



Finding the Evidence

Research support for PHE staff undertaking university courses.

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Introduction

Information skills such as literature searching and critical appraisal skills are a key part of the learning and research process, because it helps students to build a case and demonstrate why their research is relevant and required. The PHE Knowledge and Library Services Team have produced this leaflet to support PHE staff who are undertaking postgraduate courses. It contains links to useful resources related to evidence-based public health, and can be used alongside materials produced by their universities, that the training that is provided as part of their university induction programme and part-time/distance learner support.

Public health definitions

- **A glossary for evidence based public health**

This glossary has been published in the Journal of Epidemiology & Community Health.

<http://jech.bmj.com/content/58/7/538.full>

- **Glossary of terms**

McMaster University's resource, Health Evidence, has produced this glossary of public health research terms.

<http://www.healthevidence.org/glossary.aspx>

Introduction to evidence-based public health

- **National Collaborating Centre for Methods and Tools (NCCMT)**

The National Collaborating Centre for Methods and Tools (NCCMT) provides access to innovative, high quality, up-to-date methods and tools for sharing what works in public health.

<http://www.nccmt.ca/>

- **A model for evidence-informed decision making in public health**

This factsheet has been produced by the National Collaborating Centre for Methods and Tools, and recognises that important evidence can come from a variety of sources.

http://www.nccmt.ca/pubs/FactSheet_EIDM_EN_WEB.pdf

- **Principles of evidence based medicine**

This paper published in the Archives of Disease in Childhood, explains introduces the five step EBM model, including question formulation, searching for evidence, and critical appraisal.

<http://adc.bmj.com/content/90/8/837.full.pdf+html>

- **Evidence-based practice for public health**

This website, developed by the University of Massachusetts Medical School Library, provides free online access to evidence-based public health (EBPH) resources.

<http://library.umassmed.edu/ebpph/>

- **Public health practice and the best available evidence**

This chapter appears in "Evidence-Based Public Health", and gives an overview of evidence-based public health practice and discusses the characteristics of high-quality research to evaluate program effectiveness.

https://uk.sagepub.com/sites/default/files/upm-binaries/45662_1.pdf

- **Evidence-based public health - a fundamental concept for public health practice**

This article reviews the concepts of evidence-based public health (EBPH), looking in particular at making decisions on the basis of the best available scientific evidence, using data and information systems systematically, applying program-planning frameworks, engaging the community in decision making, conducting sound evaluation, and disseminating what is learned.

<http://www.astho.org/Programs/Evidence-Based-Public-Health/Evidence-Based-Public-Health--A-Fundamental-Concept-for-Public-Health-Practice/>

- **Evidence-based methodologies for public health**

This report explores how methods of evidence-based medicine can be applied in public health in the field of infectious diseases, and presents a five-stage framework for rapid risk assessments.

http://ecdc.europa.eu/en/publications/Publications/1109_TER_evidence_based_methods_for_public_health.pdf

Research methods and tools

- **Sage Research Methods**

This is a research methodology database, where you can find and compare different study designs.

<http://phe.baileysolutions.co.uk/default.aspx>

- **Key reporting guidelines for the main types of research studies**

The following checklists are the most commonly used study designs in health-related research, and help to organise your search results and final reporting.

<http://www.equator-network.org/toolkits/teachers/key-reporting-guidelines-for-the-main-types-of-research-studies/>

- **Levels and sources of public health evidence**

McMaster University's resource, Health Evidence, has produced this guide to the levels of evidence for public health.

http://www.healthevidence.org/documents/practice-tools/HETools_Levels&SourcesPublicHealthEvidence_18.Mar.2013.doc

- **University of Texas research support material**

This is a collection of resources for systematic reviews and evidence-based public health practice.

<https://sph.uth.edu/current-students/library/resources-for-systematic-reviews-evidence-based-public-health-practice/>

Searching for public health evidence

- **Evidence-based public health: Identifying and using information resources**

These are a set of slides from a webinar delivered by the University of Massachusetts Medical School Library Service.

http://library.umassmed.edu/ebpph/ebph_webinar_apr3_2012.pdf

- **How to search for evidence of intervention effectiveness and cost-effectiveness**

This tool from the Australian State Government of Victoria, is relevant to searching for evidence of intervention effectiveness.

