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Systematic Review Series: An Overview of the Stages and Resources

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Overview

- What is a Systematic Review and other review types
- Systematic Review in the Health Sciences Guide
- The 9 steps
    1. Formulate a Research Question
    2. Establish a team for Review
    3. Create a Protocol
    4. Search Databases
    5. Screening
    6. Data Extraction
    7. Risk of Bias
    8. Synthesis
    9. Interpretation

What is a Systematic review?

A systematic review, as a type of evidence syntheses, follows a rigorous and structured method with a well-defined, transparent, and replicable process to identify, evaluate, and synthesize the findings of all relevant individual studies on a particular topic or research question.

Average Time Commitment

6 Months to 1 Year

Evidence Synthesis

- Guidelines
- Systematic Review
- Scoping Review
- Integrative Review
- Narrative Review
- Meta-Analysis
- Rapid Review

Timeline for a Cochrane Review

Month	Activity
1 – 2	Preparation of protocol.
3 – 8	Searches for published and unpublished studies.
2 – 3	Pilot test of eligibility criteria.
3 – 8	Inclusion assessments.
3	Pilot test of 'Risk of bias' assessment.
3 – 10	Validity assessments.
3	Pilot test of data collection.
3 – 10	Data collection.
3 – 10	Data entry.
5 – 11	Follow up of missing information.
8 – 10	Analysis.
1 – 11	Preparation of review report.
12 –	Keeping the review up-to-date.

Cochrane Handbook for Systematic reviews, 2018 edition

Other Review Types

1. Scoping Review - a type of evidence synthesis that aims to systematically identify and map the breadth of evidence available on a particular topic, field, concept, or issue, often irrespective of source (ie, primary research, reviews, non-empirical evidence) within or across particular contexts.

2. Rapid Review - a form of knowledge synthesis that accelerates the process of conducting a traditional systematic review through streamlining or omitting a variety of methods to produce evidence in a resource-efficient manner. (Ideal for Students)

3. Integrative Review - Integrative reviews assimilate research data from various research designs (quantitative and qualitative) to reach conclusions that are comprehensive and reliable

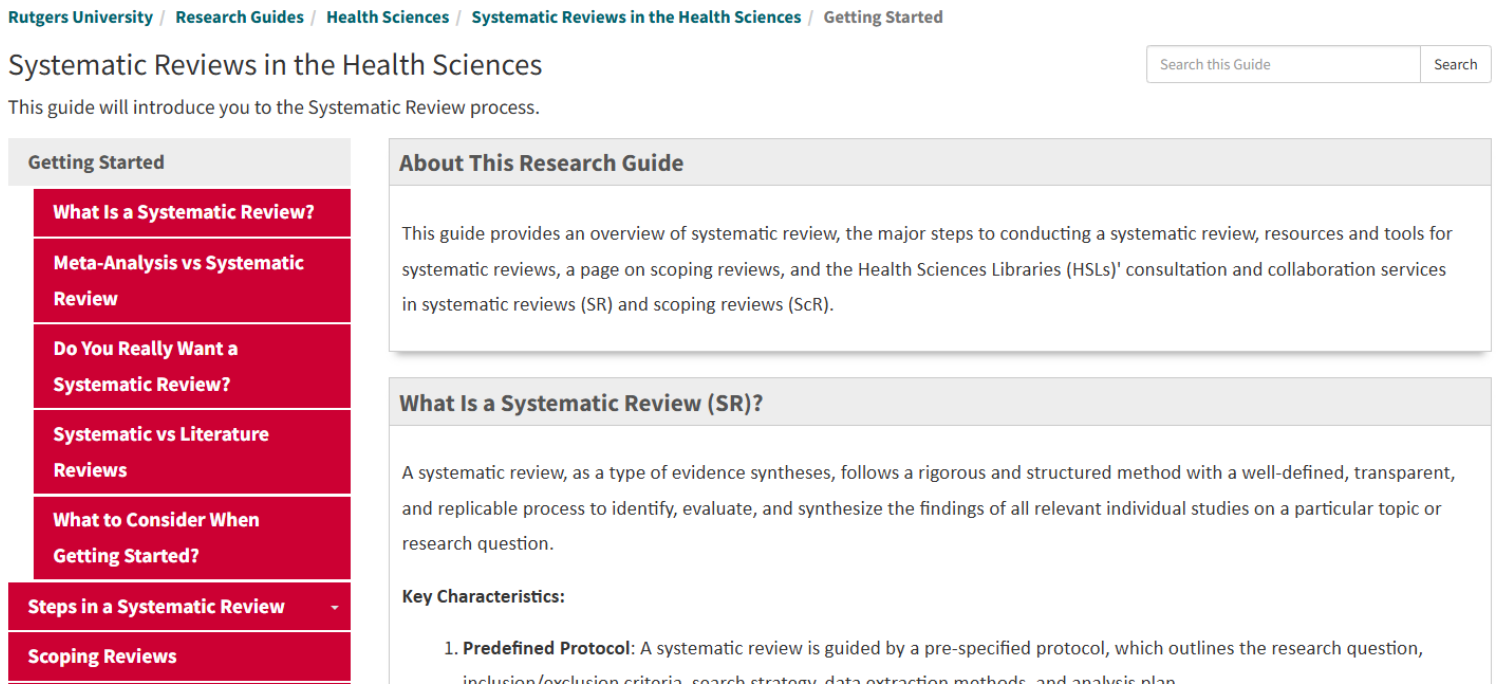
4. Narrative Review – A review of literature with not fixed methodology.

