6.2 How to identify and access reports of existing research

Authors

Anne Brice, Public Health England, London, United Kingdom.

Caroline De Brún, Public Health England, London, United Kingdom.

6.2.1 Learning objectives

To understand the key factors to consider when searching for evidence for Health EDRM, by:

1. Recognizing the issues related to searching for evidence for Health EDRM;
2. Understanding the techniques required for finding the best evidence for Health EDRM;
3. Identifying relevant information sources to answer the focused question; and
4. Being aware of how to manage and appraise the evidence retrieved, so that it can be applied in practice.

6.2.2 Introduction

"Effective healthcare response requires evidence and information to meet various and often unpredictable eventualities" *(1)*. Making good health decisions requires combining the best available research evidence with relevant knowledge and experience, and matching it to local context – which is particularly important in areas where the situation is uncertain, such as in disaster zones and when working on Health EDRM. Information overload is a daily reality for all health practitioners as they struggle to cope, not only with the volume of published literature, but also with the ever-increasing digital exchange from a wide range of sources, and of variable quality.

As shown elsewhere in this book, problems of quality can arise from poor research design and reporting biases but the way evidence is reported, published and organized can also contribute to problems such as difficulties in finding it in bibliographic databases (see below) or lack of open access *(2)*. Perceived lack of time and limited skills in finding and using online resources also contribute to unsystematic and unsuccessful methods of information retrieval, leading the practitioner to consider that 'finding the evidence' represents a significant barrier to evidence-based practice. Good evidence is available, but to find it effectively, practitioners need to acquire knowledge and skills: knowledge about the range, quality and content of available sources of evidence, and the skills to use these

sources effectively. This chapter aims to help you to achieve this. It complements Chapter 2.6, which discusses the role of systematic reviews as a source of evidence, and Chapter 3.7, which describes specific collated resources, such as that created by Evidence Aid *(3)*.

This chapter is intended to help you build skills in finding the evidence you need in a global and disaster health context, by raising your awareness of the range of information sources available, and demonstrating how a structured approach to building search strategies can improve results. These skills should help you to find evidence that will help you to make well-informed decisions about practice and policy, and also to ensure that any research you design, conduct and report takes proper account of other similar studies, as discussed in Chapter 3.5.

6.2.3 Searching for global and disaster health evidence: Key issues

There are different types of disaster (Chapter 3.2):

Natural: earthquakes, landslides, tsunamis, windstorms, extreme temperatures, floods, droughts, or wildfires.

Biological: disease outbreaks, including human, animal, and plant epidemics and pandemics.

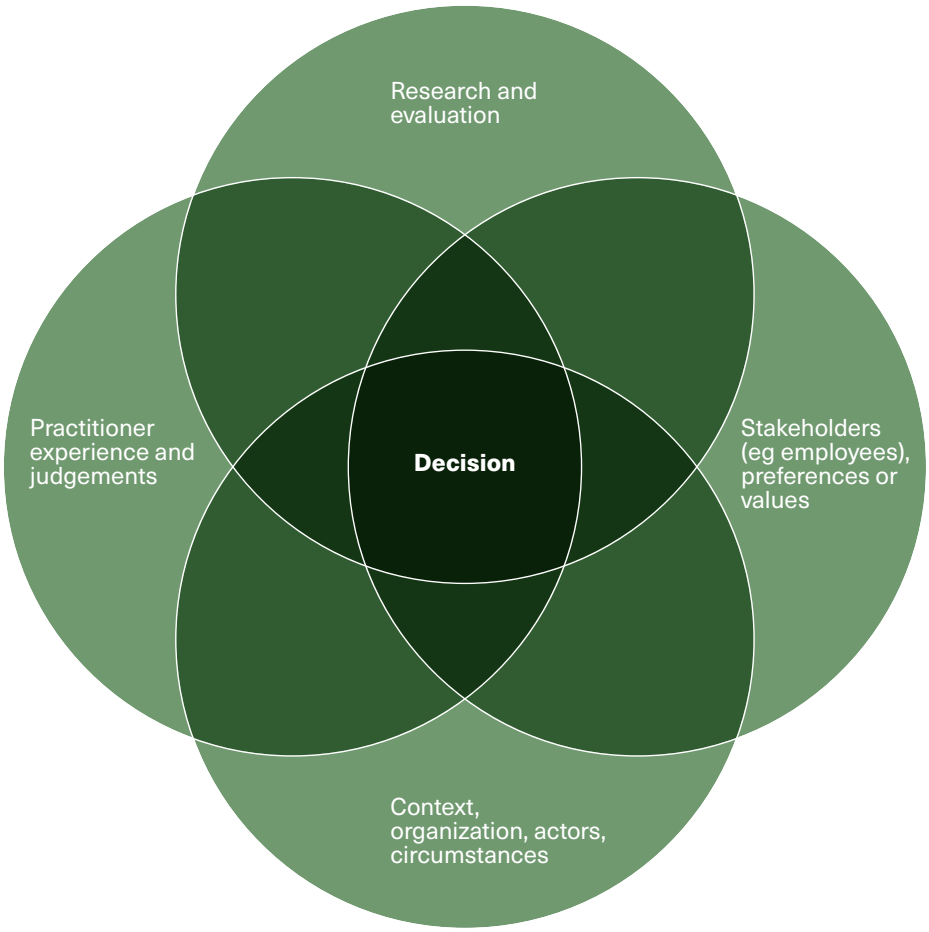
Technological: chemical and radiological agent release, explosions, and transport and infrastructure failures.

