Why is evidence essential to the success of your healthcare programme?

Evidence reviews: An Introduction

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Innovation Insights

What is evidence

- Demonstrating that interventions have been robustly tested
- Benefits and harms
- Research studies, service evaluations, audits
- Questionnaires, scales, tests, interviews, focus groups

The role of evidence in healthcare

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- Evidence-based practice:
  - allows for informed decision-making
  - can lead to changes in long standing policies
  - reduces variation in practice
  - leads to improved quality of care
  - leads to improved patient outcomes

Evidence synthesis

- The process of bringing together information from a range of sources to provide an overall summary of current knowledge
- Useful for identifying gaps in the literature
- Provide an evidence base for best-practice guidance, policy makers, practitioners

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Types of evidence synthesis

Literature reviews…

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…are a summary of existing research or literature on a topic of interest

…aim to provide an overview, put a research problem in context, and/or identify gaps and weaknesses in previous studies

…evaluate the existing literature rather than just restating it, but methods to do so are not described

…do not aim to be exhaustive and conclusions may be influenced by the authors' own views

Literature reviews: advantages and disadvantages

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- ✓ Good method when time, money and access to support are limited
- ✓ Provide information on a specific topic in a short period of time

- ✗ Findings may not be reliable
- ✗ Findings may be biased
- ✗ The quality of the included studies is not formally assessed
- ✗ May not provide the best answer to focused questions
- ✗ Lack of clarity on methodology

Systematic reviews…

…are evidence syntheses bringing together results from several studies

…aim to find and review **all** the evidence appropriate to a particular research question.

…produce more reliable, precise and widely applicable evidence than found in any of the studies alone.

A good systematic review:

…has a clearly defined review question
…uses a systematic approach to identify, select and appraise studies
…is driven by its protocol

Systematic reviews: a well-defined process

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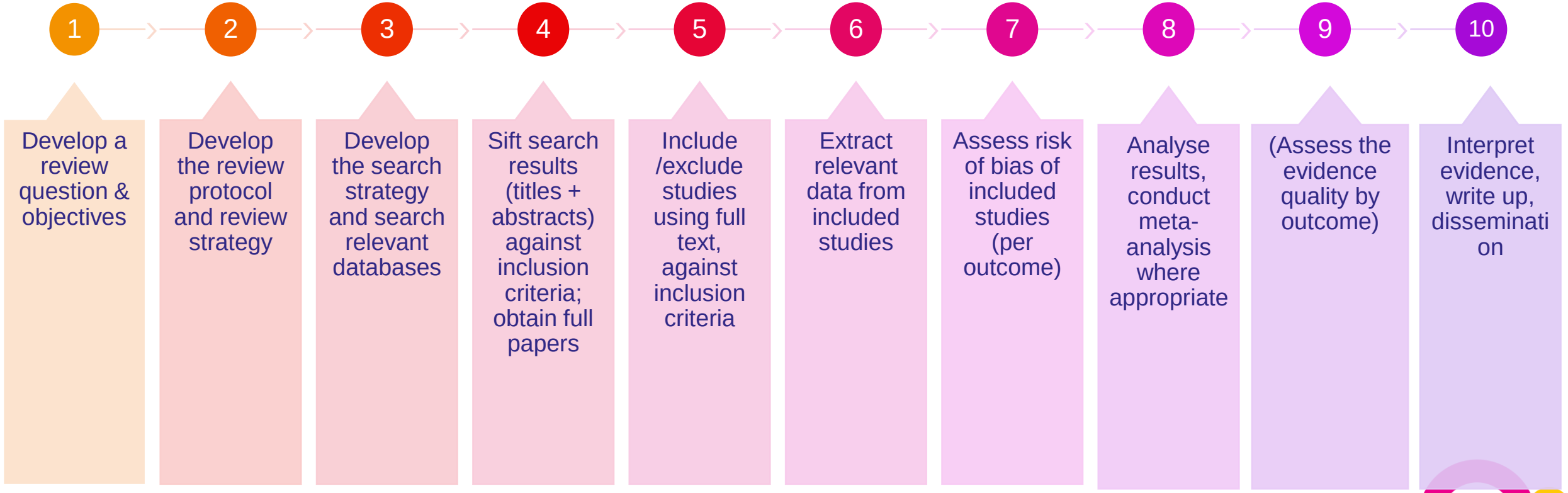

