

# Guidance on Terminology, Application, and Reporting of Citation Searching

## The TARCiS Statement



Dr. Julian Hirt  
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20.02.2025

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# Agenda.

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- 1 Citation Searching – basics and definitions

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  - 2 Protocol and Aims

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  - 3 Scoping Review of Methodological Studies

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  - 4 Development and Publication of the TARCiS Statement

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  - 5 Terminology and Reporting

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  - 6 Workflow of Supplementary Citation Searching (according to TARCiS)

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  - 7 Research Priorities: *Ready to Join our New Consortium?*
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# Supplementary search techniques in systematic evidence syntheses

Methodological recommendations for systematic review searches:  
database searching (primary search) and one or several supplementary search methods, e.g.,

Web searching

Hand searching

Expert consultation

**Citation searching (comprising multiple methods)**

# Citation Searching relies on *seed references*

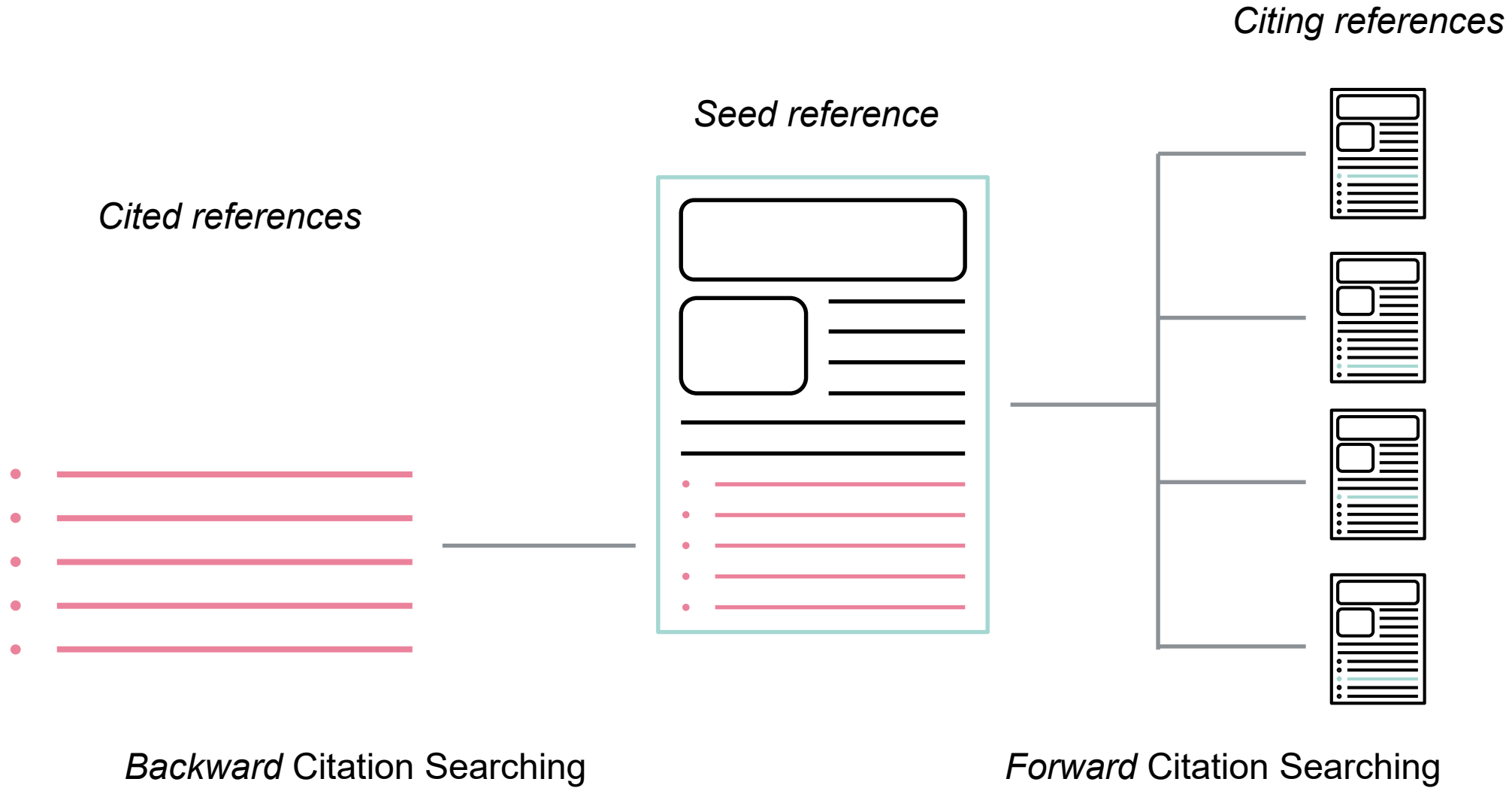
= «*seed articles*», «*seed papers*», «*pearls*», «*base set*», ...



1. If Citation Searching is used **as a supplementary search technique**, *seed references* could be the references that were included from the primary database search

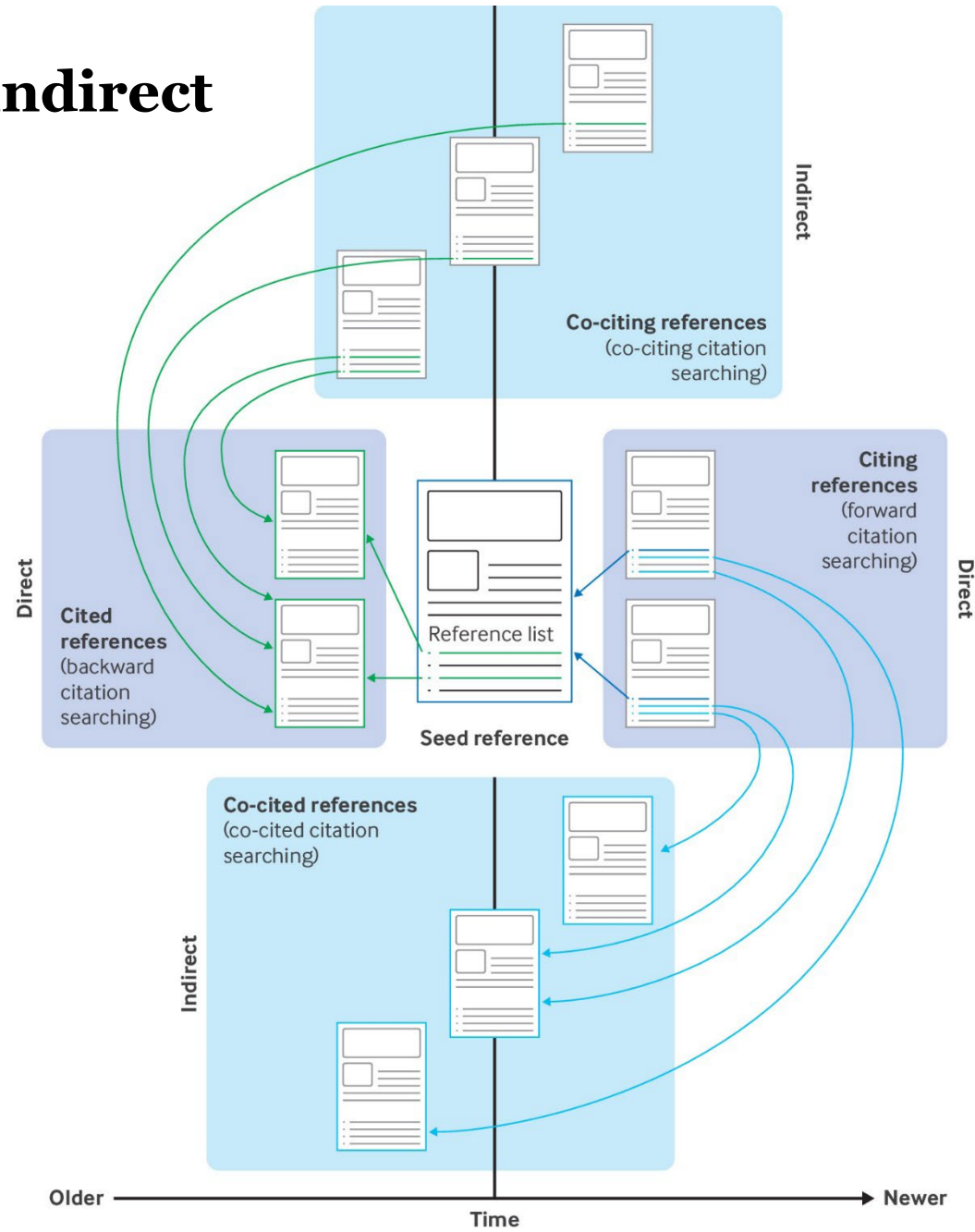
2. If Citation Searching is used **as a primary search method for evidence retrieval**, *seed references* can be identified by whatever means...