Societal: conflict, stampedes, acts of terrorism, migration, humanitarian emergencies, and riots.

Figure 6.2.1 illustrates the concepts of evidence-informed decision-making in public health, which would also apply to disasters more specifically *(4)*. In terms of global and disaster health, the context, organization, actors, circumstances (which might include power disruptions resulting in limited or no Internet access), time constraints, cultural issues, safety, local priorities and vulnerabilities, and literacy levels of the community are all important. Furthermore, during emergency situations, there is often a significant burden of disease and limited resources for rescue teams to work with *(5)*.

6.2

Figure 6.2.1 Evidence-informed decision making in public health *(4)*



Finding evidence for Health EDRM requires an awareness of – and ability to retrieve – relevant studies from a wide range of primary and secondary sources across multiple disciplines. These often use differing terminologies and indexing techniques, adding to the complexity of searching for evidence in this field.

6.2.4 Introduction to searching

Developing a systematic and reproducible approach will help you retrieve the most relevant results, save time, and avoid missing important material. Searching techniques need to be *sensitive* (to get as much relevant information as possible) and *specific* (to minimize the amount of irrelevant information retrieved).

Formulating a searchable question

When searching the literature, it is essential to construct a focused question, so that there is no ambiguity around what is being searched for. There are several frameworks *(6-7)* that can be used to help turn the scenario into a focused question, and identify relevant terms on which to base the strategy and words that mean the same (synonyms). Table 6.2.1 lists some of these frameworks.

Table 6.2.1 Frameworks for formulating searchable questions

Framework	Definition	Area of interest
PICO	Patient/Problem/Population, Intervention, Comparison, Outcome	Clinical interventions
PECOT	Patient/Problem/Population, Exposure, Comparison, Outcome, Time	Causation or prognosis
SPICE	Setting, Perspective/Population, Intervention, Comparison, Evaluation	Project, service or intervention evaluation
SPIDER	Sample, Phenomenon of Interest, Design, Evaluation, Research type	Qualitative or mixed methods
ECLIPSE	Expectation, Client group, Location, Impact, Professionals, Service	Service evaluation

A framework does not have to be applied, but it is important to break the scenario into concepts or themes, so that it is clear what is being searched for. Three or four concepts should help you to find relevant evidence, but sometimes, the answer can be found by searching for just two concepts. Four concepts to consider are:

Concept 1 – could be the key population and/or setting

Concept 2 – might be the type of intervention or exposure

Concept 3 – perhaps a comparison of a second intervention

Concept 4 – refers to the final, expected outcomes.

For example, consider the question "What is the evidence on communicable disease and infection control in areas of conflict?" There are three main concepts in this – communicable disease, infection control, and areas of conflict – and the search must find reports about all of these concepts. Under each of the concepts, consider all the alternative terms that could apply to that original concept (Table 6.2.2). For articles in English, think about both American and British terminology and spellings, or brand names. For example, tsunamis are also known as harbour waves, harbor waves, or tidal waves, and earthquakes, as quakes, tremors, or temblors.

