A Guide to Reviewing Evidence for use in Health Impact Assessment

The need for this resource

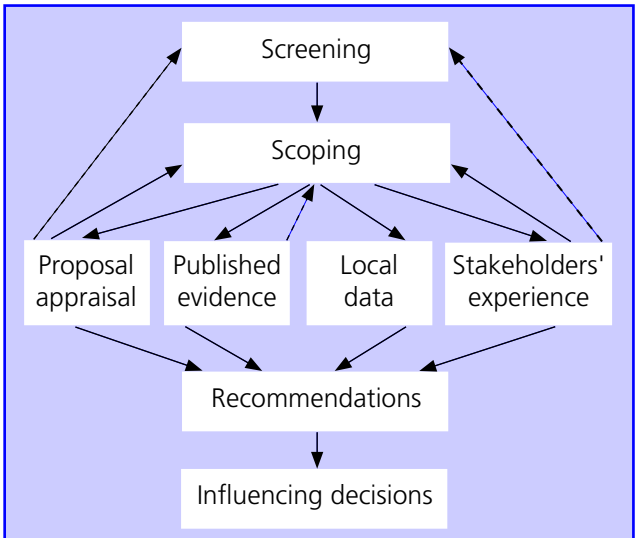
Evidence in health impact assessment (HIA) includes:

- *published evidence* from elsewhere (eg peer-reviewed journal articles and 'grey' literature)
- *local data* (eg community profiles, census data)
- *stakeholder experience* (write-ups from stakeholder workshops, surveys etc).

This resource is limited to reviewing *published evidence*, both scientific (research) literature in peer-reviewed journals and grey literature, mostly internal documents from a range of disparate organisations, including other HIAs.

Reviewing evidence for use in HIA presents a number of methodological challenges, as follows.

- A focus on complex and/or multiple interventions or policy proposals, and their diverse effects on determinants of health.
- Diversity of the evidence – relevant disciplines, study designs, quality criteria and sources of information. Because of the wide range of interventions and approaches that may contribute to improving health and the broad range of health impacts, there is a need to search, obtain and appraise a broad literature.
- Need for, but paucity of, evidence on the reversibility of adverse factors damaging to health (most evidence is of associations between factors and adverse effects, not studies of reversing these).
- Need to seek evidence about potential impacts on inequalities as well as on overall effects.
- Broad range of stakeholders involved.
- Need to apply HIA within the realities of policy-making, planning and decision-making processes, which can often mean short time scales and limited resources.
- Pragmatic need to inform decision-makers, regardless of the quality of the evidence.



Use of evidence in an HIA framework

These factors have implications for commissioning and conducting literature reviews to ensure ethical use of evidence. For more detail see Mindell *et al.* (2004)*.

How to use this resource

This guide provides a step-by-step framework to assist practitioners in reviewing literature for use in an HIA. A literature review is an essential component of the evidence used in the appraisal stage. As there may be limited time and resources available, this guide presents both essential components that must be included, even in a brief literature review, and additional elements than can be included when resources

Mindell J, Boaz A, Joffe M, Curtis S, Birley M. Enhancing the evidence base for health impact assessment. *Journal of Epidemiology and Community Health* 2004; 58(7): 546-551. http://jech.bmjjournals.com/cgi/reprint/58/7/546.pdf

(including time and skills) permit, for more comprehensive literature reviews.

When using this resource, please consider what type of review you are undertaking. If you are yourself making (or commissioning) a **new review** of original research papers, this resource should help you ensure your review is rigorous. When commissioning a review, consider what is practical within the available resources (time and people/money) as well as what standards are wanted.

This resource may also be used to help appraise the quality of an **existing review**, whether based on original studies or drawing on one or more reviews by other authors. In this case each review will provide 'second-hand' reports of several original studies. This resource aims to help you judge the quality of the review process that other authors have applied.