# Citation Searching – backward and forward



Adapted from: Haddaway et al., Res Synth Methods 2022

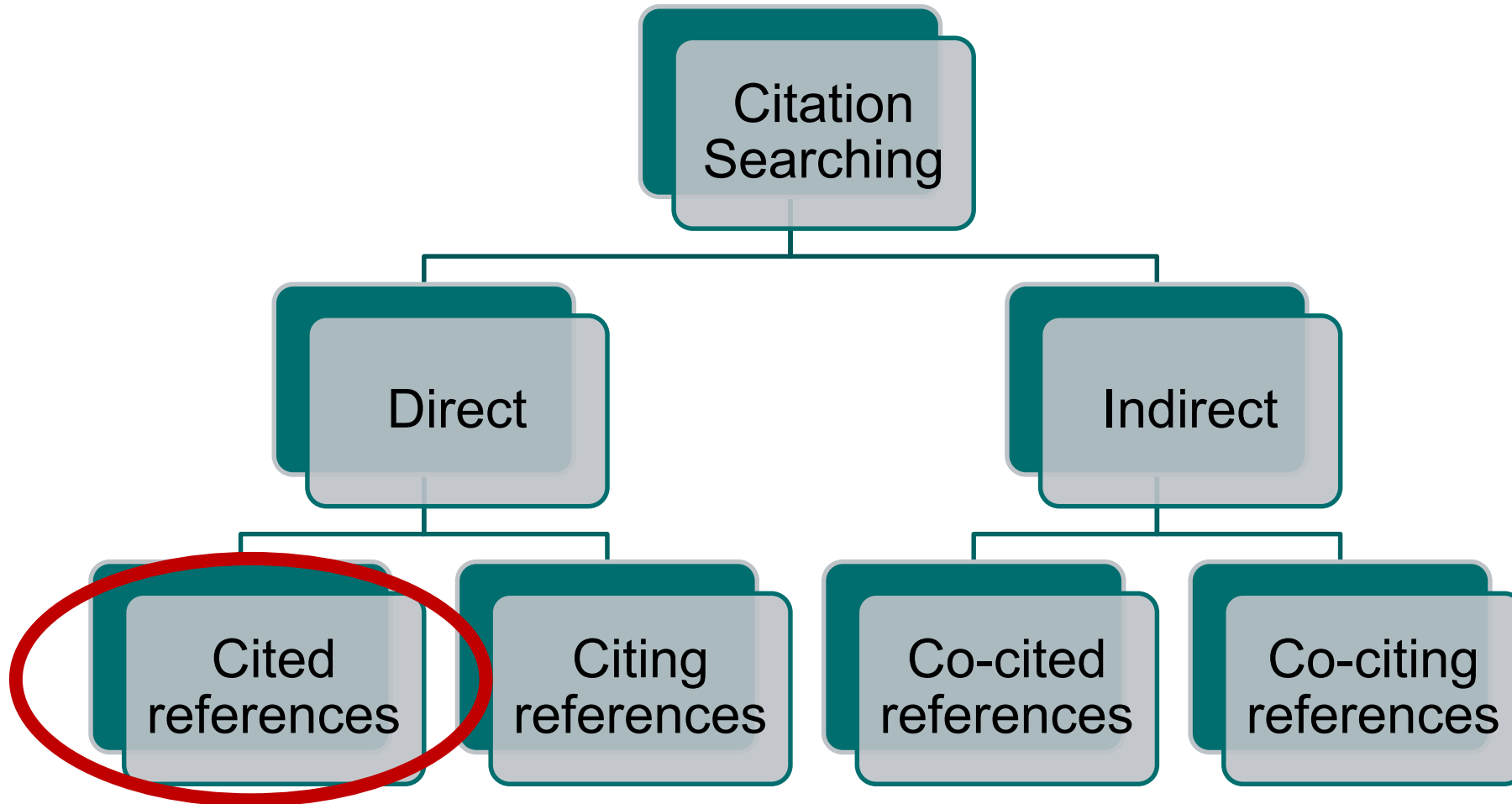
# Citation Searching – indirect



Hirt et al. BMJ 2024



# Citation Searching – basics and definitions



# Backward Citation Searching (reference list checking)

The old way...

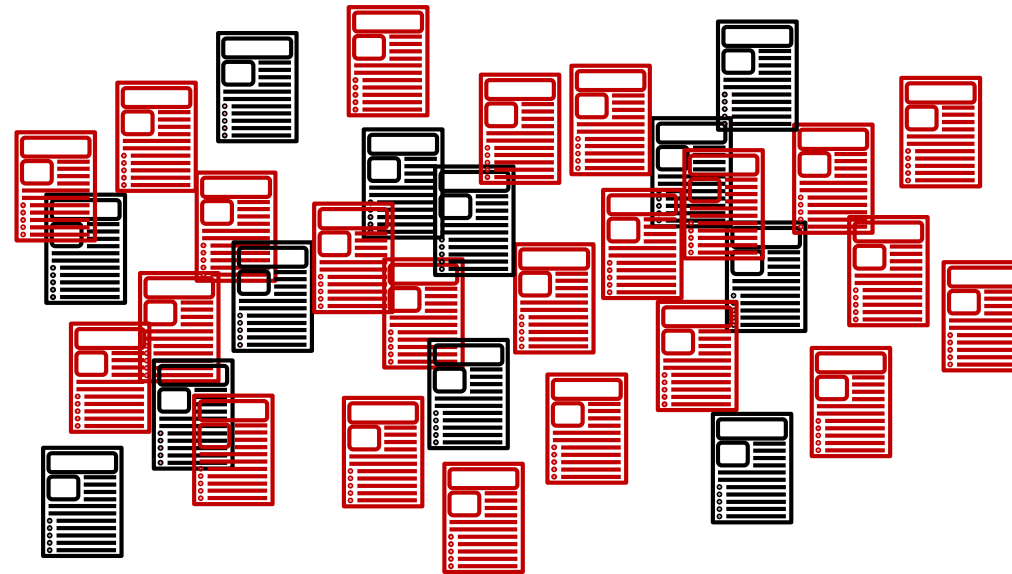
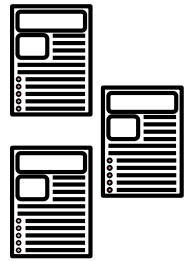


<http://kazan.klonec.co/paper-reports/>

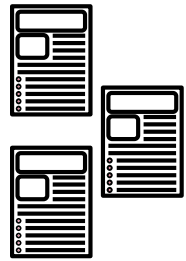
# Citation indexes (commercial or open-access)



