

HEALTH EVIDENCE NETWORK SYNTHESIS REPORT 50

A resource for developing an evidence synthesis report for policy-making

Leena Eklund Karlsson | Ryoko Takahashi



The Health Evidence Network

HEN – the Health Evidence Network – is an information service for public health decision-makers in the WHO European Region, in action since 2003 and initiated and coordinated by the WHO Regional Office for Europe under the umbrella of the European Health Information Initiative (a multipartner network coordinating all health information activities in the European Region).

HEN supports public health decision-makers to use the best available evidence in their own decision-making and aims to ensure links between evidence, health policies and improvements in public health. The HEN synthesis report series provides summaries of what is known about the policy issue, the gaps in the evidence and the areas of debate. Based on the synthesized evidence, HEN proposes policy options, not recommendations, for further consideration of policy-makers to formulate their own recommendations and policies within their national context.

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Abstract

Evidence syntheses use multidisciplinary and intersectoral sources of evidence to support policy-making. The Health Evidence Network (HEN) has supported and strengthened the use of evidence in health policy-making in the WHO European Region since 2003. The HEN synthesis report series responds to public health questions by summarizing the best available global and local findings from peer-reviewed and grey literature, as well as policy options, and proposes general directions, strategies and actions for consideration. This resource has been developed to outline key approaches, methods and considerations for a HEN evidence synthesis to support the systematic and routine use of the best available evidence for decision-making relevant to the needs of public health decision-makers. It proposes approaches that hold both scientific rigour and practical applicability for individuals and institutions that perform, commission, review and/or publish evidence syntheses.

Keywords

HEALTH POLICY, POLICY MAKING, RESEARCH

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ABBREVIATIONS

CERQual	Confidence in the Evidence from Reviews of Qualitative Research
EIP	evidence-informed policy-making
GRADE	Grading of Recommendations Assessment, Development and Evaluation
HEN	Health Evidence Network
PRISMA-P	Preferred Reporting Items for Systematic Reviews and Meta-analyses for Protocols



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SUMMARY

The WHO Regional Office for Europe is committed to strengthening the use of evidence, information and research for policy-making towards reducing inequalities in health and improving health status and well-being. In an effort to increase and promote the generation, access and use of multidisciplinary and intersectoral sources of evidence for public health policy-making, an evidence synthesis is an approach that utilizes the best available evidence found in peer-reviewed and grey literature.

The purpose of this resource

Based on the principle that the systematic and routine use of existing evidence improves decision-making and ultimately public health outcomes, this resource outlines key approaches, methods and considerations for evidence synthesis relevant to the needs of public health decision-makers. The resource proposes general principles, processes and rationale that can be applied in making an informed decision as to what methodological approach and considerations need to be implemented to appropriately and adequately answer a health policy question.

The resource is developed based on published and unpublished literature as well as the best practices, lessons learnt and technical guidance cultivated, strengthened, documented and vetted by the HEN Secretariat since 2003.

The scope

Evidence synthesis reports in this resource refer to publications aimed to support public health and health systems decision-making, as opposed to clinical or biomedical guidance, in line with WHO's mandate to support its Member States in strengthening health systems, addressing complex societal issues, contributing to reducing inequities in health and improving the health of individuals and populations.

Evidence synthesis reports such as those of the WHO Health Evidence Network (HEN) provide a summary of the best available evidence and options for health policies and interventions and do not contain specific actions that should be taken (as might be seen in publications containing specific WHO recommendations). Other synthesis products might contain specific recommendations and detailed policy options that factor in specific country contexts, values, preferences and resources.

This resource not only covers the methodological steps of developing an evidence synthesis report that is relevant, useful and actionable but also gives consideration to publishing and disseminating evidence synthesis reports.

This resource does not prescribe one single approach to conducting an evidence synthesis nor does it seek to replace existing tools and resources, which provide extensive and detailed methodologies on each of the various evidence synthesis approaches. This resource aims to ensure that an evidence synthesis report holds both scientific rigour and practical applicability.

Target audience

This resource is developed primarily for individuals and institutions that perform (referred to here as a review/author team), commission (commissioners), review and/or publish (as a publisher) evidence syntheses, in particular in response to questions with regard to public health and health system policy.



1. INTRODUCTION

1.1. Background

WHO's commitment in promoting, facilitating and strengthening mechanisms supporting evidence-informed policy-making (EIP) is articulated in the World Health Assembly resolution WHA 58.34 (1) and mirrored in the European policy framework Health 2020 (2), the European Health Information Initiative (a multimember WHO network committed to improving health by improving the information that underpins policy) (3) and the WHO Regional Office for Europe's Action plan to strengthen the use of evidence, information and research for policy-making in the WHO European Region 2016–2020 (4). The action plan calls for increased access to and use of evidence by producing, publishing and disseminating evidence synthesis products on priority health issues.

This resource is based on published and unpublished literature on evidence syntheses plus the past experiences, knowledge and intuition of those involved in instructional stages (e.g. in advising on the synthesis writing process).

1.2. Evidence

The term evidence is often used synonymously with knowledge, but both refer to “findings from research and other knowledge that may serve as a useful basis for decision-making in public health and health care” (5). Evidence is a combination of explicit knowledge (i.e. verifiable, reproducible and structured scientific research (6,7)) and tacit knowledge (e.g. experiences, opinions, views, culture, resources, pressure groups, political environment (7–11)).

1.3. Well-informed policy-making

Policy may refer to “a law, regulation, procedure, administrative action, incentive, or voluntary practice of governments and other institutions” (12). Development of policies is an essential public health function and influences actions and performance at system, organizational and individual levels.

EIP is an approach that ensures that policy formulation and development is well informed by the best available evidence (13). While many factors influence policy-

making, for example resources, culture, political context, values and judgement, the principle of EIP is that evidence should not be only one among various inputs but should be prioritized and considered first in policy-making (4).

1.4. Evidence synthesis

Evidence synthesis is an approach to integrating findings from peer-reviewed and grey literature (14) to summarize a substantive and diverse body of evidence. Evidence synthesis is characterized by its systematic and transparent (i.e. replicable and observable) approach to formulating questions and searching, appraising, synthesizing and packaging the body of evidence to provide a more comprehensive picture than a single study could do (15). This means that the methodology used (e.g. search terms, sources/databases, inclusion/exclusion criteria) is explicitly documented to leave a trail for others to replicate the search, make updates easier and assist readers to be aware of any potential bias.


1.5. Evidence syntheses in support of policy-making

Evidence synthesis reports are initiated, designed and written for those who prepare and formulate policies (referred to here as decision-makers or readers) and contain a focused, relevant and actionable summary of evidence. The evidence synthesis reports described in this resource do not go through the approval process of the WHO's Guideline Review Committee (16) and so are not the same as publications containing specific WHO recommendations.

For evidence to be used in decision-making, it needs to be “available, easy to consume, uncontroversial and clear” (17). According to policy-makers, use of research is facilitated by the relevance and timeliness of evidence, collaborations between researchers and policy-makers and summaries of policy implications (18,19). To achieve this facilitation, approaches to developing evidence synthesis reports need to find a balance between methodological rigour, relevance and feasibility.

1.5.1. Types of evidence synthesis products

The outputs of synthesizing evidence can be, but are not limited to, systematic reviews, guidelines and policy option papers. There is a wide range of evidence synthesis products and these differ by their objectives, target audience, scientific rigour and formats. WHO publishes several key documents based on evidence synthesis in support of policy-making including, but not limited to:

- 
- the HEN synthesis report series;
 - evidence briefs for policy produced by the Evidence-informed Policy Network (EVIPNet);
 - policy briefs from the European Observatory on Health Systems and Policies (WHO partnership);
 - WHO guidelines produced after assessment by the Guidelines Review Committee (16); and
 - flagship reports and research issues from the Alliance for Health Policy and Systems Research (WHO collaboration).

1.5.2. The HEN synthesis report series

HEN has supported and strengthened the use of the best available evidence in health policy-making in the WHO European Region since 2003. HEN responds to questions regarding priority public health policy posed by regional decision-makers by producing an evidence synthesis report.

HEN reports are written specifically with decision-makers in mind and contain a summary of findings from peer-reviewed and grey literature as well as policy options proposing general directions, strategies and actions for consideration. As the essential function of the HEN synthesis reports is to present a body of evidence and the implications that arise from the evidence, they do not promote or dictate one policy action over another. HEN invites the readers to come up with their own nuanced and contextualized policy recommendations.

HEN is uniquely positioned to support decision-makers in the WHO European Region as its reports present a package of evidence that is reflective of its 53 Member States ranging from western Europe to central Asia.

The HEN synthesis reports follow an established structure (Annex 1), which starts with a short summary providing a concise and to-the-point overview of the issue, method, findings and policy options; it is then followed by a full report, the sources used for the report and the methodology employed.

The HEN synthesis reports have been indexed in the United States' National Center for Biotechnology Information Bookshelf since 2016 (20) and made discoverable and searchable via PubMed. This means that "instead of being 'grey literature', they are now being recognized as core evidence" (21).