Table 6.2.2 Example of building search using term concepts

Concept 1: Communicable disease	Concept 2: Infection control	Concept 3: Areas of conflict
infection	prevention	war zones
infectious disease	prophylaxis	emergencies
Zika	prophylactic	disasters
Ebola	antibiotic chemoprophylaxis	relief work
cholera		rescue work
dengue fever		humanitarian crisis
plague		

If you already know of, or can find a report that covers the topic that you are interested in, looking at the key words and phrases used in it and those used to index it may help you identify additional search terms.

6.2.5 Step-by-step guide to searching bibliographic databases

If the reports you are interested in have been published in scientific journals, these might be available through electronic bibliographic databases. These include, for instance, PubMed for health care, Global Index Medicus for regional health research, and ERIC for educational literature. These are all freely available. There are also some useful, subscription-based resources, including Embase, which includes conference abstracts and journals that are not indexed on PubMed; Scopus; and Web of Science. If possible, working with a librarian or information specialist should help you to decide which of the many hundreds of such databases to search. Some of the databases are restricted to simple searching, where only the words entered will be searched for. Some allow advanced searching, where it is possible to limit the search to particular parts of each record (fields), such as the title and abstract.

Thesaurus searching

More complex databases will provide access to a thesaurus (also known as index, MeSH or subject headings) where every article that is added to the database is tagged with a set of index terms, to help retrieve articles specifically on that topic. If a thesaurus is available, this is the best place to start searching, because the references found should be highly relevant. When the thesaurus term is selected, there will be an option to "explode" results ("exp") so that the term you entered and any narrower thesaurus terms will be included. For a comprehensive search, it may be best to initially explode terms, and then narrow down the search by combining with the other concepts. However, if the search is retrieving too many irrelevant results, then going back to that term and de-selecting the "explode" option so that it only searches for that one index term and none of the narrower terms may help remedy this.There is sometimes an option to choose a "major topic" or "focus", but these can be too restrictive because they will focus more on that chosen term. Once the thesaurus

term is selected, there is an option to narrow down by "subheading". Again, it is good practice to keep the search broad, and include all subheadings, but if time is of the essence, the subheadings are a useful tool to reduce the number of records retrieved and increase the concentration of the most relevant records. For example, there are subheadings for prevention and control, therapy, diagnosis, and causality, among others, so it is possible to be more specific in the search. However, this focusing down by using subheadings runs the risk that key papers will be missed because they have not been assigned the relevant subheading.

The thesaurus terms include synonyms related to that term. However, you need to be cautious because it can take a few months for index terms to be added to a new record, which means that a reliance on these terms alone will miss the most recent reports that have not yet been tagged.

Free text searching

Once the thesaurus terms have been searched, a free text (also known as natural language or keyword) search can be conducted. The database will search the whole content of each record in the database (but not the article's full text), for the term that has been entered and no other variations. It will not look for similar terms, plurals, or spelling variations. Truncation (* or $) and wildcards (?) help to improve retrieval by expanding options. For example, prophyla* will look for prophylaxis or prophylactic, while behavio?r will retrieve papers containing the British and American spellings. Searching in free text is also useful when looking for papers on specific products or techniques. For example, Plumpy'Nut is a well-used intervention for treating malnutrition in children, but the term would not be listed as an index term, as it is a product name, and it would not necessarily come up in a thesaurus search.

Proximity searching

This technique is a way of combining words, so that they are searched for in close proximity to each other. This helps to yield more relevant results. NEAR or N and ADJ are the most commonly used proximity operators. ADJ specifies that the terms appear in the order required, while NEAR lets the terms appear in any order. When numbers appear after the word, it means that the terms are separated by that number of words. For example, primary ADJ2 care will find articles on primary care or primary health care; while disaster N2 manag* or disaster NEAR2 manage* would retrieve papers on disaster management or management of disasters or managing disasters.

Combining searches

For comprehensive results, it is necessary to search for each concept, one at a time, combining with OR within each concept. The search string for each concept can then be combined using AND, so that the reports retrieved contain all the concept terms and/or synonyms.