# *Citation index A*



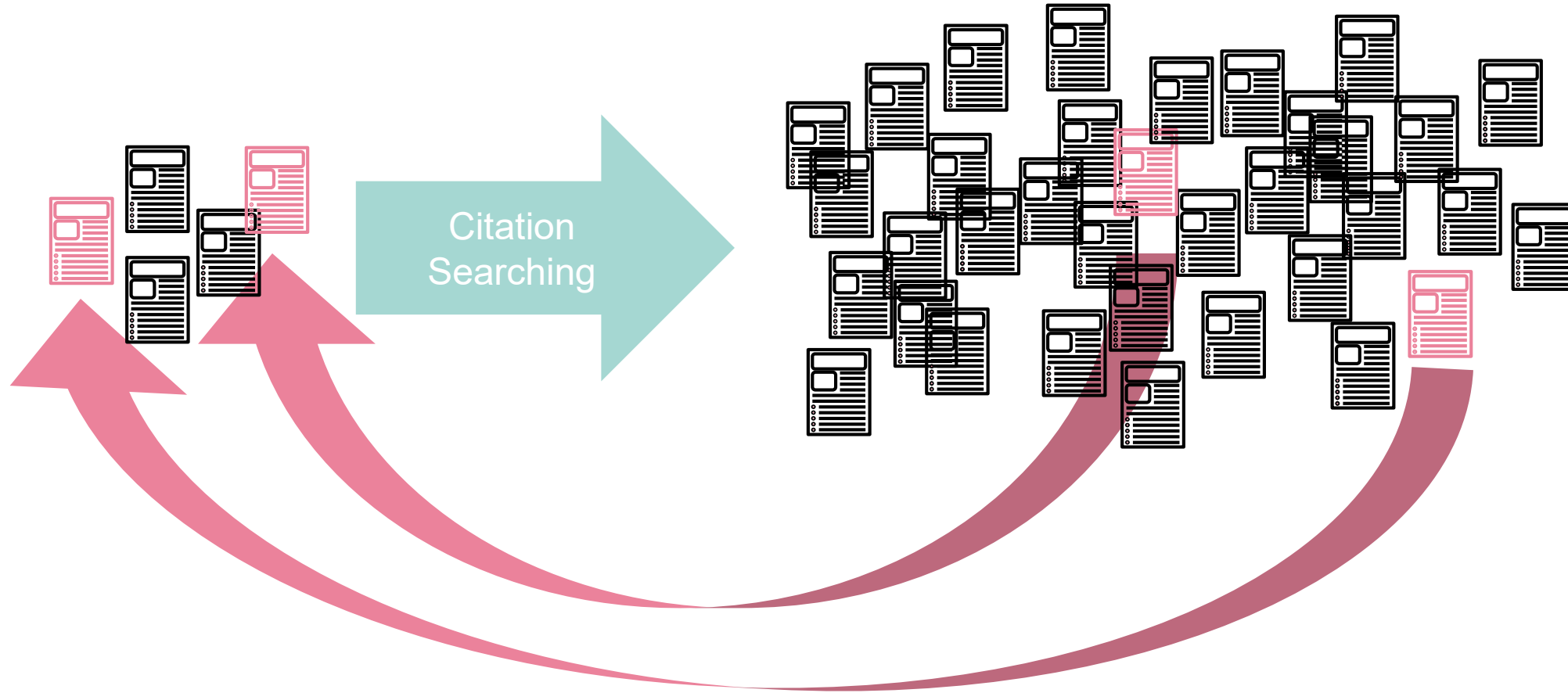
# *Citation index B*



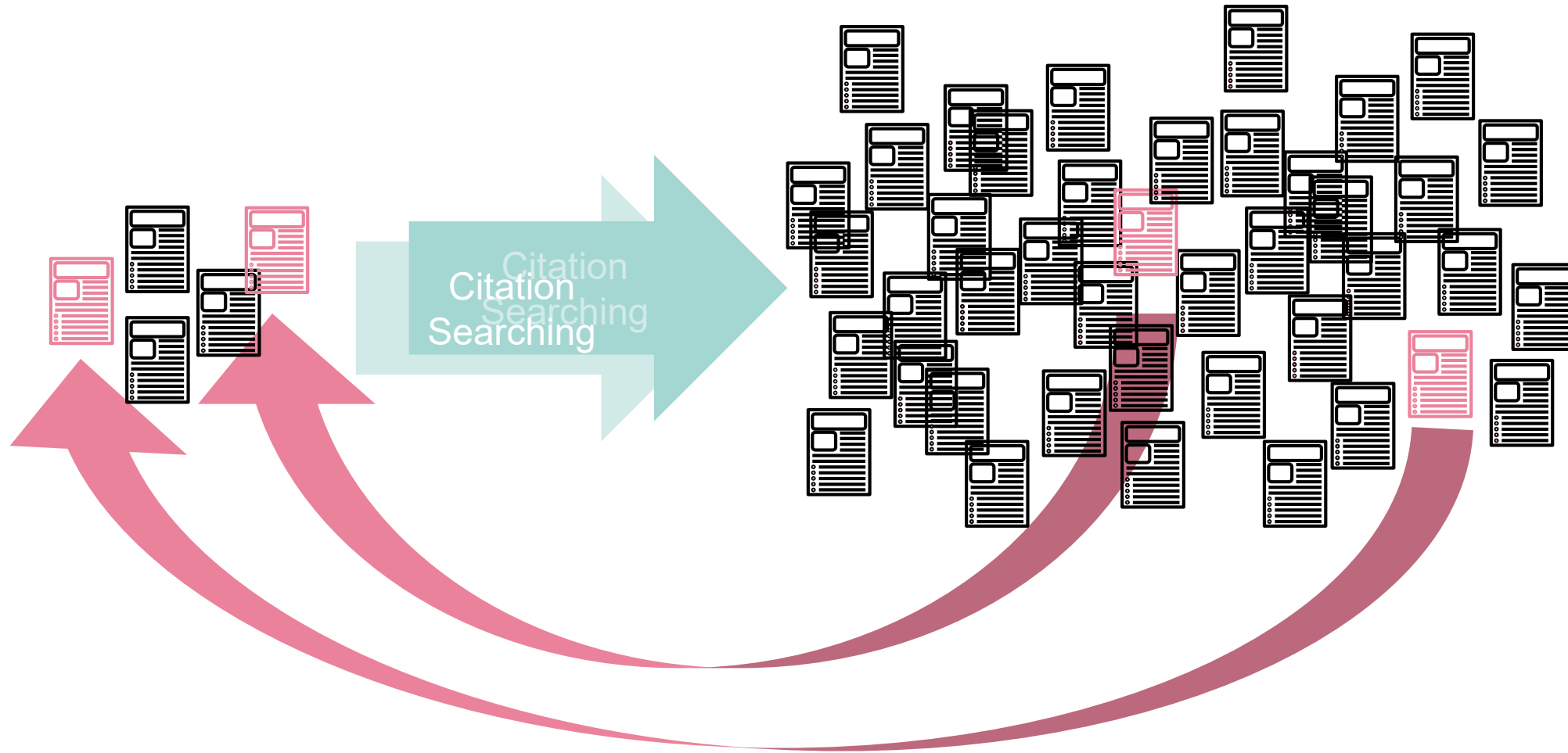
# Citation Searching Iterations



# Citation Searching Iterations



# Iterative Citation Searching





Supplementary search/Stand-alone search?

Seed references?

Cited/citing references?

Reporting?

Co-citing/co-cited references?

Cut-off procedures?

Manual reference list checking?

How many electronic citation indexes?

Iterative citation searching?

***Citation searching yes/no?***

# Complementing PRISMA-S (item 5) and other guidelines?

Rethlefsen et al., JMLA 2021, 109:174

## ITEM 5. Citation searching

Indicate whether cited references or citing references were examined, and describe any methods used for locating cited/citing references (e.g., browsing reference lists, using a citation index, setting up email alerts for references citing included studies).

(...)

The use of these methods can be complicated to describe, but the explanation should clearly state the database used, if applicable (i.e., Scopus, Google Scholar, Science Citation Index), and describe any other methods used. Authors also must cite the “base” article(s) that citation searching was performed upon, either for examining cited or citing articles (Box 1). If the same database is used for both a topical search as well as citation searching, describe each use separately. For manually checking the reference lists for included articles, a simple statement as in the first example is sufficient.

- Is **browsing reference lists (without examining abstracts)** good enough?
- Is **a single citation index** good enough?
- Should **citation search iterations** be reported?
- Should **co-citing and co-cited papers** be assessed? How should they be **ranked/prioritised**?
- Can we move towards a **harmonized citation search terminology**?




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-

STUDY PROTOCOL

**REVISED** Using citation tracking for systematic literature searching - study protocol for a **scoping review** of methodological studies and a **Delphi study** [version 3; peer review: 2 approved]

Previously titled: Using citation tracking for systematic literature searching - study protocol for a scoping review of methodological studies and an expert survey

Julian Hirt <sup>1-3</sup>, Thomas Nordhausen<sup>2</sup>, Christian Appenzeller-Herzog <sup>4</sup>, Hannah Ewald <sup>4</sup>

# Aims



ScR

- What is the benefit of citation searching for systematic literature searching for health-related topics?
- Which methods, citation indexes, and other tools are used for citation searching?
- What terminology is used for citation searching methods?



Delphi

## **Recommendations** for Citation Searching in systematic literature searching

- Guidance as to when which Citation Searching method is likely to be particularly effective
- Preferred Reporting Items
- ...

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# Identification and selection of studies

	Database Searches (Medline, CINAHL, LLISFT, LISTA, WoS)	Supplementary Searches	Total
Unique Records	7,937	3,924	11,861
Records assessed in Full Text	98	123	221
Included Records	26	24	50*
Web Searching	-	1	
Backward Citation Searching	-	14**	
Forward Citation Searching	-	6**	
Contacting Experts	-	3	

\* 47 independent studies

\*\* Citation Searching iterations: 20 first round, 0 second round, 0 third round

# Selected characteristics of included studies (n = 47)

## Citation searching Iterations



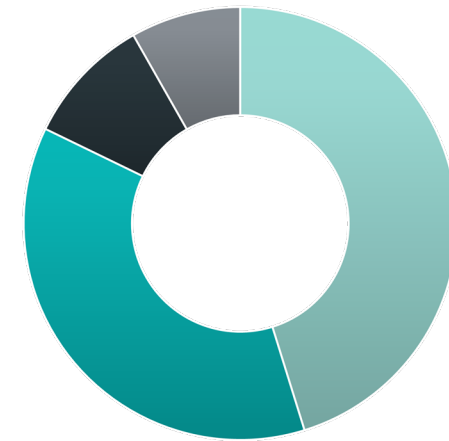
■ Definitely yes ■ Probably yes  
■ Probably no ■ Definitely no

## Citation indexes used\*



■ None ■ Single ■ Multiple

## Citation Searching methods



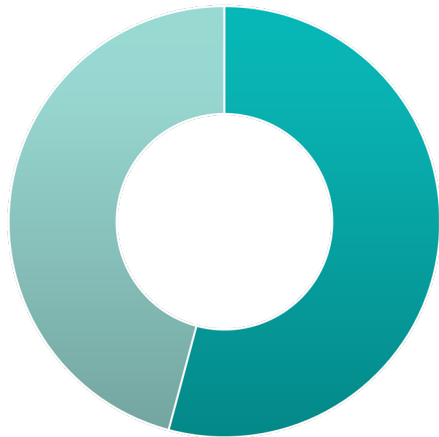
■ Backward ■ Forward  
■ Co-cited ■ Co-citing

\* Mostly Science Citation Index (Web of Science)