2. EVIDENCE SYNTHESSES IN SUPPORT OF POLICY-MAKING: STEPS

While the basic steps for evidence syntheses – formulating a synthesis question and defining the remit; searching, screening and appraising literature; and extracting, synthesizing and presenting findings – are known, a range of methodological approaches exist for conducting evidence syntheses. In order to define an appropriate synthesis approach, the nature and scope of the policy concern, the target audience and the available resources for creating a report must be taken into account, as well as the expected contributions of the synthesis. The rationale and key considerations for each of the evidence synthesis steps are elaborated below.

2.1. Formulating a synthesis question

Evidence synthesis starts with developing a synthesis question based on a health policy concern or problem; the question might be posed by decision-makers or commissioners who engage in setting priorities and policy formulation or by those who contribute to closing the gap between policy and research. At this step, it is best to involve decision-makers, a commissioner, a review team and subject experts so that a synthesis question reflects decision-makers' interests and concerns and becomes refined through exchanges and linkages among multidisciplinary stakeholders.

The HEN synthesis reports often address public health and health system policy questions focusing on the what, how and when (22), in terms of:

- the structure, organization and functions of health systems;
- actions and practices of stakeholders within health systems; or
- conditions and factors related to implementing certain changes.

The synthesis question should articulate what the policy-makers need to know more about (e.g. facilitators and barriers; mechanisms and tools; best practices) to bring about what outcome (e.g. reducing noncommunicable diseases, improving health information systems or promoting intersectoral actions) and for which population groups (e.g. children under 5 years of age, refugees, health information system experts in the WHO European Region).



2.2. Defining the scope

While a well-formulated synthesis question frames the remit of a review, further articulation of the detailed elements of the policy or health concern being addressed is crucial to ensure that the review team knows exactly what evidence to search and how, and to ensure that the review yields evidence that directly addresses the decision-makers' question.

There are various tools that help to define the scope of a synthesis question (23), including PICO (population, intervention, comparisons, outcomes), which is often used to compare one intervention with another for clinical issues such as diagnoses and therapies; PICOS (people, interventions, comparisons, outcomes, study design); SPICE (setting, perspective, intervention, comparison, evaluation), which is used to evaluate outcomes of a service, project or intervention; and SPIDER (sample, phenomenon of interest, design, evaluation, research type), which uses a qualitative/mixed method that focuses more on study design and samples rather than populations. PICO is most commonly used in clinical systematic reviews but some might find it relevant and useful in structuring a qualitative synthesis question.

The following guiding questions can be followed to describe the direction, scale and boundaries of the review further.

Who forms the primary target audience of the synthesis report?

While the general target users of evidence synthesis reports are decision-makers, in framing policy options it is crucial to be clear about the type and level of decision-makers that a synthesis report will target. For example, they may be national decision-makers, health managers, municipal governments, knowledge brokers or health information system experts.

On which geographical area will the search focus?

While one policy question may require a focus on specific target groups and geographical areas for local decision-making (e.g. pregnant women or the WHO European Region), others may be answered by a global search of literature to draw on good practices and effective interventions worldwide. This decision may be made based on the health policy question, level of policy action the evidence synthesis is informing and the geographical distribution of available evidence.

Which (sub)regional databases should be searched to achieve the needed coverage?

English literature alone does not always yield a comprehensive picture of the evidence available because mainstream databases may contain

research mostly from North America and western Europe. This means that a literature search needs to be conducted in multiple languages and using various databases in order to be reflective of the target geographical region.

What types of literature will the review include?

To address a complex health system policy question and gain an expansive and whole picture of the available evidence, the review relies on a variety of evidence sources (e.g. peer-reviewed journals, books, government/policy documents, conference presentations, statistics). The methods to identify evidence (search strategy/information retrieval) depend on the policy question of concern, the type of selected review approach (scope, breadth and depth), the skills and capacity of the reviewers, and how much time and resources are available. The components of the policy question help to determine what types of study/paper will be searched to generate answers to the questions. It is important to keep in mind that in any policy concerns there may be need for more than one type of systematic review in order to provide answers to the questions.


2.3. Review methods

There are numerous existing and emerging methods for evidence syntheses, making it challenging to choose the most appropriate review method for the nature of the synthesis question, the target audience and the resources available (24–27), while keeping in mind the varying degree of rigour of methods and reliability of results (28). Recent review methods have an increasing focus on relevance and appropriateness over comprehensiveness or exhaustivity (Annex 2) (29). Lately, reviews that can be produced quickly are becoming more common as they are intended to be less time consuming and resource intensive than traditional systematic reviews. HEN synthesis reports are often requested to be developed and published within a period of six to nine months, leaving three to five months for the review of literature and drafting of a report.

This section highlights several methodological approaches that are often used to respond to health system policy questions.

2.3.1. Systematic reviews

Despite improved knowledge about systematic reviews, many still believe that a systematic review is a statistical meta-analysis of controlled trials on the effectiveness of health interventions. However, it is important to stress that systematic reviews



can and should include qualitative information, adding pragmatic aspects of interventions or phenomena in focus. It is the explicit and systematic approach that distinguishes systematic reviews from other types of review (30,31).

A systematic review is a review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research, and to extract and analyse data from the studies that are included in the review (31,32). If a methodological quality of systematic reviews is ensured, the risk of bias as well as the reliability and accuracy of conclusions based on evidence can be improved. Systematic reviews should contain valid and relevant studies on a particular topic. They clarify not only what is known but also what is not known, highlighting the gaps in current knowledge and informing about policy options and further major research needs. Nevertheless, not all reviews are systematic and not all systematic reviews are of high quality. So-called nonsystematic reviews are missing one or more of the essential characteristics mentioned above for systematic reviews (other publications give more details for undertaking reviews in health care (30,32–34)).

2.3.2. Review of reviews

Synthesizing systematic reviews and other secondary research and information requires repackaging the results to a specific target audience – decision-makers in the field of public health. The procedure of synthesizing systematic reviews calls for the same diligence and rigour that characterizes evidence-based appraisals and synthesis of primary original research, as described in any handbook of critical appraisal methods (34,35). A standardized process should be followed for defining the question and scope; searching, excluding, including and assessing the included reviews; and drawing together the evidence to reach conclusions and develop policy options (33,35).

For example, if time, capacity and/or costs do not allow for a full-scale comprehensive review, the synthesis preparation may need to compromise on the depth of the information retrieval strategy (by limiting the scope of the review) and the rigour in the appraisal process while nonetheless relying on the principles of systematic reviews (there are many examples (28,36–43)). Moreover, the type of policy question also determines the choice of approach. In particular, if the policy question concerns a relatively new or unknown field then the authors may opt for a provisional method (e.g. scoping review or rapid review) to first map the area of concern and gather provisional knowledge about the subject matter; they can then consider whether a more comprehensive review is needed. The provisional review approaches are

developed to provide a systematic process to identify different types of study in the literature; however, they are still based on the principles of systematic review even though they lack the comprehensive and exhaustive information retrieval and/or rigour in the appraisal of the included evidence.

2.3.3. Scoping review

Scoping review commonly refers to a mapping process of summarizing a range of evidence in order to convey the breadth and depth of a field (37,39,40,42,43). A scoping review is usually undertaken to

- examine the extent, range and nature of research activity;
- determine the value of undertaking a full systematic review;
- summarize and disseminate research findings; and/or
- identify gaps in existing knowledge.

Scoping reviews differ from systematic reviews of primary studies as typically they do not assess the quality of the included studies. Scoping reviews also differ from other reviews in that the scoping process requires analytical reinterpretation of the literature. For more detail of the differences, see Dijkers (43).

2.3.4. Rapid review

Definitions, methods and applications of rapid reviews vary substantially (28). Some reviews are termed rapid reviews when they employ systematic review methods but diverge from standard systematic review methodologies in one or more stages of the review process, for example using only one reviewer, reducing the number of databases searched, not performing quality assessment of studies or using less comprehensive approaches for data extraction and synthesis (44–47).

2.3.5. A review protocol

Annex 2 lists the main review types often used for HEN synthesis reports, their characteristics and their potential contribution to informing policy (10,48–51). A choice on a review method should be based on its fitness for purpose in the context of the review question, time frame, resources (number and expertise of the review team, funding, library support, etc.) and types of literature searched (grey literature such as national strategy, size and quality of literature, etc.) (52).

For transparency, a detailed plan for a review should be documented in a review protocol. A search strategy should be developed by a review team in consultation



with a librarian/information specialist. The Preferred Reporting Items for Systematic Reviews and Meta-analyses for Protocols (PRISMA-P) gives a 17-item checklist to facilitate preparing a robust protocol (53,54). Among the items that should be included are:

- background information for a health policy issue
- a synthesis question
- a review method
- search terms
- databases for peer-reviewed and grey literature
- inclusion and exclusion criteria
- a data extraction strategy
- a quality appraisal procedure.