5. Guideline - systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances

6. Meta-Analysis - method for systematically combining pertinent qualitative and quantitative study data from several selected studies to develop a single conclusion that has greater statistical power.

Systematic Review Guide

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Rutgers University / Research Guides / Health Sciences / Systematic Reviews in the Health Sciences / Getting Started

Systematic Reviews in the Health Sciences

Search this Guide | Search

This guide will introduce you to the Systematic Review process.

Getting Started

- What Is a Systematic Review?
- Meta-Analysis vs Systematic Review
- Do You Really Want a Systematic Review?
- Systematic vs Literature Reviews
- What to Consider When Getting Started?

Steps in a Systematic Review

Scoping Reviews

About This Research Guide

This guide provides an overview of systematic review, the major steps to conducting a systematic review, resources and tools for systematic reviews, a page on scoping reviews, and the Health Sciences Libraries (HSLs)' consultation and collaboration services in systematic reviews (SR) and scoping reviews (ScR).

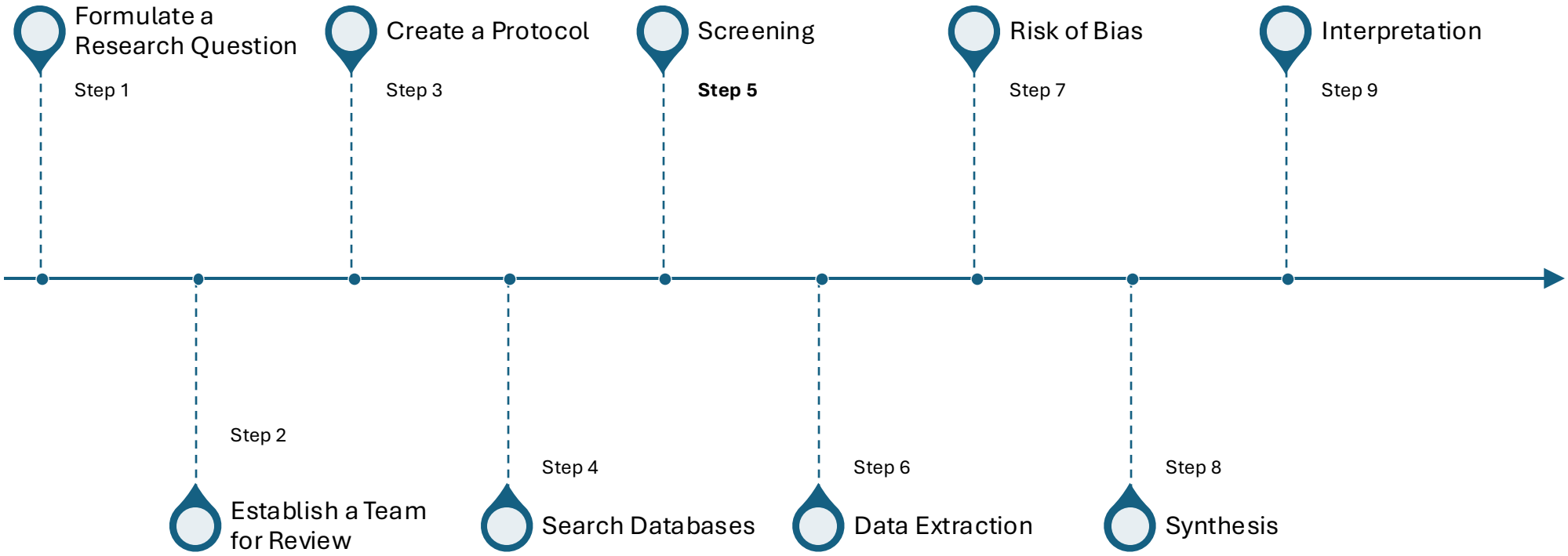
What Is a Systematic Review (SR)?