<https://www2.health.vic.gov.au/Api/downloadmedia/%7BA38CC291-589F-4313-9B98-6DB6A4815A7D%7D>

- **Evidence-based public health - finding and appraising relevant resources**

These are a set of slides from a presentation delivered by the University of Massachusetts Medical School Library Service.

<http://library.umassmed.edu/ebpph/characteristics.ppt>

Sources of information: open access

- **NICE Evidence Search**

Evidence search provides access to selected and authoritative evidence on health, drugs and technologies, public health, social care, and healthcare management and commissioning in one place.

<http://www.evidence.nhs.uk/>

- **TRIP Database**

The TRIP Database searches a range of health information sources to inform clinical and non-clinical decision-making. There is a useful PICO option so that you can just put in the relevant search terms, and the results are delivered with the highest level of evidence first.

<https://www.tripdatabase.com/>

- **Campbell Collaboration**

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

<http://www.campbellcollaboration.org/lib/>

- **Cochrane Library**

The Cochrane Library is a collection of six databases that contain different types of high-quality, independent evidence to inform healthcare decision-making.

<http://www.thecochranelibrary.com/view/0/index.html>

- **Cochrane Library Effective Practice and Organisation of Care Group**

This database produces systematic reviews of educational, behavioural, financial, regulatory and organisation interventions designed to improve health professional practice and the organisation of health care services. Most healthcare organisations subscribe to the Cochrane Collaboration.

<http://epoc.cochrane.org/>

- **EPPI-Centre**

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.

<https://eppi.ioe.ac.uk/cms/Default.aspx?tabid=185>

- **PROSPERO (International prospective register of systematic reviews)**

This is a register of protocols for systematic reviews. If you are carrying out a piece of research, it is worth checking this site to see if another researcher is already carrying out the research. Furthermore, if you are carrying out a systematic review, then you need to write a protocol and upload it to PROSPERO.

<http://www.crd.york.ac.uk/PROSPERO/>

- **PubMed**
 Medline and PubMed have the same content, just different interfaces, and are made up of more than 22 million citations from biomedical literature, journals, and online books.
<http://www.pubmed.gov>
- **Social Care Online**
 Nowadays, with health and social care integrated, it is important to include social care evidence where appropriate. This database is the UK's largest database of information and research on all aspects of social care and social work. <http://www.scie-socialcareonline.org.uk/>
- **Global Health Library**
 This resource contains medical and health documentation from countries, less-developed, outside the major industrialized areas.
<http://www.globalhealthlibrary.net/php/index.php>
- **LILACS**
 This database is a comprehensive index of scientific and technical literature about Latin America and the Caribbean.
<http://lilacs.bvsalud.org/en/>
- **PDQ-Evidence for Informed Health Policymaking**
 PDQ ("pretty darn quick") Evidence includes systematic reviews, overviews of reviews, evidence-based policy briefs, primary studies and structured summaries of evidence for decisions about health systems.
<http://www.pdq-evidence.org/>
- **Health Evidence**
 This database has been developed by McMaster University in Canada, and provides access to 4,774 quality-rated systematic reviews evaluating the effectiveness of public health interventions.
<http://www.healthevidence.org/>
- **Health Evidence Network**
 HEN has been developed by the World Health Organization (Regional Office for Europe), and provides access to information and evidence in the field of public health, gathered from a range of sources, and available via a single platform.
<http://data.euro.who.int/HEN/Search/HenSearch.aspx>
- **McMaster University Health Systems Evidence**
 This database provides rapid access to evidence on how to strengthen or reform health systems or in how to get cost-effective programs, services and drugs to those who need them.
<http://www.healthsystemsevidence.org>
- **European Portal for Action on Health Inequalities**
 This resource contains information and an online training module, about health inequalities.
<http://www.health-inequalities.eu/>

