

Living systematic reviews: what, why, when and how?

Dr Rebecca Kate Hodder

September 2025



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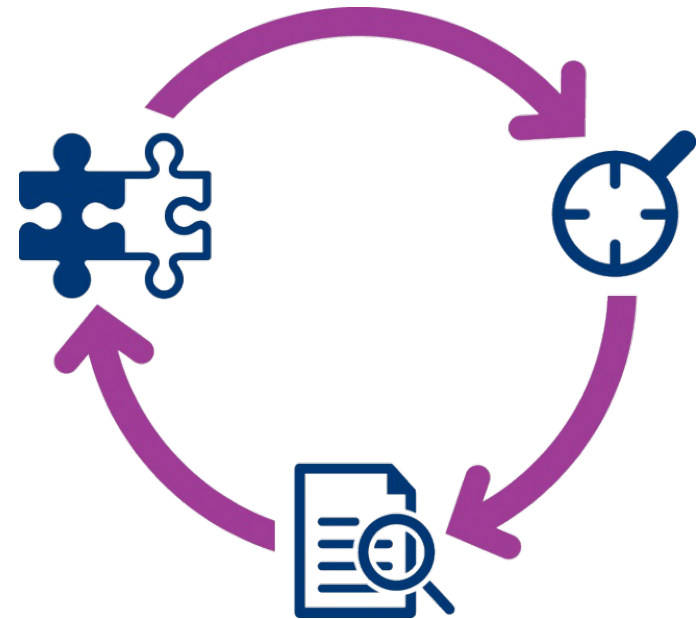
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Overview

- Brief background
- What is a living systematic review (LSR)
- When to conduct an LSR
- How to conduct an LSR
 - Planning
 - Core / LSR specific methods
- Brief case study
- Practical tips
- Resources



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<https://community.cochrane.org/review-production/production-resources/living-systematic-reviews>

Background

- Systematic reviews highest level of evidence to inform evidence-based decision making
- Aim to adopt high quality methods and incorporate most recent evidence
- Systematic reviews take years to produce and publish, infrequently updated
- Can be out of date on publication
- **Challenge: how to retain high methodological quality and currency of systematic reviews?**



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What is a living systematic review?



“A systematic review that is continually updated, incorporating relevant new evidence as it becomes available.”

“In practice, this means continual surveillance for new research evidence through ongoing or frequent searches and the inclusion of relevant new information into the review in a timely manner so that the findings of the systematic review remain current”



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Elliott JH, et al. Living Systematic Review Network. Living systematic review: 1. Introduction-the why, what, when, and how. J Clin Epidemiol. 2017 Nov;91:23-30
<https://www.vectorstock.com>



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Features of a living systematic review

- ✓ Can be applied to any review type (e.g. RCTs, qualitative)
- ✓ New reviews or existing reviews
- ✓ Retains all core systematic review methods
- ✓ Addition of LSR-specific methods, pre-specified at protocol stage
- ✓ Continual evidence surveillance / synthesis frequency is explicit, stated *a priori*
- ✓ LSR commences with a protocol and / or standard 'baseline' review



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LSR verses standard SRs?

	Living systematic review	Standard systematic review
Explicit, pre-defined methods describing search frequency	✓	x
Explicit, pre-defined methods describing when new evidence is incorporated into the review	✓	x
Continual evidence surveillance	✓	x
New evidence is immediately flagged for reader or incorporated into the review	✓	x
Core SR methods (e.g. screening, data extraction, risk of bias, GRADE)	✓	✓



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https://community.cochrane.org/sites/default/files/uploads/inline-files/Transform/201912_LSR_Revised_Guidance.pdf



When should you conduct an LSR?

Key criteria to consider whether an LSR appropriate

1. Is the review question a priority for decision making?
2. Is the certainty in the existing evidence low or very low?
3. Is there is likely to be new research evidence?
4. **Feasible? Author (and editorial) capacity for an LSR?**



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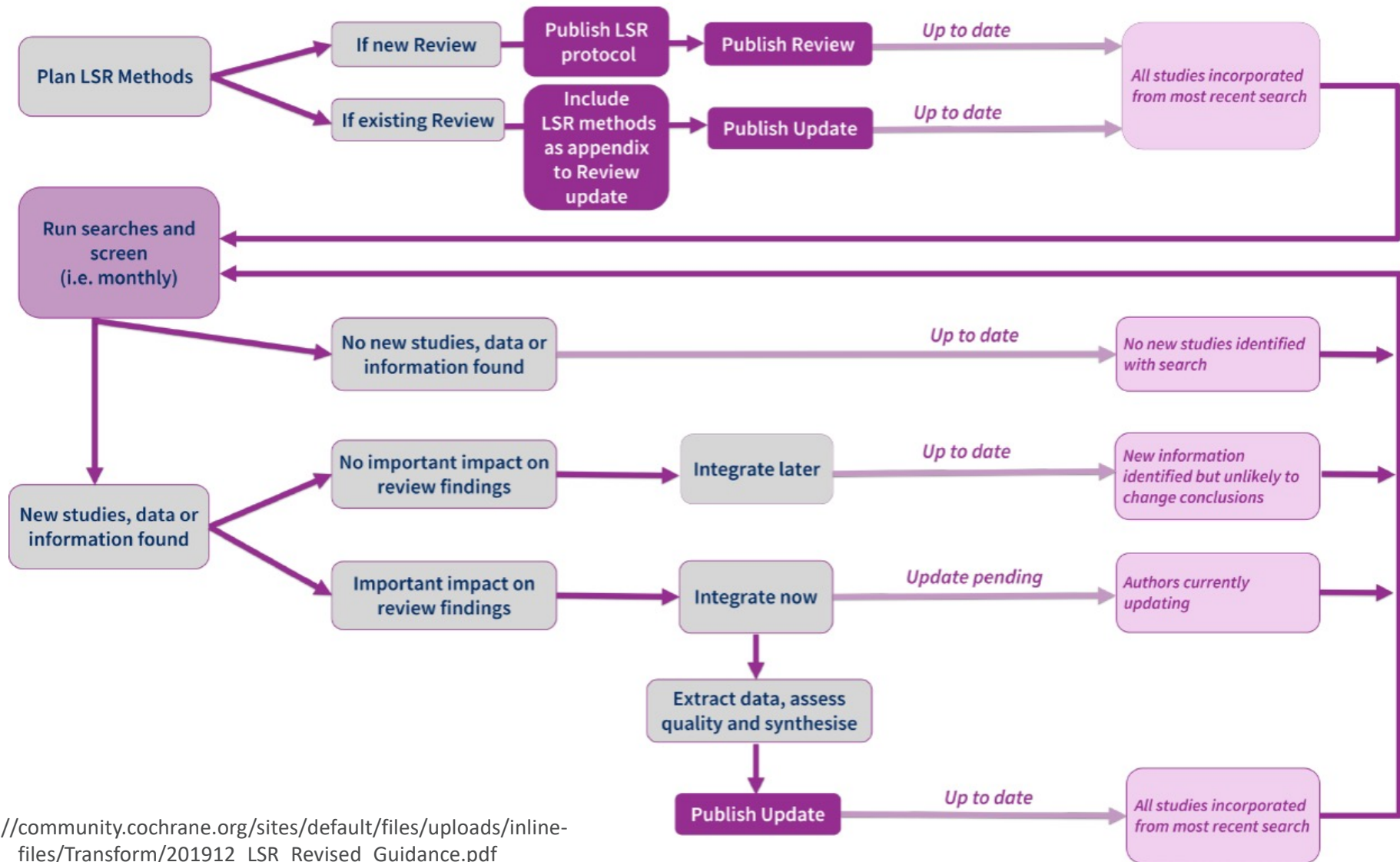
How to conduct an LSR