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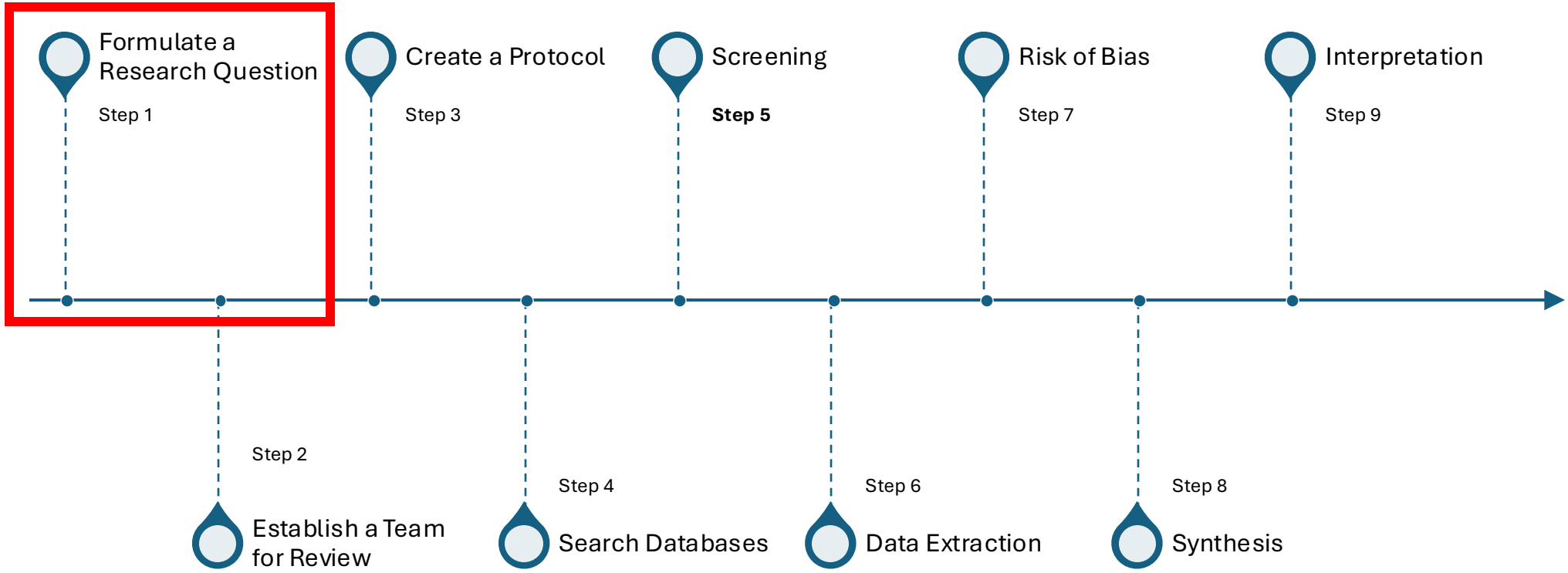
Key Characteristics:

1. **Predefined Protocol**: A systematic review is guided by a pre-specified protocol, which outlines the research question, inclusion/exclusion criteria, search strategy, data extraction methods, and analysis plan

The 9 Steps


Formulate a Research Question
Step 1
Step 2
Establish a Team for Review
Create a Protocol
Step 3
Step 4
Search Databases
Screening
Step 5
Step 6
Data Extraction
Risk of Bias
Step 7
Step 8
Synthesis
Interpretation
Step 9

Step 1 – Formulate a Research Question



How to Formulate a Research Question



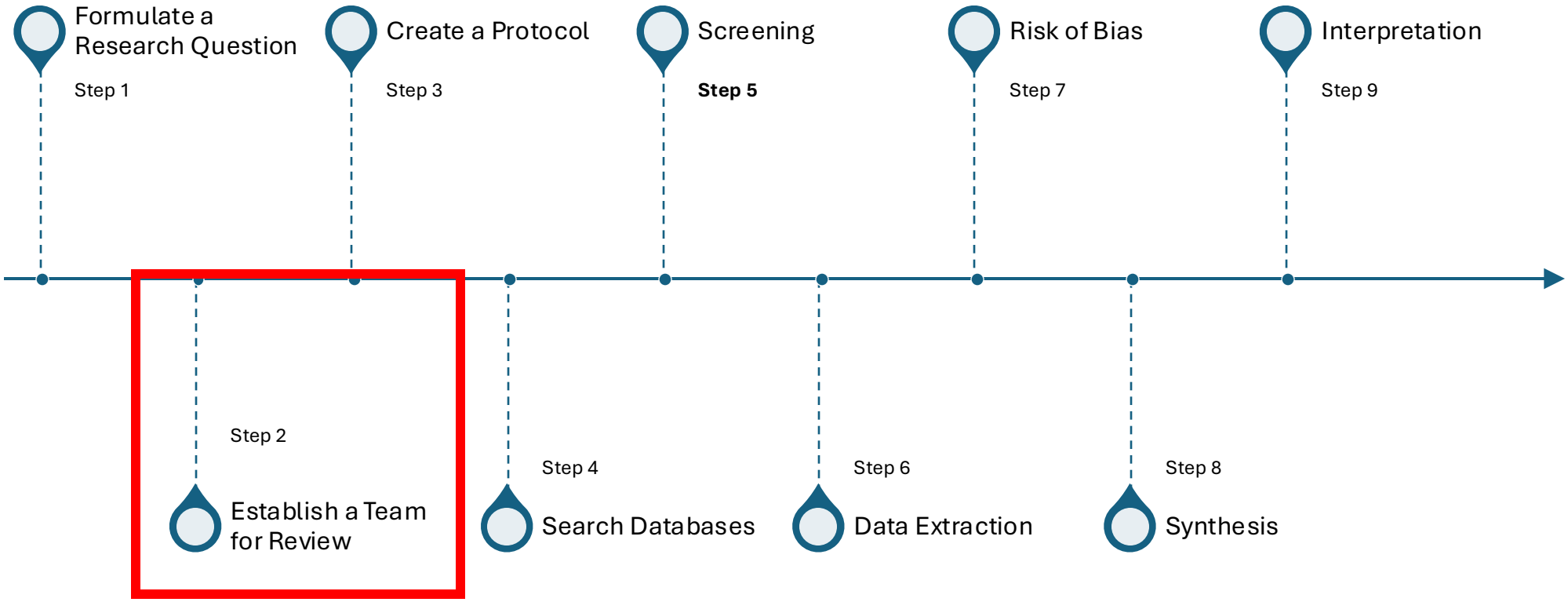
Tips

1. Begin with a topic you already know well
2. Search for existing systematic review or protocols
3. Assess gaps in the literature
4. Narrow the scope
5. Find 2 or 3 Perfect Examples

