Leading article

The Cochrane Collaboration and systematic reviews

M. Clarke

The UK Cochrane Centre, NHS R&D Programme, Summertown Pavilion, Middle Way, Oxford, Oxfordshire OX2 7LG, UK
(e-mail: mclarke@cochrane.co.uk)

Published online in Wiley InterScience (www.bjs.co.uk). **DOI:** 10.1002/bjs.5812

Faced with a choice between two surgical interventions, some of the key information needed to make the decision is reliable evidence on the relative effects of the two procedures. This is also true if the choice is between surgery and another way of managing the condition, or between two aspects of care associated with an operation. There are other things to consider as well, including surgical expertise and experience, patient's preference and the feasibility of the different interventions, but it is especially important to know which intervention is likely to be more beneficial or, conversely, which might be less harmful.

Ideally, the evidence to underpin this aspect of informed decision making should come from well conducted randomized trials – unless the interventions are so different that their different effects would be obvious, even in the presence of the biases inherent in some other study designs. Furthermore, rather than looking for a single randomized trial, or being faced with potentially undue emphasis on the results of one trial, the surgeon making the decision might seek out an up-to-date, well conducted systematic review of randomized trials.

Twenty years ago systematic reviews were rare; now there are many thousands, published in hundreds of journals. In fact, the time is approaching when we will need to focus on systematic reviews of reviews to help make sense of this research. Careful effort is needed when handling the vast quantity of healthcare literature that is being added to on a daily basis if we are to find the evidence on effects that will help everyone making decisions about healthcare to make the best decision possible. To help appreciate the overwhelming amount of information – if not the truth – that is out there, the reader might try typing 'surgery' into http://www.google.co.uk. See how much material you find and how fast you find it – the last time I looked there were 158 million pages in a thirtieth of a second.

The Cochrane Collaboration is an initiative that has grown out of this need to find a way through the vast swathes of literature to reach reliable, up-to-date evidence, in which biases have been minimized (http://www.cochrane.org). It is the world's largest organization producing and maintaining systematic reviews in health. These reviews focus on the effects of healthcare interventions and so rely heavily, but not exclusively, on the findings from randomized trials. All aspects of care are eligible, including screening, treatment, prevention and rehabilitation. There are also Cochrane methodology reviews that bring together empirical research on topics such as barriers to recruitment to research, the value of peer review and methods to increase the response to questionnaires. In 2007, the breadth will expand further with the introduction of a new type of review, addressing diagnostic test accuracy.

The Cochrane Collaboration was established in 1993, a year after the opening of the first Cochrane Centre in the UK, with support from the fledgling Research and Development Programme of the National Health Service. Continued support has helped the organization to grow, and Cochrane output is recognized as one of the major achievements of that programme[1]. Although it may have started in the UK, with a large minority of the participants still based in that country, The Cochrane Collaboration has become an international organization. At the beginning of 2006 there were nearly 15 000 people actively participating in its work, in nearly 100 countries[2].

Most of these people are authors working on Cochrane reviews, almost always without direct reimbursement for their efforts. As authors, they work with one of the 51 Cochrane Review Groups that provide editorial support, administration and infrastructure. These groups cover specific areas of health and are based around the world. The groups and individual participants in The Cochrane Collaboration are supported with training and methodological advice by 12 Cochrane Centres and 11 Cochrane Methods Groups. The latter cover issues such as applicability, information retrieval, statistics and health economics. There are also 12 Cochrane Fields that have broad areas of interest and expertise, such as child health, cancer and neurology. These cut across the scope of Cochrane Review Groups and help to identify people to work on reviews and to disseminate the findings. A Cochrane Consumer Network strives to promote the involvement of users of healthcare, in both the production and use of Cochrane reviews.

The reviews are published in the *Cochrane Database of Systematic Reviews*, which is part of The Cochrane Library, an electronic publication available on Wiley Interscience (http://www.thecochranelibrary.com). They are indexed in Medline and included in the Thomson's Scientific Web of Science. All Cochrane reviews have the same structure, which, once mastered, makes it easy to move between reviews to find those sections of particular interest. When the *Cochrane Database of Systematic Reviews* first appeared in 1995, it contained just 36 full reviews; there were 500 in 1999, 1000 in 2001, 2000 in 2004 and there are now 3000. The protocols for a further 1600 future reviews are published alongside this completed work, setting out the methods that will be followed. About 400 of these protocols will become full reviews over the coming year and a few hundred of the existing reviews will be updated to such an extent that readers who used their findings in the past will be encouraged to read them anew. Several hundred more reviews will be updated to a lesser degree.

Cochrane reviews cover the whole range of healthcare, driven primarily by the enthusiasm of authors to meet the scientific challenge of questions about the effects of interventions and the appropriateness of a Cochrane review to answer these questions. Are the reviews relevant to surgery? A look at the new reviews from the final issue of The Cochrane Library in 2006 provides some insight. There are reviews comparing different surgical techniques, such as laparoscopic *versus* open surgery for rectal cancer[3] and stapled *versus* conventional surgery for haemorrhoids[4]. Others compare operations with non-operative treatments, for example for dislocation of the hip after total hip arthroplasty[5], and yet more investigate aspects of surgical care, such as the introduction of feeding after operation[6].

Although there are now thousands of Cochrane and other systematic reviews, there is still a long way to go. It has been estimated that more than 10 000 independent systematic reviews are needed to tackle the vast quantity of effectiveness research that already exists; the real number might be double this[7]. The challenge both of preparing reviews and of keeping them up to date must be faced if we are to cope with the overwhelming amount of research information that is now available. Furthermore, new research must be undertaken, and interpreted, only with scientific and ethical justification. Such justification requires a knowledge that such new research is actually needed and that it has been designed to take account of existing evidence. Systematic reviews are vital to these processes[8].

References

1 Horton R. Health research in the UK: the price of success. *Lancet* 2006; **368**: 93–97.

2 Allen C, Clarke M. International activity in Cochrane Review Groups with particular reference to China. *Chinese Journal of Evidence Based Medicine* 2006; **6**: 541–545.

3 Breukink S, Pierie J, Wiggers T. Laparoscopic *versus* open total mesorectal excision for rectal cancer. *Cochrane Database of Systematic Reviews* 2006; Issue 4. Art. No.: CD005200. DOI: 10·1002/14651858. CD005200.pub2.

4 Jayaraman S, Colquhoun PHD, Malthaner RA. Stapled *versus* conventional surgery for hemorrhoids. *Cochrane Database of Systematic Reviews* 2006; Issue 4. Art. No.: CD005393. DOI: 10·1002/14651858. CD005393.pub2.

5 Khan RJK, Carey Smith RL, Alakeson R, Fick DP, Wood D. Operative and non-operative treatment options for dislocation of the hip following total hip arthroplasty. *Cochrane Database of Systematic Reviews* 2006; Issue 4. Art. No.: CD005320. DOI: 10·1002/14651858. CD005320.pub2.

6 Andersen HK, Lewis SJ, Thomas S. Early enteral nutrition within 24 h of colorectal surgery *versus* later commencement of feeding for postoperative complications. *Cochrane Database of Systematic Reviews* 2006; Issue 4. Art. No.: CD004080. DOI: 10·1002/14651858.CD004080.pub2.

7 Mallett S, Clarke M. How many Cochrane reviews are needed to cover existing evidence on the effects of healthcare interventions? *Evidence Based Medicine* 2003; **8**: 100–101.

8 Clarke M. Doing new research? Don't forget the old: nobody should do a trial without reviewing what is known. *PLoS Med* 2004; **1**: 100–102.