



# Choosing the Right Systematic Review Management System

A Guide for Decision Makers

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# Who Should Read This Guide?

**Systematic Review (SR) is on the rise around the world. There is widespread recognition that evidence-based SRs lead to superior guidelines, practice and policy, but students and faculty at universities, associations and guidelines organizations often have limited experience conducting these rigorous research analyses. This leads to concerning variation in the ability to successfully complete and publish research, and in the quality and impact of published reviews.**

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This guide is intended for decision makers in the field of evidence-based health research who are charged with developing a strategy to effectively and efficiently support patrons to create the best SRs possible. This group includes **library leadership in academic and hospital settings**; as information experts, you're constantly called upon to provide sophisticated solutions for your users to keep research quality high, but often with limited staff and resources.

Likewise, **leadership within professional healthcare associations, societies and guidelines groups** faces similar challenges in keeping evidence-based guidance current and accurate. Information professionals know that SRs are extremely difficult to keep up to date, but that a failure to do so leads to a decay in review currency, accuracy, and utility.

In short, anyone with professional responsibility for promoting evidence-based practice and encouraging the publication of high-quality SR research at their organization will find this guide helpful in achieving those strategic aims.

# Why You Need a Systematic Review Management System

SRs aim to consolidate all the empirical evidence within pre-specified eligibility criteria in order to answer a specific research question. They use explicit, systematic methods that are selected with a view to minimizing bias, thus providing more reliable findings from which conclusions can be drawn, and best practices established. Key characteristics of an SR are:

- 1** Clearly stated question/objective
- 2** Pre-defined eligibility criteria for studies
- 3** Explicit, reproducible methodology
- 4** Systematic search to identify all eligible studies
- 5** Assessment of the validity of findings of included studies
- 6** Systematic presentation and synthesis of findings<sup>1</sup>

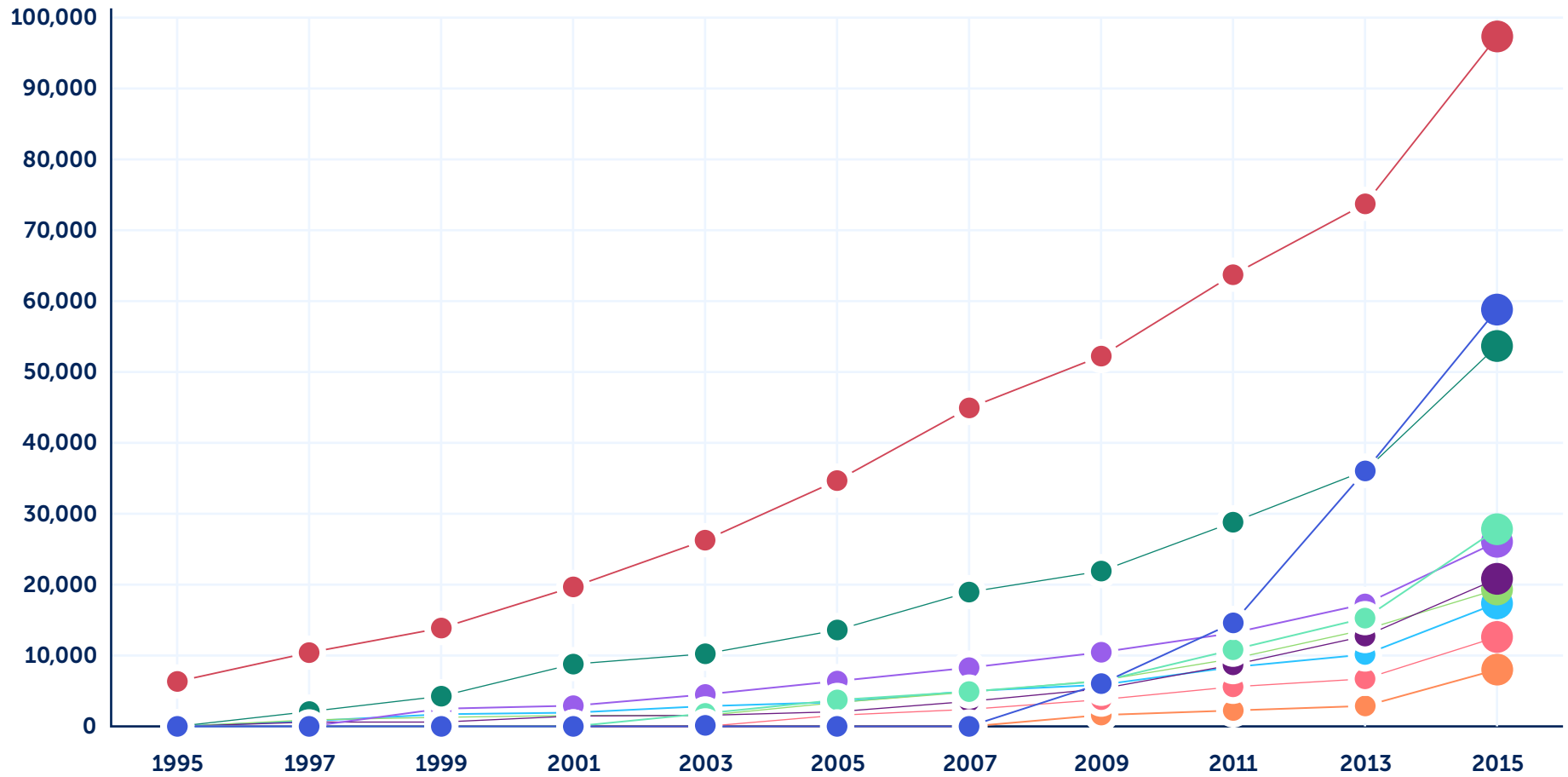
SRs and meta-analyses are considered the highest levels of evidence for informing decisions. These methods are well established in health care and social sciences, but are also growing rapidly in many other subject areas, including education, international development, public policy, ecology, environmental sciences, engineering and basic science research.<sup>2</sup>

