

Review Article

Meeting the review family: exploring review types and associated information retrieval requirements

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Abstract

Background and objectives: The last decade has witnessed increased recognition of the value of literature reviews for advancing understanding and decision making. This has been accompanied by an expansion in the range of methodological approaches and types of review. However, there remains uncertainty over definitions and search requirements beyond those for the ‘traditional’ systematic review. This study aims to characterise health related reviews by type and to provide recommendations on appropriate methods of information retrieval based on the available guidance.

Methods: A list of review types was generated from published typologies and categorised into ‘families’ based on their common features. Guidance on information retrieval for each review type was identified by searching PUBMED, MEDLINE and Google Scholar, supplemented by scrutinising websites of review producing organisations.

Results: Forty-eight review types were identified and categorised into seven families. Published guidance reveals increasing specification of methods for information retrieval; however, much of it remains generic with many review types lacking explicit requirements for the identification of evidence.

Conclusions: Defining review types and utilising appropriate search methods remain challenging. By familiarising themselves with a range of review methodologies and associated search methods, information specialists will be better equipped to select suitable approaches for future projects.

Keywords: information retrieval; information science; literature searching; overview; search strategies

Key Messages

- Use consistent terminology when referring to review types and review families, making clear distinction between review types within the same family
- Information specialists should be familiar with review families & types and the associated retrieval methods to enhance their role with the review team.
- Where generic methods are not appropriate, information specialists should develop (and validate) specific methods for evidence identification suitable for each review type.
- Definitions of (and practical guidance on) iterative searching are required.
- Further validation of the use of automated methods to support evidence identification is required. When sufficient research has been conducted, definitive guidance should be developed.

Background

Reviews of literature have featured within scholarly work for almost as long as academia has existed.

Taking stock of what has been written and seeking to position subsequent work in relation to what has gone before is considered essential, irrespective of discipline or research tradition. More recently,

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emphasis has shifted to a more pragmatic function of literature reviews – namely, their role in knowledge translation and changing professional and organisational practice. As a consequence, the traditional role of reviews in mapping research activity and consolidating existing knowledge has been supplemented by an instrumental function within evidence based decision making.

This wider remit for literature reviews holds numerous implications for the form and function of review products. As reviews have assimilated diverse roles and purposes in teaching, research and practice, they have adopted a greater array of types, often accompanied by novel, but not necessarily mutually exclusive, labels (Moher, Stewart & Shekelle, 2015). A further trend can be detected in the move to greater systematicity – the influence of the systematic review model has impacted on other forms of literature review requiring that they be systematic in procedures, explicit in describing methods and, to the extent possible, reproducible to facilitate consolidation of knowledge (Booth, Sutton & Papaioannou, 2016b).

Within health care, a defining moment came when Mulrow (1987) critiqued the variable quality of the traditional medical review, at the time considered a staple of medical education and practice. In response, systematic review methodology offered a more auditable and reproducible template and the influence of this model on literature searching, either implicitly or explicitly, is now detected across multiple review types. In some cases, deviations from the systematic review template become a distinguishing characteristic, as with 'rapid reviews.' In yet other instances, the systematic review search method is uneasily grafted onto other methodologies; for example, meta-ethnography and realist synthesis were never intended for systematic searching and yet, particularly within health research, the quest for a comprehensive approach has overridden opportunistic or purposive methods of sampling.

We contend, here and elsewhere, that all review types should be 'systematic,' in the sense that all research is expected to follow some 'system' of inquiry (Booth et al., 2016a). This is quite different, however from stating that all reviews should be

context of interpretive review types, the accompanying narrative may overtly advance a particular personal, disciplinary or organisational viewpoint. The latter is not inherently 'biased' provided that the reader is offered sufficient detail on how those decisions were made, how the underpinning evidence was derived and, preferably, any limitations arising from such choices. All reviews, quantitative or qualitative, benefit from reviewers and review teams being reflexive on the implications of their own relationship to the review findings. This recognised feature of primary qualitative research is poorly interpreted within quantitative reviews as referring exclusively to financial interest, sponsorship or formal organisational ties.

Objective

The objective of this study is to characterise existing review types by drawing upon current guidance and typologies, with a particular emphasis on requirements for information retrieval.

Method

The team started by generating a list of review types from previously published typologies and compendia (defined as collections including five or more review types). The authors had previously compiled the initial list of typologies/compendia in their role as methodological experts. They use regular citation searching and alerts to document review types and typologies, used in their research, teaching and scholarship, and interact within several academic groups that keep aware of new and emerging review types. Fifteen typologies were used as source documents for identifying review types (see Table 1). Having compiled an initial list of review types from typologies/compendia the team supplemented this list with additional review types from their experience and reading.

Identified review types were included in our review according to the following criteria:

1. is included in at least one health reviews typology OR
2. has at least one methodological paper/worked example OR

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Table 1 Typology source documents

Typology	Number of review types included
Barnett-Page and Thomas (2009)	9
Booth (2015)	17
Booth et al. (2016a)	22
Cook, Nichols, Webb, Fuller and Richards (2017)	9
Dixon-Woods, Agarwal, Jones, Young and Sutton (2005)	11
Grant and Booth (2009)	14
Hannes and Lockwood (2011)	6
Kastner et al. (2012)	25
Kastner, Antony, Soobiah, Straus and Tricco (2016)	12
Munn, Stern, Aromataris, Lockwood and Jordan (2018)	10
Paré, Trudel, Jaana and Kitsiou (2015)	9
Tricco, Tetzlaff and Moher (2011)	8
Tricco et al. (2016c)	25
Tricco et al. (2018)	5
Whittemore, Chao, Jang, Minges and Park (2014)	9

The included review types were then categorised into ‘families’ relating to commonality of review purpose and key characteristics. The key characteristics included search requirements where these were available.