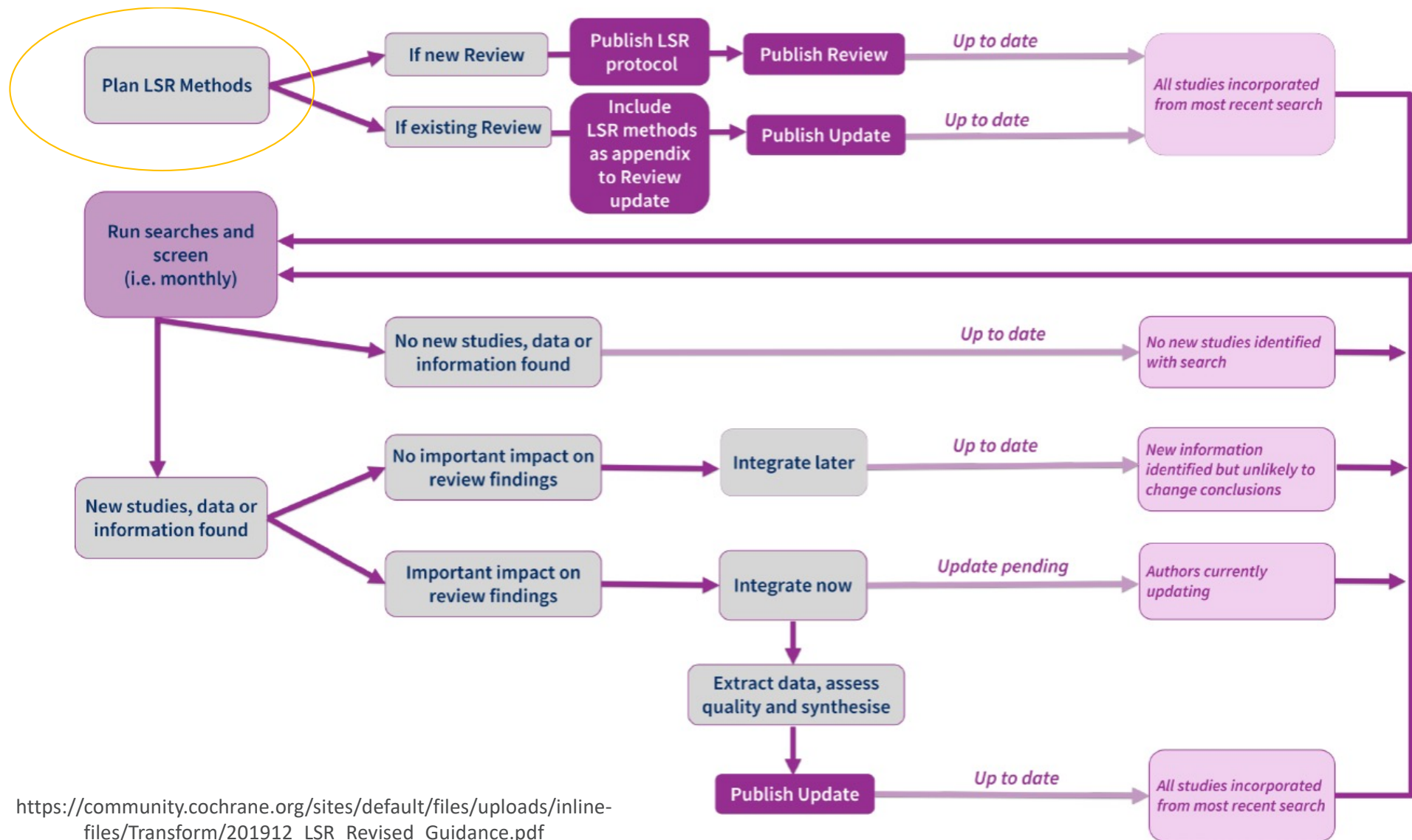
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https://community.cochrane.org/sites/default/files/uploads/inline-files/Transform/201912_LSR_Revised_Guidance.pdf



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Planning an LSR

Develop an LSR protocol

- Living document in public domain
- Core method considerations
 - Searching/screening for new evidence – frequency?
 - Incorporating new evidence – frequency?
- LSR-specific methods
 - Review status between updates – communicated how?
 - Review of LSR and other methods – when?

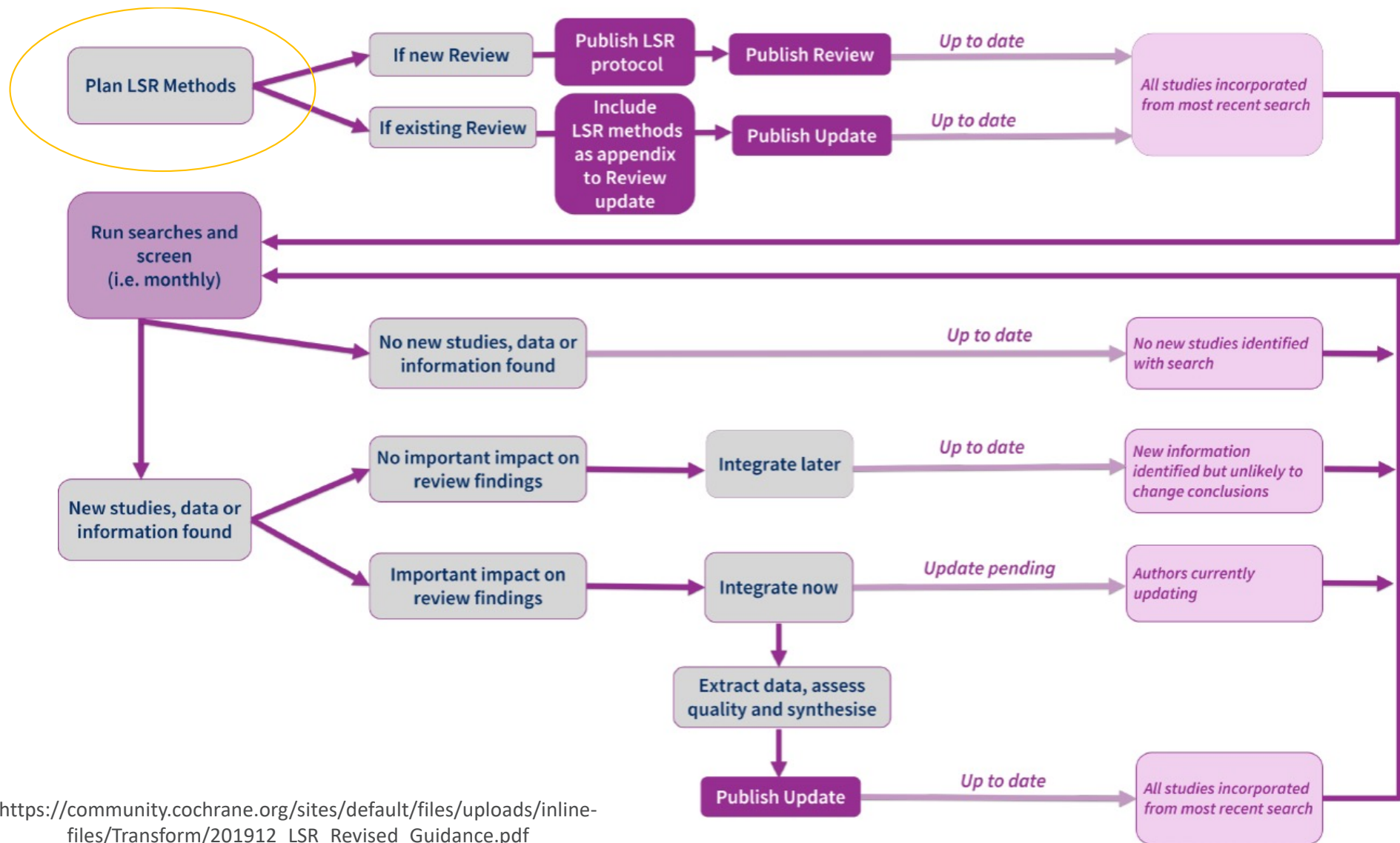
Editorial team endorsement for LSR approach