Systematic review – example

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National Guideline Centre

Final version

Low back pain and sciatica in over 16s: assessment and management

Assessment and non-nvasive treatments

NICE guideline NG59
Methods, evidence and recommendations
November 2016

Guideline updates

December 2020: in the recommendation on stopping opioid analgesics we added links to other NICE guidelines and resources that support discussion with patients about opioid prescribing and safe withdrawal management.

September 2020: NICE's original guidance on low back pain and sciatica in over 16s was published in 2016. It was partially updated in September 2020.

See the NICE website for the guideline recommendations and the evidence review for the 2020 update.

This document preserves evidence reviews and committee discussions for areas of the guideline that were not updated in 2020.

Final 2016

9.3 Clinical evidence

9.3.1 Summary of included studies – single interventions

A search was conducted for randomised trials comparing the effectiveness of exercise therapies (mind-body exercises, biomechanical exercise, aerobic exercise, and mixed modality exercises) with either placebo, usual care, or other non-invasive treatments in the management of people with low back pain or sciatica.

Seventy-five randomised trials were identified from a total of 80 papers.[8,12,26,37,55,67,71,72,79,80,84,93,98,104,112,132,134,138,161,168,170,173,180,194,196,199-201,211,233,265,277,278,282,295,309,313,317,318,324,325,329,331,334,335,342,348,352,364,124,125,370,371,379,395,400,410,414,416,419,430,436,447-449,457-462,466,473] Details of these studies are summarised in **Table 71**, **Table 72**, **Table 73** and **Table 74** below. Evidence from the study is summarised in the clinical evidence summary below (see section 9.3.5 to (a)). See also the study selection flow chart in Appendix E, study evidence tables in Appendix H, forest plots in Appendix K, GRADE tables in Appendix J and excluded studies list in Appendix L.

9.5 Evidence statements

9.5.1 Clinical

9.5.1.1 Individual biomechanical exercise versus usual care

In the mixed population, individual biomechanical exercise showed a clinically important improvement compared with usual care for improvement of quality of life scores on all but one of the reported domains (2 studies; low and very low quality; n = 57), and psychological distress (1 study; very low quality; n = 54). No clinically important benefit was seen for short term pain in 5 studies (moderate quality; n = 317), however there was a clinically important benefit in pain at rest, pain during movement, and pain when walking (3 studies; moderate, moderate and very low quality;

Exercise

1.2.2 Consider a group exercise programme (biomechanical, aerobic, mind–body or a combination of approaches) within the NHS for people with a specific episode or flare-up of low back pain with or without sciatica. Take people's specific needs, preferences and capabilities into account when choosing the type of exercise. **[2016]**

Systematic review – example

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Interventions to reduce falls in hospitals: a systematic review and meta-analysis

Meg E Morris ✉, Kate Webster, Cathy Jones, Anne-Marie Hill, Terry Haines, Steven McPhail, Debra Kiegaldie, Susan Slade, Dana Jazayeri, Hazel Heng ... Show more
Author Notes

Background

Falls remain a common and debilitating problem in hospitals worldwide. The aim of this study was to investigate the effects of falls prevention interventions on falls rates and the risk of falling in hospital.

Design

Systematic review and meta-analysis.

Participants

Hospitalised adults.

Intervention

Prevention methods included staff and patient education, environmental modifications, assistive devices, policies and systems, rehabilitation, medication management and management of cognitive impairment. We evaluated single and multi-factorial approaches.

Outcome measures

Falls rate ratios (rate ratio: RaR) and falls risk, as defined by the odds of being a faller in the intervention compared to control group (odds ratio: OR).