Types of literature review

A number of terms are used to describe approaches to conducting literature reviews. More information on types of literature review and different approaches to conducting them can be found at: www.lho.org.uk/hia/ReviewingEvidenceHIA.htm

Here we use two terms: **brief** and **more comprehensive**. While it is acknowledged that a comprehensive, systematic review of all relevant literature will provide the best evidence, such reviews generally take many person-months (or years) to complete and require resources not generally available to those conducting HIA. In practice, brief reviews are generally conducted, taking a few days or weeks. These have been of variable quality. Critical appraisal of such reviews is hampered when the methods used are not explicitly stated.

This resource indicates the minimum criteria that are essential in any literature review, however brief or however limited the resources, and also suggests additional elements to be included when circumstances permit, to add to the robustness of a review's conclusions.

Nine steps to reviewing the evidence

The following tables provide details on the nine steps reviewers should follow. Less-experienced reviewers will find it helpful to work through the steps in the order presented, to ensure the review process proceeds in rational stages. More experienced reviewers will be familiar with the steps involved in carrying out a review, and may want to focus on certain areas to confirm particular aspects of good practice.

Reviewing evidence is an iterative process. The question/s to be answered need to be formulated at the beginning (**step A**), but the availability and content of primary studies and/or reviews (**steps B, E and F**) often refine the question/s remaining to be answered. For example, to answer the question *'What are the potential impacts of congestion charging on health and inequalities?'*, an absence of specific evidence on congestion charging might generate less specific questions on the impacts of congestion, traffic reduction, access, or job losses. Although framing the question is the first step, it will often need to be revised.

Those conducting a literature review should be familiar with the basic concepts of critical appraisal (assessing the quality and relevance of evidence) and research methods. Some organisations offer critical appraisal training in the UK (see below).

Training organisations

- Critical Appraisal Skills Programme, Oxford www.phru.nhs.uk/casp/casp.htm
- Centre for Reviews and Dissemination – Systematic reviews and critical appraisal www.york.ac.uk/inst/crd/crdtraining.htm#sr
- National Training and Research Appraisal Group – Critical appraisal of qualitative research www.ntrag.co.uk

Weblinks

For a catalogue of evidence-based medicine/healthcare websites: www.herts.ac.uk/lis/subjects/health/ebm.htm#ebmint

Step A: Framing the question/s	
Essential steps in a brief literature review	**Tips and resources**
1. The question/s asked by the literature review should be clear and focused, relating to the topic of the HIA	Examine the proposal on which the HIA is being conducted to inform the formulation of the question/s. It is likely that a number of different primary study designs and/or existing reviews may be included to answer the questions relevant to an HIA One approach to broader questions is to use a series of linked, more focused reviews For a list of websites offering advice on focusing the question (but with a very clinical focus): www.shef.ac.uk/scharr/ir/focusing.html
2. The question/s asked by the literature review should be relevant to the local context of the HIA	Decisions made at the scoping stage of an HIA should help to frame the question/s. It is useful for stakeholders to decide at the start of an HIA what level and type of evidence is required Consulting stakeholders on the scope of the question/s can help to build their ownership of the literature review, and also to check the relevance of the question/s
3. The population groups and demographic factors relevant to the HIA should be stipulated, including vulnerable groups and others with different exposure or susceptibility (see Step F)	It may be helpful to focus on the detail of the proposal for which the HIA is being undertaken
4. The following issues are important as they may provide information for mitigation or alternative scenarios: • evidence of effectiveness of interventions or mitigation strategies (if identified as part of scoping) • evidence of reversibility • effect on inequalities • economic appraisal	There may be little or no information available, but it should be sought rather than assumed – e.g. it should not be assumed that if exposure to an adverse determinant of health (such as unemployment) causes poorer mental health, then providing job opportunities will reverse that. The lack of information on economic appraisal (e.g. evidence of cost-effectiveness) is mentioned in the 2004 Wanless report: www.hm-treasury.gov.uk/consultations_and_legislation/wanless/consult_wanless04_final.cfm