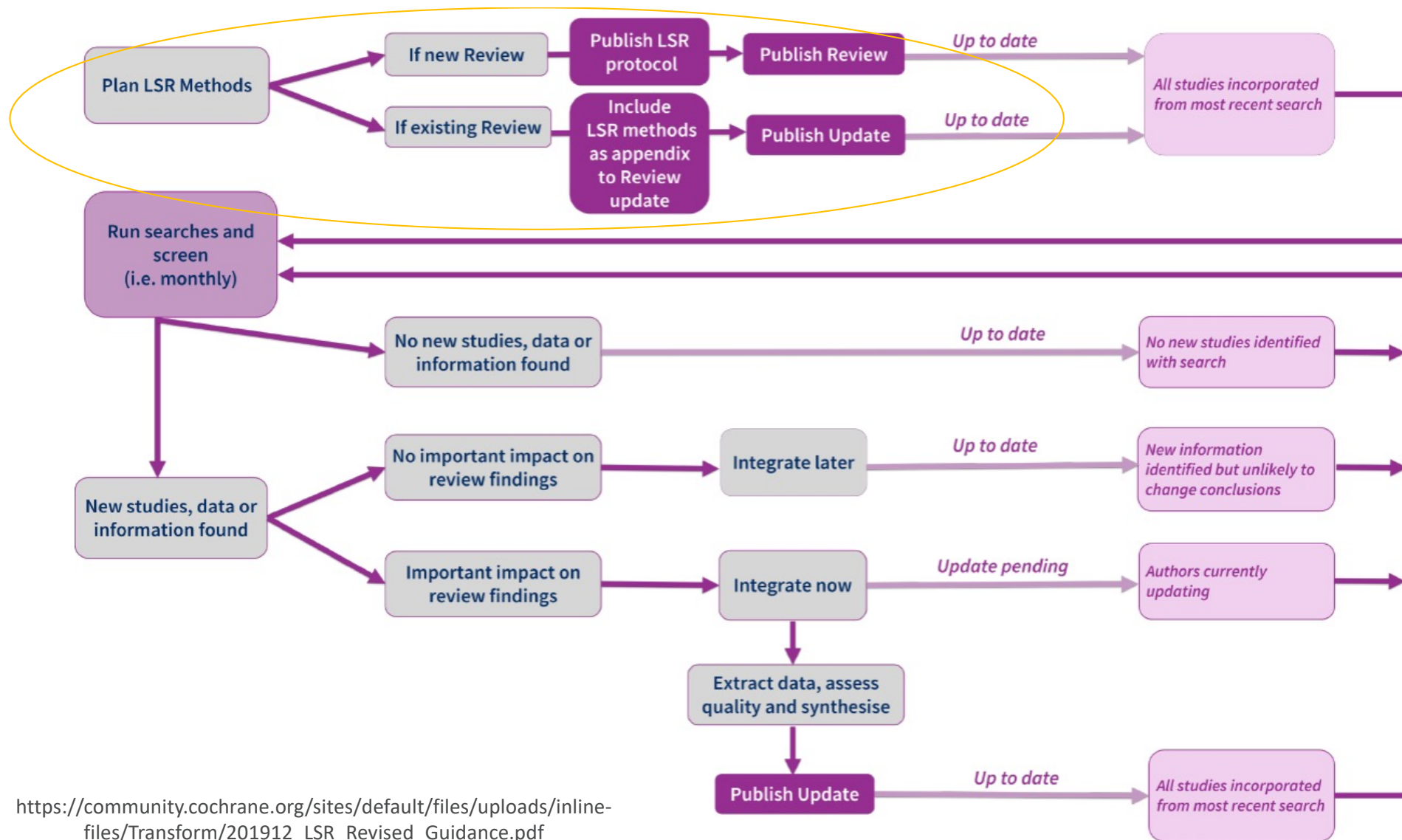
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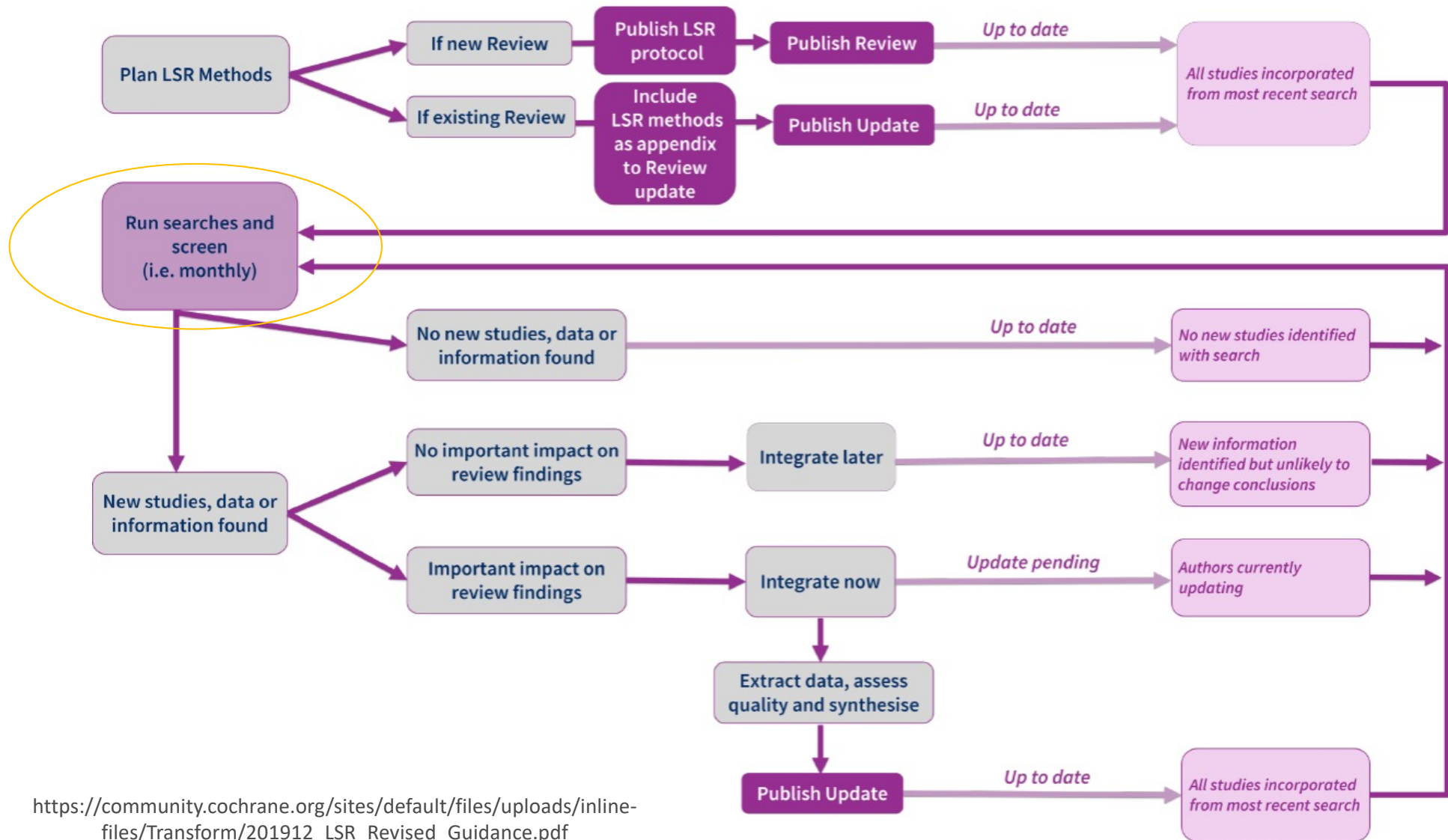
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Searching and evidence surveillance



- Decide on search frequency
 - Fixed / pre-specified interval or response to predefined triggers
 - Matched to pace of new research - minimum every 3 months
 - Can change over life of LSR
 - Database frequency can be different to other sources
- Revision of search methods
 - To identify contribution of individual databases/sources
 - Optimal frequency of searching each source
 - Annual review of search strategy terms
- Management of ongoing searches
 - All reference libraries for duplicates, linking
 - Auto alerts