2.4. A dissemination and communication strategy

To achieve full and meaningful use of an evidence synthesis report, strategic and logistical planning for dissemination and communication is critical from the early stage. The following questions may help to structure the planning:

- **immediate use**
 - for which policy document or action (e.g. national strategy, regional action plan) is the synthesis report to be used?
 - for which policy events (e.g. ministerial meetings, technical conferences, regional committee meetings) is the report requested?
 - are there any conferences and meetings on a related technical area or a health topic at which the synthesis reports should be presented?
- **communication**
 - should supplementary communication tools such as infographics be developed?
 - would authors, peer reviewers or commissioners speak about the synthesis report on camera?
 - which communication media can be used to announce and disseminate the report (e.g. websites, social media, clearinghouses, newsletters, email updates)?
- **distribution**
 - to whom should the published reports be distributed?
 - where should the synthesis reports be made available (e.g. national libraries, documentation centres, knowledge-brokering organizations, universities)?

2.5. Searching and data extraction

2.5.1. Searching protocol

Based on the review protocol, a thorough and expansive literature search is conducted to seek relevant and credible evidence to answer the health policy question.

A literature search should cover the most frequently used databases for scientific research, such as the Cochrane Library, MEDLINE, SCOPUS, the Web of Science and McMaster's Health Evidence.

To address the health policy question fully and integrate diverse sources of evidence, search terms can be not only in English but also in the languages of the target audiences and can be applied in databases specific to a region or subregion (e.g. East View).

In addition to peer-reviewed literature, various types of grey literature can complement the search to reflect insights from the local policy environment or to highlight topics and issues that are not found in the peer-reviewed literature (55). In addition, grey literature can help to fill the publication delay of peer-reviewed research, which can be one to two years (56), and contribute timely evidence. Grey literature may be either research that is unpublished but available via specific repositories (e.g. theses and funding registries) or practitioner-generated evidence (e.g. organizational reports, government papers, monitoring and evaluation reports, internal policy documents, briefing documents, technical reports, consultants' reports, internal reviews, fact sheets, statistics, standards, frameworks, infographics and posters, conference proceedings, newspapers, books and monographs, websites and social media posts).

Annex 3 contains a list of potential databases for both peer-reviewed and grey literature categorized by type of studies included (e.g. systematic reviews, primary studies), type of documents (guidelines, theses and abstracts) and organizations (e.g. professional/research/national organizations).

2.5.2. Setting screening criteria

In order to decide on what information to include or exclude, the review team should screen the information based on a set of defined, explicit and transparent criteria and guided by a substantive focus on the synthesis question. The synthesis must also report the reasons for this selection in the form of a table or a flow chart



(e.g. the PRISMA flow chart (57)). Inclusion criteria may include such items as type of literature, type of methods, geographical area, language and/or the date of study.

With regard to the inclusion of systematic reviews, particular attention should be paid to whether formal critical appraisal checklists have been used (58,59) or if subjective assessment has been applied. The latter is not desirable because of its tendency to end up with subjective statements; if it cannot be avoided, the authors should mention their method explicitly in the synthesis report.

2.5.3. Extracting data

Data extraction is mainly focused on filtering, organizing, sifting and sorting data from the relevant sections of the included papers and storing these in memos, visual maps, tables and so on. Data extraction requirements will vary from review to review, and the extraction forms should be designed to fit with the synthesis question. Therefore, the details of the extraction depend on the synthesis type and the topic of the review. In practice, the extraction of data is linked to assessment of study quality and this is often undertaken at the same time (34).

2.6. Appraising and synthesizing data

2.6.1. Quality appraisal

Quality appraisal is essential for users to know how much confidence they can place in the policy options suggested (16,58–61). This is an important step towards assessing the quality of evidence, that is, whether the evidence taken as a whole is strong enough to support a particular course of action. Annex 4 lists a selection of tools currently available for appraising evidence. However, whatever tool the authors select, they need to be explicit about their rationale and process of assessing the quality of included papers. Judgements about the quality of evidence require consideration of study design, study quality, consistency and directness of the evidence, reporting biases, strength of associations, the balance between benefits and harms of an intervention and translation of the evidence into specific circumstances/contexts.

Annex 4 outlines quality appraisal tools for systematic reviews, randomized controlled trials, cohort studies, case-control studies, qualitative studies, mixed-method studies and grey literature. There is no consensus regarding the most appropriate critical appraisal tool for the various types of public health research (62) but there are several tools for quality appraisal to grade evidence and formulate

recommendations that are applicable to a wide range of public health interventions and contexts (16,63–65); Annex 5 gives some examples.

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach (Annex 5, Table A5.2) was developed to assess the quality of a body of evidence and to support making policy recommendations (63). Key elements of the GRADE assessment include the risk of bias in the included studies, the relevance of assessed studies to the review question, the consistency of results from the studies, the precision of the estimate and the risk of publication bias in the contributing evidence. Currently many national and international guideline development groups, including WHO, use the GRADE approach (16,66).

The GRADE subgroup developed a new method for assessing levels of confidence in evidence from qualitative reviews, known as Confidence in the Evidence from Reviews of Qualitative Research (CERQual) (67). It is based on four components: the methodological limitations of the qualitative studies contributing to a review finding, the relevance of the findings to the review question, the coherence of the review finding and the adequacy of data supporting a review finding (Annex 5; Table A5.3). Confidence is assessed for each review finding individually and not for the review as a whole (67). CERQual is not intended to appraise methodological limitations of individual studies or syntheses or the effectiveness of interventions.

2.6.2. Synthesizing

Synthesizing refers to examining and analysing the findings from the included and appraised studies and information towards answering the review questions. The detail approach and methods used to integrate the information will depend on the synthesis and the specific research questions, the selected synthesis type (qualitative, quantitative, mixed) and the selected detailed procedures used for interpretation of data (e.g. meta-analysis, meta-ethnography, grounded formal theory). The use of either a qualitative or a quantitative (or mixed) approach in the synthesis affects the presentation of findings. In quantitative syntheses, the findings are presented as average effect sizes or numerical counting and the results are presented as numerical data and figures. Qualitative reviews often present the results in conceptual models or narrative text.

Conflicting evidence is often the result of differences in study design. Whenever conflicting or heterogeneous findings occur, it is necessary to summarize and inspect the findings from studies with similar design features to see whether those results would yield more homogeneous results.



2.7. Proposing policy options

Policy-makers are keen to know what actions are suggested by the evidence found. Based on the findings of the reviews, HEN reports propose potential policy options for consideration by decision-makers when formulating their own recommendations for the context of their setting, such as culture, ethics, resources and epidemiology. Policy options, for that reason, differ from recommendations, the latter outlining specific actions that should be taken.

Depending on the remit, some evidence synthesis reports might propose a wide variety of options that may be viable and feasible, leaving room for decision-makers to contextualize them further and make their own explicit recommendations. Other synthesis reports may delve into certain national or subnational contexts, including culture, level, administrative and logistical feasibility, and narrow down the policy options to a limited number for selection (68).

Policy options need to be clear, actionable, necessary, beneficial and feasible (depending on context) (69). To formulate policy options, a review team, in consultation with a commissioner, subject experts and health system experts, should:

- be aware of the type(s) of decision-maker addressed by the evidence synthesis report and identify who has vested interests and political stakes for the particular health policy issue, and whether the relevant decision-makers are national, municipal government, health managers or knowledge brokers;
- ensure that policy options are directly informed by the findings in the review and presented with a clear rationale and justification, stating how each option compares with the alternatives discussed, and the limitations of the options (70);
- be mindful of the contextual and political factors by which decision-makers are influenced, such as the economic climate for the decision-makers, and any existing international, regional or national policies, movements and practices that could prompt or slow down certain changes; and
- present options with detailed discussion on the strengths and weaknesses of the evidence and the degree of confidence that the readers can place in the policy options.

2.8. Writing and presenting findings in a HEN synthesis report

A HEN report should ideally be short and concise, keeping to around 8000 words, excluding annexes and references. The HEN synthesis report series uses an established and standardized format (Annex 1) so that the structure of each report is clear and familiar to the readers. A common pathway is followed of introduction, method, results, discussion and conclusion. The HEN report contains a summary that briefly and succinctly describes the issue, policy question, findings and policy options in order to assist the reader in navigating to the information for special attention. Bulleted lists and paragraph breaks are used optimally to facilitate a quick yet thorough uptake of information.

2.9. Characteristics of policy-friendly synthesis

Writing for decision-makers means that authors remain attentive to the interests of decision-makers, the “story” the evidence tells, choices for actions and readability. The following outlines commonly known yet vital characteristics of a policy-focused and policy-friendly evidence synthesis report based on literature (70–72) and on experiences from the HEN synthesis series.

2.9.1. Informed by evidence


Policy options in evidence synthesis reports are grounded in and derived from the findings. There should be a direct link between relevant peer-reviewed and grey literature found and options proposed.

2.9.2. In context

To affirm the need to realize, adopt and implement a new action for change, the information needs to be relevant to readers. Regional decisions require evidence reflective of that region. Local decision-making requires locally produced evidence (e.g. country examples or case studies and information about the benefits, harms/risks and costs of interventions).