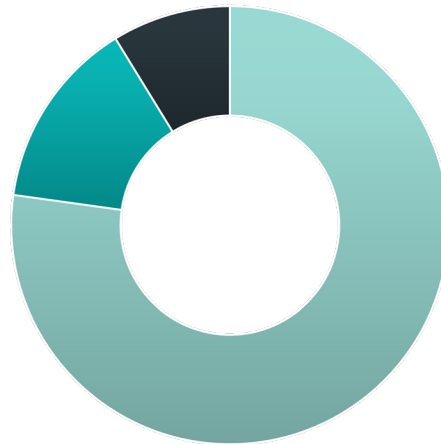
# Selected characteristics of included studies (n = 47)

## Purpose of Citation Searching



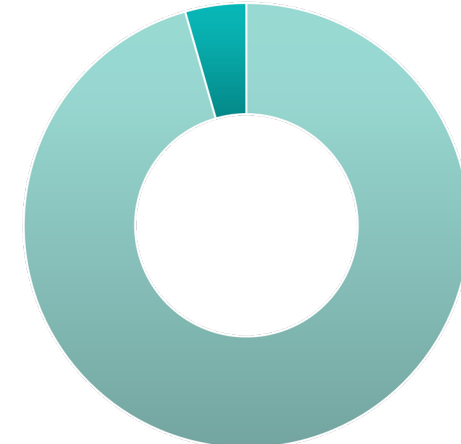
- Primary/stand-alone search
- Supplementary search

## Study focus



- Benefit/effectiveness of Citation Searching
- Technical uses
- Different Citation Searching methods

## Added value



- Yes
- No

# Is Citation Searching adding value, yes/no? -> Research topic probably matters...

Diffusion of service-level innovations in healthcare organisations

## Example 1

### Effectiveness and efficiency of search methods in systematic reviews of complex evidence: audit of primary sources

Trisha Greenhalgh, Richard Peacock

Department of Primary Care and Population Sciences, University College London Medical School, Holborn Union Building, London N19 5LW

Trisha Greenhalgh  
*professor of primary health care*

Archway Healthcare Library, Holborn Union Building, London

Richard Peacock  
*clinical librarian*

Correspondence to: T Greenhalgh  
p.greenhalgh@pcps.ucl.ac.uk

BMJ 2005;331:1064-5

#### Abstract

**Objective** To describe where papers come from in a systematic review of complex evidence.

**Method** Audit of how the 495 primary sources for the review were originally identified.

**Results** Only 30% of sources were obtained from the protocol defined at the outset of the study (that is, from the database and hand searches). Fifty one per cent were identified by “snowballing” (such as pursuing references of references), and 24% by personal knowledge or personal contacts.

**Conclusion** Systematic reviews of complex evidence cannot rely solely on protocol-driven search strategies.

#### Introduction

In Cochrane reviews of therapeutic interventions, most high quality primary studies could be identified

policy questions and synthesise qualitative and quantitative evidence, usually from multiple and disparate sources.<sup>2</sup>

The aim of our study was to audit the origin of primary sources in a wide ranging systematic review of complex evidence.

#### Method

We reviewed the diffusion of service-level innovations in healthcare organisations. The methods and full report have been published elsewhere.<sup>3,4</sup> Briefly, six researchers mapped 13 different research traditions, compared their conceptual and theoretical approaches, and synthesised the empirical evidence. We report here on the search phase.

After extensive “browsing” in libraries and bookshops to get a feel for the overall research field, we used

#### What is already known on this topic

It is generally assumed that the more explicit and meticulous the search strategy, the more likely a systematic review is to pick up all the important papers

In systematic reviews of clinical treatments, most high quality primary studies can be identified by searching four standard electronic databases

#### What this study adds

In systematic reviews of complex and heterogeneous evidence (such as those undertaken for management and policymaking questions) formal protocol-driven search strategies may fail to identify important evidence

Informal approaches such as browsing, “asking around,” and being alert to serendipitous discovery can substantially increase the yield and efficiency of search efforts

“Snowball” methods such as pursuing references of references and electronic citation tracking are especially powerful for identifying high quality sources in obscure locations

# Is Citation Searching adding value, yes/no? -> Research topic probably matters...

Efficacy of psychotherapeutic, pharmacological and combined interventions in the treatment of chronic depression

## Example 2

Journal of Public Health Research 2014; volume 3:177



### Article

## Efficiency and contribution of strategies for finding randomized controlled trials: a case study from a systematic review on therapeutic interventions of chronic depression

Annika Westphal,<sup>1</sup> Levente Kriston,<sup>1</sup> Lars P. Hölzel,<sup>2</sup> Martin Härter,<sup>1</sup> Alessa von Wolff<sup>1</sup>

*Results.* A total of 358 full-text articles were identified; 50 studies were included in the systematic review, wherefrom 84.0% (42) were acquired by the sensitive electronic database search and 16.0% (8) through additional search strategies. Screening reference lists of related systematic reviews was the most beneficial additional search strategy, with an efficiency of 31.3% (5) and a contribution of 10.0% (5/50), whereas hand-searching and author contacts contributed two and one additional studies, respectively. Citation tracking and searching clinical trial registers did not lead to any further inclusion of primary studies.

# Citation Searching Terminology

*Used in this presentation*

<b>Umbrella term</b>	<b>Citation Searching</b>
Sub-method retrieving and screening ...	
... cited references	<b>Backward Citation Searching</b>
... citing references	<b>Forward Citation Searching</b>
... co-cited references	<b>Co-cited Citation Searching</b>
... co-citing references	<b>Co-citing Citation Searching</b>
Relevant articles known beforehand	<b>Seed references</b>
Iterative repetition of a citation-based method	<b>Iterative Citation Searching</b>

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*“Citation Tracking”*  
*“Citation Chasing”*  
*“Citation-based Searching”*  
*“Snowballing”*

# Citation Searching Terminology

*Used in this presentation*

Umbrella term	Citation Searching	
Sub-method retrieving and screening ...		<i>“Backward Citation Tracking”</i> <i>“Backward Citation Chasing”</i> <i>“Searching Reference Lists”</i>
... cited references	<b>Backward Citation Searching</b>	<i>“Checking References”</i>
... citing references	<b>Forward Citation Searching</b>	<i>“Reference Tracking”</i>
... co-cited references	<b>Co-cited Citation Searching</b>	<i>“Reference Searching”</i>
... co-citing references	<b>Co-citing Citation Searching</b>	<i>“Cited Reference Searching”</i>
Relevant articles known beforehand	<b>Seed references</b>	...
Iterative repetition of a citation-based method	<b>Iterative Citation Searching</b>	

# Citation Searching Terminology

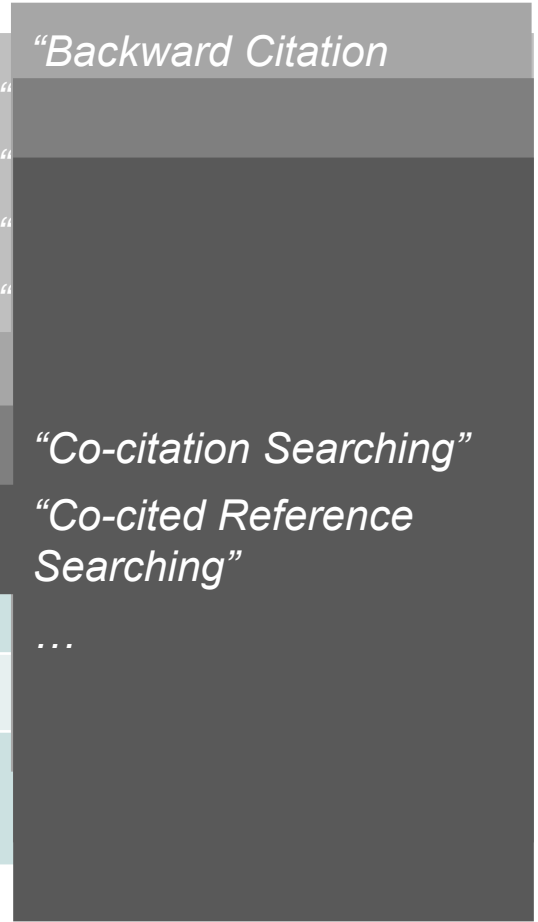
*Used in this presentation*

Umbrella term	Citation Searching	
Sub-method retrieving and screening ...		"Backward Citation"
... cited references	<b>Backward Citation</b>	"Forward Citation Tracking"
... citing references	<b>Forward Citation</b>	"Forward Citation Chasing"
... co-cited references	<b>Co-cited Citation Searching</b>	"Citation Tracking"
... co-citing references	<b>Co-citing Citation Searching</b>	"Citation Searching"
Relevant articles known beforehand	<b>Seed references</b>	"Citing Reference Searching"
Iterative repetition of a citation-based method	<b>Iterative Citation Searching</b>	...

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Relevant articles known beforehand	<b>Seed references</b>
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Relevant articles known beforehand	<b>Seed references</b>
Iterative repetition of a citation-based method	<b>Iterative Citation Searching</b>

*“Backward Citation*

*“Bibliographic Coupling”*

*“Co-citing Reference Searching”*

...