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Selecting studies

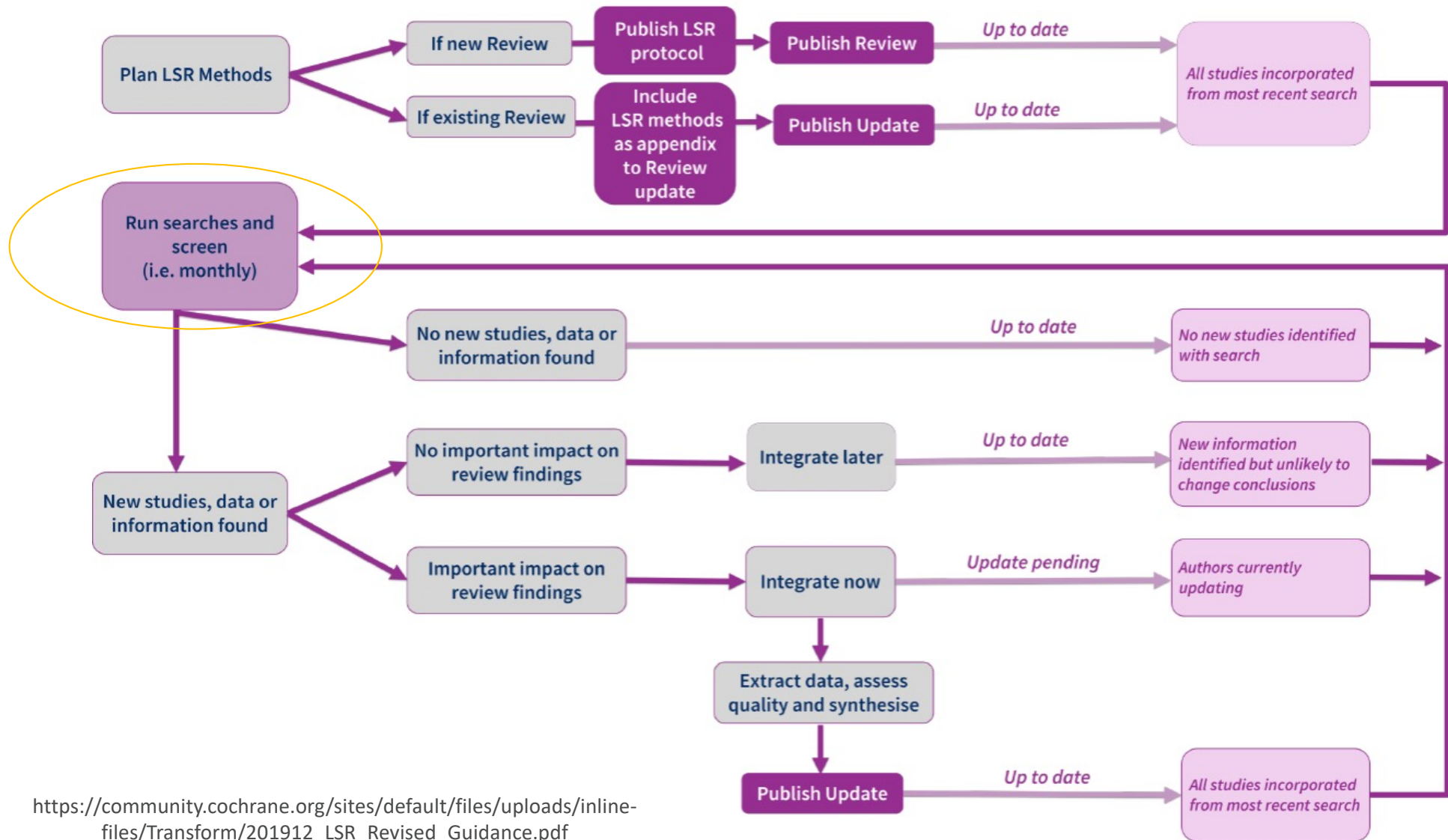
- Follow same core methods as standard reviews...except....
 - Pre-determined frequency, usually aligned to search frequency
- LSR-specific considerations
 - Linking new reports of included studies
 - Trial registries, protocols → full report of results
 - Adoption of automation software and tools
 - Classifiers e.g. 'RCT classifier'
 - Citizen science e.g. Cochrane Crowd
 - Workflows e.g. Screen4Me
 - Review-specific supervised machine learning classifiers