2.9.3. Relevant

The synthesis report should address the health policy question or synthesis question directly. The background to the problem, methodology, findings and policy options should all be aligned to the core health policy concern and the designed synthesis



question. The relevance can be ensured by having a well-framed synthesis question and clearly and explicitly defined review methodology. Relevance can also be achieved by including current evidence. This may mean complementing the sources of evidence by recently published grey literature, thus filling the publication delay for peer-reviewed research, which can be one to two years.

2.9.4. Practical

The evidence synthesis report is an action-oriented tool and is not a mere method or analysis document. Policy options based on the evidence found are the key content.

2.9.5. Timely

Timeliness can be achieved through timing the production of an evidence synthesis report to a specific policy event or an outcome (section 2.4) so that the evidence as an input is planned, expected and integrated into the policy field.

2.9.6. Concise

The shorter a report is, the more likely it is to be read. Evidence synthesis reports should offer an option for the readers to find a short text that communicates the problem, findings and policy options in one sitting. This is the reason for the initiating summary of the main point and policy options, followed by a full report, which is usually 15–20 pages (i.e. usually not longer than 8000–10 000 words).

2.9.7. Understandable

Making information understandable requires knowing about the audience. Evidence synthesis reports are written for decision-makers, who might have different levels of technical background on a given topic. With this in mind, authors should give consideration to the following:

- use clear and simple language (i.e. free of technical jargon and inclinations to academic theories);
- provide well-developed and easy-to-follow arguments and rationale;
- avoid terms such as large and mostly without qualification (e.g. offer easy-to-understand statistical evidence and cite sources of information);
- avoid technical language wherever possible, even when writing for more specialist members of the policy community;
- where technical terms are unavoidable, provide a glossary that defines such terms in simple language;

- use visual elements to complement language and content, including illustrations, tables, graphs or charts;
- use an easy-to-follow layout with subheadings, bulleted points, consistent style and a table of contents; and
- test the readability by including decision-makers as peer reviewers.

2.9.8. Objective

The synthesis reports advocate the use of evidence but do not advocate one policy action over another. It is important to note that evidence synthesis reports present what the evidence says, and the policy options included are proposed, not prescribed, to provide the reader with the information necessary to decide, adopt and implement actions for change.

2.9.9. Accessible

For evidence synthesis reports to be accessible and easy to use, the following aspects should be considered:

- **language** – readers may be more inclined to read reports if they are translated into their language;
- **packaging** – use of alternative media forms, such as infographics, videos or presentations about the report, may be less intimidating or easier to consume and thus prompt interest to read the full report; and
- **indexing** – tools such as traditional MEDLINE indexing and abstracting and indexing services may be pursued in consultation with a librarian/information specialist in order to increase discoverability and searchability of evidence synthesis reports.

2.9.10. Aesthetic

In a world of information overload, evidence synthesis reports should present themselves as a credible and professional source of evidence. Use of logos, professional-quality design and layout, clearly labelled authors' names and institutions will emphasize this.

2.10. Quality control

A draft synthesis report should undergo internal and external peer reviews to ensure that the synthesis is performed systematically and transparently and the technical



content is presented adequately and objectively according to the scope initially defined. Both internal and external reviews should examine the following criteria:

- value
- scope
- style
- format
- consistency
- level of detail
- clarity
- use of tables and figures
- definitions and terminology
- gaps and errors.

Peer reviewers should be drawn not only from subject and methodology experts but also from the ultimate end-users of the synthesis report – decision-makers and practitioners – in order to ensure readability, relevance and user-friendliness of the report. In addition, considerations of geographical, gender and language representation in selecting peer reviewers become critical for ensuring well-rounded feedback.

3. SKILLS, CAPACITY AND RESOURCES REQUIRED TO UNDERTAKE A SYNTHESIS

3.1. Composition of the review team

The composition of the review team should optimally include subject experts, methodologists (e.g. for particular types of review), a librarian/information specialist and someone familiar with knowledge translation and policy formulation. The review team or the authors should:

- demonstrate methodological expertise and experience in conducting systematic and transparent evidence syntheses;
- have a track record of research and publication on a relevant subject area (e.g. visibility in MEDLINE or another relevant databases);
- have experience in knowledge translation and knowledge brokering;
- have adequate and relevant resources and support to perform an evidence synthesis, considering the scope of the review and the timeline; and
- declare any potential conflict of interest in delivering fair and balanced evidence and policy options.

3.2. Conflict of interest

The review team is tasked with conducting a systematic and transparent evidence synthesis of high integrity in which decision-makers can place confidence. The review team members are required to declare any conflict of interest with the subject areas of the synthesis before they embark on the synthesis process. WHO defines a conflict of interest as “any interest declared by an expert that may affect or reasonably be perceived to affect the expert’s objectivity and independence in providing advice”. WHO staff can give guidance on any potential conflict of interest.

When a review team is selected, the commissioner performs due diligence and risk assessment to preserve the integrity, reputation and independence of the work. All review team members should declare and document any potential or actual conflicts relevant to tasks assigned.



4. CONCLUSIONS

Writing an evidence synthesis report for EIP involves a series of complex and multifaceted choices to build a design that is most acceptable, achievable and appropriate to answer the health policy question. It requires authors to balance the contextual factors behind the health policy question with scientific rigour and user-friendliness throughout the synthesis process. With numerous context-specific variables, there are no clear-cut instructions or algorithms to develop an evidence synthesis product; however, this resource strives to summarize a range of approaches and considerations to appropriately and adequately answer an evidence synthesis question.

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ANNEX 1. A FORMAT FOR A HEN SYNTHESIS REPORT

The HEN synthesis report series uses an established and standardized format so that the structure of each report is clear and familiar to the readers. The common pathway of introduction, method, results, discussion and conclusion is followed.

Title

The title of the report is often the synthesis question.

Abstract

In 150 words or less, the abstract succinctly outlines the most important elements of the report including the synthesis question, results and policy options.

Summary

The summary includes the public health issue at hand, the corresponding synthesis question, types of evidence reviewed and policy considerations. The summary section is the essence of the HEN report and provides the most relevant information in the fewest possible words so that policy-makers with different technical skills can quickly grasp the evidence within a few minutes (1–3).

Main text

Introduction

The introduction describes the background focus of the problem or issue analysed, a description of the contexts and determinants of the problem and a clear statement of the importance, timeliness and policy relevance of the issue to the target audience.

Methodology

The method section should leave a transparent trail for others to replicate the search and to alert readers to any potential bias connected to the inclusion/exclusion of information. As was the case for the review protocol, it is essential to describe



which databases, websites and other sources were searched, and what key terms were used (4–9). Often the methodology is expanded in an annex.

The ENTREQ statement (enhancing transparency in reporting the synthesis of qualitative research) (10) might be useful, particularly in reporting explicitly the methods of a qualitative synthesis. It consists of 21 items grouped into five main domains, which can help the authors to report the stages most commonly associated with the synthesis of qualitative health research: searching and selecting qualitative research, quality appraisal and methods for synthesizing qualitative findings.

The methods should include sources of information used; search strategy and databases searched; inclusion/exclusion criteria and data extraction; type of review applied; and a statement of the source of any grading scale applied to the evidence.

Results

Findings should be presented as precisely as possible so that decision-makers have access to key evidence to build upon. Discussing interpretation of results in terms of “certainty” helps policy-makers to understand what is known and what is not known about the subject, while avoiding statistical jargon where possible.

There are many guidelines available for reporting the synthesis process and findings that have increased the standardization of reporting study results and helped to ensure that crucial information is available for translating evidence into practice and policy. Examples include CONSORT (consolidated standards of reporting trials (11)), STROBE (strengthening the reporting of observational studies in epidemiology (12)), TREND (transparent reporting of evaluations with nonrandomized designs (13)), COREQ (consolidated criteria for reporting qualitative research (14)) and CERQual (15). Keeping in mind that these technical guidelines are focused on producing syntheses for policy-making, it is important that the findings and policy options are linked.

Given the nontechnical background of most policy-makers, authors are recommended to state clearly that the lack of available evidence does not mean that there is no effect of such a programme or intervention, merely that the effect is not known. This precautionary principle should be mentioned in the reports.

Discussion

The discussion section includes the strengths and limitations of the review and additional considerations to operationalize proposed policy options in national/

regional/local contexts. As relevant, it is important to recognize possible opinions and debate around the issue, including:

- cost and cost–effectiveness;
- potential social, legal and ethical implications;
- current debate in the field (e.g. media);
- ongoing projects (e.g. evaluation or action) of particular importance in the field and protocols of ongoing or planned projects; and
- other aspects important for the issue/topic of concern.

In addition, the discussion should reflect on the publication and language bias. Unfunded and small sample studies are less likely to be published in the format of peer-reviewed articles (contributing to publication bias). It is well known that papers reporting positive results have a higher chance of publication than those that find an intervention ineffective (16,17). The findings of unpublished studies may be more controversial than those that were published and, consequently, bias the synthesis. The bias also includes the tendency for authors to submit, and editors to accept for publication, research that is consistent with previously published findings (16).