To identify available guidance on information retrieval for the included review types, multiple search methods were employed as follows:

1. Searching and browsing the websites of known review producing organisations for current guidance. For example; Cochrane, Campbell Collaboration, Centre for Reviews and Dissemination (University of York), The Joanna Briggs Institute (The University of Adelaide). See Table 2 for a complete list.
2. Searching PUBMED using the Systematic Review Methods Filter (The PubMed Health Team, 2015) combined with names of known review types. For example: sysrev_methods [sb] and scoping review
3. Where methods 1 & 2 did not retrieve relevant guidance, by title searching for review types on PUBMED, MEDLINE (via Ovid) and Google Scholar.

current practice. Preference was given to identifying official guidance. Where official guidance was identified, searching ceased for that review type. If official guidance was not identified, methodological advice was sought. Finally, in the absence of methodological advice, the team searched for current practice. The criteria for classifying types of guidance were as follows:

1. official guidance – produced by a recognised organisation which either generates or commissions reviews.
2. methodological advice – peer reviewed publications by authors with experience of conducting reviews.
3. current practice – case studies, conference presentations or online resources (where these contain a description of search methods).

From all the guidance identified, data were extracted (where available) relating to overall search approach, types of literature required, evidence identification methods and guidance type. Where multiple examples of guidance were identified, we used professional judgement to collate recommendations, aiming for coherence over complexity. When extracting the data on evidence identification, we categorised the requirements into ‘expected’ and ‘discretionary.’ Expected was defined as the minimum requirement for the review type, discretionary as the methods which may be applied if appropriate to the topic, and time and resources allow. Where no guidance was identified, we used our knowledge and experience as methodologists to populate the evidence identification section of Table S1 (available online). Where multiple review names applied to a single type of review, we discussed, and came to a consensus on, our preferred label. In these cases, synonyms for the review type are listed under ‘also known as’ in our data extraction table.

Results

Forty-eight distinct review types were identified. These review types were categorised into seven broad review ‘families’: traditional reviews, systematic reviews, review of reviews, rapid reviews qualitative reviews mixed method reviews

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Table 2 Websites searched

Organisation	Website
Agency for Healthcare Research and Quality (AHRQ)	https://www.ahrq.gov/
Campbell Collaboration	https://campbellcollaboration.org/
CADTH (Canadian Agency for Drugs and Technologies in Health)	https://www.cadth.ca/
Centre for Health Economics and Policy Analysis (CHEPA), McMaster University	www.chepa.org
Centre for Reviews and Dissemination (CRD), University of York	https://www.york.ac.uk/crd/
Cochrane	https://www.cochrane.org/
Department of Health	https://www.gov.uk/government/organisations/department-of-health-and-social-care
Economic and Social Research Centre (ESRC)	https://esrc.ukri.org/
EUnetha (European Network for Health Technology Assessment)	https://www.eunetha.eu/
Healthcare Improvement Scotland	http://www.healthcareimprovementscotland.org/
Health Economics Research Unit (HERU), University of Aberdeen	https://www.abdn.ac.uk/heru/
Health Technology Assessment International (HTAi)	https://htai.org/
INAHTA (The International Network of Agencies for Health Technology Assessment)	http://www.inahta.org/
Institute for Clinical and Economic Review (ICER)	https://icer-review.org/
ISPOR (International Society for Pharmacoeconomics and Outcomes Research)	https://www.ispor.org/
Joanna Briggs Institute, The University of Adelaide	http://joannabriggs.org/
National Collaborating Centre for Methods and Tools	https://www.nccmt.ca/
National Institute for Health Research (NIHR)	https://www.nihr.ac.uk/
NICE (National Institute for Health and Care Excellence)	https://www.nice.org.uk/

extraction for each review type can be found in Table S1 (available online) and summarised narratively below.

Traditional review family

Generally, this review family uses a purposive sampling approach, although occasionally the influence of systematic reviews now requires that traditional reviews, such as the narrative review, aim to be comprehensive in methods and reach. Purposive approaches may determine the type of literature required (e.g. a critical review focuses on theory and empirical research) or time period (such as in a state of the art review which focuses on the most current literature). All traditional reviews employ bibliographic database searching; however, they are not always explicit in their methods. In general, there is a move to be more systematic in

bibliographic database searching is the staple approach for traditional reviews but narrative summaries and state of the art reviews extend to include searching for grey literature, particularly where policy documents are relevant to the scope of the review. An integrative review, which focuses on research into practice, is likely to include searching of research registries to identify prospective or ongoing research. Reference list checking is typically suggested as a discretionary search method, with some review types also employing hand searching and/or contact with experts. Review types that are rapid in nature, for example narrative summary, may abbreviate search methods due to their time intensivity; therefore, discretionary search methods may be excluded. Formal search methods guidance for traditional reviews was not identified; however, searching is often covered within wider journal articles describing the review type

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Table 3 Review type definitions