Table 6.2.3 Combining search terms

Concept 1:		Concept 2:		Concept 3:
communicable disease **OR** infection **OR** infectious disease **OR** zika **OR** ebola **OR** cholera **OR** dengue fever **OR** plague **OR** disease outbreaks	**AND**	**infection control** **OR** prevention **OR** prophylaxis **OR** prophylactic **OR** antibiotic chemoprophylaxis	**AND**	**areas of conflict** **OR** war zones **OR** emergencies **OR** disasters **OR** relief work **OR** rescue work **OR** humanitarian crisis

When you are doing your initial search, start with something broad, or sensitive. This will find a lot of material, much of which may not be relevant but it is important not to limit or narrow the search too early, because this may exclude vital evidence from your search results. Once you have entered all the terms you wish to use, the overall results can be limited by a range of options, to suit the population or question you are interested in. Types of limits include:

- language of article;
- date of publication;
- age of population;
- publication type (that is, to restrict to specific research methods including randomized controlled trial, meta-analysis or systematic review).

Methodological search filters *(8–10)* are pre-tested literature search strategies that provide a more effective way of refining a search to find evidence appropriate to the type of question under investigation. They may be designed to maximize sensitivity (or recall) or to maximize precision (and reduce the number of irrelevant records that need to be assessed for relevance). Many databases have these filters built in and available for application at the limiting stage.

Table 6.2.4 contains an example of a comprehensive database search. The number of results for each term are in brackets and you can see how the numbers end up as a much more manageable figure by the end of the search.

Table 6.2.4 Example of a search strategy

1	exp Communicable Diseases/ (33764)
2	exp Disease Outbreaks/ (88997)
3	exp Infection/ (757664)
4	infectious disease*.tw. (71286)
5	exp Zika Virus Infection/ (3163)
6	exp Hemorrhagic Fever, Ebola/ (4822)
7	exp Cholera/ (8422)
8	exp Dengue Virus/ (8141)
9	dengue fever.tw. (4273)
10	exp Plague/ (5060)
11	or/1-10 (901566)
12	exp Infection Control/ (60674)
13	exp Primary Prevention/ (144184)
14	prevention.tw. (497908)
15	prophyla*.tw. (154455)
16	antibiotic chemoprophylaxis.tw. (53)
17	or/12-16 (805099)
18	area* of conflict.tw. (255)
19	exp Warfare/ (36098)
20	war zone*.tw. (556)
21	exp Emergencies/ (39087)
22	exp Disasters/ (81001)
23	exp Relief Work/ (4663)
24	exp Rescue Work/ (2039)
25	(humanitarian adj (crisis or crises or effort*)).tw. (409)
26	or/18-25 (115660)
27	11 and 17 and 26 (1183)
28	limit 27 to (English language and last 5 years) (176)

Key: exp – explode term; tw – only searches in the title and abstract fields; adj – adjacent and refers to proximity searching

If too few results are retrieved, then these should be reviewed, and if there are any papers that are exactly as required, these should be checked to see if they contain terms that you might add to your search strategy. If there are, these terms should be added and the search run again to identify other similar reports that were missed the first time.

6.2.6 Saving your search strategy

Most databases have the option to save the search strategy for future use, and some allow the strategy to be saved as an "alert", so that when new reports that match the search strategy are added to the database, a message is emailed to you. It is important to save a copy of the search strategy along with the date of the search, particularly if the results are to be shared with colleagues or across agencies. This allows someone else to re-run the search later, without having to revisit earlier results. Searching the scientific literature is an iterative process, and strategies may need to be refined and re-assessed throughout the process to improve relevance and ensure that results can be recorded and stored appropriately.

The general principles for searching, described above, apply to most databases, but some databases may operate differently. For example, the truncation and wildcard symbols differ across databases or database vendors (such as OVID). The Help facility for each database can provide details of any differences and provide the best advice for searching effectively. Universities are a good source of useful guides to database searching, for example McMaster University, which provides searching guidance on a range of topics *(11)*. Where possible, it may save you time to engage the services of a librarian or information specialist, who will have the skills to conduct an effective search. There are also discussion forums that might be helpful for finding advice from topic experts (see Table 6.2.5).