Results

There were 43 studies that satisfied the systematic review criteria and 23 were included in meta-analyses. There was marked heterogeneity in intervention methods and study designs. The only intervention that yielded a significant result in the meta-analysis was education, with a reduction in falls rates (RaR = 0.70 [0.51–0.96], $P = 0.03$) and the odds of falling (OR = 0.62 [0.47–0.83], $P = 0.001$). The patient and staff education studies in the meta-analysis were of high quality on the GRADE tool. Individual trials in the systematic review showed evidence for clinician education, some multi-factorial interventions, select rehabilitation therapies, and systems, with low to moderate risk of bias.

Conclusion

Patient and staff education can reduce hospital falls. Multi-factorial interventions had a tendency towards producing a positive impact. Chair alarms, bed alarms, wearable sensors and use of scored risk assessment tools were not associated with significant fall reductions.

Systematic review: advantages and disadvantages

- ✓ Minimise bias
- ✓ Provides a reliable basis for decision making
- ✓ Transparent approach
- ✓ Identifies gaps in the current research
- ✓ Enables a cumulative body of sound evidence to be developed on a subject area
- ✓ No evidence is missed out or ignored
- ✓ Formally assesses the quality of included studies
- ✓ Objective

- ✗ Requires expertise of the topic area
- ✗ Very comprehensive and therefore time consuming
- ✗ Typically require a team of researchers

Rapid reviews

- Rapid reviews, rapid evidence reviews, rapid evidence assessment, rapid systematic review, rapid evidence summary, expedited review

- “A form of knowledge synthesis in which components of the systematic review process are **simplified** or **omitted** to produce information in a **timely** manner” (Khangura 2012)

Khangura, S., Konnyu, K., Cushman, R., Grimshaw, J., & Moher, D. (2012). Evidence summaries: the evolution of a rapid review approach. *Systematic reviews*, *1*(1), 1-9

Rapid review – example

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Community engagement for COVID-19 prevention and control: a rapid evidence synthesis

PDF
PDF + Supplementary Material
XML

Brynne Gilmore [1], Rawlance Ndejjo [2], Adalbert Tchetchia [3], Vergil de Claro [4], Elizabeth Mago [5], Alpha A Diallo [6], Claudia Lopes [7], Sanghita Bhattacharyya [8, 9]
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Abstract

Introduction Community engagement has been considered a fundamental component of past outbreaks, such as Ebola. However, there is concern over the lack of involvement of communities and 'bottom-up' approaches used within COVID-19 responses thus far. Identifying how community engagement approaches have been used in past epidemics may support more robust implementation within the COVID-19 response.

Methodology A rapid evidence review was conducted to identify how community engagement is used for infectious disease prevention and control during epidemics. Three databases were searched in addition to extensive snowballing for grey literature. Previous epidemics were limited to Ebola, Zika, SARS, Middle East respiratory syndromeand H1N1 since 2000. No restrictions were applied to study design or language.

Results From 1112 references identified, 32 articles met our inclusion criteria, which detail 37 initiatives. Six main community engagement actors were identified: local leaders, community and faith-based organisations, community groups, health facility committees, individuals and key stakeholders. These worked on different functions: designing and planning, community entry and trust building, social and behaviour change communication, risk communication, surveillance and tracing, and logistics and administration.

Conclusion COVID-19's global presence and social transmission pathways require social and community responses. This may be particularly important to reach marginalised populations and to support equity-informed responses. Aligning previous community engagement experience with current COVID-19 community-based strategy recommendations highlights how communities can play important and active roles in prevention and control. Countries worldwide are encouraged to assess existing community engagement structures and use community engagement approaches to support contextually specific, acceptable and appropriate COVID-19 prevention and control measures.

Evidence of the effectiveness of travel-related measures during the early phase of the COVID-19 pandemic: a rapid systematic review

PDF
PDF + Supplementary Material
XML

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Abstract

Objective To review the effectiveness of travel measures implemented during the early stages of the COVID-19 pandemic to inform changes on how evidence is incorporated in the International Health Regulations (2005) (IHR).