Review type	Brief definition
Traditional review family	
Critical review	'Aims to demonstrate writer has extensively researched literature and critically evaluated its quality. Goes beyond mere description to include degree of analysis and conceptual innovation. Typically results in hypothesis or model' (Grant & Booth, 2009)
Integrative Review Also known as: <i>Integrative Synthesis</i>	Umbrella term for synthesis methods for integrating qualitative and quantitative data. Can be used to guide the summary and analysis of literature in order to draw conclusions that provide a more comprehensive understanding of a phenomenon than existed prior to the review (Tricco et al., 2016b). More specifically, 'The integrative review method is an approach (primarily within nursing research) that allows for the inclusion of diverse methodologies (i.e. experimental and non-experimental research).' (Whittemore & Knafl, 2005)
Narrative review	Used to describe a 'conventional' review of the literature, particularly when contrasted with a systematic review (Booth et al., 2016b)
Narrative summary	An overview of the available evidence addressing a research question or set of research questions related to a single topic, often produced within a short timeframe (Khangura et al., 2012)
State of the art review	'Tend to address more current matters in contrast to other combined retrospective and current approaches. May offer new perspectives on issue or point out area for further research' (Grant & Booth, 2009)
Systematic review family	
Cochrane review of effects	'Cochrane Reviews are systematic summaries of evidence of the effects of healthcare interventions. They are intended to help people make practical decisions. For a review to be called a 'Cochrane Review' it must be in CDSR (Cochrane Database of Systematic Reviews) or CMR (Cochrane Methodology Register). The specific methods used in a Review are described in the text of the review. Cochrane Reviews are prepared using Review Manager (RevMan) software provided by the Collaboration, and adhere to a structured format that is described in the Cochrane Handbook for Systematic Reviews of Interventions.' (The Cochrane Collaboration, 2019)
Comparative effectiveness review	Depicts how the relative benefits and harms of a range of options compare, rather than to answer a narrow question of whether a single therapy is safe and effective (Slutsky, Atkins, Chang & Sharp, 2010).
Diagnostic Systematic Review Also known as: <i>Diagnostic Test Accuracy Review</i> Meta-analysis	'Systematic reviews of diagnostic test accuracy summarize the evidence about test accuracy. Ideally, they also investigate why the results may vary among studies, compare the performance of alternative tests, and help the reader to put the evidence in a clinical context' (Leeflang, Deeks, Takwoingi & Macaskill, 2013)
Network meta-analysis	'Technique that statistically combines the results of quantitative studies to provide a more precise effect of the results' (Grant & Booth, 2009)
Prognostic review	'A network meta-analysis starts with a network of evidence: the relevant treatments and the clinical trials that have compared those treatments directly. Its structure is often readily apparent from a diagram in which each node represents a treatment (or perhaps a class of treatments), and each link or edge connects treatments that have been directly compared in one or more RCTs.' (Hoaglin et al., 2011)
Psychometric review	'To determine the overall prognosis for a condition, the link between specific prognostic factors and an outcome and/or prognostic/prediction models and prognostic tests.' (Munn et al., 2018)
Review of economic evaluations	'To evaluate the psychometric properties of a certain test, normally to determine how the reliability and validity of a particular test or assessment.' (Munn et al., 2018)
Systematic review	'An economic evaluation identifies, measures, values and compares the costs and outcomes of a technology with its relevant comparator.' (Kaunelis & Glanville, 2017)
	'Seeks to systematically search for, appraise and synthesis research evidence, often adhering to guidelines on the conduct of a review' (Grant & Booth, 2009)

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Table 3 (continued)

Review type	Brief definition
Systematic review of Epidemiology Studies Also known as: <i>Prevalence and/or Incidence Review Etiology and/or Risk Review</i>	A systematic review to determine the prevalence and/or incidence of a certain condition (Munn et al., 2018)
Review of review family Review of Reviews Also known as: <i>Overview</i>	(Generic): 'summary of the [medical] literature that attempts to survey the literature and describe its characteristics' (Grant & Booth, 2009) (Specific): May also be used to refer to a Cochrane Overview of Reviews, which 'are intended primarily to summarize multiple Cochrane Intervention reviews addressing the effects of two or more potential interventions for a single condition or health problem. In the absence of a relevant Cochrane Intervention review, Cochrane Overviews may additionally include systematic reviews published elsewhere.' (Higgins & Green, 2011) 'Specifically refers to review compiling evidence from multiple reviews into one accessible and usable document.' (Grant & Booth, 2009)
Umbrella review	
Rapid review family Rapid Review (general guidance for all types. Specific types below) Also known as: <i>Rapid Evidence Synthesis</i>	'a type of knowledge synthesis in which components of the systematic review process are simplified or omitted to produce information in a short period of time' (Tricco et al., 2015)
Rapid evidence assessment	'a process that is faster and less rigorous than a full systematic review but more rigorous than ad hoc searching, it uses a combination of key informant interviews and targeted literature searches to produce a report in a few days or weeks' (betterevaluation.org, cited in Booth, 2016) 'Applies a realist approach to knowledge synthesis ("What works for whom under what circumstances?") to produce a product that is useful to policy makers in responding to time-sensitive and/or emerging issues within limited time and resources.' (Booth, 2016, edited)
Rapid Realist Synthesis Also known as: <i>Rapid Realist Review</i>	
Qualitative Review family (Also known as: Experiential Reviews) Qualitative Evidence Synthesis (QES)	Qualitative evidence synthesis is the broad term, popularised within the Cochrane Collaboration, for the group of methods used to undertake systematic reviews of qualitative research evidence Also known as: Qualitative Systematic Review: 'Method for integrating or comparing the findings from qualitative studies. It looks for "themes" or "constructs" that lie in or across individual qualitative studies' (Grant & Booth, 2009) See also: Qualitative Interpretive Meta-synthesis (see below) Qualitative Meta-synthesis (see below) Qualitative Research Synthesis (see below) Qualitative Meta-Summary
Qualitative Interpretive Meta-synthesis	Specifically within social work, a synthesis of qualitative studies that results in generation of a more in-depth understanding of the phenomena studied that can be then used to develop theory and inform practice and policy. Methodology is designed to enable a synergistic understanding of phenomena with richness in diversity of settings, participants and qualitative traditions.