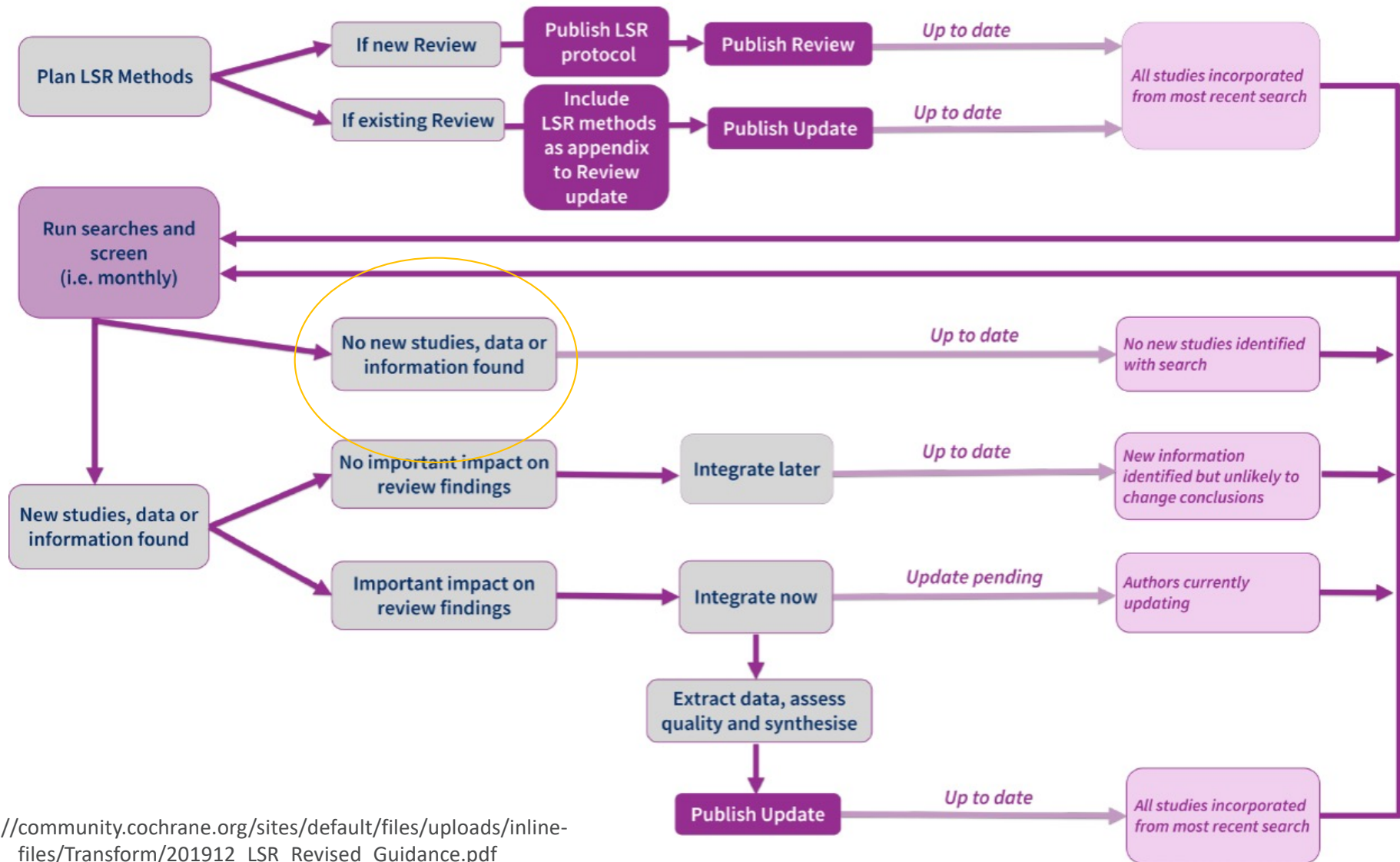


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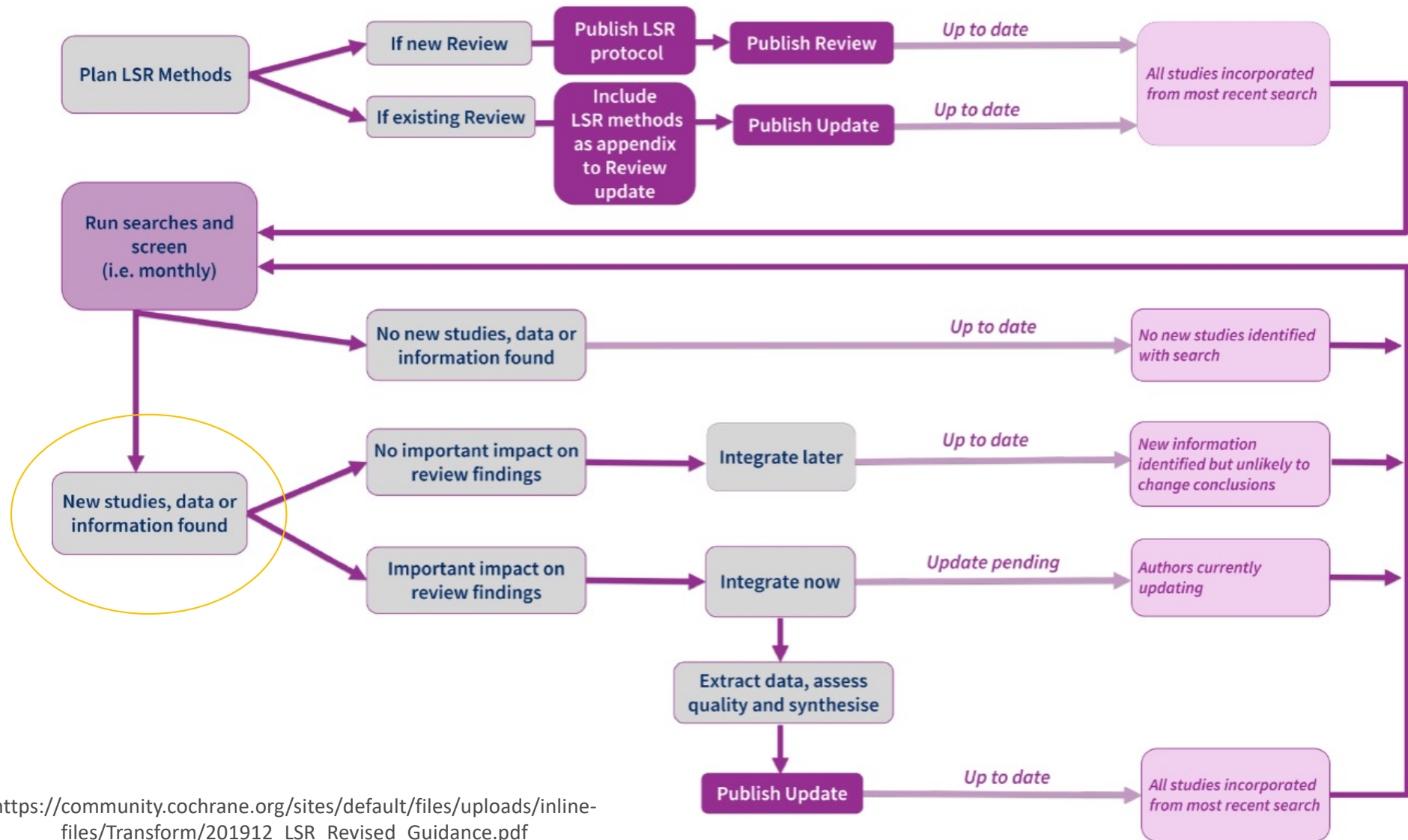


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Incorporating new evidence

Follow same core methods as standard reviews...except...

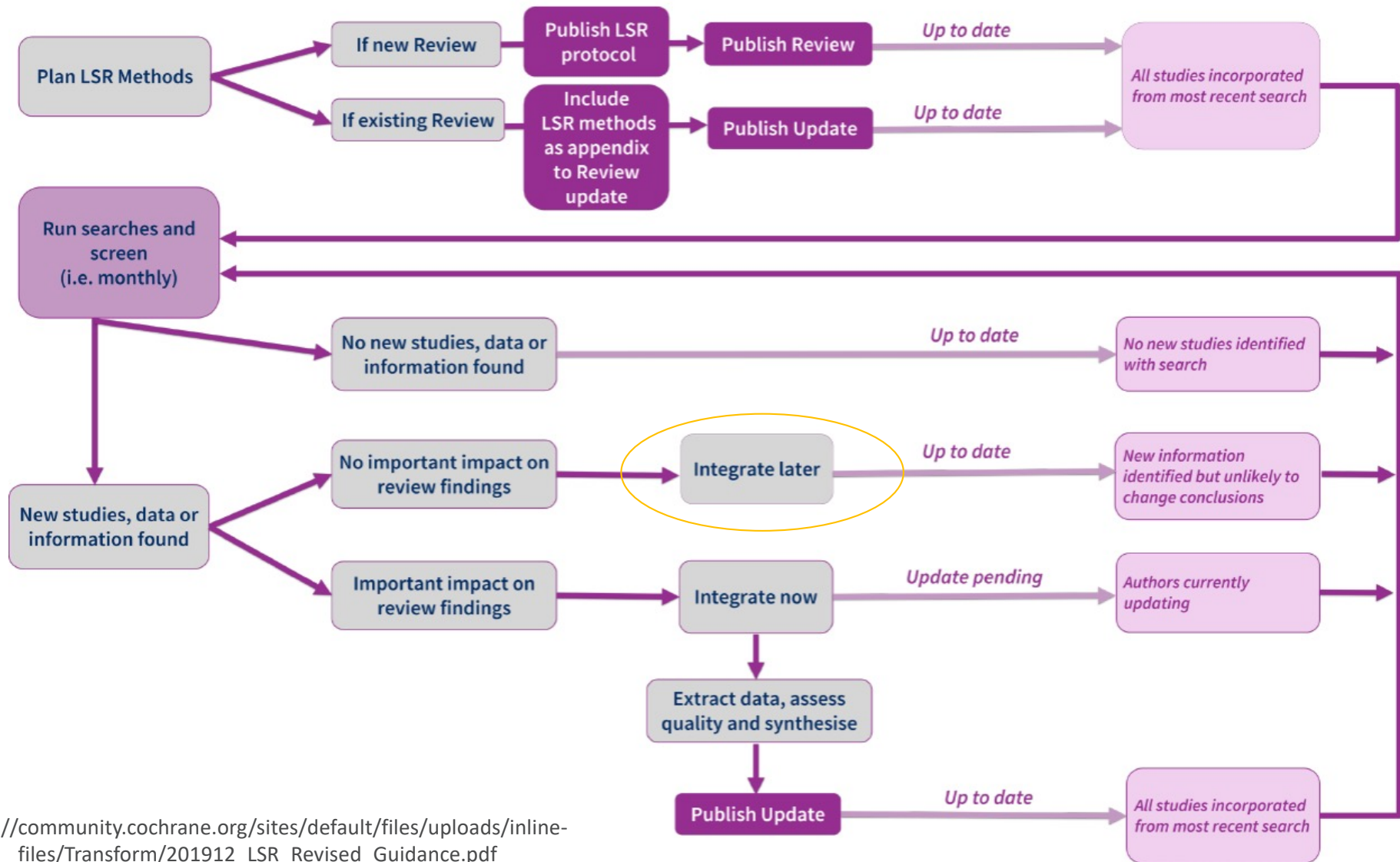
- When to incorporate evidence?
 - Pre-specified interval schedule
 - When new evidence identified substantively impacts conclusions
- What is a '*substantive impact on conclusions*' ?
 - Apply formal statistics e.g. re-run data analysis
 - Pre-specification of type/degree of change
 - e.g. magnitude of change in effect size or precision
 - Other considerations
 - change in direction of effect, certainty of effect (GRADE)
 - new unreported interventions, populations, service adverse events or other clinically meaningful findings