Conclusions

The conclusions is the section where the reader finds the synthesis question and detailed (much more than in the Summary) policy options (section 2.7) proposed by the findings. This section is often read together with the summary before the reader proceeds to the main report.

References

The list of referenced sources is a key element of a synthesis report as it allows the reader to judge the basis on which the arguments are built and it provides a guide to the currently available sources on the topic in question, which can then be used further.

Annexes

Although the synthesis is a short and targeted document, authors sometimes decide that their argument needs further support and so include one or more annexes (e.g. the details of the methodology).



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ANNEX 2. CHARACTERISTICS OF THE MAIN REVIEW TYPES RELEVANT TO HEN SYNTHESIS REPORTS

Methods can be quantitative, qualitative or a mixture. Some of the methods outlined here are overlapping or very similar to each other (see the example references).

Table A2 (see next page) outlines the main types of review.

Table A2. Types of review

Type of review	Description	Limitations
Conventional systematic review	Seeks to systematically search for, appraise and synthesize research evidence, often adhering to the guidelines provided by the Cochrane Collaboration or the Centre for Reviews and Dissemination; transparent in the reporting of its methods to facilitate others to replicate the process	Limited to provide insights about effectiveness rather than seeking answers to more complex search questions; restricted to single study designs such as randomized controlled trials
Umbrella review (review of reviews)	Overarching review for aggregating findings from several (systematic) reviews that address specific questions	Lacks well-established quality criteria and requires the pre-existence of narrower component reviews; currently not feasible for many areas of practice
Rapid review	A means of providing an "assessment of what is already known" about a policy or practice issue using systematic review methods; can provide an overview of the available evidence addressing a research question or set of research questions related to a single topic (an area of need and priority identified by knowledge users) produced within a short time frame	Aims to be rigorous and explicit in methodology and, therefore, systematic but makes concessions to the breadth or depth of the process by limiting particular aspects of the systematic review process; producing the evidence within a rapid timescale has to be offset against this risk of increased bias
Scoping review	Aims to identify the nature and extent of research evidence (usually including ongoing research); shares several characteristics of the systematic review in attempting to be systematic, transparent and replicable	Usually not regarded as a final output in its own right, primarily because of limitations in rigour and duration, which means that scoping reviews hold the potential for bias; typically, quality assessment of included papers and well-established quality criteria are lacking



When to choose this type of review	Sample of leading policy questions	Example references
Time and resources available; effectiveness of interventions, particularly randomized controlled trials	What is likely to work to address the problem? For whom does it work? How many are there? How big is the problem?	1–3
Assesses similarities and differences in published reviews to summarize what is known about a topic	How do these topic areas compare?	4
A means of providing an assessment of what is already known about a policy or practice issue in a short timescale	What is known, what is lacking?	5–7
A scoping review is able to inform policy-makers as to whether a full systematic review is needed as it provides a preliminary assessment of the potential size and scope of the available research literature	What exists, what is known, what is lacking?	8–13

Table A2. (Contd)

Type of review	Description	Limitations
Qualitative systematic review/ qualitative evidence synthesis	A method for integrating or comparing the findings from qualitative studies; used when the results of primary studies are summarized but not statistically combined; terminology of choice would be a qualitative systematic review or qualitative evidence synthesis but other terms encountered in the literature include the tautological "qualitative meta-synthesis" and the misleading "meta-ethnography" (describing a method that can be adapted to interpreting many types of qualitative research, not simply ethnographies)	Methods not fully developed and searches not always comprehensive; there is a "softness" and subjective nature to opinions and views
Mixed methods review	Refers to any combination of methods where at least one of the components is a literature (usually systematic) review accompanied by interviews or by a stakeholder consultation, thus bringing together a quantitative effectiveness review and a qualitative review on attitudes to the intervention or on implementation issues	Attempts to bring together the "what works" of the quantitative data with the "how and why does it work" of the qualitative data, but lacks the ability to address the more complex issue of "what works under which circumstances"; lacks well-established quality criteria

Sources: adapted from Barnett-Page & Thomas, 2009 (16); Grant & Booth, 2009 (17); Kastner et al., 2012 (18); Mays et al., 2005 (19); Whitemore et al., 2014 (20).

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When to choose this type of review	Sample of leading policy questions	Example references
To develop a new theory, to provide an overarching description, a wider generalization or an interpretive translation, and to broaden understanding of phenomena; explores users' views, preferences and attitudes; informs prioritization of services where evidence on effectiveness is equivocal	How does it work and why does it work? What is the meaning and value of the phenomenon to users or practitioners? How acceptable is the intervention/policy? Is the intervention implemented successfully? What is the reaction?	14
Brings together a quantitative effectiveness review and a qualitative review of issues such as attitudes to the intervention or implementation; has potential to come up with a more holistic understanding of a particular intervention or condition	What works and how, why and when?	15

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ANNEX 3. A SELECTION OF USEFUL DATABASES

Table A3 contains examples of databases available in April 2017 covering the various areas of literature that may be useful for a HEN report.

Table A3. Databases available in April 2017 that may be useful for a HEN report

Database	Characteristics
Systematic reviews	
CAMPBELL Collaboration (https://www.campbellcollaboration.org/)	Seeks to maintain and disseminate systematic reviews of research related to education; crime and justice; social welfare; and international development
CDC (Center for Disease Control and Prevention) Guide to Community Preventive Services (http://www.thecommunityguide.org)	A website that houses the official collection of all Community Preventive Services Task Force findings and the systematic reviews on which they are based
Cochrane Library (http://www.cochranelibrary.com/)	Six databases that contain different types of high-quality independent evidence to inform health care decision-making; a seventh database provides information about Cochrane groups
DARE	Provided access to systematic reviews that evaluate the effects of health and social care interventions and the delivery and organization of health and social care services. It also included reviews of the wider determinants of health, such as housing and transport, where these impact directly on health or have the potential to impact on health and well-being. Funding for this source ceased in 2015 and no new records have been added to the databases since then; however the Centre for Reviews and Dissemination (https://www.crd.york.ac.uk/CRDWeb/) is committed to maintaining archive versions of DARE until at least 2021

Table A3. (Contd)

Database	Characteristics
EPPi-Centre (Evidence for Policy and Practice Information and Co-ordinating Centre) (http://eppi.ioe.ac.uk)	Develops methods for systematic reviews and research syntheses; conducts reviews and supports others to undertake reviews, and provide guidance and training in this area. The Centre also studies the use/non-use of research evidence in personal, practice and political decision-making. It supports those who wish to find and use research to help to solve problems and provides guidance and training in this area
INAHTA (International Network of Agencies for Health Technology Assessment) (http://www.inahta.org/)	Network for health technology assessment agencies (40 agencies) and members who disseminate and share knowledge
Trip database (clinical research evidence) (http://www.tripdatabase.com/)	Primarily to help clinicians to identify the best available evidence with which to answer clinical questions; in addition to research evidence, it also includes images, videos, patient information leaflets, educational courses and news
Primary research	
Ageline (https://www.ebscohost.com/academic/ageline)	Focuses exclusively on issues of ageing and the population of people aged 50 years and older (gerontology)
AMED (Allied and Complementary Medicine Database) (https://www.ebscohost.com/academic/amed-the-allied-and-complementary-medicine-database)	Designed for physicians, therapists, medical researchers and clinicians looking to learn more about alternative treatments (subscription required); subjects include complementary medicine, occupational therapy, palliative care, physiotherapy, podiatry, rehabilitation, speech and language
ASSIA (Applied Social Science Index and Abstracts) (http://www.csa.com/csa/HelpV5/suppl/assia.shtml)	An indexing and abstracting tool covering health, social services, psychology, sociology, economics, politics, race relations and education. It is updated monthly and provides a comprehensive source of social science and health information for the practical and academic professional



Database	Characteristics
CANCERLIT (http://www.cancer.gov)	On 4 April 2003, the National Cancer Institute retired its CANCERLIT database and linked users to Cancer.gov
CINAHL (Cumulative Index to Nursing and Allied Health Literature) (http://www.cinahl.com/)	An index of journal articles in English and selected other languages about nursing, allied health, biomedicine and health care
Criminal Justice Abstracts (https://www.ebscohost.com/academic/criminal-justice-abstracts)	Covers hundreds of journals and provides records selected from the most important sources within the criminal justice field, such as criminal justice, criminal law and procedure, corrections and prisons, police and policing, criminal investigation, forensic sciences and investigation, history of crime, substance abuse and addiction, probation and parole, criminology
DAHTA database (https://www.dimdi.de/static/en/db/dbinfo/dahta.htm_945116164.htm)	Contains health technology assessment reports provided in Germany by the German Agency for Health Technology Assessment and other institutions in the German health care system, plus international health technology assessment reports
EconLit (Economics Literature) (http://www.econlit.org/)	Economic literature from journal articles, working papers from leading universities, doctoral dissertations, books, collective volume articles, conference proceedings and book reviews are all expertly indexed, classified and linkable to full-text library holdings
Economic Evaluation Database (Cochrane) (http://community.cochrane.org/editorial-and-publishing-policy-resource/nhs-economic-evaluation-database)	Includes economic evaluations of health care interventions: cost–benefit analyses, cost–utility analyses and cost–effectiveness analyses
EMBASE (Excerpta Medica database) (https://www.elsevier.com/solutions/embase-biomedical-research)	A biomedical and pharmacological database of published literature designed to support information managers and pharmacovigilance in complying with the regulatory requirements for a licensed drug