Question Formulation Tools – A Sample

ECLIPSE – Expectation – Client - Location – Impact – Professionals - Service
PICO – Patient – Intervention – Comparison – Outcome
PICOT – Patient – Intervention – Comparison – Outcome - Time
SPIDER – Sample – Phenomenon of Interest – Design – Evaluation – Research Type
SPICE - setting – perspective - intervention/exposure/interest - comparison - evaluation
PEO = Population – Exposure - Outcome

Step 2 - Establish a team for Review



Establish a Team for Review

- A competent Evidence Synthesis project requires a team
  - 3 Teams members minimum, 5 is preferred
- Subject Matter Experts
- Understand Time Commitment
- Meet Regularly, even if not much is going on



Step 3 - Create a Protocol



Create a Protocol

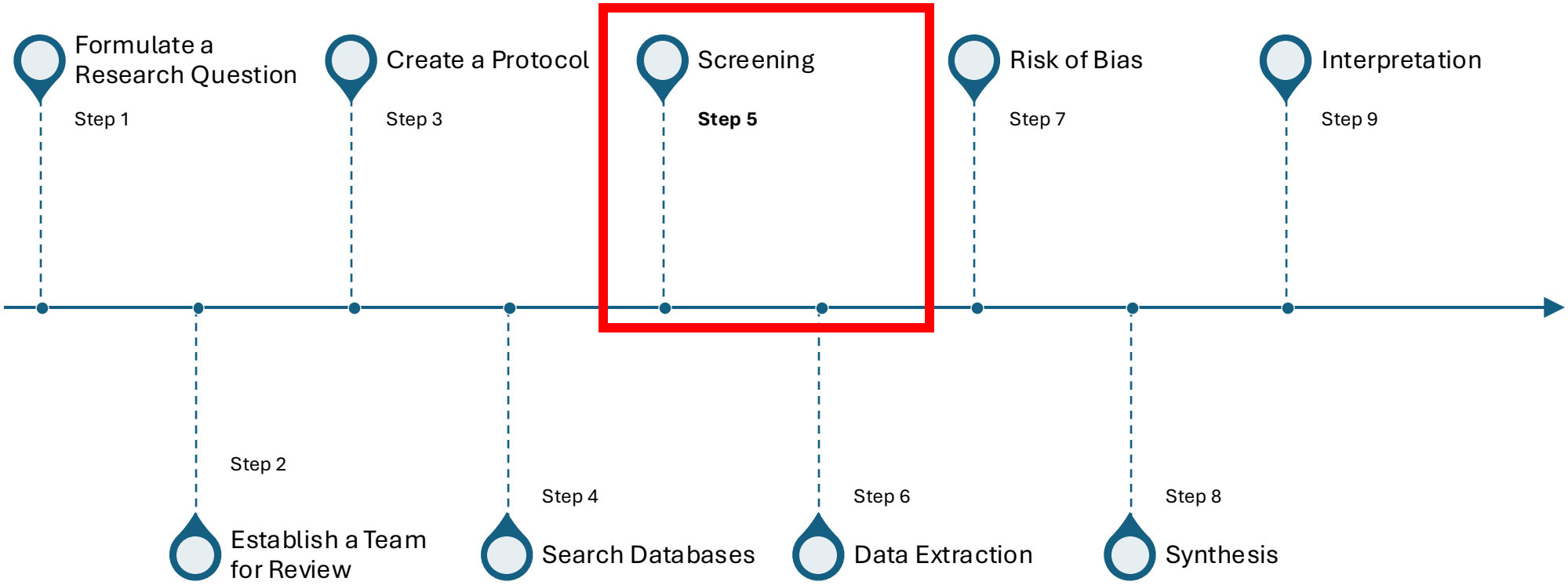
- Take your time
- Prisma Check list is the best tool to use
  - Many Publications require it
  - Register with Prospero
  - OSF
- Use other Systematic Reviews as a model
- Really think about Inclusion/Exclusion criteria and Data Extraction tool.
  - Can you realistically combine the studies into a unified vision?