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Table 3 (continued)

Review type	Brief definition
Qualitative meta-synthesis	Qualitative meta-synthesis is an intentional and coherent approach to analysing data across qualitative studies. It enables researchers to identify a specific research question and then search for, select, appraise, summarise, and combine qualitative evidence to address the research question
Qualitative research synthesis	Specifically within education, qualitative research synthesis, relies upon sophisticated interpretivist methods and is one of a range of refined approaches that has developed from efforts to offer synthesis methods with increasing levels of specialisation, criticality and interpretation
Best fit framework synthesis	The 'best fit' (framework synthesis) approach applies new methods to identify theories in a systematic manner, and to create the <i>a priori</i> framework for the (qualitative evidence) synthesis. Otherwise it uses an innovative combination of existing methods of quality assessment, analysis and synthesis to complete the (review) process (Carroll et al., 2013)
Framework synthesis	An evidence product which 'uses existing framework from stakeholder consultation or literature as a template for data extraction and analysis. Data not adequately explained by the existing framework is analysed inductively to create themes that populate a revised framework' (Booth, 2016)
Meta-aggregation	The methodology of qualitative evidence synthesis that is 'most transparently aligned with accepted conventions for the conduct of high-quality systematic reviews. Meta-aggregation is grounded in pragmatism and transcendental phenomenology.' In a meta-aggregative review 'the reviewer avoids re-interpretation of included studies, but instead accurately and reliably presents the findings of the included studies as intended by the original authors.' (Lockwood, Munn & Porritt, 2015)
Meta-Ethnography Also known as: <i>Extended Meta-Ethnography Meta-Ethnography Review</i>	Method for synthesising qualitative research and for developing models that interpret findings across multiple studies (Tricco et al., 2016a). Synthesises qualitative research to develop 'translations of qualitative studies into one another' (i.e. reciprocal translation analysis). Interpretive approach that aims to provide a new interpretation of these studies or a new theory to explain research findings encountered, rather than a simple aggregation. Re-analyses and compares the texts of published studies (rather than the original data of each) to produce a new interpretation. Involves induction and interpretation, whereby separate parts are brought together to form a 'whole' so that the result is greater than the sum of its parts. Translation of studies into one another encourages the researcher to understand and transfer ideas, concepts and metaphors across different studies.
Meta-interpretation	Approach to the interpretive synthesis of qualitative research that seeks to maintain an interpretive epistemology that is congruent with most primary qualitative research (Weed, 2005). Fundamental features of meta-interpretation comprise: <ul style="list-style-type: none"> • An ideographic (i.e. not predetermined) approach to development of exclusion criteria • A focus on meaning in context • Interpretations as the raw data for synthesis • An iterative approach to the theoretical sampling of studies for synthesis • A transparent audit trail as a guarantor of the integrity and trustworthiness of the synthesis
Meta-narrative review	Seeks to illuminate a heterogeneous topic area by highlighting the contrasting and complementary ways in which researchers have studied the same or a similar topic. Meta-narrative review looks historically at how particular research traditions have unfolded over time and shaped the kind of questions being asked and the methods used to answer them (Wong et al., 2013).
Meta-Study Also known as: <i>Meta-Theory</i>	'Meta study derives questions from each of its three components to which it subjects the dataset and inductively generates a number of theoretical claims in relation to it.' (Barnett-Page & Thomas, 2009)

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Table 3 (continued)

Review type	Brief definition
Meta-Summary	'a new and original approach to handling a collection of qualitative studies... the frequency of each finding is determined and the higher the frequency of a particular finding, the greater its validity' (Barnett-Page & Thomas, 2009)
Thematic Synthesis Also known as: <i>Thematic Analysis</i>	'combines and adapts approaches from both meta-ethnography and grounded theory. The method was developed out of a need to conduct reviews that addressed questions relating to intervention need, appropriateness and acceptability – as well as those relating to effectiveness – without compromising on key principles developed in systematic reviews' (Barnett-Page & Thomas, 2009)
Mixed methods review family Mixed Methods Synthesis Also known as: Mixed Methods Review	'any combination of methods where one significant component is a literature review (usually systematic). Within a review context it refers to a combination of review approaches for example combining quantitative with qualitative research or outcome with process studies' (Grant & Booth, 2009)
Bayesian Meta-Analysis Also known as: <i>Bayesian Approach</i>	Frequently cited but little used method for synthesising qualitative and quantitative findings. Begins with a prior distribution describing plausible potential values for parameters of interest. This distribution may be informed by previous data or expert beliefs, or it may allow any of a wide range of parameters to be equally true. Observed data is then described in relation to these parameter values. Finally, both parameter and likelihood data are multiplied to create a posterior distribution for each parameter with the mean, median or mode of the posterior distribution being handled as a point estimate and credible set limits being used to describe the surrounding uncertainty (Voils et al., 2009)
EPPI-Centre Review Also known as: <i>EPPI-Centre Outcomes plus Views Review</i>	Mixed method synthesis that encompasses studies measuring effectiveness (e.g. from randomised controlled trials) and studies investigating people's views and experiences (from qualitative research) (Oliver, 2015). The Evidence for Policy and Practice Information and Coordinating Centre, Institute of Education, University of London sought to combine methods for assessing the likelihood of causal relationships with those that advance understanding of different social perspectives within a third, integrative review
Critical interpretive synthesis	'Involves an iterative approach to refining the research question and searching and selecting from the literature (using theoretical sampling) and defining and applying codes and categories. It also has a particular approach to appraising quality, using relevance – i.e. likely contribution to theory development – rather than methodological characteristics as a means of determining the 'quality' of individual papers' (Barnett-Page & Thomas, 2009)
Narrative Synthesis Also known as: <i>Textual Narrative Synthesis</i>	Draws out central theories or causal mechanisms identified in multiple studies and builds an explanation of the body of research by telling the story of the evolution of the field or mapping the domains covered by the literature in an area. Created using the methods of thematic analysis, conceptual mapping, and critical reflection on the synthesis process. (Tricco et al., 2016a) Textual narrative synthesis is an approach which arranges studies into more homogenous groups. (Barnett-Page & Thomas, 2009)
Realist Synthesis Also known as: <i>Realist Review</i>	'Answers the question "What works for whom under what circumstances?" rather than "What works?". Specifically, it seeks to 'unpack the mechanism' of how complex programmes work (or why they fail) in particular contexts and settings' (Booth, 2016)
Rapid Realist Synthesis Purpose Specific Reviews Concept Synthesis Also known as: <i>Concept Analysis</i> <i>Conceptual Analysis</i>	See Above Under Rapid Reviews
	Synthesis method used to identify concepts, viewpoints or ideas. Focuses on identifying the defining attributes of the concepts and can be used to develop a synthesis model (Tricco et al., 2016a)