Table A3. (Contd)

Database	Characteristics
ERIC (Educational Resource Information Centre) (http://www.eric.ed.gov/)	An online library of education research and information sponsored by the Institute of Education Sciences of the United States Department of Education; it provide an Internet-based bibliographic and full-text database of education research and information for educators, researchers and the general public
HMIC (Health Management Information Consortium) (http://www.lshtm.ac.uk/library/resources/databases/info_hmic.html)	Very focused towards United Kingdom health care issues and its NHS, covering subjects such as health management, including health service policy, management and administration; the quality of health services; the planning, design, construction and maintenance of health service buildings; occupational health; control and regulation of medicines; medical equipment and supplies; and social care and personal social services
IBSS (International Bibliography of Social Sciences) (http://www.proquest.com/libraries/academic/databases/ibss-set-c.html)	Focuses on social science and interdisciplinary research. Main subjects include accounting; agriculture; anthropology; archaeology; art and architecture; business studies; communication and media; criminology; cultural studies; demography; development studies; economics; education; environment; ethnology and ethnography; family studies; finance; gender and sexuality studies; geography; globalization; health; history; human behaviour; industrial relations; international relations; law; linguistics; organization theory; philosophy; policy studies; political science; psychology; public administration; race and ethnic studies; regional studies; religious studies; science and technology; social work, social problems and social policy; sociology; social sciences; statistics; urban and rural studies
IPSA (International Political Science Abstracts) (http://ipsa.ca/)	A peer-reviewed academic journal that covers political science published in journals and yearbooks all over the world



Database	Characteristics
<p>MEDLINE (United States National Library of Medicine) (http://www.ncbi.nlm.nih.gov/pubmed/)</p>	<p>A bibliographic database of life sciences and biomedical information that includes bibliographic information for articles from academic journals covering medicine, nursing, pharmacy, dentistry, veterinary medicine and health care; it also covers much of the literature in biology, biochemistry and molecular evolution</p>
<p>NRIC (National Rehabilitation Information Centre) (http://www.naric.com/)</p>	<p>Library that collects, catalogues and disseminate the articles, reports, curricula, guides and other publications and products of research projects funded by the National Institute on Disability, Independent Living, and Rehabilitation Research; the Institute conducts research on a wide range of issues including technology, health and function, independent living and capacity-building</p>
<p>OpenSIGLE (System for Information on Grey Literature) (file://localhost/C:/Users/leklund/AppData/Local/Microsoft/Windows/Temporary%20Internet%20Files/Content.Outlook/3AK9IF2F/opensigle.inist.fr)</p>	<p>Provides access to European grey literature and seeks to improve bibliographic coverage; input to the database ended in 2005, and in 2007 the French Institut de l'information scientifique et technique integrated SIGLE records into a new open access database called OpenSIGLE, which provides access to all the former SIGLE records, new data added by the European Association for Grey Literature Exploitation and information from GreyNet</p>
<p>PAIS (Public Affairs Information Service) (http://www.proquest.com/products-services/pais-set-c.html)</p>	<p>Focuses on the world's public affairs, public and social policies, international relations and world politics (subscription required). Main subjects include administration of justice; agriculture, forestry and fishing; banking and finance; business and service sector; culture and religion; economic conditions; education; energy resources and policy; environment; government; health conditions; human rights; international relations; labour conditions and policy; law and ethics; manufacturing and industry; media and communications; military and defence policy; politics; population and demographics; science and technology; social conditions; trade; transportation</p>

Table A3. (Contd)

Database	Characteristics
PsycLit/PsycINFO (http://www.apa.org/psycinfo/)	A database of abstracts of literature in the field of psychology produced by the American Psychological Association. It contains citations and summaries from the 19th century to the present of journal articles, book chapters, books and dissertations
SCI (Science Citation Index) (http://ip-science.thomsonreuters.com/cgi-bin/jrnlst/jloptions.cgi?PC=K)	A citation index owned by Thomson Reuters. The larger version (Science Citation Index Expanded) covers more than 6500 notable and significant journals across 150 disciplines, from 1900 to the present (available through the Web of Science (http://wok.mimas.ac.uk/))
Social Work Abstracts (https://www.ebscohost.com/academic/social-work-abstracts)	Provides indexing and abstracts for journals dealing with all aspects of the social work field, including theory and practice, areas of service and social issues and problems (subscription required). Subjects include addictions, child and family welfare, civil and legal rights, education, human services, mental health, therapy
Sociological Abstracts (http://www.proquest.com/products-services/socioabs-set-c.html)	Indexes the international literature of sociology and related disciplines in the social and behavioural sciences; includes the companion file Social Services Abstracts, which provides bibliographic coverage of research on social work, human services and related areas, including social welfare, social policy and community development
SSCI (Social Science Citation Index) (http://ip-science.thomsonreuters.com/cgi-bin/jrnlst/jloptions.cgi?PC=SS)	A citation index owned by Thomson Reuters and covering some of the world's leading journals of social sciences across more than 50 disciplines (available through the Web of Science (http://wok.mimas.ac.uk/))
Databases of guidelines	
CMA Infobase (Canadian Medical Association database) (https://www.cma.ca/En/Pages/clinical-practice-guidelines.aspx)	A database of evidence-based Canadian clinical practice guidelines



Database	Characteristics
eGuidelines (http://www.eguidelines.co.uk/)	Provides clinical guideline summaries of major primary and shared care guidelines in the United Kingdom plus summarizes European guidelines from some of the major independent professional bodies; summaries of guidelines from NICE, SIGN, independent professional bodies and expert-led working party groups are developed for use in clinical practice
GIN (Guidelines International Network) (http://www.guidelines-international.net/)	A network of individuals and organizations interested in guidelines and providing the world's largest international guideline library; the Network supports evidence-based health care and improved health outcomes by reducing inappropriate variation throughout the world
National Guideline Clearinghouse (http://www.guideline.gov/)	Mission is to provide an accessible mechanism for obtaining objective, detailed information on clinical practice guidelines, and to further their dissemination, implementation and use for physicians and other health professionals, health care providers, health plans, integrated delivery systems, purchasers and others
NICE (http://www.nice.org.uk/)	Site provides governance information, up-to-date policies, procedures and publications for the United Kingdom; it also contains guidance, advice, quality standards and information services within health, public health and social care plus resources to help to maximize use of evidence and guidance
SIGN (http://www.sign.ac.uk/)	Develops evidence-based clinical practice guidelines for the Scottish NHS
WHO Handbook for Guideline Development, 2012 (apps.who.int/iris/bitstream/10665/75146/1/9789241548441_eng.pdf)	Provides advice on producing WHO guidelines and contains recommendations (clinical, public health, or policy) about health interventions

Table A3. (Contd)

Database	Characteristics
WHO Statistical databases	
Alcohol control database (http://data.euro.who.int/alcohol/)	Provides data to track and assess alcohol policies and their implementation within and across countries of the WHO European Region
CISID (Centralized Information System for Infectious Diseases) (http://data.euro.who.int/cisid/)	Collects, analyses and presents data on infectious diseases in the WHO European Region
European Health for All database (http://www.euro.who.int/en/data-and-evidence/databases/european-health-for-all-family-of-databases-hfa-db)	Provides a selection of core health statistics covering basic demographics; health status, health determinants and risk factors; and health care resources, utilization and expenditure in the 53 countries in the WHO European Region
Tobacco control database (http://data.euro.who.int/tobacco/)	Focuses on tobacco control and provides country-specific data; offers country comparisons; identifies leading countries in the WHO European Region within specific WHO Framework Convention on Tobacco Control measures; identifies and displays the relevant articles within the law; provides the entire text of the law in the original language and the English translation (both upon availability); and displays data in visually friendly and interactive bar charts
WHOSIS (WHO Statistical Information System) (http://www.who.int/gho/)	Incorporated into the Global Health Observatory to provide more data, more tools, more analysis and more reports
Internet	
European Observatory on Health Systems and Policies (http://www.euro.who.int/en/about-us/partners/observatory)	Supports and promotes evidence-based health policy-making through comprehensive and rigorous analysis of the dynamics of health care systems in Europe