Step 4 - Searching Databases

- 4 to 5 Databases
  - A search is prepared for each one
- Best done in collaboration with a Librarian
- Searches might be rerun at the request of journal or if significant time has passed.
- Must be reproducible
- 1 to 2 Months

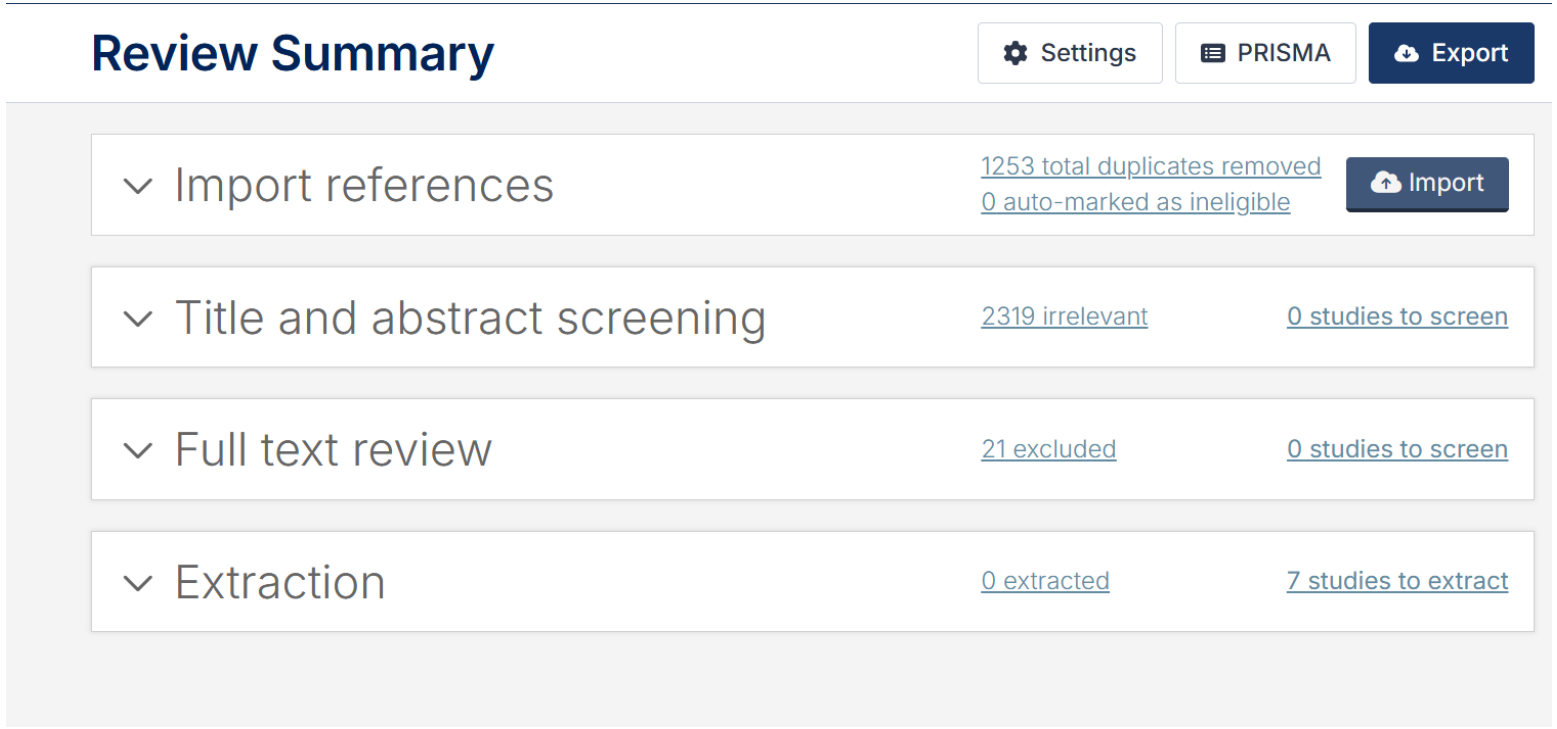
Step 5 Screening



Screening - Part 1 of 3

- Top resources
  - Covidence (Top Choice), available through the library
  - Rayyan
  - Endnote/Excel
- Strong Inclusion/Exclusion Criteria are Required
  - Developed with protocol
  - Articles must meet ALL criteria to be included
- Two Reviewers vote to include or exclude a study
- Third reviewer resolves disputes