Sources of information: grey literature & networks

- **CHAIN—Contact, Help, Advice and Information Network**
CHAIN is an online support group for people working in health and social care. It also has several sub-groups for quality improvement, patient and public involvement, safer patients, and service improvement.
<http://chain.ulcc.ac.uk/>
- **Knowledge4Commissioning**
NHS library and knowledge services offer a unique service to commissioners that complements and builds on the work of other commissioning support services.
<http://www.knowledge4commissioning.nhs.uk>
- **National Elf Service**
Evidence-based information source for health and social care professionals working in a range of areas, including commissioning and provision of care services.
<http://www.nationalelfservice.net/>
- **NICE Local practice case studies**
This is a collection of over 500 working examples of quality improvement in health and social care services.
<https://www.nice.org.uk/localPractice/collection>
- **OpenGrey**
This database contains grey literature, such as reports and dissertations.
<http://www.opengrey.eu>
- **RightCare Casebooks – Commissioning for Value**
These case studies cover different interventions from a variety of clinical commissioning groups.
<http://www.rightcare.nhs.uk/index.php/resourcecentre/commissioning-for-value-best-practice-casebooks/>

Sources of information: subscription databases

PHE staff, who are studying part-time, can access additional, subscription databases from their educational establishment and/or NHS core content

(<http://www.libraryservices.nhs.uk/forlibrarystaff/information/eresources.html>). Useful databases for public health include:

- **ASSIA**
This is the Applied Social Sciences Index and Abstracts database, and it covers health, social services, psychology, sociology, economics, politics, race relations, and education.
- **CINAHL**
CINAHL covers a wide range of topics including nursing, biomedicine, health sciences librarianship, alternative/complementary medicine, consumer health and 17 allied health disciplines.

- **Embase**
This is the European version of Medline, containing abstracts of articles on medical and pharmacological research.
- **Global Health**
This database covers all aspects of public health at both international and community levels, as well as a wealth of material from other biomedical and life science fields.
- **Health Business Elite**
This is a resource which provides comprehensive journal content detailing all aspects of health care administration and other non-clinical aspects of health care management.
- **HMIC**
This database brings together the bibliographic database of two UK health and social care management organizations: the Department of Health's Library and Information Services (DH-Data) and King's Fund Information and Library Service.
- **Medline**
Medline and PubMed have the same content, just different interfaces, and are made up of more than 22 million citations from biomedical literature, journals, and online books.
- **PsycInfo**
This resource contains abstracts of articles and book chapters on behavioural sciences and mental health, and psychological aspects of related disciplines, such as management and learning.
- **Social Policy & Practice**
This resource brings together information from five of the UK's leading collections of social policy and practice resources.

Relevant open access journals

- **PLOS ONE**
<http://journals.plos.org/plosone/>
- **Implementation Science**
<http://implementationscience.biomedcentral.com/>
- **BMC Public Health**
<http://bmcpublichealth.biomedcentral.com/>
- **Journal of Public Health Research**
<http://www.jphres.org/>
- **Journal of Environmental and Public Health**
<http://www.hindawi.com/journals/jeph/>
- **Frontiers in Public Health**
<http://journal.frontiersin.org/journal/public-health>
- **The Open Public Health Journal**
<http://benthamopen.com/tophj/home>
- **International Journal for Equity in Health**
<http://equityhealthj.biomedcentral.com/>

- **JMIR Public Health and Surveillance**
<http://publichealth.jmir.org/>
- **BMJ Open**
<http://bmjopen.bmj.com/>

Reference management software

Reference management tools enable you to create a library of references downloaded via your literature searches. The references can then be formatted into your reference style of choice and inserted into your documents, creating a bibliography at the end. Mendeley and Zotero are freely available, while EndNote must be purchased:

- **Mendeley**
<https://www.mendeley.com/>
- **Zotero**
<https://www.zotero.org/>
- **EndNote**
<http://www.endnote.com/>