# Citation Searching Terminology

*Used in this presentation*

Umbrella term	Citation Searching	
Sub-method retrieving and screening ...		<i>"Backward Citation"</i> <i>"Key Articles"</i> <i>"Relevant Articles"</i> <i>"Source Articles"</i> <i>"Query Articles"</i> <i>"Query Set"</i> <i>"Base Articles"</i> <i>"Base Set"</i> <i>"Core Articles"</i> <i>"Core Set"</i> ...
... cited references	<b>Backward Citation</b>	
... citing references	<b>Forward Citation</b>	
... co-cited references	<b>Co-cited Citation</b>	
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... co-cited references	<b>Co-cited Citations</b>
... co-citing references	<b>Co-citing Citations</b>
Relevant articles known beforehand	<b>Seed references</b>
Iterative repetition of a citation-based method	<b>Iterative Citation Searching</b>



**Note ambiguities!**

*“Backward Citation*

*“Seed Articles”*

*“Repeating the Citation Search”*

*“Citation Searching to Completion”*

*“Snowballing”*

...

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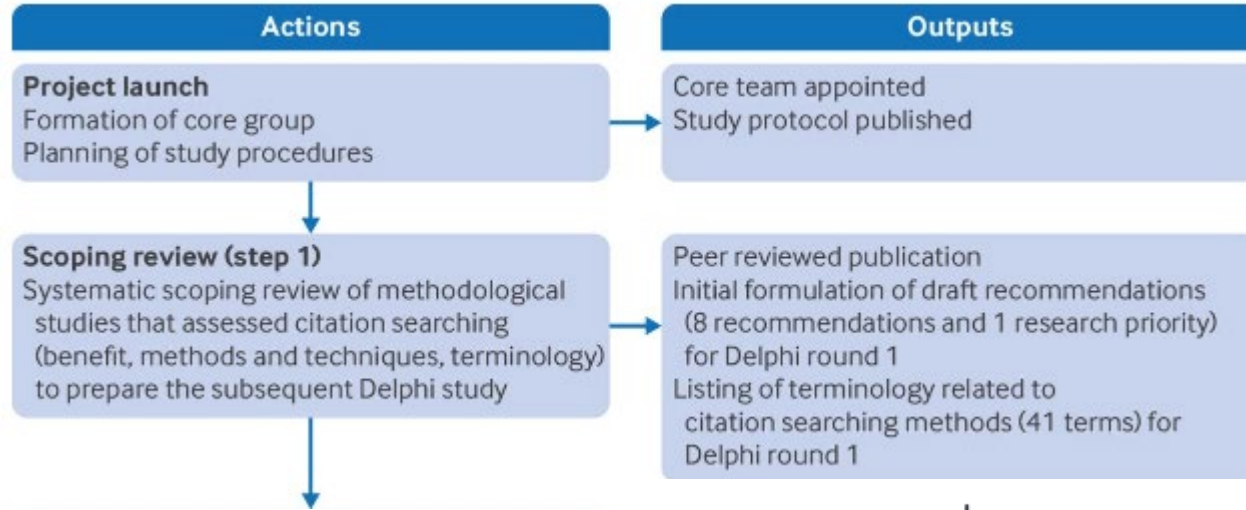
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  - 6 Workflow of Supplementary Citation Searching (according to TARCiS)

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  - 7 Research Priorities: *Ready to Join our New Consortium?*
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# Development of TARCiS



Hirt et al. BMJ 2024




Received: 29 September 2022 | Revised: 18 January 2023 | Accepted: 30 March 2023

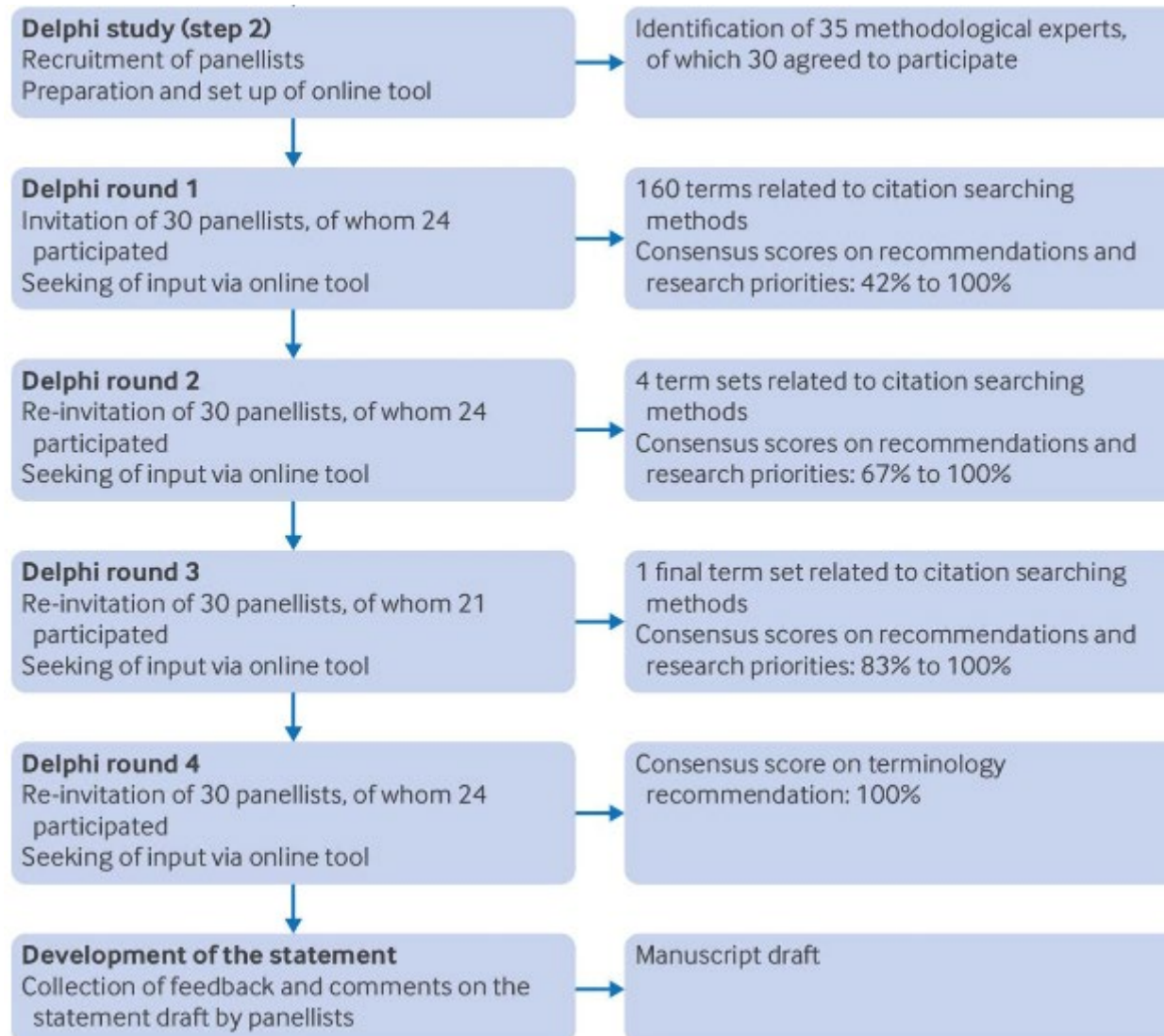
DOI: 10.1002/jrsm.1635

**REVIEW**

Research  
Synthesis Methods **WILEY**

## Citation tracking for systematic literature searching: A scoping review

Julian Hirt<sup>1,2,3</sup>  | Thomas Nordhausen<sup>2</sup> | Christian Appenzeller-Herzog<sup>4</sup>  |  
Hannah Ewald<sup>4</sup> 



Hirt et al. BMJ 2024



# Guidance on terminology, application, and reporting of citation searching: the TARCIS statement

Julian Hirt,<sup>1,2,3</sup> Thomas Nordhausen,<sup>4</sup> Thomas Fuerst,<sup>5</sup> Hannah Ewald,<sup>5</sup> Christian Appenzeller-Herzog,<sup>5</sup> on behalf of the TARCIS study group

<sup>1</sup>Pragmatic Evidence Lab, Research Centre for Clinical Neuroimmunology and Neuroscience Basel, University Hospital Basel and University of Basel, Basel, Switzerland

<sup>2</sup>Department of Health, Eastern Switzerland University of Applied Sciences, St Gallen, Switzerland

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<sup>4</sup>Institute of Health and Nursing Science, Medical Faculty, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany

<sup>5</sup>University Medical Library, University of Basel, 4051 Basel, Switzerland

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Additional material is published online only. To view please visit the journal online.

