

THE COCHRANE COLLABORATION, ITS MISSION AND THE VALUE OF SYSTEMATIC REVIEWS



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The Cochrane Collaboration's primary purpose is to produce systematic reviews to inform decision-making in health care for patients and carers, health professionals, policy-makers and other stakeholders. Over 5,000 systematic reviews across clinical care and health policy are available in the Cochrane Database of Systematic Reviews, which is published as the major database within The Cochrane Library. Around 400 systematic reviews relate to cancer and include nearly 4,900 studies, providing a unique resource for people making decisions and choices about cancer screening, prevention and treatment. The Cochrane Library is free at the point of use to about half the world's health professionals and a cancer review is accessed every three minutes.

The Cochrane Collaboration is celebrating its twentieth anniversary in 2013 and since its establishment in 1993, its primary purpose has been to produce systematic reviews to inform decision-making in health care for patients and carers, health professionals, policy-makers and other stakeholders. From its origins in the UK, the Collaboration spread quickly across the world. There are now around 28,000 people involved in Cochrane activities, across more than 100 countries.

The Collaboration continues to produce more systematic reviews than any other body internationally and more than 5,000 full reviews of interventions and diagnostic tests across all areas of clinical care and health policy are available, with thousands more at earlier stages in their development. Cochrane Reviews have many special features: they are prospectively registered and preceded by a peer reviewed and published protocol setting out the methods to be followed, review authors are expected to maintain their reviews in order to reflect emerging evidence, and they are published in full, including all of the analyses and details on every included study. By virtue of the rigorous methodological approach, and the structured and detailed editorial processes they are also widely regarded as demonstrating high quality evidence on which to base clinical and policy decisions, and have been to shown to be, on average, of higher quality than reviews published in other journals¹.

The Collaboration includes in its core principles the aims of building on the enthusiasm of individuals, minimizing bias and avoiding duplication of effort. Review authors are supported through the research process by editorial teams from the point of registering their title, through preparation and publication of the protocol and subsequently the full review and its updates. Each of the 53 Cochrane Review Groups takes responsibility for one aspect of health, whether it is a clinical condition such as breast cancer or heart disease, or a non-clinical area such as public health, communication, or effective practice and organization of care. At both the protocol and review stages, peer reviewers include consumer, content and methods experts, in order to assure quality and relevance.

Cochrane Reviews are highly structured and substantial documents, reflecting the enormous commitment and expertise of their contributors. They are collected together within the Cochrane Database of Systematic Reviews (CDSR), which forms the core component database of The Cochrane Library, which is the main product produced by the Collaboration and is published online and in associated digital formats (www.thecochranelibrary.com).

Currently about 50% of the world's clinicians enjoy "one-click" access to The Cochrane Library, free at the point of use. These include countries where there is a national licence, including the UK, and most countries included in the World Bank's list of low-income countries. In addition, the

Table 1: Profile of cancer review prepared through the Reviews for Africa Programme

Title: Interventions for squamous cell carcinoma of the conjunctiva in HIV-infected individuals

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Plain language summary: Conjunctival squamous cell carcinoma, a tumour of the thin membrane that covers the white of the eye, is becoming more common, more aggressive, and affecting more young people, especially women. This pattern is associated with the HIV/AIDS pandemic, exposure to solar radiation, and infection with human papilloma virus (HPV). Various treatment modalities exist, but the recurrence rate is high and the cosmetic outcome of late disease unsightly (Figure 1). Death may occur when the disease spreads to the surrounding structures and the brain. This review was conducted to evaluate the effects of the current interventions. No randomised controlled trials of any interventions for this cancer were found. Current clinical practice appears to be based on case series and case reports. These are weak sources of evidence for the effectiveness of a treatment. Randomised controlled clinical trials are needed.

Collaboration has used its networks to produce translations of key elements in Cochrane Reviews into a growing number of languages to increase accessibility in communities where English is not the first language².

The Cochrane Collaboration has also been influential in other roles; as a provider of training in systematic review methods and knowledge translation, in its advocacy for evidence informed health decision-making and in the contribution made by its members to the development of systematic review methodology. In January 2011, The Cochrane Collaboration was accepted as a Non-Governmental Organization in Official Relations with the World Health Organization (WHO), the public health arm of the United Nations, establishing formalized communication between the two organizations.

Cochrane and low- and middle-income countries (LMIC)

The Cochrane Collaboration is prioritizing the production of reviews that are relevant to the needs of people and communities where the threats to health are greatest and where provision of services is most challenging, for economic and other reasons. Achieving geographical relevance can be difficult, since most of the highest quality research is conducted and reported in higher income countries, but it is

nonetheless imperative that Cochrane Reviews tackle the issues of relevance to resource poor settings. As Dr Hassan Mshinda, Director General of the Tanzania Commission for Science and Technology says “If you are poor actually you need more evidence than if you are rich”.