6.2.7 Other searching techniques

Much of this chapter has focused on database searching, but there are other techniques that can be applied:

- **Citation searching** – looking up a specific report in a citation index, for example Web of Science or Scopus, to see who has cited it, and then who has cited their work, and so on.
- **Reference list checking** – identifying additional relevant references and terms by looking at the reference list of a key paper that strongly relates to your question *(12)*.
- **Contact with experts** – getting in touch with the authors of relevant reports to see if they have other work in the pipeline or if they can recommend other experts who have published on the topic.
- **Text mining** – refers to the automated analysis of large collections of written content to identify additional terms to include in the search *(13)*.
- **Pearl harvesting** – taking one reference, and using the terms applied to it to identify additional terms for the search strategy *(14)*.

6.2.8 Key sources of evidence

It is crucial to choose appropriate information sources to search – that is, sources that are likely to contain the type of evidence required. For articles in scientific journals, this is likely to focus on bibliographic databases but you may need to search other sources as well. Grey literature are non-conventional publications, which include conference proceedings, local

guidelines, dissertations, bibliographies, technical reports, unpublished official documents and so on (Chapter 3.6) *(15)*. Grey literature is a valuable source of information because it can provide important data about the local context.

As discussed in Chapter 2.6, up-to-date systematic reviews or evidence syntheses that have tackled your question might allow you to move quickly to an answer. When time is of the essence, there may not be time to find and read the full reports of many studies, and so especially in emergency situations, evidence syntheses are essential as they highlight the key messages needed to make quick and accurate decisions. However, the recommendations that are made in such evidence syntheses may not always be feasible in disaster zones. For example, you may not have access to the medication or equipment that research elsewhere has shown to be most effective. Even if you can find a systematic review in your general search or can access collections such as those discussed in Chapter 3.7, you will still need to consider its relevance to your setting and whether you need to supplement it with searches for additional context-specific research. Table 6.2.5 introduces a collection of information sources, organized by levels of evidence.

Table 6.2.5 Hierarchy of searching for global and disaster health

Guidelines:

Medbox: The aid library
This is an open source library for health-related work, humanitarian action and development assistance. It contains key information on Ebola, Zika, Tuberculosis, Cholera, Leprosy, Polio, natural hazards, conflict, rapid response, refugee, disability, and specific hazards.
www.medbox.org.

Medécins Sans Frontiéres
This collection of medical guides has been produced to help people working in areas with epidemics of infectious disease, and emergency situations.
https://medicalguidelines.msf.org/viewport/MG/en/guidelines-16681097.html

Oxfam GB Guidelines and toolkits
Oxfam publishes a range of resources, including guidelines, manuals and training packs that provide advice and tools for practical application and adaptation. These cover many different thematic areas including, gender justice, livelihoods, private sector engagement, climate change, resilience, humanitarian response, water and sanitation, governance and fragile contexts.
policy-practice.oxfam.org.uk/our-approach/toolkits-and-guidelines.

TRIP (Turning Research Into Practice)
TRIP searches a range of health information sources to inform clinical and non-clinical decision-making. It contains all levels of evidence, and the results are delivered with the highest level of evidence first. This is free to access, but an enhanced version, TRIP Pro, is also available free to countries with low resource. www.tripdatabase.com.

WHO: Emergency surgical care in disaster situations
These guidelines have been extracted from the WHO manual Surgical Care at the District Hospital (SCDH), which is a part of the WHO Integrated Management on Emergency and Essential Surgical Care (IMEESC) tool kit.
www.who.int/surgery/publications/s16368e.pdf.

6.2

Evidence maps and syntheses *(see also Chapter 2.7):*

Humanitarian Evaluation, Learning and Performance (HELP)
This resource contains almost 17 000 resources to support evaluation, learning and performance in the humanitarian sector. www.alnap.org/help-library.

International Initiative for Impact Evaluation (3ie)
3ie produce briefs which summarize evidence from 3ie-supported impact evaluations, systematic reviews, replications and evidence gap maps. They also include summaries of their research programmes, lessons from grant making and instances of uptake and use of evidence. Their database also includes systematic reviews of the effectiveness of social and economic interventions in low- and middle- income countries. It contains almost 303 summaries of systematic reviews drawn from a range of sources and sectors. www.3ieimpact.org/evidence-hub/publications/briefs/.