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Review type	Brief definition
Content Analysis	Research technique for the objective, systematic and quantitative description of the manifest content of communication (i.e. journal articles, books etcetera). Content analysis represents a tool for analysing a sample of research documents in a systematic and rule-governed way. Broadly, content analysis can be translated into two levels of analysis: (i) analysing the manifest content of texts and documents by statistical methods and (ii) excavating latent content of the text and documents by interpreting the underlying meaning of terms and arguments (Seuring & Gold, 2012)
Expert Opinion/Policy Review	'To review and synthesize current expert opinion, text or policy on a certain phenomena' (Munn et al., 2018)
Technology Assessment Review (Health Technology Assessment)	Commissioned by decision making bodies (e.g. NICE in the UK), TARs assess the evidence submitted by manufacturers of the clinical efficacy and cost-effectiveness of their products. Manufacturers' own systematic review methods will be critiqued and the evidence review group may perform their own searches
See also: Systematic Review family (Systematic Review of Effectiveness; Comparative Effectiveness Review; Meta-analysis; Network Meta-Analysis; Review of economic evaluations)	
Scoping Review	'Preliminary assessment of potential size and scope of available research literature. Aims to identify nature and extent of research evidence (usually including ongoing research)' (Grant & Booth, 2009)
Also known as: <i>Scoping Study</i>	
Mapping Review	'Map out and categorize existing literature from which to commission further reviews and/or primary research by identifying gaps in research literature' (Grant & Booth, 2009)
Also known as: <i>Evidence Map</i> <i>Systematic Map</i>	
<i>Systematic Mapping Review</i>	'To examine and investigate current research methods and potentially their impact on research quality.' (Munn et al., 2018)
Methodological Review	
Also known as: <i>Meta-Method</i> <i>Methodology Review</i>	
Systematic Search and Review	'Combines strengths of critical review with a comprehensive search process. Typically addresses broad questions to produce 'best evidence synthesis'' (Grant & Booth, 2009)
Systematized Review	'Attempt to include elements of systematic review process while stopping short of systematic review. Typically conducted as postgraduate student assignment' (Grant & Booth, 2009)

Systematic review family

With the exception of qualitative systematic reviews, which appear within a separate 'family,' all review types in the systematic review family employ a comprehensive search approach as a defining feature. Systematic reviews often focus on particular study types, which may be either a general category such as observational studies or one or more specific study designs, such as economic evaluations. The included study type is

usually across multiple sources, but definitely employing more than one database. Minimum standards are often determined in the guidance documentation for the review type. Specialist sources exist as resources to search for some review types, but these are not always maintained, for example NHS Economic Evaluation Database which is a recommended source for reviews of economic evaluations (Briscoe, Cooper, Glanville & Lefebvre, 2017). Grey literature should be

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Table 4 Distinctions between review types

Label	Definition	Label	Definition
Review of Reviews	Review that opportunistically brings together multiple reviews, conducted to different standards and methods to map and synthesise an existing evidence base	Umbrella Review	Review that brings together multiple pre-existing reviews, all conducted using a shared methodology (e.g. Cochrane reviews), facilitating comparison and analysis
Scoping Review	Review that seeks to explore and define conceptual and logistic boundaries around a particular topic with a view to informing a future predetermined systematic review or primary research	Mapping Review	Review that examines a typically broad topic area with a view to identifying evidence gaps to be addressed by future primary research or systematic review(s), as yet unspecified
Narrative Review	Legacy model of a review criticised during the early years of the systematic review movement for its lack of transparency. Serves continuing role, when performed more systematically, in orienting research within a wider field	Narrative Synthesis	Specific four-step method of synthesis used to analyse mixed bodies of quantitative and qualitative evidence using textual, graphical and tabular methods to explore patterns in the data

others allude to ‘grey literature searching’ in a general sense. Conference abstracts and research protocols are often noted as sources of evidence in the search methods of a review in the systematic family, not necessarily for inclusion but, typically, as a pointer to potential includable studies. Recommended supplementary search methods include hand searching, reference list checking, citation searching and contact with experts (Cooper, Booth, Britten & Garside, 2017; Cooper, Lovell, Husk, Booth & Garside, 2017). Recent emphasis highlights the potential role of web searching (Briscoe, 2015, 2017; Stansfield, Dickson & Bangpan, 2016) and systematic approaches to snowballing have emerged from other disciplines (Wohlin, 2014). Formal guidance is established for search methods for many systematic review types, originating from collaboration of information specialists within organisations such as Cochrane, Campbell Collaboration and Health Technology Assessment International. Reporting standards and guidance are also well developed for the systematic review family type, for example via the work of PRISMA (Moher, Liberati, Tetzlaff & Altman, 2009).