Design We used an abbreviated Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols to identify studies that investigated the effectiveness of travel-related measures preprinted or published by 1 June 2020.

Results We identified 29 studies, of which 26 were modelled. Thirteen studies investigated international measures, while 17 investigated domestic measures (one investigated both). There was a high level of agreement that the adoption of travel measures led to important changes in the dynamics of the early phases of the COVID-19 pandemic: the Wuhan measures reduced the number of cases exported internationally by 70%–80% and led to important reductions in transmission within Mainland China. Additional travel measures, including flight restrictions to and from China, may have led to additional reductions in the number of exported cases. Few studies investigated the effectiveness of measures implemented in other contexts. Early implementation was identified as a determinant of effectiveness. Most studies of international travel measures did not account for domestic travel measures thus likely leading to biased estimates.

Conclusion Travel measures played an important role in shaping the early transmission dynamics of the COVID-19 pandemic. There is an urgent need to address important evidence gaps and also a need to review how evidence is incorporated in the IHR in the early phases of a novel infectious disease outbreak.

Rapid review: advantages and disadvantages

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- ✓ Very focused
- ✓ Timely
- ✓ Reduces bias to some extent
- ✓ Transparent

- × Search is not comprehensive
- × There may only be one reviewer
- × No universally accepted definition of ‘rapid review’
- × Interpretation of findings has to be cautious and limited
- × More susceptible to bias
- × Still need a content expert and needs to be experienced with systematic reviews

Scoping reviews…

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…are an exploratory approach to systematically synthesise evidence

…aim to map the extent, range and nature of emerging areas, and/or to identify gaps in the evidence

…are useful when it is still unclear what other, more specific questions can be posed

…use a systematic and rigorous approach to the identify relevant literature (similar to systematic reviews)

Reasons for choosing a scoping review

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1. Identify main concepts and definitions on a topic
2. Determine the primary dimensions of a concept
3. Uncover the types of evidence available on a topic
4. Determine gaps in the literature
5. Take a preliminary step toward conducting a systematic review
6. Better understand how research has been carried out on a topic

Peters MDJ, Marnie C, Tricco AC, et al. Updated methodological guidance for the conduct of scoping reviews. JBI Evid Synth . 2020;18(10):2119–2126. doi: 10.11124/jbies-20-00167.

Scoping review - example

Trends in outcomes used to measure the effectiveness of UK-based support interventions and services targeted at adults with experience of domestic and sexual violence and abuse: a scoping review

PDF + Supplementary Material

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Abstract

Objectives In the UK, a range of support services and interventions are available to people who have experienced or perpetrated domestic and sexual violence and abuse (DSVA). However, it is currently not clear which outcomes and outcome measures are used to assess their effectiveness. The objective of this review is to summarise, map and identify trends in outcome measures in evaluations of DSVA services and interventions in the UK.

Design Scoping review.

Data sources MEDLINE, EMBASE, PsycINFO, Social Policy and Practice, ASSIA, IBSS, Sociological abstracts and SSCI electronic databases were searched from inception until 21 June 2022. Grey literature sources were identified and searched.

Eligibility We included randomised controlled trials, non-randomised comparative studies, pre–post studies and service evaluations, with at least one outcome relating to the effectiveness of the support intervention or service for people who have experienced and/or perpetrated DSVA. Outcomes had to be assessed at baseline and at least one more time point, or compared with a comparison group.

Charting methods Outcome measures were extracted, iteratively thematically grouped into categories, domains and subdomains, and trends were explored.

Results 80 studies reporting 87 DSVA interventions or services were included. A total of 426 outcome measures were extracted, of which 200 were used more than once. The most commonly reported outcome subdomain was DSVA perpetration. Cessation of abuse according to the Severity of Abuse Grid was the most common individual outcome. Analysis of temporal trends showed that the number of studies and outcomes used has increased since the 1990s.

Conclusions Our findings highlight inconsistencies between studies in outcome measurement. The increase in the number of studies and variety of measures suggests that as evaluation of DSVA services and interventions matures, there is an increased need for a core of common, reliable metrics to aid comparability.