Systematic reviews *(see also Chapter 2.7):*

Campbell Collaboration
This database contains systematic reviews on the effects of interventions in crime and justice, education, international development, and social welfare. campbellcollaboration.org.

Evidence Aid
Evidence Aid, along with partners (including the International Rescue Committee (USA) and Cochrane), has assessed published systematic reviews. Those identified as being of relevance to natural disasters, humanitarian crises or major healthcare emergencies, that include health outcomes, are included within the four categories and include a summary of the review before it links to the full article. Most summaries are also available in Spanish and French. www.evidenceaid.org/resources/

PubMed Clinical Queries
The resource is designed to filter PubMed records by three clinical research areas: Clinical Study Categories (diagnosis, therapy, prognosis and so on), Systematic Reviews, and Medical Genetics.
www.ncbi.nlm.nih.gov/pubmed/clinical.

Primary research

Global Index Medicus
This is a collection of the Regional Index Medicus, and contains medical and health documentation from low-income countries, outside the major industrialized areas.
search.bvsalud.org/gim/advanced.

PubMed
PubMed is a database containing more than 22 million citations from biomedical literature, journals, and online books. www.pubmed.gov.

Grey literature

Database for Disaster Medicine and Public Health - NLM Disaster Lit®
This resource improves access to disaster health information, including systematic reviews related to natural and human-induced disasters, and infectious diseases.
disasterinfo.nlm.nih.gov/disaster-lit

EM-DAT: The International Disaster Database (see Chapter 2.1)
This resource provides information on the human impact of disasters - such as the number of people killed, injured or affected, along with disaster-related economic damage estimates and disaster-specific international aid contributions. www.emdat.be/publications.

Prevention Web
This is a collaborative knowledge-sharing platform on DRR, managed by the UN Office for Disaster Risk Reduction (UNISDR). It contains a range of knowledge products and services to facilitate the work of DRR professionals. www.preventionweb.net/english/.

Relief Web
This is a humanitarian information source on global crises and disasters, and provides reliable and timely information, including the latest reports, maps and infographics from trusted sources, enabling humanitarian workers to make informed decisions and to plan effective response.
reliefweb.int.

Resilience Library – South East Asia Resources
The International Federation of Red Cross and Red Crescent Societies has collated information on the following topics: climate change, communication and advocacy, disaster law, disaster risk reduction, gender and diversity, health, migration, national society development, and youth and volunteering.
www.rcrc-resilience-southeastasia.org.

Environment, Conflict and Cooperation (ECC) Platform Library
This resource contains documents on topics, including climate change, environment and migration, early warning and risk analysis, and conflict transformation.
library.ecc-platform.org.

Discussion forums

Healthcare Information for All (HIFA)
Healthcare Information for All is a global health network with more than 18 000 members (health workers, librarians, publishers, researchers, policymakers) committed to the progressive realization of a world where every person has access to the healthcare information they need to protect their own health and the health of others. Its members have a vast and unique experience and expertise which they can use to bring clarity to challenging questions around global health issues in general and healthcare information issues in particular.
www.hifa.org.

Disaster Outreach Librarians
This is a discussion list where topics related to library services and disaster preparedness can be discussed, and experiences shared.
disasterinfo.nlm.nih.gov/dimrc/dimrclistserv.html.

Tools

Disaster apps for your digital go bag
The apps on this page contain information to support disaster management, including dealing with blast injuries, hazardous material and incident response and planning, radiation and nuclear emergencies, etc. They have been designed to provide mobile device users access to web-based content, and run on specific mobile platforms, such as iOS (iPhone and iPad), Android, or Blackberry.
disasterinfo.nlm.nih.gov/apps.

Google and Google Scholar

Google (https://www.google.com/) is easily accessible, and can identify relevant information, particularly when a topic is new, and there is not yet much established literature. It is also useful for finding news items, videos and pictures, grey literature, and information about specific organizations.

Google Scholar (https://scholar.google.com/) can be used to quickly locate research papers, particularly full-text articles, but it is not easy, or comprehensive, to use for complex searches.