Review of review family

The review of review family is unique in that it focuses on one study type – prioritising systematic

guidance on search sources and techniques is consistent: focus on databases specifically indexing systematic reviews (such as the Cochrane Database of Systematic Reviews) and/or use systematic review filters to search bibliographic databases. Grey literature is recommended, including searching PROSPERO for prospective reviews. Various discretionary methods may be employed, including reference list checking which was the most commonly mentioned. Generally, reviews of reviews follow the same methodological and reporting standards as systematic reviews, and there is a definite overlap with the previous family type.

We were unable to identify any formal searching guidance, but information specialists are contributing to methods research and disseminating via publications and conference presentations, for example Wright and Walwyn (2016) on overviews, and Golder and Wright (2016) on umbrella reviews.

Rapid review family

As increasing numbers of papers are published under the ‘rapid’ banner (Moher et al., 2015), the methodology has progressed to a point where reviews may be grouped according to how they have abbreviated or otherwise deviated from conventional systematic review methods, locating them within one of the specific types below. All

regarding the scope and methods to establish how they will be delivered within the time available; this negotiation is the defining feature of this family. For the review to be useful, any modifications to the process and consequent limitations must be explicitly declared, perhaps even at more length than in a conventional systematic review.

While some types of rapid review may abbreviate the search process, for others the time savings are made elsewhere in the process, for example through the removal or simplification of the appraisal, synthesis or analysis stages. Reviews where a team has decided to streamline the search process often employ a simple strategy with limited iterations and minimal validation; or search a limited number of databases; or restrict the search to secondary sources (existing reviews).

Although certain product types (e.g. rapid evidence assessment) follow a predefined review methodology, the specific requirements for types of included publication are often defined by the client themselves (e.g. a preference for secondary sources or recent grey literature over peer reviewed primary studies). Certain review types (e.g. the rapid realist review) may be purposive and opportunistic in their approach to sampling, drawing on expert advice or readily available local documents as a basis for theories, which are then tested and validated through targeted searches until evidence saturation is reached.

In essence, the rapid review family offers a flexible template, within which different types of evidence and different approaches to identifying them may be accommodated. The defining feature is the dialogue between client and review team.

Qualitative systematic review family

When compared to the systematic review of quantitative research, the qualitative systematic review has a far less distant and extensive pedigree (Harris et al., 2017). Nevertheless, the richness of qualitative research traditions and the diverse positions adopted by qualitative researchers have resulted in a rapid proliferation, and potentially bewildering variety, of review types (Booth et al. 2016a). Labels for review types may

qualitative evidence synthesis); relate to the specific synthesis method used (e.g. thematic synthesis or framework synthesis); or, perhaps most commonly, attribute the synthesis process to the entire review output (e.g. a meta-ethnography or a critical interpretive synthesis).

When determining search approaches, information specialists need to consider whether the review is intended to be aggregative, or interpretive. For aggregative reviews, the literature search resembles its quantitative counterpart in systematically exploring a large number of databases and supplementary sources, contrasting with interpretive reviews where theoretical sampling may be appropriate (Booth, 2016).

The second consideration is whether theory is expected to play an important role in the review. If the review is intended to explore or test existing theories, then a specific search for theory must be conducted alongside the search for research studies (Booth & Carroll, 2015). This is particularly necessary given the well documented split between papers that contribute conceptually to a topic and those that research or evaluate that same topic. Specific methods have been developed to search for theory (Booth & Carroll, 2015; Booth, Wright & Briscoe, 2018).

The third consideration is whether differences in context are considered important in understanding the phenomenon. Often reviews of interventions seek commonalities where studies which deviate are considered outliers which require explanation. However, it may be that in a qualitative systematic review we want to understand about any differences, as for many complex interventions patterns are considerably more complicated; an apparently similar intervention may work in some contexts but not others or the extent of effectiveness may vary according to the presence, absence or amount of a particular 'ingredient' in the intervention or context. Where context is considered important, the team seeks to acquire as complete a picture of the study context as they possibly can, in many cases deriving this from multiple study reports. From a definitive set of included studies, the searcher uses diverse techniques: reference checking, follow up of

Mixed methods review family

Mixed methods reviews can be identified as reviews that incorporate mixed methods primary *studies* or, more commonly, as reviews that seek to integrate mixed (quantitative and qualitative) *data*. Guidance for mixed methods reviews suggests use of a filter for retrieving mixed methods studies which has been developed but not validated (El Sherif, Pluye, Gore, Granikov & Hong, 2016). Essentially, this filter uses keywords retrieving papers with qualitative data plus added terms relating to mixed or multiple study research approaches. Where the intention is to include all quantitative and qualitative research studies, the searcher has three alternatives:

- Run filters for quantitative, qualitative and mixed methods studies and trust that no research studies fall between the gaps.
- If there are concerns that research studies may be missed, these filters could be supplemented by generic terms to retrieve any type of research study (e.g. research, study design, *et cetera*). However, this approach could result in overlap of retrieved references that require de-duplication.
- Finally, searchers could simply run a topic based search without filters and then sift through all retrieved results. This last ‘big bang’ approach may be feasible and appropriate if the review team is also interested in theoretical or other aspects (e.g. economics) of the topic.