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Accepted: 19 March 2024

Evidence syntheses adhering to systematic literature searching techniques are a cornerstone of evidence based healthcare. Beyond term based searching in electronic databases, citation searching is a prevalent search technique to identify relevant sources of evidence. However, for decades, citation searching methodology and terminology has not been standardised. An evidence guided, four round Delphi consensus study was conducted with 27 international methodological experts in order to develop the Terminology, Application, and Reporting of Citation Searching (TARCIS) statement. TARCIS comprises 10 specific recommendations, each with a rationale and explanation on when and how to conduct and report citation searching in the context of systematic literature searches. The statement also presents four research priorities, and it is hoped that systematic review teams are encouraged to incorporate TARCIS into standardised workflows.

when the Science Citation Index, the antecedent of Web of Science, was introduced in 1963.<sup>1</sup> Although the availability of electronic citation indexes has increased, evidence syntheses in systematic reviews do not primarily rely on citation searching for literature retrieval but rather on search methods based on text and keywords.<sup>2</sup> When used in systematic review workflows, citation searching traditionally constitutes a supplementary search technique that builds on an initial set of references from the primary database search (seed references).<sup>3</sup>

Citation searching is an umbrella term that entails various methods of citation based literature retrieval (fig 1). Checking references cited by seed references, also known as backward citation searching, is the most prevalent and a mandatory step when conducting Cochrane reviews.<sup>4</sup> In forward citation searching, systematic reviewers can also assess the eligibility of articles that cite the seed references. Backward and forward citation searching are known as direct citation searching (fig 1). They can be supplemented by indirect retrieval methods—namely, by co-citing citation searching (retrieving articles that share cited references with a seed reference) and co-cited citation searching (retrieving articles that share citing references with a seed reference).

Citation searching can contribute substantially to evidence retrieval and can show similar or even superior effectiveness and efficiency compared with text and keyword based searches. An audit of the different search methods used in a systematic review of complex evidence, for instance, revealed that 44% of all included studies were identified by backward citation searching, and 7% by forward citation searching. In comparison, initial text and keyword searches accounted for only 25% of included studies.<sup>5</sup> For the scoping review that collected methodological studies as a foundation for the present work, these

<https://doi.org/10.1136/bmj-2023-078384>



#### Box 1: TARCIS statement

##### Recommendations on terminology, conduct, and reporting of citation searching

1. The following terminology should be used to describe search methods that exploit citation relationships:
  - "Citation searching" as an umbrella term.
  - "Backward citation searching" to describe the sub-method retrieving and screening cited references.
  - "Reference list checking" to describe the sub-method retrieving and screening cited references by manually reviewing reference lists.
  - "Forward citation searching" to describe the sub-method retrieving and screening citing references.
  - "Co-cited citation searching" to describe the sub-method retrieving and screening co-cited references.
  - "Co-citing citation searching" to describe the sub-method retrieving and screening co-citing references.
  - "Iterative citation searching" to describe one or more repetition(s) of a search method that exploits citation relationships.
  - "Seed references" to describe relevant articles that are known beforehand and used as a starting point for any citation search.
2. For systematic search topics that are difficult to search for, backward and forward citation searching should be seriously considered as supplementary search techniques.
3. For systematic search topics that are easier to search for and addressed by a highly sensitive search, backward and forward citation searching are not explicitly recommended as supplementary search techniques. Reference list checking of included records can be used to confirm the sensitivity of the search strategy.
4. Backward and forward citation searching as supplementary search techniques should be based on all included records of the primary search (ie, all records that meet the inclusion criteria of the review after full text screening of the primary search results). Occasionally, it can be justified to deviate from this recommendation and either use further pertinent records as additional seed references or only a defined sample of the included records.
5. Backward citation searching should ideally be conducted by screening the titles and abstracts of the seed references as provided by a citation index. Screening titles as provided when checking reference lists of the seed references can still be performed.
6. Using the combined coverage of two citation indexes for citation searching to achieve more extensive coverage should be considered if access is available. This combination is especially meaningful if seed references cannot be found in one index and reference lists were not checked.
7. Before screening, the results of supplementary backward and forward citation searching should be deduplicated.
8. If citation searching finds additional eligible records, another iteration of citation searching should be considered using these records as new seed references.
9. Standalone citation searching should not be used for literature searches that aim at completeness of recall.
10. Reporting of citation searching should clearly state:
  - the seed references (along with a justification should the seed references differ from the set of included records from the results of the primary database search),
  - the directionality of searching (backward, forward, co-cited, co-citing),
  - the date(s) of searching (which might differ between rounds of iterative citation searching) (not applicable for reference list checking),
  - the number of citation searching iterations (and possibly the reason for stopping if the last iteration still retrieved additional eligible records),
  - all citation indexes searched (eg, Lens.org, Google Scholar, Scopus, citation indexes in Web of Science) and, if applicable, the tools that were used to access them (eg, Publish or Perish, citationchaser),
  - if applicable, information about the deduplication process (eg, manual/automated, the software or tool used),
  - the method of screening (ie, state whether the records were screened in the same way as the primary search results or, if not, describe the alternative method used), and
  - the number of citation searching results in the right column box of the *PRISMA 2020 flow diagram for new or updated systematic reviews that included searches of databases, registers, and other sources*.

##### Research priorities

1. The effectiveness, applicability, and conduct of indirect citation searching methods as supplementary search methods in systematic reviewing require further research (including retrieval of additional unique references, their relevance for the review and prioritisation of results).
2. Further research is needed to assess the value of citation searching. Potential research topics could be:
  - influence of citation searching on results and conclusions of systematic evidence syntheses,
  - topics or at least determinants of topics where citation searching likely/not likely has additional value, or
  - economic evaluation of citation searching to assess the cost and time of conducting citation searching in relation to its benefit.
3. Further research is needed to assess the best way to perform citation searching. Potential research topics could be:
  - optimal selection of seed references,
  - optimal use of indexes and tools and their combination to conduct citation searching,
  - methods and tools for deduplication of citation searching results,
  - subjective influences on citation searching (eg, experience of researcher, prevention of mistakes), or
  - reproducibility of citation searching.
4. Further research is needed to reproduce existing studies: Any recommendations in this Delphi that are based on only 1-2 studies require reproduction of these studies in the form of larger, prospectively planned studies that grade the evidence for each recommendation and propose additional research where the grade of evidence is weak.

## 10 Recommendations on Terminology, Conduct, and Reporting of Citation Searching

## 4 Research Priorities

Hirt et al. BMJ 2024





## The TARCiS Statement Guidance on Terminology, Application, and Reporting of Citation Searching

The TARCiS statement comprises ten evidence-based recommendations and four research priorities. It provides guidance for systematic reviewers on when and how to conduct *citation searching* and on how to report it.

### Who should use TARCiS?

TARCiS is intended to be used by researchers, systematic reviewers, information specialists, librarians, editors, peer reviewers, and others who are conducting or assessing citation searching methods.

### Citing TARCiS

The TARCiS statement was published in 2024.

For background on evidence retrieval, Delphi procedure, and study group composition, please refer to this publication.

[TARCIS PUBLICATION](#)

### TARCiS Files for Download/Streaming

[Terminology and Reporting Item Checklist \(DOCX, 15.61 KB\)](#) ▾

[Terminology and Reporting Item Checklist \(PDF, 13.16 MB\)](#) ▾

[Example video on how to conduct citation searching](#) ↗

# Agenda.

- 
- 1 Citation Searching – basics and definitions

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  - 2 Protocol and Aims

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  - 3 Scoping Review of Methodological Studies

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  - 4 Development and Publication of the TARCiS Statement

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  - 5 Terminology and Reporting

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  - 6 Workflow of Supplementary Citation Searching (according to TARCiS)

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  - 7 Research Priorities: *Ready to Join our New Consortium?*
-