Database	Characteristics
Google Scholar (http://scholar.google.com/)	A web-based scholarly search engine, citation analysis tool and gateway to open access materials on the web; it also connects to library journal subscriptions and book collections
WHO HEN (Health Evidence Network) (http://www.euro.who.int/en/data-and-evidence/evidence-informed-policy-making/health-evidence-network-hen)	A platform providing evidence in multiple formats to help decision-making; HEN provides easy access to a number of resources within public health in a single location through its sources of evidence database
Country health care and research websites	
AHRQ (Agency of Health Care Research and Quality) (http://www.ahrq.gov)	Produces evidence within the United States to make health care safer, higher quality, more accessible, equitable and affordable
DynaMed (https://dynamed.ebscohost.com)	Provides the most useful information to health care professionals at the point of care; also provides evidence-based clinical information to health care organizations around the world
Evidence Aid (http://www.evidenceaid.org/)	A group from the Cochrane Library bringing together systematic reviews related to disease outbreaks, natural disasters, humanitarian emergencies; reuses systematic reviews from Cochrane Library
Joanna Briggs Library (http://joannabriggslibrary.org/notice.html)	A repository for publications and information for policy-makers, health professionals, health scientists and others with a practical or academic interest in evidence-based health care (subscription required); publishes systematic review protocols and systematic reviews of health care research
McMaster Health Systems Evidence (http://www.healthsystemsevidence.org)	Syntheses of research evidence about governance, financial and delivery arrangements within health systems, and about implementation strategies that can support change in health systems

Table A3. (Contd)

Database	Characteristics
McMaster Resources for Evidence-Based Practice (http://hsl.mcmaster.libguides.com/ebm/)	Identifies the core concepts of evidence-based practice and contains resources for deepening the knowledge within terminology, pathology, patient education, drug information, procedures, laboratory values, anatomy
NICE (http://www.nice.org.uk/)	Site provides governance information, up-to-date policies, procedures and publications; it also contains guidance, advice, quality standards and information services within health, public health and social care plus resources to help to maximize use of evidence and guidance
PROSPERO (http://www.crd.york.ac.uk/PROSPERO/)	An international database of prospectively registered systematic reviews in health and social care; currently includes systematic reviews of the effects of interventions and strategies to prevent, diagnose, treat and monitor health conditions for which there is a health-related outcome
SIGN Surgical Database (https://www.signsurgery.org)	Surgical database; managers of active SIGN programmes may log in to the SIGN Surgical Database to report surgical cases and follow-up; the system is specifically designed for use in hospitals in developing countries where real-time imaging and power equipment are not available
SUPPORT tools (http://health-policy-systems.biomedcentral.com/articles/supplements/volume-7-supplement-1)	Investigate the role of evidence-based health policy and health research systems in ensuring the efficient utilization and application of knowledge to improve health and health equity, especially in developing countries
WHO eLENA (e-Library of Evidence for Nutrition Actions) (http://www.who.int/elena/en/)	An online library of evidence-informed guidelines for an expanding list of nutrition interventions



Database	Characteristics
Grey literature	
CABI (Centre for Agriculture and Biosciences International) (http://www.cabi.org/publishing-products/online-information-resources/global-health/)	An international non-profit-making organization that provides information and application of scientific expertise to solve problems in agriculture and the environment; a global health database
GIFT (Global Information Full Text)	Provides WHO staff worldwide with online access to major journals and databases in the medical and biomedical field; access can be made available for contributors to WHO publications
Grey Literature Report (http://www.greylit.org)	Provided by the New York Academy of Medicine; exclusively focused on grey literature but with a strong United States bias; in January 2017, the website and database were discontinued and are longer updated, but the resources are still accessible
Popline (http://www.popline.org)	A free international resource that provides information on population, family planning and related reproductive health and development literature
OpenGrey (http://www.opengrey.eu)	Provides open access to bibliographic references of grey literature (paper) produced in Europe. Many students focus on countries with logistics management and information systems so the information is not exclusively European. It is provided by a network of universities with a high concentration of social sciences and some medical topics
WHOLIS (WHO library databases) (http://www.who.int/library/databases/en/)	The collective electronic memory for all WHO documentation

Table A3. (Contd)

Database	Characteristics
Conference proceedings and abstracts	
NLM (National Library of Medicine) gateway (http://gateway.nlm.nih.gov/gw/Cmd)	Transitioned to a pilot project from the Lister Hill National Center for Biomedical Communications in 2011. The meeting abstracts database contains selected abstracts from meetings and conferences in the subject areas of AIDS, health services research and space life sciences. The last update to the meeting abstracts database was the addition of the 2010 18th International AIDS Conference. The meeting abstracts database is still accessible but no new data has been loaded. In May 2014, Health Services Research Projects in Progress (HSRProj) was retired from the NLM Gateway but is accessible through the portal site HSR Information Central (http://www.nlm.nih.gov/hsrinfo/) and directly at http://www.nlm.nih.gov/hsrproj
PapersFirst (https://www.oclc.org/support/services/firstsearch/documentation/dbdetails/details/PapersFirst.en.html)	Covers every published congress, symposium, conference, exposition, workshop and meeting report received by the British Library Document Supply Centre
Theses and dissertations	
British Library Electronic Theses Online Service (http://ETHOS.bl.uk)	Aims to maximize the visibility and availability of doctoral research theses by providing a national aggregated record of all doctoral theses awarded by United Kingdom higher education institutions
NDLTD (Networked Digital Library of Theses and Dissertation) (http://www.theses.org/)	Topics include how to find, create and preserve electronic doctoral theses; how to set up an electronic doctoral thesis programme; legal and technical questions; and the latest news and research in this community



Database	Characteristics
Databases of international organizations	
Council of Europe (http://www.coe.int/)	International organization focused on promoting democracy, rule of law, human rights, economic development and standardization of certain regulatory functions in Europe
EEA (European Environment Agency) (http://www.eea.europa.eu/)	An agency of the European Union that provides information on the European environment, including assessments and information in the form of reports, short briefings and articles, press material and a range of online products and services. The material covers the state of the environment; current trends and pressures; economic and social driving forces; policy effectiveness; and identification of future trends, outlooks and problems using scenarios and other techniques
EU Commission DG SANCO (Directorate-General for Health and Consumers) (http://ec.europa.eu/food/safety/biosafety_en)	Responsible for biological safety, such as harmonizing measures for transmissible spongiform encephalopathies (diseases in sheep and goats) by drafting legislation based on scientific evidence to protect consumer and animal health and to ensure the safety of food and feed
European Observatory on Health Systems and Policies (http://www.euro.who.int/en/about-us/partners/observatory)	Supports and promotes evidence-based health policy-making through comprehensive and rigorous analysis of the dynamics of health care systems in Europe
FAO (Food and Agriculture Organization) (http://www.fao.org/)	Leads international efforts to defeat hunger; serving both developed and developing countries, it acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy. It is also a source of knowledge and information and helps developing countries and countries in transition to modernize and improve agriculture, forestry and fisheries practices, ensuring good nutrition and food security for all

Table A3. (Contd)

Database	Characteristics
IARC (International Agency for Research on Cancer) (http://www.iarc.fr/)	Intergovernmental agency forming part of WHO; role is to conduct and coordinate research into the causes of cancer and to collect and publish surveillance data regarding the occurrence of cancer worldwide
OECD (Organisation for Economic Co-operation and Development) (http://www.oecd.org/)	Founded to stimulate economic progress and world trade, this forum of countries describes itself as committed to democracy and the market economy, providing a platform to compare policy experiences, seek answers to common problems, identify good practices and coordinate domestic and international policies of its members
OHCHR (Office of the United Nations High Commissioner for Human Rights)	Mandated to promote and protect human rights for all; it provides a forum for identifying, highlighting and developing responses to current human rights challenges and acts as the principal focal point of human rights research, education, public information and advocacy activities in the United Nations system. It focuses on standard setting, monitoring and implementation on the ground
PAHO/AMRO (Pan American Health Organization/WHO Regional Office for the Americas) (http://www2.paho.org/hq/)	The specialized health agency of the Inter-American System and the WHO Regional Office for the Americas, PAHO engages in technical cooperation with its Member States to fight communicable and noncommunicable diseases and their causes, to strengthen health systems and to respond to emergencies and disasters (47 countries)
UNAIDS (United Nations Programme on HIV and AIDS) (http://www.unaids.org/)	The main advocate for accelerated, comprehensive and coordinated global action on the HIV/AIDS epidemic



Database	Characteristics
<p>UNDP (United Nations Development Programme) (http://www.undp.org/)</p>	<p>Advocates for change and connects countries to knowledge, experience and resources to help people to build a better life; provides expert advice, training and grant support to developing countries, with increasing emphasis on assistance to the least developed countries</p>
<p>UNECE (United Nations Economic Commission for Europe) (http://www.unece.org/)</p>	<p>One of five regional commissions under the administrative direction of United Nations headquarters, reporting to the Economic and Social Council; established to encourage economic cooperation among Member States. In addition to the countries in Europe, it includes Canada, the Central Asian Republics, Israel and the United States</p>
<p>UNESCO (United Nations Educational, Scientific and Cultural Organization) (http://www.unesco.org/)</p>	<p>Purpose is to contribute to peace and security by promoting international collaboration through educational, scientific and cultural reforms in order to increase universal respect for justice, the rule of law and human rights along with fundamental freedom as proclaimed in the United Nations Charter</p>
<p>UNFPA (United Nations Population Fund) (http://www.unfpa.org/)</p>	<p>Works towards the improvement of reproductive health, including the creation of national strategies and protocols, and providing supplies and services</p>
<p>UNICEF (United Nations Children's Emergency Fund) (http://www.unicef.org/)</p>	<p>Promotes the rights and well-being of every child; together with partners, it works in 190 countries and territories to translate that commitment into practical action, focusing special effort on reaching the most vulnerable and excluded children</p>
<p>WHO (http://www.who.int/en/)</p>	<p>A specialized agency of the United Nations that is concerned with international public health. It is organized into six regions: Africa, Americas, Eastern Mediterranean, South-East Asia, Europe and Western Pacific</p>

