Public Health England

Protecting and improving the nation's health

Introductory guide to finding and appraising the evidence

The aim of this guide is to help information publishers find the evidence to inform their patient information products, to meet the criteria of the NHS England Information Standard.

Contents

Glossary

- NICE – National Institute for Health and Care Excellence
- NIHR – National Institute for Health Research
- SCIE – Social Care Institute of Excellence
- SIGN – Scottish Intercollegiate Guidelines Network
- TRIP – Translating Research Into Practice database

Key papers

The first of these two papers provides a brief, but comprehensive introduction to evidence-based practice and critical appraisal, while the second paper, provides a useful summary of different publication types.

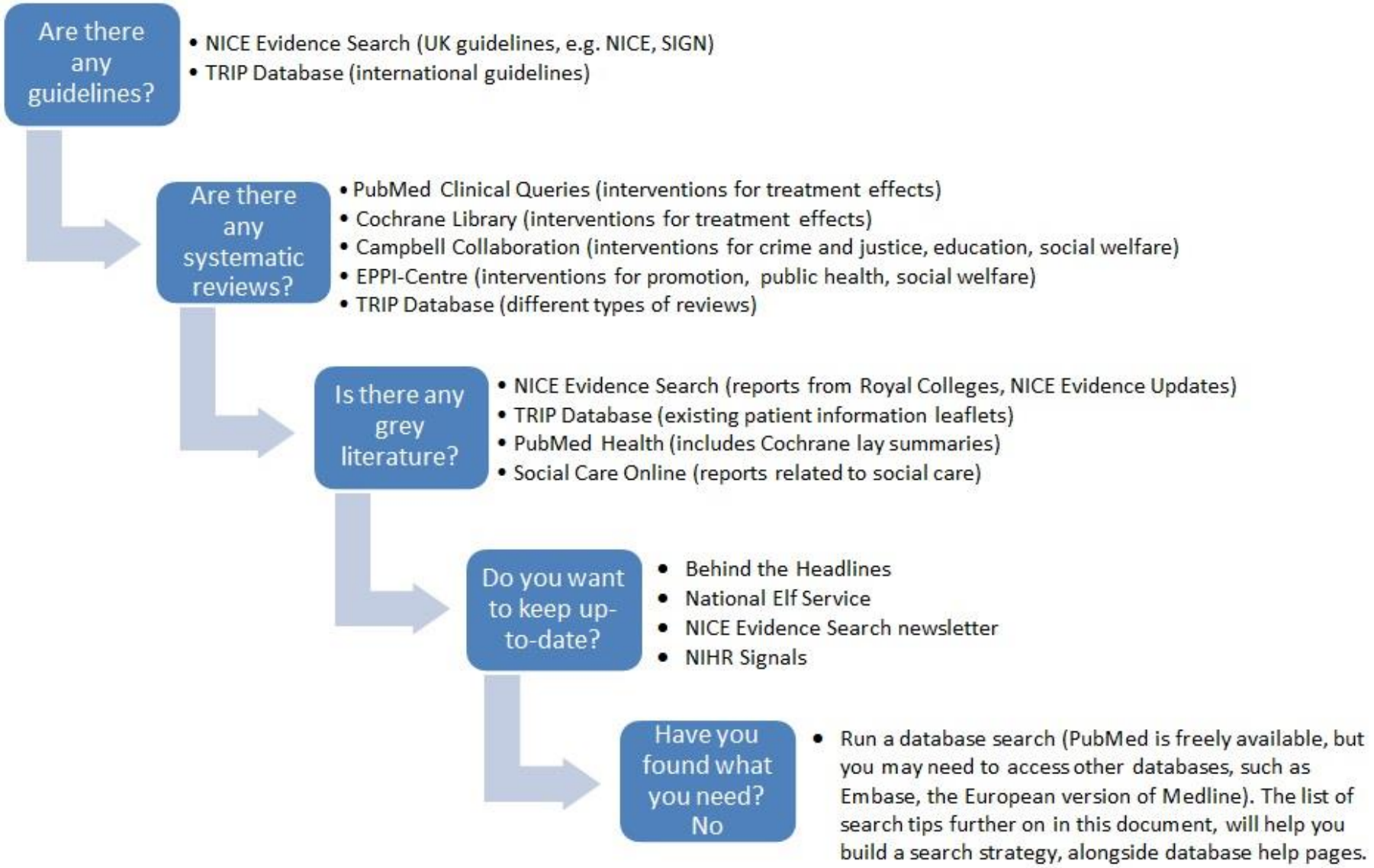
1. Akobeng AK. **Principles of evidence based medicine**. Archives of Disease in Childhood. 2005, 90:837-840 http://adc.bmj.com/content/90/8/837.full.pdf+html
2. Nesta. **Using research evidence: A practice guide**. January 2016 http://www.alliance4usefulevidence.org/assets/Using-Research-Evidence-for-Success-A-Practice-Guide-v6-web.pdf