The International Federation of Library Associations and Institutions (IFLA) Evidence for Global and Disaster Health (E4GDH) has produced two guides, linking to many more information sources: finding the evidence for global and disaster health. www.ifla.org/publications/node/81736?og=25692.

6.2.9 Managing references and creating bibliographies

As your collection of reports grows, you may find it helpful to use reference management software for managing the citations, formatting them into standard referencing styles (such as Harvard, Vancouver and so on), making annotations, and sharing collections with colleagues to facilitate collaborative working across agencies. For instance, Mendeley (www.mendeley.com) and Zotero (www.zotero.org) are examples of freely available, web-based software which lend themselves well to collaborative working, and Endnote (endnote.com) is a subscription-based reference management software.

6.2.10 Obtaining the full text of reports

Databases will provide brief summaries of the reports, known as abstracts, and in some cases, will include a link to the full text. If this is not the case, there are some options available:

- Local librarian – libraries often have access to a range of other libraries and can source reports this way.
- Direct links from the database – if access to the full text is available, either via your local subscription or open access, these will link directly to the journal publisher.
- Open access databases – PubMed Central is a database which provides access to open access reports (www.ncbi.nlm.nih.gov/pmc).
- HINARI– was set up by WHO together with major publishers to enable people in low- and middle-income countries to gain access to one of the world's largest collections of biomedical and health literature. Visit the website to see eligibility criteria (www.who.int/hinari/en).
- Emergency Access Initiative (EAI) – provides temporary, free access to full text articles from major biomedicine titles to healthcare professionals, librarians, and the public affected by disasters in a region of the USA or throughout the world. This site is only active when a disaster event is named and the access period specified. Visit the website to see eligibility criteria (eai.nlm.nih.gov).

6.2.11 Appraising the evidence

Critical appraisal is the process of assessing and interpreting evidence, enabling you to systematically assess the trustworthiness, relevance and results of published papers. There are many useful tools and checklists to help appraise retrieved content. A simple checklist to assess whether the information is relevant and reliable is:

- **Authorship** – Who wrote the content and what are their credentials? Are they qualified to provide this information?
- **Attribution** – is it clear how the information was generated (for example, is it referenced)?
- **Disclosure** – is the website sponsored by anyone who might have a commercial gain? When did they write it? Who did they write it for?
- **Currency** – is there a date to indicate age of the content? *(16)*

The Critical Appraisal Skills Programme has a set of eight critical appraisal tools, which can be used to assess the quality of research papers (casp-uk.net/casp-tools-checklists/). The Centre for Evidence Based Medicine has translations of some of these English language checklists – into Chinese, German, Lithuanian, Portuguese, Spanish, and Persian (www.cebm.net/2014/06/critical-appraisal/).

6.2.12 Conclusions

Finding the evidence to inform decisions can be challenging in Health EDRM, particularly when timescales are short, and situations are resource-poor. This chapter provides guidance on searching for this type of evidence, so that people working in these areas can make informed decisions about the choices they have to make. It has guided you through each stage of the search process, highlighting relevant resources for this particular topic area, and describing techniques for searching those resources effectively. Once the relevant research has been identified, this chapter provides information on how to manage the references, obtain full text publications, and assess the quality of the research methodology. Although the purpose of the chapter is to facilitate independent information retrieval, you are encouraged to find a librarian or information specialist, where possible, for expert professional assistance or advice.

6.2

6.2.13 Key messages

- **If available, contact a librarian who has the skills and understands the context.**
- **Recognize the scenario and formulate a focused question.**
- **Identify the key search terms and compile a list of synonyms.**
- **Decide on the most appropriate study types to answer the question.**
- **Choose the most relevant information sources and apply the search terms.**
- **Start with a broad (or sensitive) search, narrow down by adding additional concepts.**
- **Keep a record of the search strategies and results so that they can be revisited, and revised, later.**
- **Use reference management software to manage the references you find.**
- **Use critical appraisal skills to check whether the information you have found is reliable and relevant.**

6.2.14 Further reading

Akobeng AK. Principles of evidence based medicine. Archives of Disease in Childhood. 2005: 90(8):837-40. adc.bmj.com/content/90/8/837.full.pdf+html (accessed 27 January 2020).

