reviews. They begin by developing their individual protocols (because systematic reviewing is research!) and progress to assessing individual trials for their validity, relevance, and reliability (often communicating with the investigators), synthesising their results, and preparing the structured report that constitutes a Cochrane Review.

Cochrane Reviewers are assisted in these tasks by instructional documents (including sections of the Cochrane Handbook), by Cochrane Centres, and through workshops. Their work is based whenever possible on the results of empirical research into the effects of different methods for doing and combining RCTs on the validity of their conclusions. This methodological research is the focus of persons who work together in methods working groups who tackle issues ranging from the effects of failing to conceal treatment assignments in RCTs (leading to overestimates of efficacy) to strategies for improving the quality assurance and dissemination of Cochrane Reviews.

Computer software has been developed by the Collaboration to help reviewers do their work. The most prominent creation (called Review Manager) provides an interactive framework for organising and analysing RCTs. It also aids in assembling Cochrane Reviews into a uniform format from which they can be published, either electronically or as hard copy. Such a formatted Cochrane Review forms the basis for the entry titled "Specialist inpatient stroke unit care reduces mortality and institutionalisation compared with general medical ward care" in this issue of Evidence-Based Medicine.

Individual Cochrane Reviews can be combined in various ways to coincide with the interests of both Collaborative Review Groups and potential user groups. The Cochrane Database of Systematic Reviews combines all Cochrane Reviews, either completed or in progress, with contact information about all the Cochrane Reviewers so that end-users can contact them to offer feedback, suggestions, and criticisms. Subscriptions to the Cochrane Database of Systematic Reviews, which currently is issued twice per year on computer diskette or compact disc, are available from the BMJ Publishing Group and in North America from the American College of Physicians, and future editions, besides containing a rapidly expanding series of Cochrane Reviews, will include an Internet version designed to further facilitate feedback and criticism from users.*

The Cochrane Collaboration has been favourably compared with the Human Genome Project in its importance to mankind (4). When its systematic reviews of the effects of health care meet the criteria for selection for Evidence-Based Medicine, they will appear here.

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References