Steps to finding the evidence

1. Identify a scenario
2. Formulate an answerable question
3. Breakdown the question into key concepts
4. Organise key concepts and identify synonyms
5. Think about relevant information sources
6. Combine within concepts (OR) and search
7. Combine all concepts (AND) and search
8. Apply limits
9. Save search and download results
10. Repeat on other databases

Hierarchy of searching

When searching for evidence for patient information leaflets, there are a range of useful and freely-available high quality information sources to use. The following chart is a guide to which sources to use for different levels of evidence, and these are described in greater detail immediately after the chart.



Are there any guidelines?

- **NICE Evidence Search** (UK guidelines, e.g. NICE, SIGN)
  http://www.evidence.nhs.uk/
  Evidence search provides access to selected and authoritative evidence in health, social care and public health.
- **TRIP Database** (international guidelines)
  https://www.tripdatabase.com/
  Trip is a clinical search engine designed to allow users to quickly and easily find and use high-quality research evidence to support their practice and/or care. As well as research evidence we also allow clinicians to search across other content types including images, videos, patient information leaflets, educational courses and news.

Are there any systematic reviews?

- **PubMed Clinical Queries** (interventions for treatment effects)
  https://www.ncbi.nlm.nih.gov/pubmed/clinical
- **Cochrane Library** (interventions for treatment effects)
  http://www.thecochranelibrary.com/view/0/index.html
  A collection of databases that contain different types of high-quality, independent evidence to inform healthcare decision-making.
- **Campbell Collaboration** (interventions for crime and justice, education, social welfare)
  http://www.campbellcollaboration.org/lib/
  This database contains systematic reviews on the effects of interventions in crime and justice, education, international development, and social welfare.
- **EPPI-Centre** (interventions for health promotion, public health, social welfare)
  https://eppi.ioe.ac.uk/cms/Default.aspx?tabid=185
  The Evidence for Policy and Practice Information and Co-ordinating Centre resource contains systematic reviews of research evidence on health promotion, public health, social welfare, and international development.
- **TRIP Database** (different types of reviews)
  https://www.tripdatabase.com/
  Trip is a clinical search engine designed to allow users to quickly and easily find and use high-quality research evidence to support their practice and/or care. As well as research evidence we also allow clinicians to search across other content types including images, videos, patient information leaflets, educational courses and news.

Is there any grey literature?

- **NICE Evidence Search** (reports from Royal Colleges)
  http://www.evidence.nhs.uk/
  Evidence search provides access to selected and authoritative evidence in health, social care and public health.
- **TRIP Database** (existing patient information leaflets)
  https://www.tripdatabase.com/
  Trip is a clinical search engine designed to allow users to quickly and easily find and use

high-quality research evidence to support their practice and/or care. As well as research evidence we also allow clinicians to search across other content types including images, videos, patient information leaflets, educational courses and news.

