

The impact of Cochrane Reviews: a mixed-methods evaluation of outputs from Cochrane Review Groups supported by the National Institute for Health Research

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Declared competing interests of authors: Frances Bunn and Daksha Trivedi are editors with the Cochrane Injuries Group, Phil Alderson is an employee of the National Institute for Health and Care Excellence (NICE) and was employed by the UK Cochrane Centre (UKCC) from 1998 to 2004 and was seconded part time to the UKCC from May 2013 to March 2014, Frances Bunn, Daksha Trivedi, Phil Alderson and Steve Iliffe are all authors on Cochrane Reviews and Phil Alderson has also published papers about Cochrane Reviews.

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Scientific summary

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Background

The last few decades have seen a growing emphasis on evidence-informed decision-making in health care. Systematic reviews, such as those produced by Cochrane, have been a key component of this movement. The National Institute for Health Research (NIHR) systematic review programme currently supports 20 Cochrane Review Groups (CRGs) in the UK and it is important that this funding represent value for money.

Aims and objectives

The overall aim was to identify the impacts and likely impacts on health care, patient outcomes and value for money, of Cochrane Reviews published by 20 NIHR-funded CRGs between the years 2007 and 2011.

Methods

We used a mixed-methods approach informed by theories about research use and guided by a framework for evaluating research impact. The framework included the following categories: knowledge production, research targeting, informing policy development and impact on practice/services.

Research plan

There were three work packages (WPs), with WPs 1 and 2 being conducted in parallel. In WP 1 we obtained a general overview of the impact of CRG outputs published between the years 2007 and 2011, and in WP 2 we undertook a more detailed exploration of the impact of a representative sample of Cochrane Reviews first published (or updated) between the years 2007 and 2011. In WP 3 we synthesised the findings from WPs 1 and 2. The WPs included the following:

Work package 1

We sent a questionnaire to CRG editorial bases, undertook secondary analysis of existing documents and resources relating to the impact of Cochrane Reviews and undertook semistructured interviews with a purposive sample of guideline developers (GDs).

Work package 2

We selected a representative sample of 60 Cochrane Reviews for further in-depth analysis. This included three reviews per CRG with one chosen randomly and two chosen from those likely to have had impact. We sent a questionnaire to the first authors of these 60 reviews and undertook bibliometric and documentary review.

Results

A total of 3187 new and updated reviews were published on the Cochrane Database of Systematic Reviews between 2007 and 2011, 1502 (47%) of which were produced by the 20 CRGs funded by the NIHR.

Knowledge production, identifying gaps in the evidence and stimulating research

We found reasonably good evidence to suggest that some Cochrane Reviews had played a role in identifying gaps in the evidence and stimulating new research. CRGs and authors provided 40 examples where they felt reviews had influenced primary research, and 13 of the sample of 60 reviews had been cited in a protocol or the background of a primary research study. Most of the examples of follow-on research were randomised controlled trials.

As well as influencing the conduct of new research, there was evidence that Cochrane Reviews had contributed to the creation of new knowledge and the stimulation of discussion and debate. Although there was considerable variation between the reviews, the data does suggest that many of the 60 reviews have been of interest to other researchers, health-care professionals and policy-makers. For example, 27 of the 60 reviews had had 100 or more citations in Google Scholar™ (Google, CA, USA) and five had received over 400 citations. Citation counts were much higher in Google Scholar than in Web of Science (WoS) or Scopus (Elsevier).

Informing policy development

Systematic reviews from all the 20 CRGs were cited in some form of clinical or practice guidance. Across the CRGs, 483 systematic reviews had been cited in 247 sets of guidance (or in the evidence reviews used to develop the guidance). This included 62 sets of international guidance, 175 sets of national guidance and 10 examples of local guidance. Of the national guidance, 87 were developed in the UK, with Cochrane Reviews cited in 30 sets of National Institute for Health and Care Excellence (NICE) guidance and 23 sets of Scottish Intercollegiate Guidelines Network guidance.