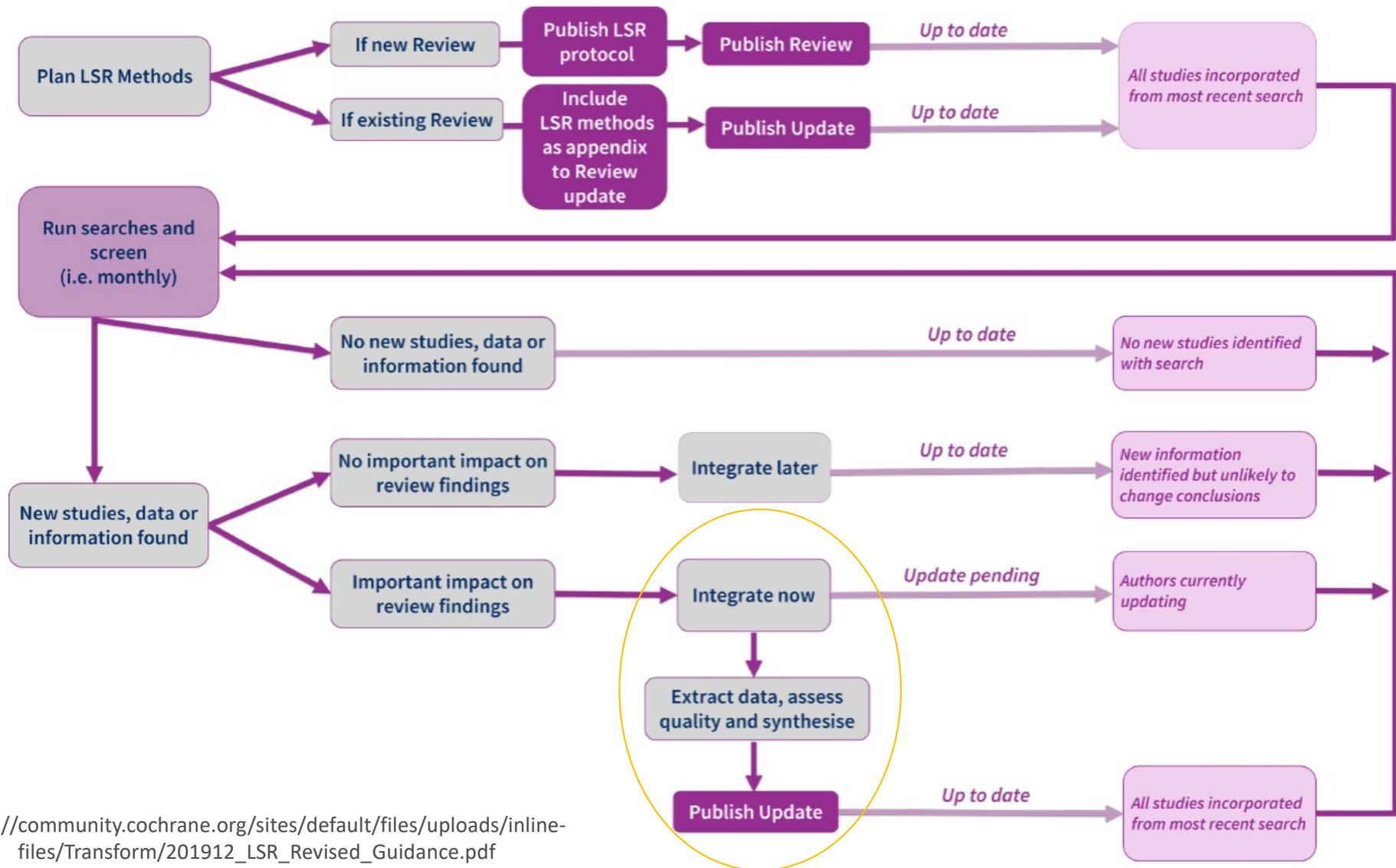
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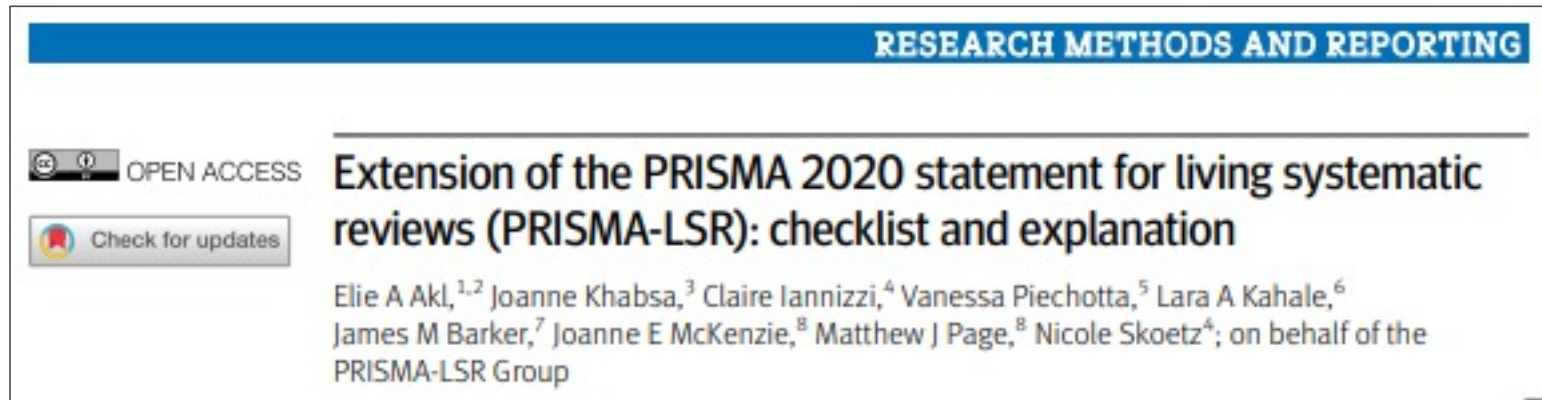
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LSR reporting requirements

- Must report according to PRISMA, plus PRISMA-LSR items



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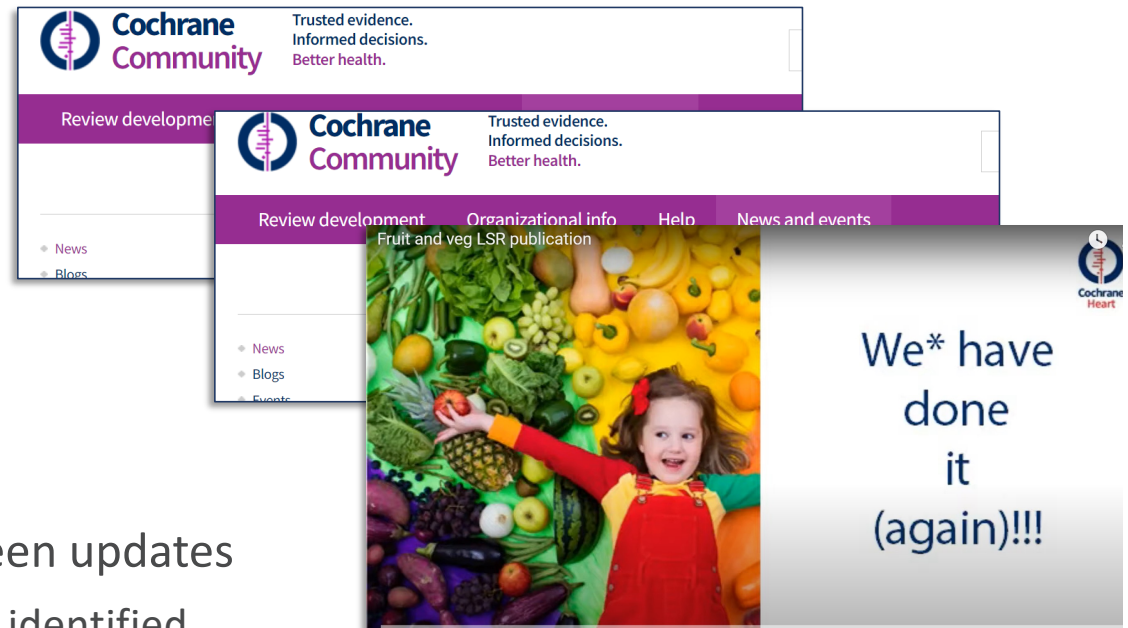
LSR publishing & status between updates

Publishing

- LSRs can challenge journal workflows
- Cochrane developed adapted editorial and publication workflow

Status between updates

- Essential LSR information shared between updates
 - Status and new studies that have been identified
 - Cochrane 'What's new' platform



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WHAT'S NEW		
Date	Event	Description
25 October 2019	New search has been performed	<p>We conducted an update of the review, which includes nine new trials, based on a search on 25 August 2019 (Bakirci-Taylor 2019; Hong 2018a; Hong 2018b; Kobel 2019; Kristiansen 2019; Nekitsing 2019b; Owen 2018; Segura-Perez 2017; Zeinstra 2017).</p> <p>This is a Living Systematic Review. Searches are run and screened monthly. The last search for the regular monthly screenings was 25 September 2019, and we found an additional two new trials that will be included in the next update.</p>

Periodic review of LSR methods

Following 12 months in living mode...

- Does the review still meet LSR criteria?
 - Are all review question **still** a priority for decision making?
 - Is the certainty in the existing evidence **still** low or very low?
 - Is there **still** likely to be new research evidence?
 - Is there sufficient resource and capacity to continue in living mode?
 - If no, living mode should cease for the entire review, or review questions
- Appropriateness of methods
 - Core methods
 - LSR-specific methods



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Transitioning out of living mode

Triggers for transitioning LSRs out of living mode

- No longer a priority for decision makers
- Level of certainty not likely to be impacted by new research
- No new research emerging
- Ongoing funding for LSR no longer available

Next steps?