- **PubMed Health** (includes Cochrane lay summaries)
  https://www.ncbi.nlm.nih.gov/pubmedhealth/
  PubMed Health provides information for consumers and clinicians on prevention and treatment of diseases and conditions. It specializes in reviews of clinical effectiveness research, with easy-to-read summaries for consumers as well as full technical reports.
- **Social Care Online** (evidence related to social care)
  http://www.scie-socialcareonline.org.uk/
  The UK's largest database of information and research on all aspects of social care and social work.

Do you want to keep up-to-date?

- **Behind the Headlines**
  http://www.nhs.uk/news/Pages/NewsIndex.aspx
  This site provides an unbiased and evidence-based analysis of health stories that make the news. The service is intended for both the public and health professionals. Behind the Headlines provides an unbiased and evidence-based analysis of health stories that make the news. The service is intended for both the public and health professionals.
- **Evidently Cochrane**
  http://www.evidentlycochrane.net/
  The evidence produced by the Cochrane Collaboration is very high quality, and this site makes it more accessible to patients, carers, and anyone making health choices. Cochrane reviews are summarised and written in plain English for a non-medical audience.
- **National Elf Service**
  http://www.nationalelfservice.net/
  This site is designed to benefit practitioners and patients alike by providing user-friendly updates on the most significant new evidence selected from today's avalanche of high quality research.
- **NICE Evidence Search newsletter**
  https://www.nice.org.uk/news/nice-newsletters-and-alerts
  This newsletter provides updates about NICE and NICE Evidence Search.
- **NIHR Signals**
  https://discover.dc.nihr.ac.uk/portal/search/signals
  These are timely summaries of the most important research that aim to cut through the noise and provide decision makers with the evidence they can use.

Have you found what you need? No

Run a database search (PubMed is freely available, but you may need to access other databases, such as Embase, the European version of Medline). PubMed contains more than 22 million citations from biomedical literature, journals, and online books.The list of search tips further on in this document, will help you build a search strategy, alongside database

help pages.
http://www.pubmed.gov

Tips for effective searching

1. Breakdown the essay question and identify the key concepts. For example:

   *What is the evidence of **health promotion interventions** in the **workplace** in terms of **reducing absence and preventing ill health**?*

   Three or four concepts should help find relevant evidence, but sometimes, the answer can be found by searching for just two concepts:
   - Concept 1 – could be the key population and/or setting
   - Concept 2 – might be the type of intervention
   - Concept 3 – applies if there are two interventions
   - Concept 4 – refers to the final outcome

Concept 1	Concept 2	Concept 3	Concept 4
workplace	health promotion interventions	(optional)	reducing absence preventing ill health

2. Under each of the concepts, think of all the alternative terms that could apply to that original concept. Think about American terminology and spellings, or brand names. For example, in America, they call motor neurone disease, Amyotrophic Lateral Sclerosis. The technical name for Prozac is fluoxetine.

Concept 1	Concept 2	Concept 3	Concept 4
workplace office working women working men employers employees	health promotion health program physical activity exercise	*(optional)*	ill health prevention sickness absence absenteeism medical leave health improvement health status welfare health and wellbeing

3. Choose appropriate information sources, such as databases. For a good search, and depending on the topic, you should search at least three databases. There will be some duplication in results, but you will also find some unique records. When searching databases, search one database at a time and search for one term at a time. If you search more than one database at a time, you will miss out on key features, such as the indexes described further on. If you search for one term at a time, you can then try out different combinations, until you get the results you are looking for.
4. There are two ways of searching databases. For best results, start with a subject heading search and combine with a free-text search:
   - **thesaurus** (also known as index, MeSH or subject heading) searches - every article that is added to the databases is also tagged with a set of index terms, to help you find articles specifically on that topic. When you apply the thesaurus/index search, there will be an option to Explode results (exp), and this means that any narrower thesaurus/index terms will be included. It is good practice to explode terms in all

cases, and then narrow down the search by combining with the other concepts. There is sometimes an option to choose Major topic or Focus, but these can be limiting. There is also an option to narrow down by Subheading. Again, it is good practice to keep the search broad, and include all Subheadings.

