

## **The transformation of evidence synthesis – bringing people and technology together**

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*#CochraneTech and the transformation of evidence synthesis: creating an evidence ecosystem, was presented by Steve McDonald, Co-Director, Cochrane Australia, at the 12th Health Libraries Inc. Conference, October 23rd, 2015.*

Innovative changes are afoot in the world of evidence synthesis. These changes are being prompted by a raft of challenges in the production and discovery of evidence. Health librarians have a key role to play in ensuring the integrity of systematic reviews by developing, testing, and validating rigorous search strategies for these reviews. As Cochrane is the world's largest producer of systematic reviews, health information professionals need to stay abreast of the significant changes unfolding there. Steve McDonald, co-director of the Australasian Cochrane Centre, spoke at the 12th Health Libraries Inc. conference to address the rapidly shifting state of play in the evidence ecosystem.

Amid an unprecedented proliferation of evidence, one of the difficulties in producing systematic reviews is the sheer time and effort it takes to produce high-quality evidence summaries such as Cochrane reviews. For example, McDonald highlighted that the median time it takes to complete a Cochrane review is currently a full 28 months between the publication of a protocol to the publication of a fully developed review.

Enter 'Project Transform'. This Cochrane-initiated project aims to bring together people and technology to maximise the value of Cochrane reviews (1). Problems in information retrieval, such as finding relevant studies for inclusion in a timely manner, are increasingly being solved by the promise of automation. Machine-learning technologies are being deployed as a central driver for an efficient 'Evidence Pipeline' to classify and retrieve citations through automated methods such as text mining (2).

However, McDonald emphasised that technology alone would not provide a complete solution. Human judgement will always be essential in the review process to make sense of the data and interpret the evidence. The goal though, is to use technology and other innovations to free up reviewers to spend more time thinking and less time on the drudgery. One example of a recent innovation is crowdsourcing.

Currently, becoming a Cochrane review author is the main route to becoming an active contributor. A challenge for Cochrane has been how to harness the collective enthusiasm of many potential contributors when there are only a limited number of authors that Cochrane can support. Now it is able to bridge the gap between the willingness of Cochrane 'citizen scientist' volunteers to help and the need for a human dimension to screen relevant citations for reviews.

Crowdsourcing has proved surprisingly successful, as demonstrated by the involvement to date of 1,923 volunteers in screening 249,404 citations to identify at least 17,251 randomised controlled trials with an accuracy of 99% (3). The pathway to this mass collaboration is being enhanced by platforms such as Task Exchange, which Cochrane uses to link the right people with review projects that are most relevant to their expertise (4).

Health information professionals are becoming increasingly adept at using a variety of tools to develop systematic review search strategies. Those who are more extensively involved in the systematic review process should take note of Cochrane's new online platform called Covidence, which also featured in McDonald's presentation. Created by an Australian team led by clinical researcher Julian Elliott, the application aims to manage the data abstraction process, screening of abstracts, and risk of bias assessment. Covidence is currently publicly available to use for free, although a pricing model is being developed for the future (5).

In addition to the aforementioned dilemmas and solutions around the production of evidence, McDonald's talk also addressed the issue of making systematic reviews, and the data they contain, easily discoverable. For Cochrane, the future of review findability lies in the adoption and implementation of linked data technologies. Linked data, sometimes referred to as the semantic web, is a framework where information is deeply connected in a highly contextual way on the web, using rich, self-describing relationships to encourage machine-readable data publishing. A pragmatic example of the potential of linked data to enhance discoverability is Cochrane's project to develop a 'PICO Annotator' using Cochrane-specific ontologies and vocabularies (6).

In a world of expanding volumes of research into the health sciences, the task of synthesising and contextualising these expanses of evidence is a challenging endeavour. As a pivotal player in the field of evidence synthesis, Cochrane is making decisive steps to meet the challenges at hand. Health information professionals are well placed to integrate the resultant lessons and tools into the specialist information services provided in the health library context and other similar environments.

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3. Cochrane/Metaxis. Embase screening project [login page]. Available from: <http://screening.metaxis.com/EMBASE/login.php>. Accessed 7th January 2016.
4. Cochrane Task Exchange.Task Exchange [website]. Available from: <http://taskexchange.cochrane.org/>. Accessed 2nd January 2016.
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6. Mavergames C, Becker L, Everett J, Wilton P, Hughes A. Cochrane PICO Annotator and PICO finder: Using semantically-enabled evidence to find what works in health care. SWAT4LS International Conference; Wednesday 9th December; Cambridge, England, 2015.