# Terminology and Reporting Item Checklist

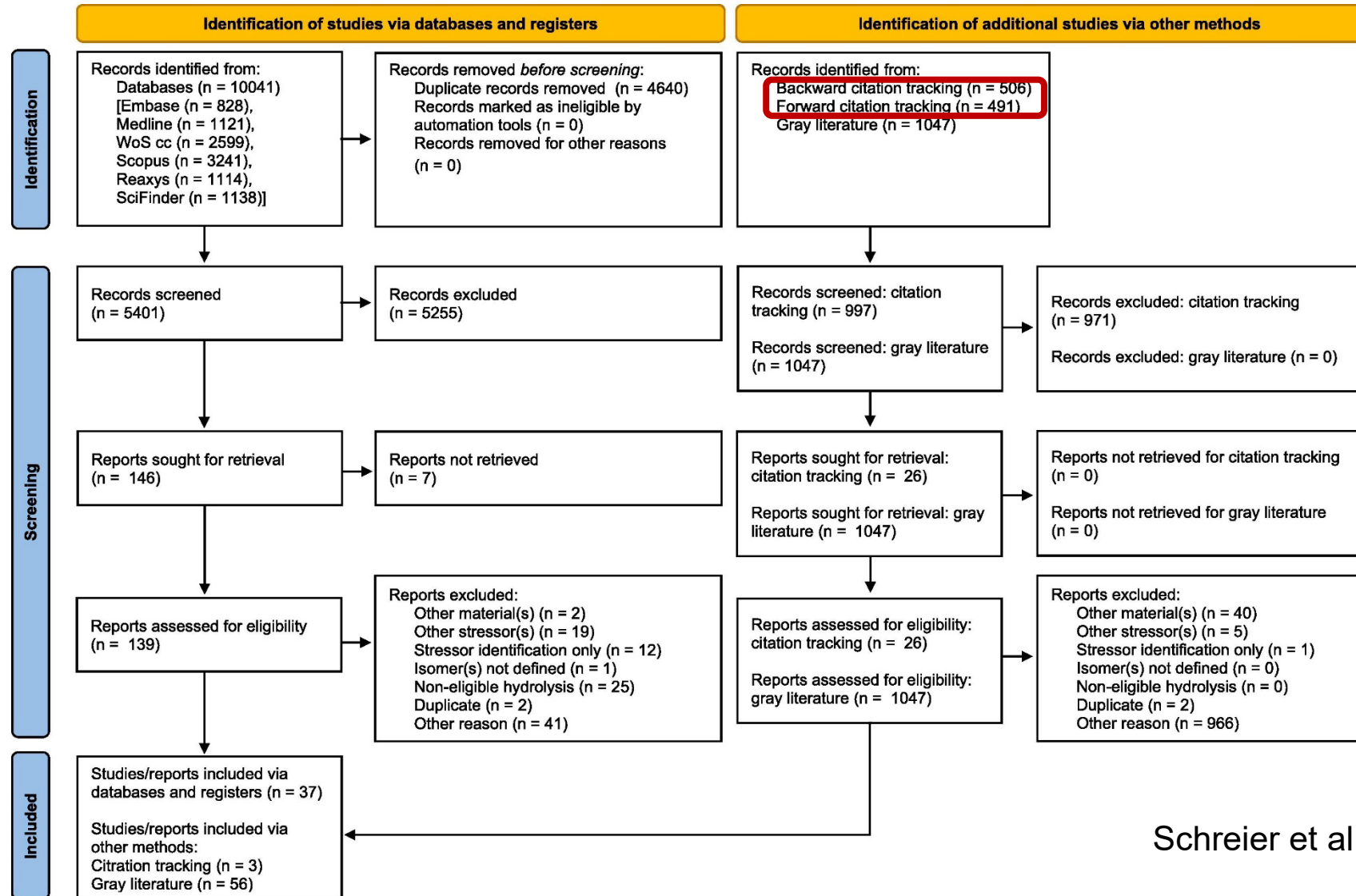
Terminology for Reporting of Citation Searching	
RECOMMENDED TERM	DESCRIPTION
Citation Searching	Umbrella term.
Backward Citation Searching	Sub-method retrieving and screening cited references.
Reference List Checking	Sub-method retrieving and screening cited references by manually reviewing reference lists.
Forward Citation Searching	Sub-method retrieving and screening citing references.
Co-cited Citation Searching	Sub-method retrieving and screening co-cited references.
Co-citing Citation Searching	Sub-method retrieving and screening co-citing references.
Iterative Citation Searching	One or more repetition(s) of a search method that exploits citation relationships.
Seed References	Relevant articles which are known beforehand and used as a starting point for any citation search.

Reporting Item Checklist			
SECTION/TOPIC	#	CHECKLIST ITEM	PAGE(S)
Methods			
Seed references	1	State the seed references (along with a justification should the seed references differ from the set of included records from the results of the primary database search).	
Citation searching method	2	State the directionality of searching (backward, forward, co-cited, co-citing).	
Search date	3	State the date(s) of searching (which may differ between rounds of iterative citation searching) (not applicable for reference list checking).	
Number of iterations	4	State the number of citation searching iterations (and possibly the reason for stopping if the last iteration still retrieved additional eligible records).	
Citation indexes and tools	5	State all citation indexes searched (e.g., Lens.org, Google Scholar, Scopus, citation indexes in Web of Science) and, if applicable, the tools that were used to access them (e.g., Publish or Perish, citationchaser).	
Deduplication	6	State, if applicable, information about the deduplication process (e.g., manual/automated, the software or tool used).	
Screening method	7	State the method of screening (i.e., state whether the records were screened in the same way as the primary search results or, if not, describe the alternative method used).	
Results			
Search results	8	State the number of citation searching results in the right column box of the PRISMA 2020 flow diagram for new or updated systematic reviews which included searches of databases, registers and other sources.	

<https://bit.ly/tarcispdf>



# PRISMA flow diagram

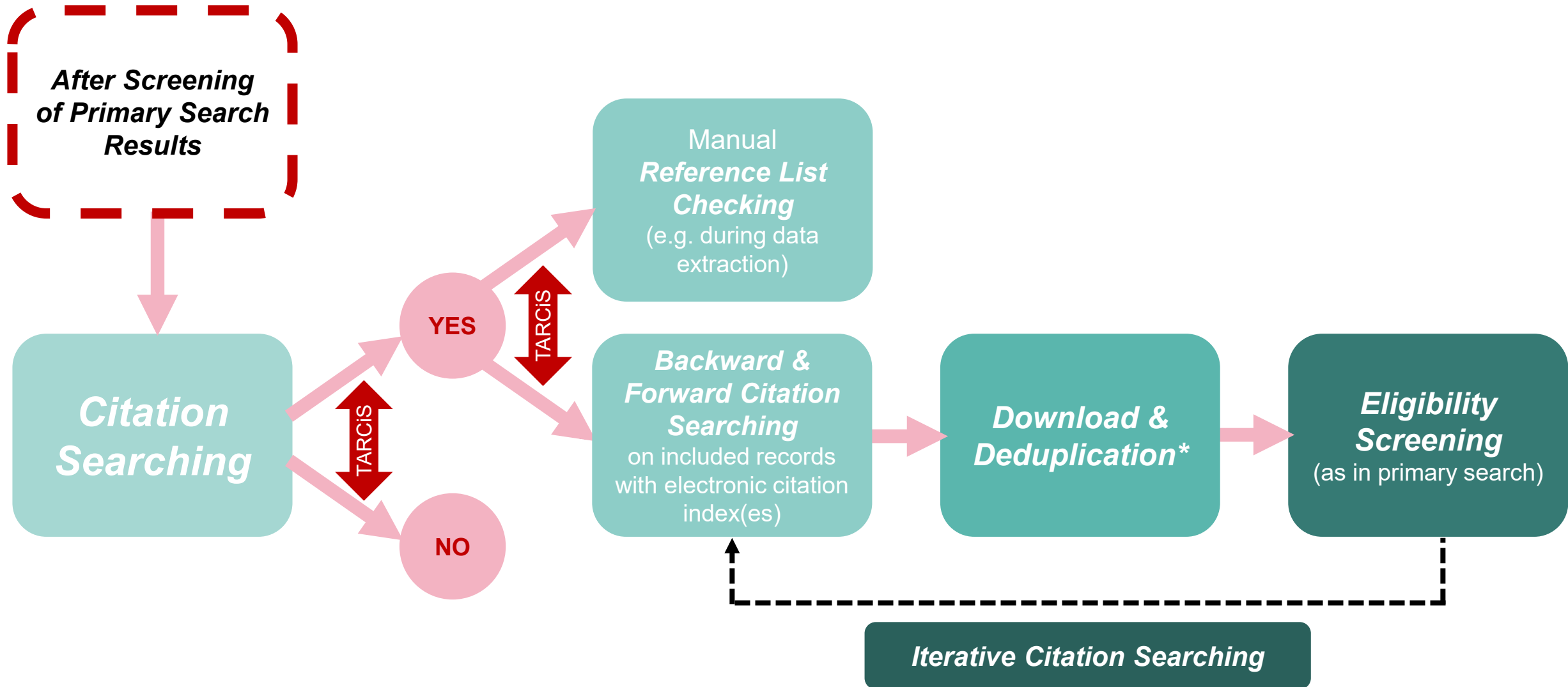


Schreier et al. Environ Int 2023

# Agenda.

- 
- 1 Citation Searching – basics and definitions
  - 2 Protocol and Aims
  - 3 Scoping Review of Methodological Studies
  - 4 Development and Publication of the TARCiS Statement
  - 5 Terminology and Reporting
  - 6 Workflow of Supplementary Citation Searching (according to TARCiS)
  - 7 Research Priorities: *Ready to Join our New Consortium?*
-

# Workflow of Supplementary Citation Searching (e.g. in a Systematic Review)



# Agenda.

- 
- 1 Citation Searching – basics and definitions

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  - 5 Terminology and Reporting

---

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  - 7 Research Priorities: *Ready to Join our New Consortium?*