- Authors and editorial team consultation
- Ideally one final update – new evidence, remove LSR methods



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Case study



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Library**

Cochrane Database of Systematic Reviews

Interventions for increasing fruit and vegetable consumption in children aged five years and under (Review)

Hodder RK, O'Brien KM, Wyse RJ, Tzelepis F, Yoong S, Stacey FG, Wolfenden L.
Interventions for increasing fruit and vegetable consumption in children aged five years and under.
Cochrane Database of Systematic Reviews 2024, Issue 9. Art. No.: CD008552.
DOI: [10.1002/14651858.CD008552.pub8](https://doi.org/10.1002/14651858.CD008552.pub8).



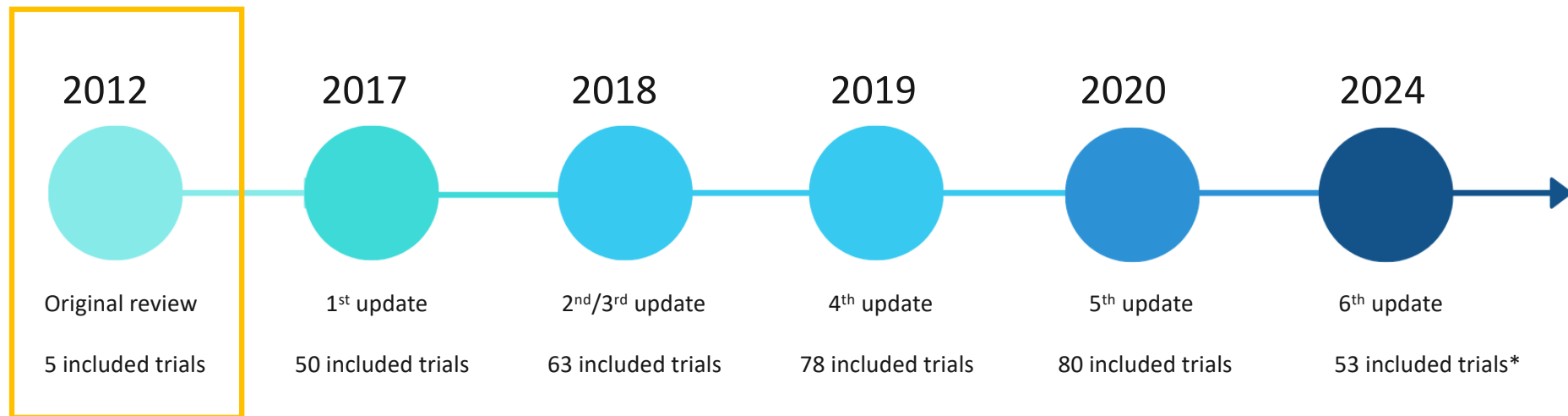
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History

- **Objective:** To assess effectiveness of interventions to increase consumption of fruit and/or vegetables amongst children aged 5 years and under
- **Eligibility:** RCTs, dietary/biochemical F&V intake, children ≤ 5 years



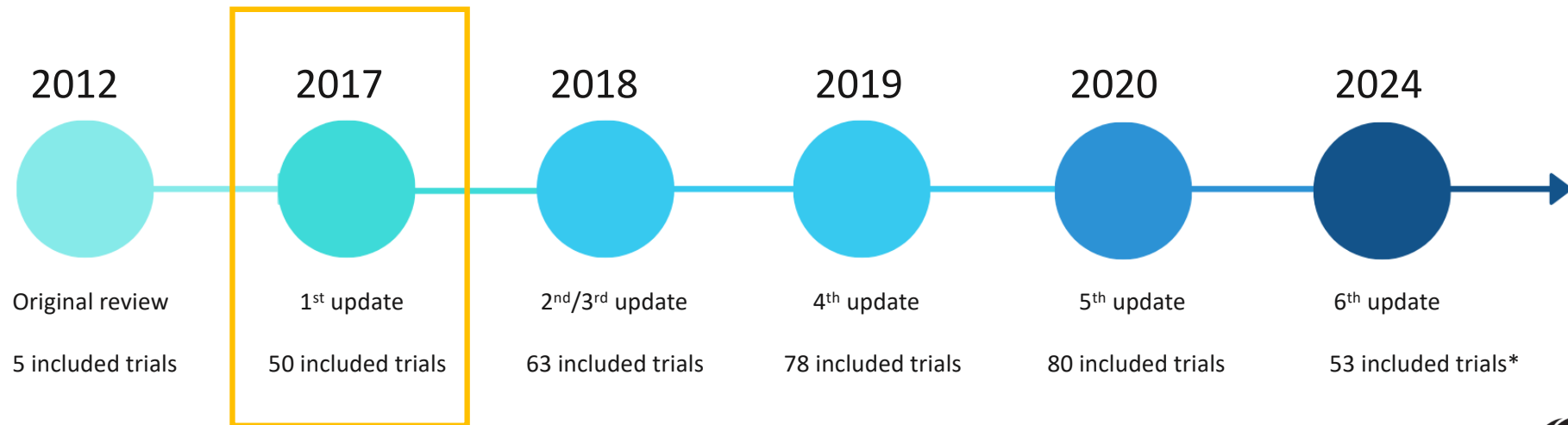
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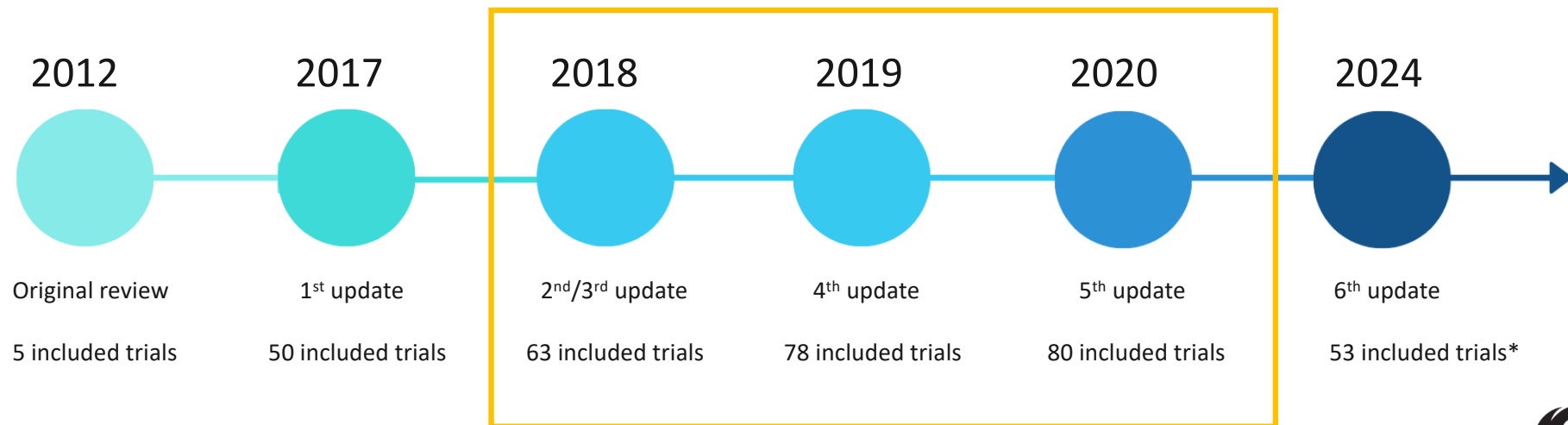
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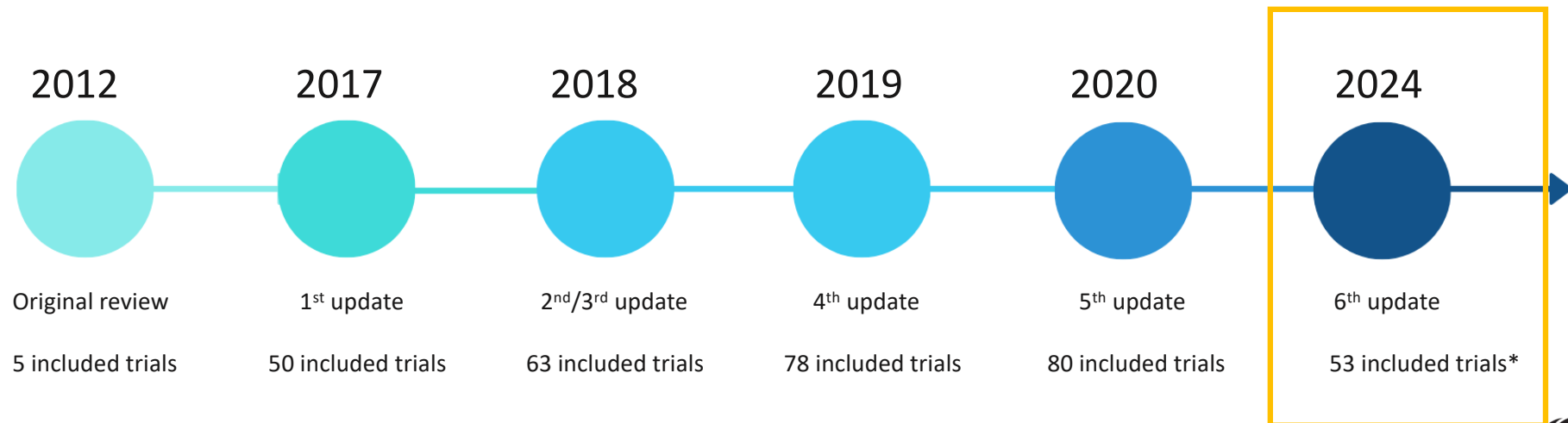
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Why we considered a LSR