Screening – part 2 of 3

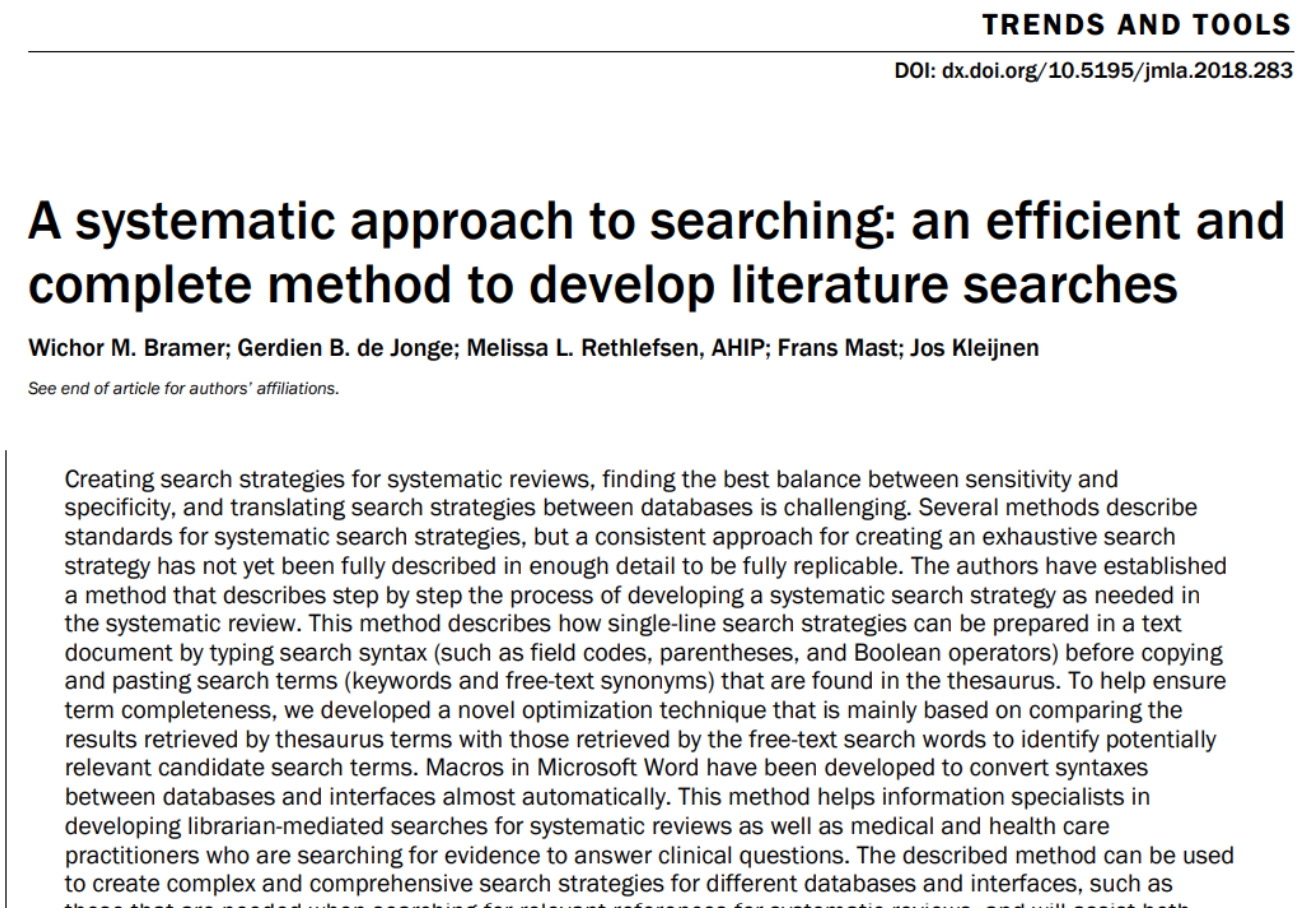


- Title/Abstract Stage
- Blinded
- Eliminates 90 to 95% of extracted studies
- There are only Yes votes or No votes. There are never Maybe votes

Screening Part 3 of 3

531

- Full Text review Stage
- Blinded or Not Blinded
- Reviewer's must read full articles
- Eliminates 50 to 75% of extracted studies



TRENDS AND TOOLS

DOI: dx.doi.org/10.5195/jmla.2018.283

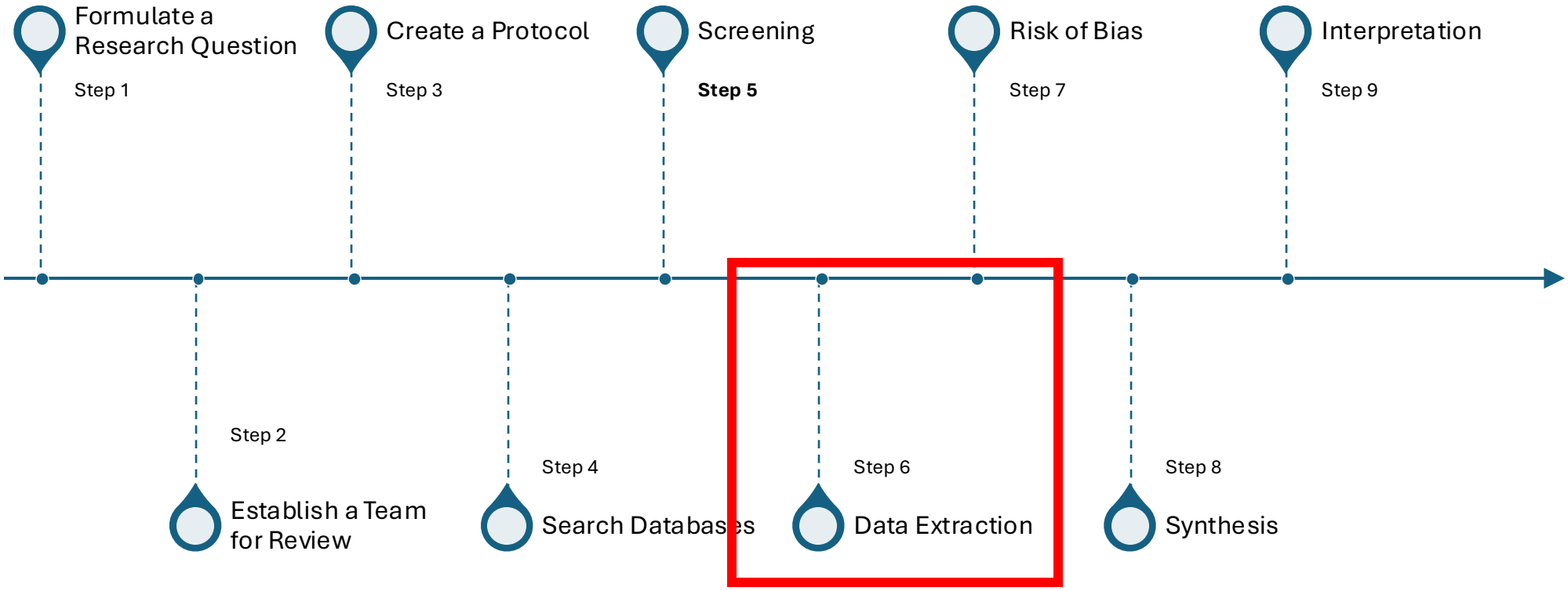
A systematic approach to searching: an efficient and complete method to develop literature searches