Table A3. (Contd)

Database	Characteristics
WHO Regional Office for Africa (http://www.afro.who.int/)	WHO's presence in the region consists of the WHO Regional Committee for Africa, a Secretariat for the African Region, three intercountry support teams and WHO country and liaison offices located in 47 Member States
WHO Regional Office for the Eastern Mediterranean (www.emro.who.int/)	Works with governments, specialized agencies, partners and other stakeholders in the field of public health to develop health policies and strengthen national health systems. Country offices occur in 18 of the 22 countries of the Region; Member Countries are represented in the World Health Assembly, WHO Executive Board and Regional Committee for the Eastern Mediterranean
WHO Regional Office for Europe (http://www.euro.who.int/en/home)	Serves the WHO European Region (53 countries)
WHO Regional Office for South-East Asia (http://www.searo.who.int/en/)	Provides leadership on health matters, articulates evidence-based policy options, provides technical support to countries and monitors health trends (11 countries)
WHO Regional Office for the Western Pacific (http://www.wpro.who.int/en/)	Acts as a catalyst and advocate for action on health issues of public concern; working together with a broad spectrum of partners from all sectors of society, it is involved in a host of closely related public health activities, including research, databanking, evaluation, awareness raising and resource mobilization (37 countries and areas)
World Bank (http://www.worldbank.org/)	International financial institution that provides loans to developing countries for capital programmes. It comprises two institutions: the International Bank for Reconstruction and Development and the International Development Association



Database	Characteristics
Databases of national organizations	
CDC (Center for Disease Control and Prevention) (http://www.cdc.gov/)	The leading national public health institute of the United States; its main goal is to protect public health and safety through the control and prevention of disease, injury and disability
NHS Electronic Library for Health	This digital library service was provided by the NHS for health care professionals and the public between 1998 and 2006; it briefly became the National Library for Health and is now NHS Evidence, managed by NICE (https://www.evidence.nhs.uk/)
NIH (National Institutes of Health) (http://www.nih.gov/)	Medical research agency and part of the United States Department of Health and Human Services
RIVM (Netherlands National Institute of Public Health and the Environment) (http://www.rivm.nl/)	Carries out independent research and provides policy advice in the prevention and control of outbreaks of infectious diseases; promotes public health and consumer safety and helps to protect the quality of the environment
SBU (Swedish Council on Technical Assessment in Health Care) (http://www.sbu.se/en/)	An independent national authority tasked by the Swedish Government with assessing health care interventions from a broad perspective, covering medical, economic, ethical and social aspects; assessments are based on systematic literature reviews of published research
Databases of professional organizations	
DARE	Provided access to systematic reviews that evaluate the effects of health and social care interventions and the delivery and organization of health and social care services. It also included reviews of the wider determinants of health, such as housing and transport, where these impact directly on health or have the potential to impact on health and well-being. Funding for this source ceased

Table A3. (Contd)

Database	Characteristics
DARE (contd)	in 2015 and no new records have been added to the databases since then; however the Centre for Reviews and Dissemination (https://www.crd.york.ac.uk/CRDWeb/) is committed to maintaining archive versions of DARE until at least 2021
EUPHA (European Public Health Association) (https://eupha.org)	An umbrella organization for public health associations and institutes in Europe that facilitates and activates a strong voice for the public health network by enhancing visibility of the evidence and strengthening the capacity of public health professionals
INAHTA (International Network of Agencies for Health Technology Assessment) (http://www.inahta.org/)	Network for health technology assessment agencies (40 agencies) and members who disseminate and share knowledge
NHSEED (Economic evaluation database)	Economic evaluations of health and social care interventions comparing the costs and outcomes of two or more interventions using cost-benefit, cost-utility or cost-effectiveness analyses; cost-minimization analyses; and cost-consequence analyses as well as systematic reviews of economic studies. Funding for this source ceased in 2015 and no new records have been added to the databases since; however, the Centre for Reviews and Dissemination is committed to maintaining archive versions of NHSEED (https://www.crd.york.ac.uk/CRDWeb/) until at least 2021
NIHR-HTA database (https://www.crd.york.ac.uk/CRDWeb/Homepage.asp)	Contains details of completed and ongoing health technology assessments from around the world; content is supplied by members of the International Network of Agencies for Health Technology Assessment and other organizations internationally. It is compiled by the Centre for Reviews and Dissemination

DARE: Database of Abstracts of Reviews of Effects; NHS: National Health Service (United Kingdom); NICE: National Institute Health and Care Excellence; SIGN: Scottish Intercollegiate Guideline Network.



ANNEX 4. SELECTION OF TOOLS FOR APPRAISING EVIDENCE

The tools outlined here are examples of existing tools; new tools are constantly appearing and existing ones are revised.

Appraising quantitative studies

Methods are available for specific study types:

- systematic reviews and meta-analyses (1–7)
- randomized controlled trials (8,9)
- cohort studies (10–14)
- case–control studies (15,16)
- economic evaluations (17,18).

Appraising qualitative studies

Saini & Shlonsky (19) have suggested a 25-item quality appraisal tool (QRQC) to evaluate the credibility, dependability, confirmability, transferability, authenticity and relevance of qualitative studies; this tool is applicable for variety of qualitative research methods. The National Institute for Health and Care Excellence (NICE) also has guidelines (20) as does the Critical Appraisal Skills programme (CASP) (21).

Mixed method appraisal tool

The MMAT Mixed Methods Appraisal Tool (22) is designed for systematic reviews that include qualitative, quantitative and mixed methods studies (23,24). The tool is used worldwide because it allows researchers to overcome the difficulties associated with using different critical appraisal tools for different designs.

Appraising grey literature

Grey literature includes productions in print and electronic formats by governments, academics, business and industry that are not part of the peer-reviewed publications from commercial publishers. It can also include theses or dissertations (reviewed by examiners who are subject specialists), conference papers (often peer reviewed

or presented by those with specialist knowledge) and various types of report from specialists. The AACODS checklist (authority, accuracy, coverage, objectivity, date, significance) is designed to enable evaluation and critical appraisal of such grey literature (25).

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ANNEX 5. EXAMPLES OF DIFFERENT GRADING SYSTEMS FOR EVIDENCE

Table A5.1. WHO/HEN grading scale

Grade	Type
Strong	Consistent findings in two or several scientific studies of high quality
Moderate	Consistent findings in two or several scientific studies of acceptable quality
Limited	Only one study available or inconsistent findings in several studies
Not evidence	No study of acceptable scientific quality available

Source: WHO Regional Office for Europe, 2003 (1).

Table A5.2. Quantitative evidence scale of GRADE

Grade	Type
High	Very confident that the true effect lies close to that of the estimate of the effect
Moderate	Moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low	Confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect
Very low	Very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect

Source: Weightman et al., 2005 (2).

Table A5.3. The CERQual approach: assessment of confidence in the evidence from reviews of qualitative synthesis findings

Confidence	Definition
High	It is highly likely that the review finding is a reasonable representation of the phenomenon of interest
Moderate	It is likely that the review finding is a reasonable representation of the phenomenon of interest
Low	It is possible that the review finding is a reasonable representation of the phenomenon of interest
Very low	It is not clear whether the review finding is a reasonable representation of the phenomenon of interest

Source: Lewin et al., 2015 (3).

Table A5.4. A hierarchy of evidence for practice in qualitative research: summary features

Grade and study type	Description	Evidence for policy and practice
I: generalizable study	Sampling focused by theory and the literature, extended as a result of analysis to capture diversity of experience; analytic procedures comprehensive and clear; located in the literature to assess relevance to other settings	Clear indications for practice or policy may offer support for current practice or a critique with indicated directions for change
II: conceptual study	Theoretical concepts guide sample selection based on analysis of literature; may be limited to one group about which little is known or a number of important subgroups; conceptual analysis recognizes diversity in participants' views	Weaker designs identify the need for further research in other groups or for caution in practice; well-developed studies can provide good evidence if residual uncertainties are clearly identified

Table A5.4. (Contd)

Grade and study type	Description	Evidence for policy and practice
III: descriptive study	Sample selected to illustrate practical rather than theoretical issues; a range of illustrative quotes are recorded including themes from the accounts of "many", "most" or "some" study participants	Demonstrates that a phenomenon exists in a defined group; identifies practice issues for further consideration
IV: single case study	Provides rich data on the views or experiences of one person; can provide insights in unexplored contexts	Alerts practitioners to the existence of an unusual phenomenon

Source: adapted from Daly et al., 2007 (4).

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