Critical appraisal of public health evidence

- **Informed Health Choices project**
This has been developed to help consumers understand the issues with information about treatment effects, so that they can make better choices.
<http://www.informedhealthchoices.org>
- **Critical thinking and Appraisal Resource Library (CARL)**
This resource 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.
<http://www.testingtreatments.com>
- **A compendium of critical appraisal tools for public health practice**
The National Collaborating Centre for Methods and Tools has collated this compendium and introduction to evidence-informed public health.
http://www.nccmt.ca/pubs/2008_07_IntroEIPH_compendiumENG.pdf
- **Critical appraisal checklist: Public Health Ontario MetaQATA**
This is a tool, developed by Public Health Ontario, to appraise all types of public health evidence.
<http://www.nccmt.ca/resources/search/243>
- **Understanding health research: A tool for making sense of health studies**
This tool, produced by the University of Glasgow, guides users through a series of questions, and provides a conclusion about the research.
<http://www.understandinghealthresearch.org/notice/1/>

Systematic review manuals

- **Cochrane Handbook for Systematic Reviews of Interventions**

This is the official guide that describes in detail the process of preparing and maintaining Cochrane systematic reviews on the effects of healthcare interventions.

<http://training.cochrane.org/handbook>
- **EPPI-Centre Methods for conducting systematic reviews**

The EPPI-Centre is part of the Social Sciences Research Unit at the University of London's Institute of Education and has produced this guide to help people conduct systematic reviews.

<https://eppi.ioe.ac.uk/cms/LinkClick.aspx?fileticket=hQBu8y4uVwI%3D&tabid=88>
- **Joanna Briggs Institute reviewers' manual**

The JBI Reviewers' Manual describes in detail the process of planning, undertaking and writing up a Joanna Briggs Institute (JBI) systematic review of qualitative, quantitative, economic, text and opinion based evidence.

<http://joannabriggs.org/assets/docs/sumari/ReviewersManual-2014.pdf>
- **Research and evidence-based practice manual**

This manual has been produced by the University of Colorado Hospital to help people learn about evidence-based practice and the research process.

<https://www.uchealth.org/professionals/Documents/file-pdf/PROF-EBP-2014-Practice-Outcomes-Manual.pdf>
- **Guidelines for writing systematic reviews**

Macquarie University Library has developed this guidance for writing systematic reviews.

<http://www.library.mq.edu.au/libguides/Guidelines%20for%20writing%20systematic%20reviews.pdf>
- **How to write a systematic review: A step-by-step guide**

The University of Pennsylvania has published this article on writing systematic reviews.

http://upoj.org/wp-content/uploads/v23/C_GENERAL_Yannascoli.pdf
- **Five steps to conducting a systematic review**

The Royal Society of Medicine has published this article on writing systematic reviews.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC539417/>
- **Guidelines for evidence summaries for health promotion and disease prevention interventions**

This guidance has been published by the Australian State Government of Victoria, and includes a template for writing evidence summaries.

<https://www2.health.vic.gov.au/Api/downloadmedia/%7B3CD3938A-B468-4D94-8D5B-347DDF6C59E7%7D>
- **Grading evidence and recommendations for public health interventions: developing and piloting a framework**

This provisional framework provides a practical and transparent method for deriving grades of recommendation for public health interventions, based on a synthesis of all relevant supporting evidence from research.

https://orca-mwe.cf.ac.uk/69810/1/grading_evidence.pdf

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	<i>(optional)</i>	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
 - thesaurus terms that have not been included
 - 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.

PHE Knowledge and Library Services

We have physical libraries at Chilton, Colindale and Porton, and we have staff in each PHE region, providing outreach services to all staff, wherever they are located. If you need further assistance with your studying, please either contact your university library or PHE Knowledge and Library Services libraries@phe.gov.uk. PHE KLS staff cannot carry out literature searches for educational purposes, but we can advise on search strategies and provide training in searching the databases. Furthermore, resources to support studying are available on the PHE Knowledge Management Platform (<http://phe.baileysolutions.co.uk/default.aspx>).