With increasing recognition of the critical role that they play in the research ecosystem, the production and publication of SRs is rising quickly around the world.<sup>3</sup>

# Systematic Review Activity is On the Rise

## SYSTEMATIC REVIEW PUBLICATIONS, 1995-2015

FONTELO AND LIU SYSTEMATIC REVIEWS (2018) 7:147



## SR Research is Time-Intensive

SRs require a substantial investment in researcher time. Partly, this is because the volume of primary research to be included in a review is growing exponentially, with over 4,000 research articles published every day in health alone.

Studies have shown that a typical SR takes an average of 1,139 hours to complete.<sup>4</sup> This workload leads to long timelines and creates a number of challenges to successfully completing reviews with available time and resources. In fact, the time from the date of the last search to SR publication is commonly over one year.<sup>5</sup>

SR workload also makes it hard to ensure SRs include the latest research evidence because the volume of research is simply too much for anyone to process in a timely and efficient manner. It's not surprising then, that the median time from the publication of a primary research study until a systematic review featuring that research is published has been shown to range from 2.5 to 6.5 years.<sup>6</sup>

Clearly, for evidence to be truly effective in practice, we need to shorten these timeframes by improving SR workflows. "Until recently we have not had the tools or systems to create reliable evidence efficiently and keep it up to date with the constant flow of new research," says Julian Elliott, M.D., CEO of Covidence and one of Australia's leading medical scientists (recognized with the prestigious Commonwealth Health Minister's Award for Excellence in Health and Medical Research).

## More Reviews, but Less Time to Support Them

Because of the challenges of SR research, students and researchers interested in pursuing these projects are increasingly turning to information and library professionals for guidance and support. And with good reason. The US National Academy of Medicine, the Cochrane Handbook for Systematic Reviews of Interventions, and the US Agency for Healthcare Research and Quality all recommend securing the services of a librarian to produce high-quality SRs.<sup>7,8,9</sup>



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– Julian Elliott M.D. | CEO of Covidence



What does this look like in terms of time spent on systematic review research for information specialists? According to a recent study in the Journal of the Medical Library Association, librarians spend an average of 26.9 hours on SR-related tasks for each project they undertake.<sup>10</sup> This time commitment is increasing, due to a growing volume of SR activity combined with the limited experience available in many review teams. These demands are also coming up against staffing decreases in many academic settings.