De Brún C, Pearce-Smith N. Searching skills toolkit: Finding the evidence. Oxford: BMJ Books.2014.

Glanville J, Lefebvre C, Wright K, editors. The InterTASC Information Specialists' Sub-Group search filter resource. 2008. sites.google.com/a/york.ac.uk/issg-search-filters-resource/home, (accessed 27 January 2020).

Kugley S, Wade A, Thomas J, Mahood Q, Jørgensen AMK, Hammerstrøm K, Sathe N. Searching for studies: a guide to information retrieval for Campbell systematic reviews. Oslo: The Campbell Collaboration. 2017. onlinelibrary.wiley.com/doi/10.4073/cmg.2016.1 (accessed 27 January 2020).

6.2.15 References

1. Mahapatra P. The need for evidence-based public health response in disasters. Journal of Evidence-Based Medicine. 2014: 7(4): 238-44.
2. Antes G, Clarke M. Knowledge as a key resource for health challenges. Lancet. 2012: 379(9812): 195-6.
3. Allen C. A resource for those preparing for and responding to natural disasters, humanitarian crises, and major healthcare emergencies. Journal of Evidence-Based Medicine. 2014: 7: 234–7.

4. Blanchet K, Allen C, Breckon J, Davies P, Duclos D, Jansen J, et al. Using research evidence in the humanitarian sector: A practice guide. London, UK: Evidence Aid, London School of Hygiene and Tropical Medicine and Nesta (Alliance for Useful Evidence). 2018. www.evidenceaid.org/wp-content/uploads/2018/10/Evidence_Aid_Practice_Guide_52pp_DIGITAL-FINAL-VERSION-2018-10-22.pdf (accessed 27 January 2020).

5. Turner T, Green S, Harris C. Supporting evidence-based health care in crises: What information do humanitarian organizations need? Disaster Medicine and Public Health Preparedness. 2013: 5(1): 69-72.

6. Booth A, Noyes J, Flemming K, Moore G, Tunçalp Ö, Shakibazadeh E. Formulating questions to explore complex interventions within qualitative evidence synthesis. BMJ Global Health. 2019: 4(Suppl 1): e001107.

7. Davies K. Formulating the evidence-based practice question: A review of the frameworks. Evidence Based Library and Information Practice. 2011: 6(2): 75-80.

8. Haynes RB, Wilczynski N, McKibbon KA, Walker CJ, Sinclair JC. Developing optimal search strategies for detecting clinically sound studies in MEDLINE. Journal of the American Medical Informatics Association. 1994: 1(6): 447-58.

9. Hoogendam A, de Vries Robbe PF, Stalenhoef AFH, Overbeke AJ. Evaluation of PubMed filters used for evidence-based searching: validation using relative recall. Journal of the Medical Library Association; 2009: 97(3): 186-93.

10. Damarell RA, May N, Hammond S, Sladek RM, Tieman JJ. Topic search filters: a systematic scoping review. Health Information & Libraries Journal. 2018: 36(1): 4-40.

11. McMaster University Library Guides [online resource] libguides.mcmaster.ca/.

12. Horsley T, Hyde C, Santesso N, Parkes J, Milne R, Stewart R. Teaching critical appraisal skills in healthcare settings. Cochrane Database of Systematic Reviews. 2011. doi: 10.1002/14651858.CD001270.pub2.

13. Thomas J, McNaught J, Ananiadou S. Applications of text mining within systematic reviews. Research Synthesis Methods. 2011: 2: 1-14.

14. Booth A. Unpacking your literature search toolbox: On search styles and tactics. Health Information and Libraries Journal. 2008: 25: 313-7.

15. Alberani V, De Castro Pietrangeli P, Mazza AM. The use of grey literature in health sciences: a preliminary survey. Bulletin of the Medical Library Association. 1990: 78(4): 358-63.

16. Silberg WM, Lundberg GD, Musacchio RA. Assessing, controlling, and assuring the quality of medical information on the Internet quality: Caveant lector et viewor--Let the reader and viewer beware.

17. Journal of the American Medical Association. 1997: 277(15): 1244-5.