Wichor M. Bramer; Gerdien B. de Jonge; Melissa L. Rethlefsen, AHIP; Frans Mast; Jos Kleijnen

See end of article for authors' affiliations.

Creating search strategies for systematic reviews, finding the best balance between sensitivity and specificity, and translating search strategies between databases is challenging. Several methods describe standards for systematic search strategies, but a consistent approach for creating an exhaustive search strategy has not yet been fully described in enough detail to be fully replicable. The authors have established a method that describes step by step the process of developing a systematic search strategy as needed in the systematic review. This method describes how single-line search strategies can be prepared in a text document by typing search syntax (such as field codes, parentheses, and Boolean operators) before copying and pasting search terms (keywords and free-text synonyms) that are found in the thesaurus. To help ensure term completeness, we developed a novel optimization technique that is mainly based on comparing the results retrieved by thesaurus terms with those retrieved by the free-text search words to identify potentially relevant candidate search terms. Macros in Microsoft Word have been developed to convert syntaxes between databases and interfaces almost automatically. This method helps information specialists in developing librarian-mediated searches for systematic reviews as well as medical and health care practitioners who are searching for evidence to answer clinical questions. The described method can be used to create complex and comprehensive search strategies for different databases and interfaces, such as

Step 6 – Data Extraction



Data Extraction

- Data Extraction Tool
- What information do you want to extract?
- Excel or another spreadsheet software
- Covidence Includes its own Data Extraction feature
- Test it on a few studies

Step 7 - Risk of Bias



Risk of Bias Assessment

- Only used on included studies
- There are tools for each study type
- You are free to adapt any of the tools
  - Cochrane Risk of Bias Tool for randomized Control Trials (ROB 2)
  - ROBINS-I tool
  - ROBINS-E tool
  - Newcastle-Ottawa Scale (NOS)
  - CASP Checklists