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## Libraries Are Leading in Research Expertise

This trend of increasing library involvement in research supports the overall evolution of academic libraries from simple providers of content to a more dynamic and innovative role as leaders in providing information consultation, education and solutions. For example, at the University of North Carolina – Chapel Hill, library leaders are tackling evidence-synthesis research education and quality head-on. They're providing comprehensive SR education to students and researchers and providing subject matter expertise to drive higher quality research and higher publication rates at the university.

"We strive to provide our students with educational experiences and resources that empower them to successfully navigate complex information and learn how to synthesize data into high-quality research," says Nandita Mani, Associate University Librarian & Director at the University of North Carolina Chapel Hill. "We leverage systematic management tools to facilitate an understanding of the rigorous research process, and to encourage development of critical team-building skills."



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– Nandita Mani, Ph.D. | Ph.D. Associate University Librarian & Director, University of North Carolina at Chapel Hill

# Benefits of a Systematic Review Management System

With SR management software, researchers and students can collaborate online, in real time, and accomplish the following tasks quickly and accurately:

**Importing/Duplicating References** Users easily import references into a shared platform that is accessed by the entire research team in real time. Systematic review management systems are usually compatible with files from reference managers like EndNote, Zotero, Refworks and Mendeley.

**Screening Titles & Abstracts** SR management systems blind title and abstract screening, speeding up the process by providing features like keyword highlighting. The system records users votes and often supports single or dual screeners.

**Screening Full Text** Team members review the full text of references which are deemed to be relevant, to decide whether to include them in data analysis. Reasons for reference exclusion are recorded, as well as notes to resolve conflicts. The system may allow for bulk .pdf upload of full-text articles.

**Data Extraction and Quality Assessment** Systems use templated forms to extract relevant data from studies and assist with the intensive process of assessing the methodological quality of included studies and extracting data relevant to the research question.

**Exporting Data** Users export saved data using common formats and leverage it for the next tasks in their evidence review project, like meta-analysis or narrative synthesis. Information is available for interpretation, write-up, and publication.



SR management systems allow organizations to take a leadership role in standardizing and streamlining not only systematic reviews, but also literature reviews and scoping reviews across many disciplines. They allow library staff to easily and efficiently support multiple research teams simultaneously and streamlines and standardizes many of the steps in the evidence research workflow that have traditionally been extremely time-consuming and cumbersome.

## Functionality of SR Management Systems

Here's a helpful checklist of functionality for users and administrators of SR management systems that you should be on the lookout for:

### FOR ACCOUNT ADMINISTRATORS:

- ✓ Unlimited organization-wide access
- ✓ Creation of institutional research repository
- ✓ Administrator dashboards
- ✓ Easy assignment of administrators to reviews
- ✓ Tracking of review progress
- ✓ Migration of users and reviews to organizational account
- ✓ Self-signup option
- ✓ External user support and training

### FOR USERS:

- ✓ Easy to invite internal/external collaborators
- ✓ Compatible with reference management formats
- ✓ Appropriate blinding of voting
- ✓ Bulk full-text pdf uploading
- ✓ Screening keyword highlighting
- ✓ Enables Risk of Bias assessment/data extraction
- ✓ Mobile screening capabilities



## Important Features of SR Management Systems



### SPEED

Automation of tasks improves efficiency and saves time



### ACCURACY

Built-in, defined workflows and validation tools reduce human error



### QUALITY

High-quality methodology and appropriate blinding reduce research bias



### TRANSPARENCY

Reasons for inclusion and exclusion are clearly documented; account administrators can track review progress

When comparing different SR management solutions to determine which one is right for your organization, consider these important features:

#### FEATURE | BENEFIT

##### Cloud-based | S A Q T

Utilizing a software-as-a-service solution promotes efficiency, accuracy and collaboration between team members in real time, with no need to install software on local networks. Allowing research teams to screen references simultaneously drives productivity, driving faster production of the highest quality evidence.

##### Best Practice | A Q

Not all SR management systems are created equal. Look for a solution that is supported by best practice methodology. If machine learning ('artificial intelligence') is incorporated make sure each algorithm has been thoroughly evaluated, to ensure the system does not undermine the efforts your patrons are taking to maintain high quality.