Scoping review: advantages and disadvantages

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- ✓ Minimise bias
- ✓ Transparent approach
- ✓ Identifies gaps in the current research
- ✓ No evidence is missed out or ignored
- ✓ Provides an overview of state of evidence in a field

- ✗ Broad scope means it can be difficult to establish boundaries
- ✗ Does not examine the quality of the evidence, can make interpretation tricky
- ✗ Often just as time consuming as systematic reviews

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Comparisons between reviews

Systematic review vs. literature review

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	Systematic Review	Traditional Literature Review
Review question/topic	Starts with a well-defined research question to be answered. Reviews have the aim of finding ALL existing evidence in an unbiased, transparent and reproducible way.	Topics may be broad; goal may be to place one's own research within the existing body of knowledge, or gather information supporting a particular view.
Searching for studies	Attempts are made to find all existing published and unpublished literature. The process is well documented.	Searches may be ad hoc, and based on what the author is already familiar with. Searches are not exhaustive.
Study selection	Reasons for inclusion and exclusion are explicit and informed by the research question.	Often lacks clear reasons for why studies were included or excluded.
Assessing the quality of included studies	Systematically assess risk of bias of individual studies and overall quality of the evidence, including sources of heterogeneity.	Often do not consider study quality or potential biases in study design.
Synthesis	Base conclusions of quality of the studies, and provide recommendations for practice or to address knowledge gaps.	Conclusions are more qualitative and may not be based on study quality.
Time frame	Months to years. Average 18 months.	Weeks to months
Number of authors	Three or more	One of more

Systematic review vs. rapid review

	Systematic Review	Rapid review
Review question/topic	Starts with a well-defined research question to be answered. Reviews have the aim of finding ALL existing evidence in an unbiased, transparent and reproducible way.	Has a well-defined research question that is focused, answerable and specific.
Searching for studies	Attempts are made to find all existing published and unpublished literature. The process is well documented.	Search is more limited – often to one major scientific database and one other source, may be limited by date and language.
Study selection	Reasons for inclusion and exclusion are explicit and informed by the research question.	Reasons for inclusion and exclusion are explicit and informed by the research question. May prioritise certain types of evidence e.g., existing systematic reviews, randomised controlled trials. May be done by one instead of two reviewers
Assessing the quality of included studies	Systematically assess risk of bias of individual studies and overall quality of the evidence, including sources of heterogeneity.	Systematically assess risk of bias of individual studies and overall quality of the evidence, including sources of heterogeneity.
Synthesis	Base conclusions of quality of the studies, and provide recommendations for practice or to address knowledge gaps.	Usually, narrative synthesis and summary tables. Meta-analysis not usually carried out.
Time frame	Months to years. Average 18 months.	<5 weeks; 1-6 months
Number of authors	Three or more	Two or more

Systematic review vs. scoping review

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	Systematic Review	Scoping review
Review question/topic	Starts with a well-defined research question to be answered. Reviews have the aim of finding ALL existing evidence in an unbiased, transparent and reproducible way.	Broad research question often used to 'map the literature', identify gaps in a body of literature, or identify key terms and concepts
Searching for studies	Attempts are made to find all existing published and unpublished literature. The process is well documented.	Attempts are made to find all existing published and unpublished literature. The process is well documented.
Study selection	Reasons for inclusion and exclusion are explicit and informed by the research question.	Often lacks clear reasons for why studies were included or excluded.
Assessing the quality of included studies	Systematically assess risk of bias of individual studies and overall quality of the evidence, including sources of heterogeneity.	No critical appraisal of the included studies – this is not a priority.
Synthesis	Base conclusions of quality of the studies, and provide recommendations for practice or to address knowledge gaps.	Synthesis is more qualitative than quantitative.
Time frame	Months to years. Average 18 months.	Months to years
Number of authors	Three or more	Three or more

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Doing a review

Who and how to do a review

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Who?