To explore the way in which Cochrane Reviews are used in the preparation of guidance (including that produced by NICE) we conducted semistructured interviews with GDs. The results of the thematic analysis suggest that searching for relevant Cochrane Reviews is part of the guideline development process and that Cochrane Reviews often play an instrumental role in informing guidance. Cochrane Reviews appeared to be used at a number of different stages of the guideline development process. For example, early in the process to scope review questions and assess the strength of the evidence and later in the process as part of the evidence review to develop the guidance. Even when the whole Cochrane Review was not used, GDs often drew on component parts of the review such as search strategies, lists of included and excluded studies, quality assessment data and analyses. However, there were a number of barriers to the use of Cochrane Reviews in guidance. Cochrane Reviews might not be available, they might not fit with the guideline scope, they might be out of date, or the methods used might not fit with those required for the guideline.

Impact on clinical practice and services

There was evidence to suggest that some Cochrane Reviews may have led (or contributed) to a number of benefits to the health service including safer or more appropriate use of medication or other health technologies and the identification of new effective drugs or treatments. However, whether these changes were directly as a result of the Cochrane Reviews or the result of subsequent clinical guidance was difficult to judge. Review authors who responded to the questionnaire were generally unsure if their work had changed the behaviour of practitioners, managers or members of the public or if their work had helped to reduce costs, increase quality, improve effectiveness or promote equity.

There is evidence to suggest that Cochrane Reviews contribute to creating knowledge about, and confidence in, the value of treatments. Many Cochrane Reviews have the potential to affect practice and policy and some produce findings that could potentially lead to costs savings and health-service benefits. Some of these potential benefits were highlighted in the Cochrane quality and productivity topics, 19 of which related to reviews produced by one of the 20 CRGs between the years 2007 and 2011. Potential benefits identified included economic benefits through budget savings or the release of funds, improvements in clinical quality, the reduction in the use of unproven or unnecessary procedures and improvements in patient and carer experiences.

Barriers and facilitators to review impact

Interviews with GDs identified a number of potential barriers to review impact. One of the themes that emerged from the interviews with GDs was the need for up-to-date evidence. Reviews that were considered to be out of date, that took too long to update or that had too narrow a scope were of less use to policy-makers. The interviews with GDs also suggested that a lack of collaboration and communication between GDs and CRGs acts as a barrier to the use of Cochrane Reviews in the development of guidance.

Conclusions

This study identified a number of impacts and likely impacts of Cochrane Reviews. The clearest impacts of Cochrane Reviews are on research targeting and health-care policy, with less evidence of a direct impact on clinical practice and the organisation and delivery of NHS services. Although it is important for researchers to consider how they might increase the influence of their work, such impacts are difficult to measure. Questions remain about how we define and measure impact and more work is needed to develop suitable methods for impact analysis.

Recommendations for practice and research

Areas for future research identified by the study include the following:

- Further work to develop methods to identify the impact of systematic reviews on health-care practice and the behaviour of clinicians, policy-makers and service users, in particular identifying ways of identifying impact on clinical practice.
- Qualitative research exploring how decision-makers interpret and understand systematic reviews and how this might be facilitated.
- Research into the impact on clinical practice, which may be more easily discernible if evaluations have a narrower focus (e.g. looking at more specific areas of health care); this would allow the use of methods targeted at specific groups of health-care providers.
- Further work on how to define and evaluate the value for money of specific reviews or groups of reviews.
- Further evaluation of the format of Cochrane Reviews including how to present complex scientific information in a format that is accessible for decision-makers.
- Further development and evaluation of knowledge transfer strategies designed to increase the use of Cochrane Reviews in evidence-informed decision-making.
- Further work to improve the completeness of citation data for Cochrane Reviews on WoS and Scopus and verify data accuracy on Google Scholar.

Areas for future practice identified by the study include the following:

- The development of formal networks for collaboration and communication between GDs and CRGs.
- The investigation of the ways Cochrane share data with GDs. However, this would need support across all the collaboration, not just the UK. It would need to be done in a way that recognises and rewards the contribution of Cochrane authors and CRGs and may need to be financially incentivised.
- The investigation of the ways Cochrane and CRGs identify and document impact on clinical decision-making and practice.
- The routine collection of examples of actual and potential impact by CRG editorial bases.

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