##### Ease of Learning and Use | S Q T

Consider ease of use and how quickly your staff and patrons could learn how to use the system, even if their SR experience is limited. A solution that is easy to use can have major benefits for the cost-effectiveness of your systematic review service. External management of all user access issues plus expert systematic review user training and support should be provided as well, so that the system does not increase the workload of library staff.

##### Administrative Insight and Oversight | Q T

Good systematic review management systems provide administrators of the institutional account with tools to understand how many users are creating systematic reviews and the current status of all systematic review projects. This allows administrators to take a leadership role in keeping research quality high, keeping teams on track, providing guidance just where and when it's needed and spurring publication of research.

# How a Robust Solution Drives Strong ROI

Systematic review research activity is surging, but quality varies greatly. As the number of reviews and the resource requirements for each review increase, the need for tools to help standardize and streamline the process becomes urgent. To cost-effectively keep research quality high and drive successful completion of systematic review projects, organizations must find a technical solution that can scale with demand without placing additional burden on existing staff. Library leaders can then focus and activate users with an easy, self-guided solution and have more time available to target their support effectively to increase review quality and completion.

The easier the system is to learn and use, the more popular it will be with users. High usage equates with a very low cost per user. Likewise, a systematic review management system that can be used outside of health sciences drives overall cost effectiveness.

**“I’M TALKING WITH COLLEAGUES FROM ALL DISCIPLINES ABOUT HOW AN SR MANAGEMENT SYSTEM CAN BE APPLIED BEYOND HEALTH SCIENCES – IT’S A GREAT TOOL TO HELP ANY FIELD OF STUDY CHAMPION EVIDENCE-BASED PRACTICE.”**

– **Lindsey Sikora**  
Health Sciences Research Liaison  
Librarian, University of Ottawa

Consider an unlimited solution that can be leveraged by organizational researchers in other fields like education, social sciences, agriculture, business, engineering, environmental sciences, and law. This creates an immediate and significant return on investment in the solution.

For example, evidence research champions within the health sciences library at the University of Ottawa take research quality very seriously and a number of librarians are integrated into research teams to contribute as co-authors on SRs. They are heavily invested in producing the best research possible and equally committed to finding ways to streamline the process. They use an SR management system to make it as easy and efficient as possible for all library users across the university. “I’m talking with colleagues from all disciplines about how an SR management



system can be applied beyond health sciences – it’s a great tool to help any field of study champion evidence-based practice,” says Lindsey Sikora, Health Sciences Research Liaison Librarian, University of Ottawa.

Department leaders should be on the lookout for a solution that provides them and their account administrators with instant access into the number of reviews being created at any given time and the current status of any project, so that admins can target outreach to those reviews that need help to get moving or stay on track. In this way, staff can improve research quality and co-own the research process.

A great SR management solution also provides organizational administrators and decision makers with meaningful oversight into how the solution is being used within the organization. This kind of insight provides valuable information and helps inform future funding decisions. “Using a systematic review management tool allows me

to know where in the process each research team is, which members are most active, and whether the team may require a friendly prompt,” says Diana Delgado, MLS, AHIP, Evidence Research Library Leader. “I can also see if teams are sticking to their established methodology for inclusion/exclusion.”

As you consider adding an SR management system to cost-effectively enhance your portfolio of services, a good first step is to identify a robust solution from a trusted partner that is founded on best practice evidence synthesis. Look to see if it is loved by your users and easy to administer by your staff. Finally, be sure that the solution will scale easily and cost-effectively as activity increases across your organization. Once you tick all these boxes, you’ll be well on your way to spearheading an organization-wide world-class SR management solution that will enhance the profile and value proposition of the library by demonstrating its ability to deliver cost-effective, high-value services to patrons.

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– Diana Delgado, MLS, AHIP | Evidence Research Library Leader



## About Covidence

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We're a non-profit, software-as-a-service provider focused on creating a culture of evidence, where the best possible evidence supports better decision-making across all sectors of society. Covidence streamlines the systematic literature review process and provides a centralized, consolidated view of all activity happening within an organization. Covidence is the standard production platform for Cochrane reviews and incorporates rigorous gold standard evidence synthesis methodology into product design.

By providing a world-class SR management solution, Covidence empowers organizations to teach, support and facilitate high-quality systematic reviews. For more information on unlimited, site-wide subscriptions, visit: <https://covidence.org/organizations>.

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