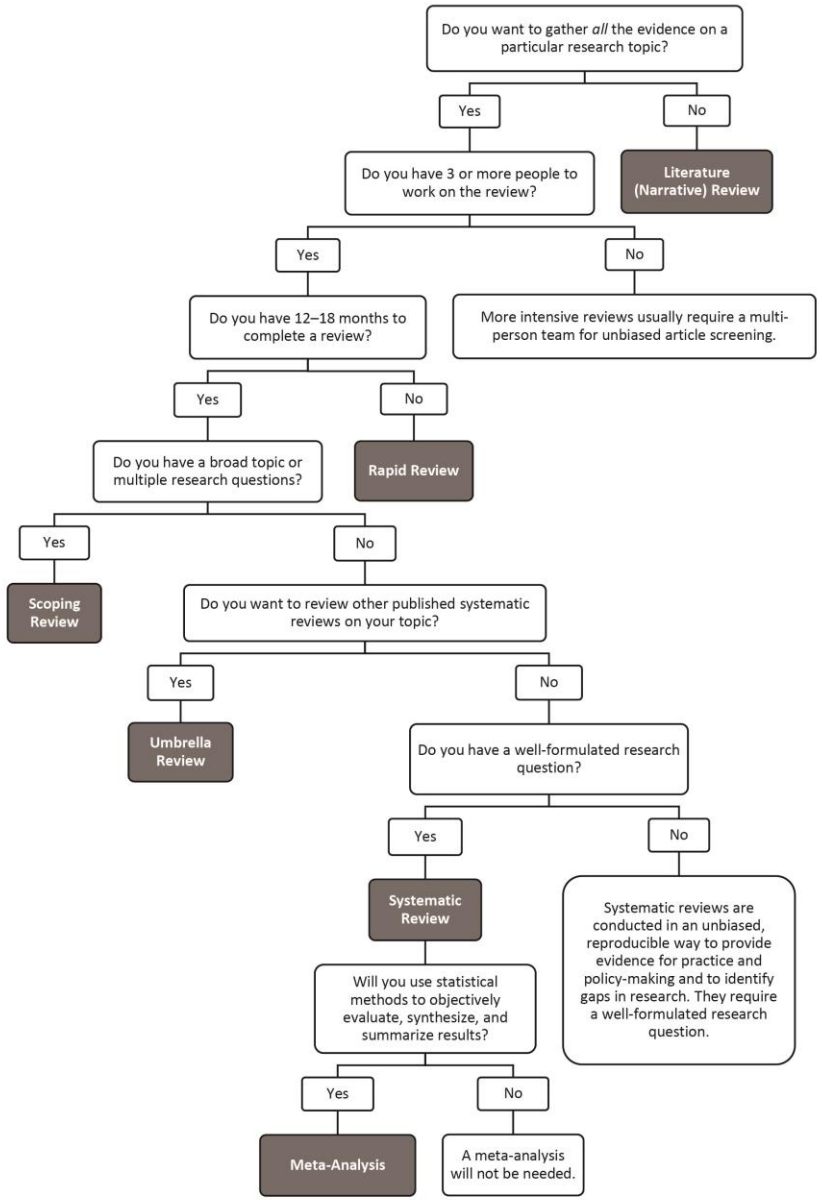
- Usually involves subject/clinical experts, methodology experts, librarians
- Often carried out by PhD students or research active staff / clinicians
- Anyone can do a review, but training is necessary

How?

- Courses are widely available – some qualify for RCP CPD points
  - E.g. Nottingham Systematic Review Course - The University of Nottingham
  - E.g., Comprehensive Systematic Review Training Program | JBI
- Online guides and resources
  - E.g. Cochrane Interactive Learning | Cochrane Training

What Type of Review Is Right for You?

Cornell University Library



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Not covered today…

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- Meta-analysis
- Umbrella reviews
- Qualitative evidence synthesis
- Mixed-methods reviews
- Evidence gap maps
- Clinical practice guidelines
- Policy briefs
- Technology assessment reviews

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Further information

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