Many Cochrane Review Groups and Cochrane Centres have prioritized building research capacity in LMIC and encouraging review titles that explicitly address questions that are relevant in these settings. The proportion of review authors based in LMIC has been tracked by the Collaboration since 2000. As of February 2012, there were 5,166 contributors in countries with low- and middle-income economies, compared to 4,618 (12% increase) in 2011; representing 19% of all contributors (compared to 6% in 2000). Of these 5,166 people, 4,943 were listed as authors (95%). (Claire Allen, personal communication)

Cochrane Reviews constitute an important component of the World Health Organization’s “Reproductive Health Library” (<http://apps.who.int/rhl/en/index.html>) and eLENA nutrition portal (<http://www.who.int/elena/en/index.html>), and have informed many WHO guidelines addressing questions relating to HIV/AIDS, pregnancy, childbirth and nutrition.

In addition, there are many other examples of Collaboration groups working with colleagues in LMIC to build capacity,

Table 2: Range of cancer topics covered by 391 Cochrane Reviews (number of reviews in brackets) in Issue 7 2012 of The Cochrane Library

Bladder (8)
Breast (39)
Childhood cancers (16)
Colorectal (49)
Generic cancer care (47)
Gynaecological (59)
Haematological malignancies (31)
Head and neck (11)
Liver (3)
Lung (25)
Neurological (13)
Oesophagus (4)
Oral (5)
Palliative and supportive care (55)
Pancreas (5)
Prostate (15)
Renal (4)
Screening (12)
Skin (8)
Small bowel (6)
Soft tissue sarcoma (5)
Stomach (3)
Testicular (1)
Urological (25)

produce relevant reviews and disseminate them to decision-makers, including guidelines groups and policy-makers. These activities include training programmes, such as the Reviews for Africa Programme (RAP) (<http://www.mrc.ac.za/cochrane/rap.htm>) coordinated by the South African Cochrane Centre and events held by the regional Cochrane Centres and Branches (<http://www.cochrane.org/contact/centres>). Knowledge transfer projects include tailored summaries produced by the Support Tools for Evidence Based Policy Making³.

However, more still needs to be done and, at a strategic leadership meeting in Croatia in 2011, the Collaboration established a plan to do more to ensure that its activities appropriately reflect the health needs of diverse populations. It has proposed a project that specifically aims to support a number of research teams in LMIC to produce relevant reviews, working with other research funders and stakeholders. This approach was strengthened when, during its 2012 strategic meeting, there was an agreement that the Collaboration should improve how the CDSR meets the needs of readers and users from low- and middle-income countries by making relevant information more prominent – by prioritizing and highlighting relevant Cochrane Reviews, and improving the information reported in reviews about setting and context – and continuing to improve access to the findings of Cochrane Reviews, including better technology and increasing the amount of translated content. (http://www.editorial-unit.cochrane.org/sites/editorial-unit.cochrane.org/files/uploads/2012-CC-strategic-session_full-report_no-appendices.pdf)

Following the Indian Ocean tsunami in December 2004, members of the Collaboration established Evidence Aid to bring together systematic reviews of relevance to natural disasters and other large scale humanitarian emergencies. Special collections of Cochrane Reviews were created and made available free through The Cochrane Library, providing collated evidence on, for example, safe water, fracture management and post-traumatic stress disorder. Evidence Aid is now working with the Collaboration and other partners to expand these activities, identifying and filling research gaps, in order to help people and organizations involved in disaster risk reduction, planning, response and recovery to make well-informed decisions. The first Cochrane Review arising from Evidence Aid was published in July 2012, examining the effects of the use of electric fans during heatwaves, and involving searches of the Indian and Chinese literature⁴.

Until 2010, The Cochrane Library was published quarterly⁵ but in order to speed up access to Cochrane Reviews, this became monthly from Issue 2 of that year in February. In the

first twelve monthly issues, up to January 2011, 20 of the 390 reviews that were published in full for the first time, explicitly mentioned their relevance to low- and middle-income countries in their abstract or authors' conclusions. For example, in a review that appeared first in 2010 and was further updated in 2012, Gulani and Sachdev concluded that evidence on whether zinc supplementation can reduce the incidence of otitis media in healthy children under the age of five years living in low- and middle-income countries is mixed and that further research is needed to see whether zinc supplements can prevent otitis media in poor community settings⁶.

The Cochrane Collaboration and cancer

Among the aforementioned 390 Cochrane Reviews that appeared in full for the first time in the first twelve monthly issues of The Cochrane Library from February 2010, there were 34 reviews of cancer. These included many of general relevance to low- and middle-income countries, without specifically mentioning these settings. For example, McNeely et al showed the benefits of post-operative exercise for women following breast cancer surgery⁷.

In Issue 7 2012 of The Cochrane Library, a total of 391 full Cochrane Reviews were readily identifiable as relating to cancer, from about 20 Cochrane Review Groups, some of which work together on reviews that cut across the scope of more than one. These reviews include a total of nearly 4,900 included studies, providing a unique resource for people making decisions and choices about issues covering screening, prevention and treatment of cancer. They are widely accessed, with a total number of full text views on The Cochrane Library website alone of 212,000 in 2011, with an average of one review being accessed every three minutes. More than half of these reviews were accessed more than 400 times during the year.