#### Box 1: TARCIS statement

##### Recommendations on terminology, conduct, and reporting of citation searching

1. The following terminology should be used to describe search methods that exploit citation relationships:
  - "Citation searching" as an umbrella term.
  - "Backward citation searching" to describe the sub-method retrieving and screening cited references.
  - "Reference list checking" to describe the sub-method retrieving and screening cited references by manually reviewing reference lists.
  - "Forward citation searching" to describe the sub-method retrieving and screening citing references.
  - "Co-cited citation searching" to describe the sub-method retrieving and screening co-cited references.
  - "Co-citing citation searching" to describe the sub-method retrieving and screening co-citing references.
  - "Iterative citation searching" to describe one or more repetition(s) of a search method that exploits citation relationships.
  - "Seed references" to describe relevant articles that are known beforehand and used as a starting point for any citation search.
2. For systematic search topics that are difficult to search for, backward and forward citation searching should be seriously considered as supplementary search techniques.
3. For systematic search topics that are easier to search for and addressed by a highly sensitive search, backward and forward citation searching are not explicitly recommended as supplementary search techniques. Reference list checking of included records can be used to confirm the sensitivity of the search strategy.
4. Backward and forward citation searching as supplementary search techniques should be based on all included records of the primary search (ie, all records that meet the inclusion criteria of the review after full text screening of the primary search results). Occasionally, it can be justified to deviate from this recommendation and either use further pertinent records as additional seed references or only a defined sample of the included records.
5. Backward citation searching should ideally be conducted by screening the titles and abstracts of the seed references as provided by a citation index. Screening titles as provided when checking reference lists of the seed references can still be performed.
6. Using the combined coverage of two citation indexes for citation searching to achieve more extensive coverage should be considered if access is available. This combination is especially meaningful if seed references cannot be found in one index and reference lists were not checked.
7. Before screening, the results of supplementary backward and forward citation searching should be deduplicated.
8. If citation searching finds additional eligible records, another iteration of citation searching should be considered using these records as new seed references.
9. Standalone citation searching should not be used for literature searches that aim at completeness of recall.
10. Reporting of citation searching should clearly state:
  - the seed references (along with a justification should the seed references differ from the set of included records from the results of the primary database search),
  - the directionality of searching (backward, forward, co-cited, co-citing),
  - the date(s) of searching (which might differ between rounds of iterative citation searching) (not applicable for reference list checking),
  - the number of citation searching iterations (and possibly the reason for stopping if the last iteration still retrieved additional eligible records),
  - all citation indexes searched (eg, Lens.org, Google Scholar, Scopus, citation indexes in Web of Science) and, if applicable, the tools that were used to access them (eg, Publish or Perish, citationchaser),
  - if applicable, information about the deduplication process (eg, manual/automated, the software or tool used),
  - the method of screening (ie, state whether the records were screened in the same way as the primary search results or, if not, describe the alternative method used), and
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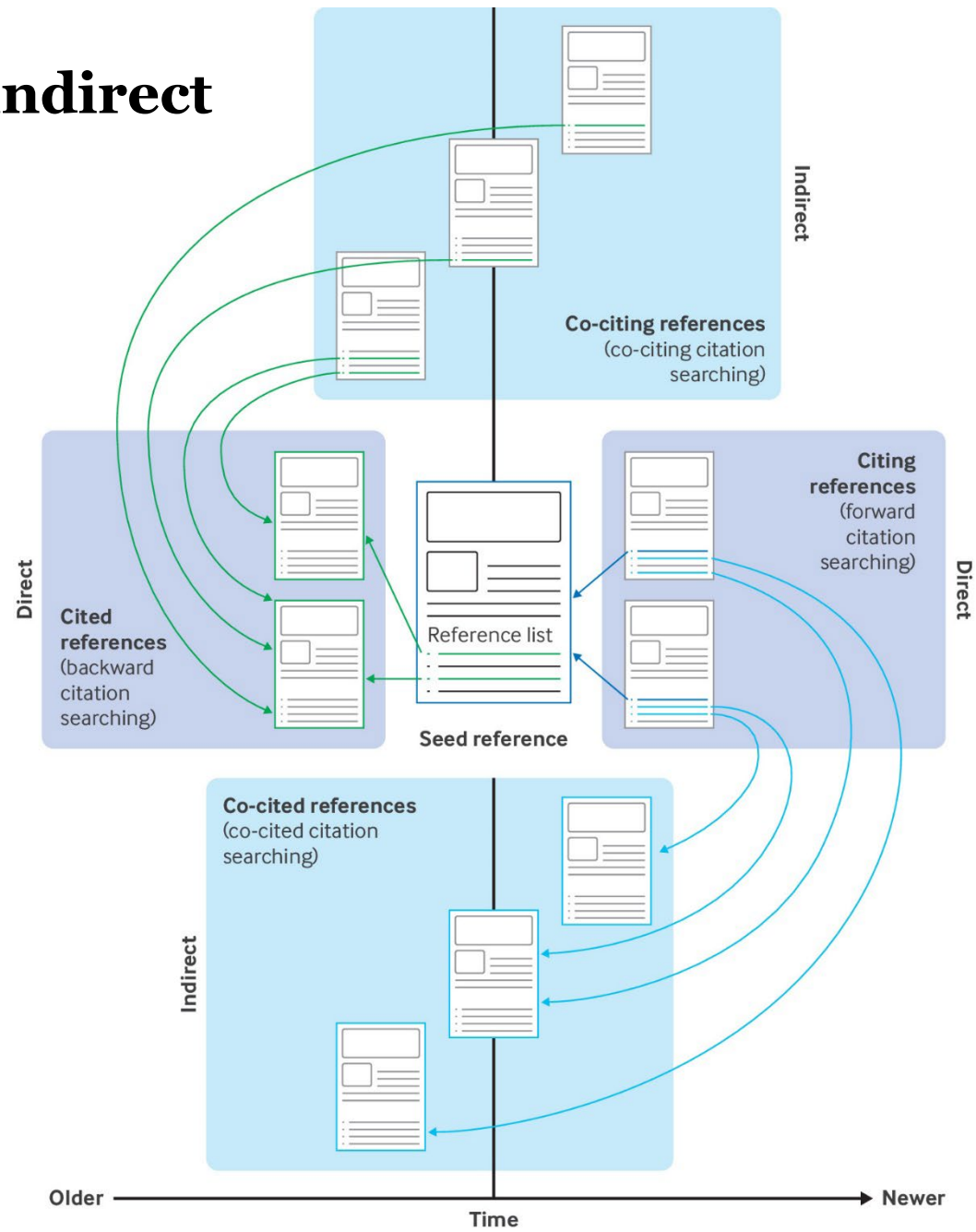
«The effectiveness, applicability, and conduct of **indirect citation searching methods** as supplementary search methods in systematic reviewing require further research»

«[Defining] topics or at least determinants of topics **where citation searching likely/not likely has additional value**»

Hirt et al. BMJ 2024



# Citation Searching – indirect



Hirt et al. BMJ 2024

Ranked indirect versus unranked direct citation searching for evidence retrieval: A study protocol

DOKU\_Protocol Paper\_20231221\_FINAL.pdf



# Ranked indirect versus unranked direct citation searching for evidence retrieval: A study protocol

Tim Woelfle\*<sup>1</sup>, Julian Hirt\*<sup>1,2</sup>, Geoffrey Fucile\*<sup>3,4</sup>, Thomas Nordhausen<sup>5</sup>, Hannah Ewald<sup>6</sup>, Christian Appenzeller-Herzog#<sup>6</sup>

<https://osf.io/8wpgx>



# Ranking inspired by Chris Belter's prework

Scientometrics (2017) 112:731–746  
DOI 10.1007/s11192-017-2406-y

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## A relevance ranking method for citation-based search results

**Christopher W. Belter<sup>1</sup>**

Received: 25 February 2016 / Published online: 16 May 2017

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# Roadmap to the formation of a new research consortium

- A new *OpenAlex*-based web-tool that enables (conventional) Unranked Direct Citation Searching (**UDCS**) and Ranked Indirect Citation Searching (**RICS**): **Ranked Co\*Citation Network**
- Implementation of a **RICS Cut-off** that best matches the volume of UDCS results
- **Case Study** (i.e. an active systematic review) where UDCS and RICS will be compared with regard to effectiveness and efficacy in retrieving unknown relevant literature
- Publication of the above
- Formation of a **Research Consortium**: Over several years, systematic review teams are invited to use the *Ranked Co\*Citation Network* and compare UDCS and RICS. Results will be submitted to us using a standard form. **[Cost of participation: A little more work. Benefits of participation: Co-authorship, cutting-edge SR methodology with potentially better coverage of the relevant literature.]**
- Analysis and publication of **quantitative UDCS x RICS comparisons** and **determinants of topics where citation searching likely has additional value**



University  
of Basel

**Thank you**  
for your attention.



Correspondence: [Christian.Appenzeller@unibas.ch](mailto:Christian.Appenzeller@unibas.ch)

# TARciS: Guidance on Terminology, Application, and Reporting of Citation Searching

## Recommendations and research priorities on conduct of citation searching (abbreviated)

### Recommendations

For "difficult-to-search-for" topics, backward and forward citation searching should be seriously considered.

For "easier-to-search-for" topics, backward and forward citation searching are not explicitly recommended.

Backward and forward citation searching should be based on all included records of the primary search.

Backward citation searching should ideally be conducted by using a citation index.

Using the combined coverage of two citation indexes for citation searching should be considered.

The results of supplementary backward and forward citation searching should be deduplicated.

If citation searching finds eligible records, another iteration of citation searching should be considered.

Stand-alone citation searching should not be used for literature searches that aim at completeness of recall.

### Research priorities

Effectiveness, applicability, and conduct of indirect citation searching methods.

Assessing the value of citation searching.

Best way to perform citation searching.

Reproducibility of existing studies on citation searching.