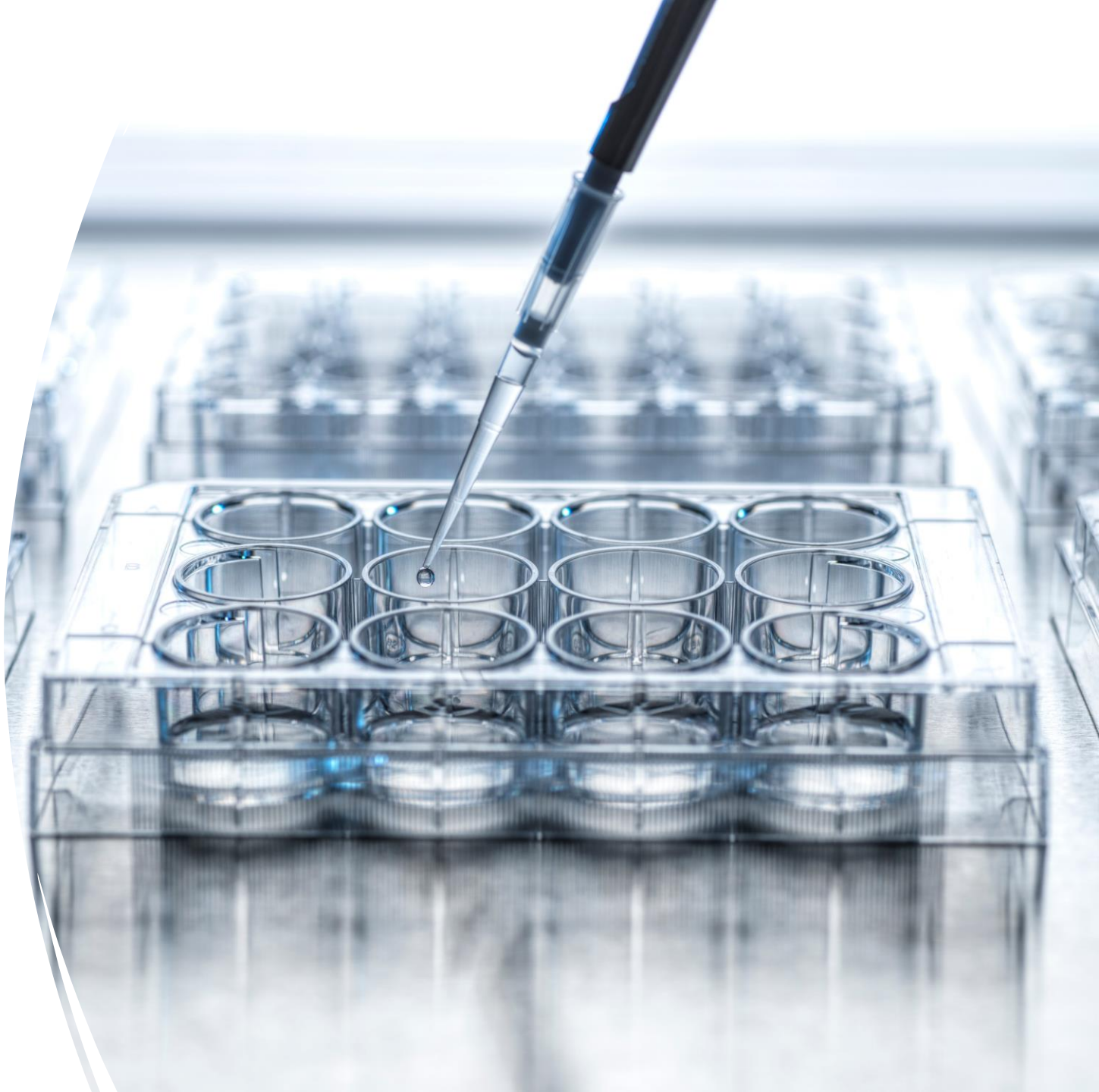
Step 8 - Synthesis



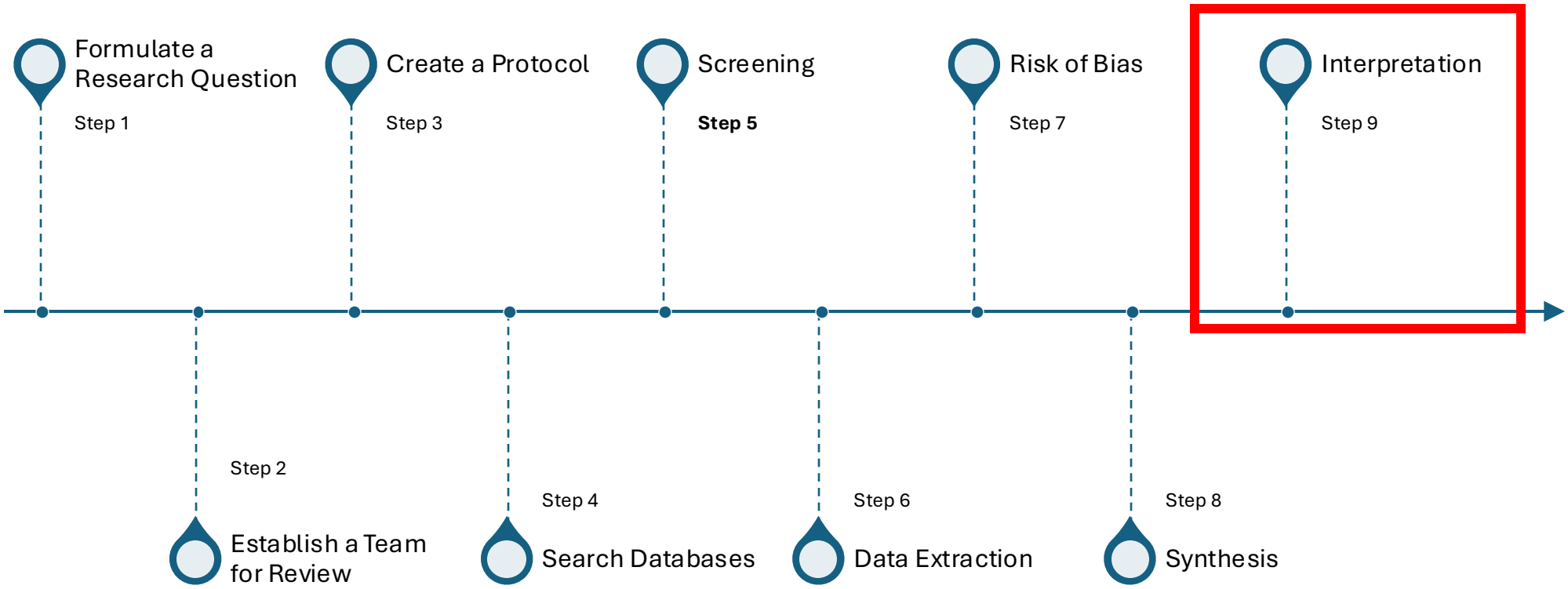
Synthesis

Choose the appropriate method:

- Narrative synthesis: Summarize findings qualitatively if meta-analysis is not feasible.
- Meta-analysis: Combine quantitative data using statistical methods.
- Mixed methods: Combines qualitative synthesis and quantitative analysis.
- Visualize results with tables and graphs (e.g., forest plots).



Step 9 - Interpretation



Interpretation

- Prepare your manuscript
- The Protocol is an excellent outline
- Review potential Journals for acceptance of Systematic Reviews
- Consult Transformative Agreement for APC savings



Resources

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Thank you

- Questions?