- ✓ The review question is a priority for decision making
 - Growing burden of disease
 - Early childhood is critical period
 - Globally children do not meet F&V recommendations
- ✓ Certainty in the existing evidence is low or very low
 - 2017 update found very low quality of evidence across all intervention types
- ✓ There is likely to be new research evidence
 - 45 new studies between 2012 and 2017, and 5 ongoing studies in 2017
- ✓ Feasible to adopt LSR approach
 - Editorial, author support and small grant funding



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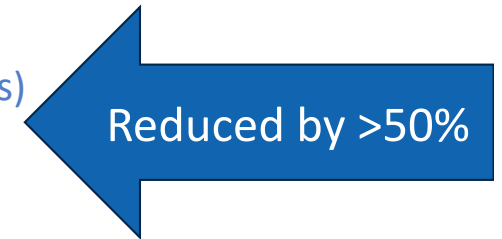


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What methods did we adapt?



- Search methods
 - Monthly searches of electronic databases
 - Every 6 months: trial registries, GoogleScholar
- Eligibility criteria
- Study selection
 - Adopted tech enablers when sufficient records identified
 - RCT classifier to identify likely RCTs
 - 0-9% likely RCTs (i.e. unlikely to be RCTs)
 - Cochrane Crowd
 - 10-100% likely RCTs
 - Author team screened against full eligibility criteria
- Analysis, risk of bias, GRADE



What methods did we adapt?



- Search methods
 - Monthly searches of electronic databases
 - Every 6 months: trial registries, GoogleScholar
- Eligibility criteria
- Study selection
 - Adopted technology (records identified)
 - Replaced by Screen4Me! (RCTs)
 - 100% likely RCTs
 - Author team screened against full eligibility criteria
- Analysis, risk of bias, GRADE



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Practical tips

- LSR planning
 - Author team with commitment, capacity and expertise
 - Partner with information specialists and other experts
 - Adopt tested SR tech enablers and automation tools
 - Access LSR support and resources
- LSR management and sustainability
 - Tight management / leadership of tasks to timelines
 - Systematic record management processes over time
 - Ongoing funding support
 - Maintaining author team



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Cochrane Database of Systematic Reviews

Interventions for increasing fruit and vegetable consumption in children aged five years and under (Review)

Hodder RK, O'Brien KM, Wyse RJ, Tzelepis F, Yoong S, Stacey FG, Wolfenden L.
Interventions for increasing fruit and vegetable consumption in children aged five years.
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DOI: [10.1002/14651858.CD008552.pub8](https://doi.org/10.1002/14651858.CD008552.pub8).

Millard et al. *Systematic Reviews* (2019) 8:325
<https://doi.org/10.1186/s13643-019-1248-5>

Systema

RESEARCH

Feasibility and acceptability of living systematic reviews: results from a mixed-methods evaluation

Tanya Millard*, Anneliese Synnot, Julian Elliott, Sally Green, Steve McDonald and Tari Turner



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LSR tools and resources

- Cochrane LSR guidelines
- LSR series in Journal of Clinical epidemiology
 1. Introduction: why, what, when and how
 2. Combining human and machine effort
 3. Statistical methods for updating meta-analyses
 4. Living guideline recommendations
- Cochrane Community LSR website
 - Report of Cochrane's evaluation of pilot LSRs
 - Cochrane Learning Live Webinars on LSRs
 - Webinars (e.g. tech enablers for living evidence)

➤ *(WATCH THIS SPACE) Cochrane Handbook LSR Chapter*



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Guidance for the production and publication of Cochrane living systematic reviews: Cochrane Reviews in living mode

Version December 2019



Journal of Clinical Epidemiology 91 (2017) 23–30

Journal of
Clinical
Epidemiology

SERIES: LIVING SYSTEMATIC REVIEWS

Living systematic review: 1. Introduction—the why, what, when, and how

Julian H. Elliott^{a,b,*}, Anneliese Synnot^{a,c}, Tari Turner^a, Mark Simmonds^d, Elie A. Akl^{e,f,g}, Steve McDonald^a, Georgia Salanti^h, Joerg Meerpohlⁱ, Harriet MacLehose^j, John Hilton^j, David Tovey^j, Ian Shemilt^k, James Thomas^k, on behalf of the Living Systematic Review Network



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 - Editorial and Publishing Policy Resource (EPPR)
 - Cochrane's Central Editorial Service
- Living systematic reviews

News

Participate in living evidence study

The revised *Guidance for the production and publication of Cochrane living systematic reviews* has been released

Tech enablers for systematic reviews



Check for updates

Journal of Clinical Epidemiology 144 (2023) 107–115

REVIEW


Tools to support the automation of systematic review

Hanan Khalil^{a,*}, Daniel Ameen^b, A

^aSchool of Psychology and Public Health, Department of Public Health, La Trobe University, Victoria 3046, Australia

^bFaculty of Medicine, Nursing and Health Sciences, Monash University, Victoria 3046, Australia

Clinical Science (2023) 137 773–784
<https://doi.org/10.1042/CS20220494>



Contents lists available at ScienceDirect

Z. Evid. Fortbild. Qual. Gesundh. wesen (ZEFQ)

journal homepage: <http://www.elsevier.com/locate/zefq>

Schwerpunktreihe / Special Section: “Living systematic reviews and living guideline recommendations to manage dynamically evolving evidence in health care”

A narrative review of recent tools and innovations toward automating living systematic reviews and evidence syntheses




Ein narrativer Review zu aktuellen Tools und innovativen Ansätzen zur Automatisierung von lebendem systematisches Übersichtsarbeiten und Evidenzsynthesen

Mark Simon^{a,d}, Roger T. Webb^{a,f}, Christopher Marshall^g, Dulceke Krings^h

Portland Press

Perspective

Systematic online living evidence summaries: emerging tools to accelerate evidence synthesis

Kaitlyn Hair¹,  Emma Wilson¹, Charis Wong^{2,3}, Anthony Tsang⁴,  Malcolm Macleod¹ and  Alexandra Bannach-Brown⁵

¹Centre for Clinical Brain Sciences, The University of Edinburgh, Edinburgh, U.K.; ²Anne Rowling Regenerative Neurology Clinic, University of Edinburgh, Edinburgh, U.K.; ³Euan Macdonald Centre for Motor Neuron Disease Research, University of Edinburgh, Edinburgh, U.K.; ⁴King's Technology Evaluation Centre, King's College London, U.K.; ⁵Charité Universitätsmedizin Berlin, Berlin Institute of Health – QUEST Center, Berlin, Germany

Cowie et al

Software Tools for Systematic Literature Review in Systematic Search and Feature Analysis

matullah, BS; Nicole Hardy, MSc; Karl Holub, BS; Kevin Kallmes, MA, JD

ited States

References and other resources

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Automation and technology enabled tools

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- Project Transform: <https://community.cochrane.org/help/tools-and-software/project-transform>

Questions?

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