Mixed methods reviews place a premium on combined mixed methods papers (i.e. where both quantitative and qualitative results are reported in the same paper) and sibling papers (i.e. where a quantitative paper and a qualitative paper share the same study setting) as these offer an opportunity to triangulate findings across both types of data. As a consequence, extra time spent in following up index papers (through follow up of citations, author names, project names or study identifiers) to find related papers, as formalised in the CLUSTER procedure (Booth et al., 2013), is time well spent. In certain contexts, a team may map where particular clusters of papers exist and then concentrate on

incorporate non-study data, for example professional journal papers, commentaries, blog sites, ephemeral materials *et cetera*, and so require specialist retrieval strategies for each type of included material (Booth et al., 2018).

Purpose specific review family

The purpose specific review family is the most difficult to characterise largely because of the heterogeneity of review types and methods. All review types should be selected appropriately according to purpose; however, by ‘purpose-specific’ we imply that the degree of tailoring required to meet a specific single purpose is such that it makes it more challenging to adapt the review type for generic use beyond that purpose. Thus, the health technology assessment (HTA) represents a multi-question systematic review, addressing multiple domains within an evidence to decision framework, that requires use of diverse systematic review search methods and multiple filters. Many HTA agencies produce their own methods manuals, largely based on generic sources such as the Cochrane Handbook (Higgins & Green, 2011) or the CRD guidelines for conducting reviews (Centre for Reviews and Dissemination, 2009). A collective website offers direction on searching for different types of questions (HTAi IRG, 2011).

Systematic methodologies exist for literature review types such as concept analysis and context analysis where overall methods are well specified but where comparatively little attention is paid to information retrieval. Scoping reviews and mapping reviews, conducted to identify either specific or general opportunities for further research, are served well by formal guidance and methodological advice, but the terms are often confused. Our definitions (in Table 3) distinguishing the two are based on the typology published by Grant and Booth (2009).

Key to the search process is alignment between the purpose of the review, the type of studies and type of sample required, and the individual search strategies and sources required to deliver that sample. Some purpose specific reviews originate in

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cases, no methodological guidance exists and methods are based upon descriptions from available case studies. Once sufficient cases are identified, then audits of published methods can document accepted practice and variation in methods, as exemplified by established methods such as realist syntheses (Berg & Nanavati, 2016), meta-ethnographies (France et al., 2014) and qualitative evidence syntheses (Hannes & Macaitis, 2012).

Discussion

Inevitably, any attempt to classify existing review types and guidance cannot cover every single instance from a fast moving and expanding field. Several review types did not make our final list for various reasons. For example, in the rapid review family the title ‘evidence brief’ (or ‘briefing’) is sometimes used but, as a product rather than a process. Therefore, where labels related to a product rather than a method, for example rapid response or policy brief, these were excluded. We also acknowledge the publication of new typologies since our initial analysis, the most recent of which was published in May 2019 (Aveyard & Bradbury-Jones, 2019).

Labels are only useful when supported by sufficient consensus or authoritative guidance to remove ambiguity on methods and processes. In 2009, Grant and Booth’s published typology of 14 review types, highlighted ‘frequent inconsistencies or overlaps between the descriptions of nominally different review types’ (Grant & Booth, 2009). Our attempts to define current review types reveal that this remains the case. Some review types are used interchangeably, with no notable differences between methodology and approach. Examples of this include the following: review of reviews/ overview versus umbrella review, narrative synthesis versus narrative review, and scoping versus mapping review. We would like to propose clear distinctions between these specific types as the first step towards a more secure typology (See Table 4).

Confusion between review types may be more of an issue where recognised standards and guidance do not exist. New review types continue to appear:

not yet have become apparent. However, we watch with interest the development of new review types such as the hermeneutic review (Greenhalgh & Shaw, 2017), which although relatively common in the information systems literature is uncommon within health research. Similarly, the long established Ecological Triangulation (Qualitative) has not yet had specific uptake in the health research field. The Genome Epidemiology Review or Human Genome Epidemiology Review (HuGE) has limited published examples on PUBMED, with the most recent being 2013, so some relatively specific review types may fail to be adopted broadly.

‘Living systematic review’ was also not included as a distinct review type; currently, we recommend that it is categorised as a sub-type of systematic review. None of our included typologies included this review type; however as a relatively new methodological development (Elliott et al., 2014b), some of the typologies used pre-date this review type ($n = 6/15$). At the time of writing, nine examples are indexed on PUBMED. We acknowledge that this review type is supported by existing methodological guidance developed by Cochrane (Living Systematic Review Network, 2017), but this is presented as interim guidance for pilot living systematic reviews, rather than as a widely adopted established methodology. Again, we watch this area with interest.

In examining information retrieval requirements, there are key areas that an overview of this type must address to be of practical use. We have collated the information on using search filters, iterative search methods, reporting standards and the development of tools to support the systematic search process and present this below.