- **free text** (also known as natural language or keyword) searches – the database will search the whole text for the term that you have entered and no other variations. So it will not look for similar terms, plurals, or spelling variations. Truncation (* or $) and wildcards (?) help to improve retrieval by expanding options, e.g. nurs* will look for nurse, nurses, nursing, while leuk?emia will retrieve papers containing the British and American spellings. You can also restrict your free text search to just title and abstract.

5. For a comprehensive search, a thesaurus search should always be run together with a free-text search, in case the articles have not been indexed yet.
6. Search for each concept, one at a time, using free text and thesaurus search methodologies, combining with OR. Then, combine the total results of each concept with AND so that you find papers containing all the concept terms.
7. Once you have completed your search, you can limit search results by applying limits (language of article, date, age of population, publication type: e.g. RCT's, meta-analysis, reviews). This is an example of a search strategy:

Database: OVID MEDLINE® In-Process & Other Non-Indexed Citations, Ovid MEDLINE® Daily and Ovid MEDLINE®<1946 to present>
Search Strategy:

1	exp Ascorbic Acid/ (39471)
2	vitamin c.tw. (17788)
3	1 or 2 (46666)
4	exp Common Cold/ (4063)
5	common cold.tw. (2929)
6	4 or 5 (5464)
7	exp Primary Prevention/ (132598)
8	prevention.tw. (422100)
9	7 or 8 (540186)
10	3 and 6 and 9 (26)
11	limit 10 to (English language and yr="2005-Current") (6)

8. If *too many* records are retrieved, go back over the strategy and narrow the search:, by using more specific or most relevant terms in Free Text and/or Thesaurus terms, or using Thesaurus search rather than Free Text or selecting specific subheadings with Thesaurus terms, or adding terms for other aspects of question (eg age or gender of patient), using AND or using limits.
9. If *too few* records retrieved, go back over strategy and widen search by using more terms: synonyms, related terms, broader terms (Thesaurus or Free Text), or adding in terms of related meaning with OR, or combining results of Thesaurus and Free Text searches or using the Explode feature of Thesaurus, which will include narrower terms, or selecting All Subheadings when searching for Thesaurus terms. You can find additional or related search terms from retrieved records:

- free text terms in the abstracts and/or titles that have not been included, but should be
- thesaurus terms that have not been included, but should be
- references at the end of the paper

10. Save your search with the name of the database and the date searched for future reference. This will help when you are reporting your search strategy. It is also worth keeping a copy of your search strategy, again for the writing-up stage of your research. To keep up-to-date, you can set up an alert so that each time another paper is added to the database that matches your search criteria, you will automatically be informed.

Reference management software

Reference management tools enable you to create a library of references retrieved from your literature searches and downloaded directly from databases. The references can then be formatted into the required reference style and inserted into documents, creating a bibliography at the end. Mendeley and Zotero are freely available reference management packages:

- **Mendeley**
  https://www.mendeley.com/
- **Zotero**
  https://www.zotero.org/

Critical appraisal

All papers that you find should be critically-appraised to make sure they are accurate, reliable, and relevant to your audience. There are a number of tools to help with this.

- **DISCERN**
  http://www.discern.org.uk/
  This is a brief questionnaire which provides users with a valid and reliable way of assessing the quality of written information on treatment choices for a health problem. It can also be used by authors and publishers of information on treatment choices as a guide to the standard which users are entitled to expect.
- **Critical thinking and Appraisal Resource Library (CARL)**
  http://www.testingtreatments.com
  This collection contains more than 500 resources to help people to learn and teach these skills so that people can learn critical thinking skills to assess treatment claims.
- **Understanding health research**
  http://www.understandinghealthresearch.org/notice/1/
  This tool is for making sense of health studies, and guides users through a series of questions, and provides a conclusion about the research.