Individuals and groups associated with The Cochrane Collaboration also undertake considerable activity to develop the methods for systematic reviews. This includes examples of reviews in which collaborative efforts by all researchers conducting trials in a specific area lead to the production of the reviews based on central, re-analysis of individual participant data. In cancer, these lead to uniquely reliable estimates of effects of treatments on the time to events, such as recurrence, progression and death; as well as the ability to explore these effects in different subgroups of patients. Among the several examples of such reviews in The Cochrane Library are those examining the effects of chemotherapy in advanced bladder cancer⁸ and non-small cell lung cancer⁹; and radiotherapy for head and neck cancer¹⁰.

What is important in the future

There is growing appreciation of the importance of non-communicable diseases in LMIC. In 2008, 7.6 million people died of cancer – 13% of all deaths worldwide. The World Health Organization reports that about 70% of all cancer deaths in 2008 occurred in LMIC. Furthermore, deaths from cancer worldwide are projected to continue rising, reaching 13.1 million deaths a year by 2030. (<http://www.who.int/mediacentre/factsheets/fs297/en/index.html>)

As an organization that is committed to providing the best evidence to guide decision-making, The Cochrane Collaboration needs to ensure that it is conducting and publishing reviews that address the key questions, be they in cancer or other conditions, and that it both prioritizes reviews that are especially relevant to low- and middle-income countries and also addresses the applicability of other reviews to such settings. In order to achieve this, it is crucial that the Collaboration identifies, engages with and supports researchers in LMIC and other resource-poor settings as review authors, peer reviewers and editors.

It is equally important that that all knowledge producers act to ensure accessibility of high quality information and provide people with the skills and knowledge to act on the evidence that is provided¹¹. Knowledge translation efforts such as the Support Summaries programme seek to help policy-makers in resource-poor settings to understand the findings from Cochrane Reviews.

In a book recently published by the Cochrane Consumers and Communication Group, *The Knowledgeable Patient*, Sophie Hill, Helen Dilkes and Jessica Kaufman identified several building blocks for building research capacity and knowledge transfer. Firstly, information must be accessible and tailored to the desired audience, both in format and in language; secondly, the knowledge transfer initiative should proceed according to a pre-specified plan; and finally, the information should come from a trusted source¹².

John Lavis has also described the advantages of moving from “user-pull” modes of knowledge transfer to a “producer-push” model, providing of course that the user has autonomy to control the nature and volume of material that is pushed towards them¹³.

The Cochrane Collaboration is well placed to provide the evidence needed to inform cancer care in LMIC settings, at the level of patients and practitioners making choices about interventions and at the level of policy-makers making decisions about the provision of services. However, many

challenges need to be tackled, both in relation to the relevance and applicability of reviews and in the dissemination of information to those who need it, when they need it. The Collaboration can succeed in this by ensuring that it is able to attract conscientious and able researchers, and engage with decision-makers. ●

David Tovey has been the Editor in Chief of The Cochrane Library since January 2009. He worked previously as Editorial Director for the BMJ Evidence Centre, which is the division of the BMJ Group that produces Clinical Evidence and its counterpart for the public BestTreatments, BMJ Point of Care, and Best Practice.

At the BMJ, David was initially Deputy Editor of Clinical Evidence under Fiona Godlee, moving to the Editor role when she became Editor of the British Medical Journal.

Dr Tovey worked as a General Practitioner in an urban practice in South London for 15 years until 2003. During that time he also undertook roles in continuing professional development for primary care professionals, and was a clinical governance lead for a Primary Care Group.

Harriet MacLehose is a Senior Editor in the Cochrane Editorial Unit, which supports Cochrane Review Groups and other entities to ensure that The Cochrane Library continues to meet the varied needs of users, and appropriately reflects the commitment of Cochrane Review Group teams and authors. Harriet was previously Assistant Editor, and later Deputy Coordinating Editor, for the Cochrane Infectious Diseases Group at the Liverpool School of Tropical Medicine for eight years and a journals editor for Wiley-Blackwell.

Professor Mike Clarke has worked for many years on rigorous assessments of the effects of interventions and actions, within health care and in other areas. He is the former Director of the UK Cochrane Centre and was Deputy Chair and Chair of The Cochrane Collaboration's Steering Group from 2000 to 2004. He has worked on dozens of systematic reviews in a wide variety of topics, including the Early Breast Cancer Trialists' Collaborative Group's reviews of individual participant data from randomized trials of treatments for women with breast cancer, which influence health care practice and research worldwide. Mike is now based at Queen's University Belfast, where he is Director of the All Ireland Hub for Trials Methodology Research, and Chair of the Medical Research Council's Network of Hubs for Trials Methodology Research.

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