The use of search filters to identify specific study types for inclusion in reviews is explored in some search methods guidance, most notably for the systematic review family. The Cochrane Handbook (Lefebvre et al., 2019) states that existing highly sensitive search filters to identify randomised trials should be used. The Campbell Collaboration guide to information retrieval (Kugley et al., 2016) states that the use of search filters should be considered, but notes some cautions particularly when searching in the social

assessed when choosing appropriate search filters. The ISSG search filters resource includes citations to publications that review search filter performance where available (ISSG Search Filter Resource, 2008). Search filters are a recommended method for identifying systematic reviews for reviews of reviews and umbrella reviews, again with consideration to performance. Conversely, for diagnostic systematic reviews, search filters should be avoided due to the inconsistencies in diagnostic search filter performance (de Vet, Eisinga, Riphagen, Aertgeerts & Pewsner, 2008) and the acknowledged challenges of searching for diagnostic studies (Preston, Carroll, Gardois, Paisley & Kaltenbacher, 2015). Search filters can also be considered for retrieving economic studies from general databases that have not been pre-filtered, such as MEDLINE and EMBASE (Kaunelis & Glanville, 2017). The choice and use of methodological search filters depends on multiple factors, including performance and convenience. Information Specialists report barriers to filter use. These could be overcome by filter developers shifting to less technical information about performance, providing ratings of filters and more information available about the filter validation and provenance (Beale et al., 2014).

Iterative searching as a technique is increasing in prominence particularly in the qualitative and purpose specific review families. However, there is no commonly accepted definition (and therefore associated methodology for this technique), and some of the review types associated with this type of searching (e.g. framework synthesis) have yet to establish guidance. Where guidance exists, it tends to establish and justify the need for iterative searching, yet rarely describes practical steps for implementing the technique. For example, the RAMESES publication standards for meta-narrative reviews states that searching should be 'revised iteratively in the light of emerging data' (Wong, Greenhalgh, Westhorp, Buckingham & Pawson, 2013a). Berry picking, as an iterative technique, is clearly defined within a seminal paper (Bates, 1989) which presents it as a new model for information retrieval. But is berry picking synonymous with 'an iterative approach'?

guidelines such as PRISMA has facilitated this (Moher et al., 2009). Guidelines have been developed in other review family types, including for qualitative systematic reviews (Tong, Flemming, McInnes, Oliver & Craig, 2012; Wong, Greenhalgh, Westhorp, Buckingham & Pawson, 2013b; Wong et al., 2013a). In addition to the items relating to search and information sources included in the PRISMA (Moher et al., 2009), ENTREQ (Tong et al., 2012), EMERGE (France, 2018) and RAMESES (Wong et al., 2013a, b), specific guidance relating to the documenting and reporting of search methodology has been proposed (Booth, 2006) but is yet to be adopted within common practice and, to date, internationally accepted reporting standards for information retrieval are lacking (Kable, Pich & Maslin-Prothero, 2012; Niederstadt & Droste, 2010). An extension to PRISMA relating to search reporting (PRISMA-S) is in development, and a draft for consultation has been circulated (Rethlefsen, Ayala, Kirtley, Koffel & Waffenschmidt, 2019).

Systematic reviewing has recently witnessed the development and adoption of tools and automation technologies to expedite the review process (Elliott et al., 2014a; Tsafnat et al., 2014), including at study identification stage (O'Mara-Eves, Thomas, McNaught, Miwa & Ananiadou, 2015). Guidance does not exist for most of the review families, with systematic reviews being the exception. Guidance from the Campbell Collaboration recommends considering the use of text mining tools and functions to filter search results (Kugley et al., 2016). Limited case studies are being developed (Clowes, 2017; Paisley et al., 2016; Shemilt et al., 2014) so we monitor this area of innovation with interest to see how it translates into official guidance. Non-automated tools referenced in the guidance include the PRESS checklist (Sampson, McGowan, Lefebvre, Moher & Grimshaw, 2008) when developing search strategies (Relevo and Balshem 2011). Relevo and Balshem (2011) also note the absence of a tool to inform when to stop searching for comparative effectiveness reviews (systematic review family) and that decisions must be based on the judgement of the expert searcher. Booth (2010) discusses the strengths of methods for deciding when to cease searching ('stopping rules') in the context of health technology assessment

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frequently recommended, with evidence that this improves the quality and reproducibility of the search and therefore contributes to a higher quality review (Koffel, 2015). The role of the information specialist in the review process continues to develop beyond the search. A recent scoping review identified 18 distinct roles for library and information professionals in the conducting of systematic reviews (Spencer & Eldredge, 2018). One of the specified roles is methodologist, specifically for the search approach, and this includes formally contributing to the writing of the review protocol and subsequent reporting of the search methods on completion of the review. In order to meet the requirements of this extended role, it is recommended that library and information professionals familiarise themselves with the ever increasing variety of review types and associated search requirements defined by their purpose, audience and available resources. In a 2005 case study, Harris (2005) concluded that a 'deeper understanding' of research methodologies by librarians contributed to investigators' 'increased appreciation for their searching and organizational expertise.' These benefits remain current, and additional advantages have emerged such as contributing to reducing avoidable waste in research, and becoming more embedded in the research team throughout the review process, not just in the initial planning and information retrieval stage (Edmunds Otter, Wright & King, 2017). Roles such as 'systematic review consultant' are reported in the literature, and one of the common tasks associated with this role is advising on the most appropriate review type for the research question (Foster, 2018). As new review types become established, knowledge of these and their implications for information retrieval can continue to enhance this understanding and position the expertise of the library and information professional as a review methodologist within the research team.

We acknowledge that the methodology used for this review does have limitations. We have not assessed the quality of the methodological guidance used as a basis for many of the review types and have assumed that publication and the peer review process is a marker of quality. We

definitive in describing review methods than exemplar reviews of the type they are describing.

Conclusion

This classification identified an increasing number of review types over the last decade. However, limited official guidance exists relating to the evidence identification requirements associated with specific review types, or indeed broader review families in some cases. We propose a consistent typology is adopted, with information specialists best placed to implement this and to advise on searching methodology as part of the review team.

Conflict of interest

The authors have no conflict of interest to declare.

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