Step B: Determining whether a literature review is required, and its scope		
Essential steps in a brief literature review	**Additional elements for a more comprehensive literature review**	**Tips and resources**
1. Check if there are existing relevant, systematic literature review/s in relevant areas Check key databases and websites Ask colleagues and professional networks and topic experts	Search of literature reviews published in peer-reviewed literature (e.g. through electronic databases of journals such as PubMed, PsychLit, etc.), using 'systematic review' or 'meta-analysis', for example, as one of the search terms	Readily available systematic literature reviews can be found by searching: • The Cochrane Collaboration: www.cochrane.org/index0.htm • The Campbell Collaboration: www.campbellcollaboration.org/Fralibrary2.html • EPPI-Centre (Evidence for Policy and Practice Information) and its Database of Promoting Health Effectiveness Reviews, DoPHER: these are not EPPI-Centre reviews, but ones that they have searched for and keyworded according to topic and quality markers: http://eppi.ioe.ac.uk/EPPIWeb/home.aspx?&page=/hp/reviews.htm http://eppi.ioe.ac.uk/EPPIWeb/home.aspx?&page=/hp/databases.htm • National Institute for Health and Clinical Excellence (NICE) Public Health: www.publichealth.nice.org.uk • Centre for Reviews and Dissemination (CRD), University of York: Database of Abstracts of Reviews of Effects (DARE): www.york.ac.uk/inst/crd/darehp.htm • CRD's Health Technology Assessment Database: www.york.ac.uk/inst/crd/htahp.htm • *Health Evidence Bulletins – Wales*: http://hebw.uwcm.ac.uk • Turning Research into Practice (TRIP) Database of evidence-based articles: www.tripdatabase.com • Community Guide (Guide to Community Preventive Services): www.thecommunityguide.org Reviews found on the above websites are already quality-assured • Economic and Social Research Council (ESRC) UK Centre for Evidence Based Policy and Practice, Queen Mary, University of London: www.evidencenetwork.org • World Health Organization (WHO) Health Evidence Network: www.euro.who.int/HEN (also provides links to many other online databases: www.euro.who.int/HEN/20030602_2) • HIA Gateway: www.publichealth.nice.org.uk/hiagateway • London Health Commission: www.londonshealth.gov.uk/allpubs.htm#hia
	The quality of existing literature reviews should be critically appraised	CRD has produced a list of criteria for DARE reviews. These have been used as the basis of an appraisal tool developed by *Health Evidence Bulletins – Wales:* http://hebw.uwcm.ac.uk/projectmethod/appendix5.htm Another methodology for assessing quality can be found at: www.fhi.se/shop/material_pdf/r200410Knowledgebased2.pdf
2. For areas of relevance not covered by existing good quality literature reviews, proceed via steps C–I below	Primary studies published since the first literature search should be sought, reviewed, and their findings integrated with those of the earlier review. Discrepancies should be discussed and explained where possible.	

Step C: Purpose, organisation and structure		
Essential steps in a brief literature review	**Additional elements for a more comprehensive literature review**	**Tips and resources**
1. The organisation producing the review, and the purpose of the review, should be stated clearly		
2. It should be clear who is conducting the literature review (name and position)	If several staff are involved, it should be clear who is responsible for which role	
3. The review should be structured to include: • the review question • details of the literature search conducted (Step E) • findings (Steps F and G) • references for all articles and reports included • conclusions (Step H) • date of completion of literature review	The review could also include: • who contributed to formulating the review question/s? • a summary of each study included • critical appraisal of each article or report included • discussion of the author's biases and values	
4. The review should be read by at least one person not involved in conducting it	The review should be subject to external peer review before dissemination, and details of the peer-review process should be noted	
	For confidence in the unbiased nature of the review, the work should be steered by peers or a suitable advisory panel, including stakeholders	The CRD systematic review of Public Water Fluoridation had an expert Advisory Board: www.york.ac.uk/inst/crd/pdf/fluorid.pdf NHS Service Delivery and Organisation (SDO) reviews tend to involve advisory groups eg *Nurse innovations for patients in the community with COPD: an extended systematic review*: www.ichs.qmul.ac.uk/research/gppc/publichealth
	If it is envisaged that the literature review will be used beyond this HIA, a date for updating should be planned	

Step D: Setting inclusion and exclusion criteria		
Essential steps in a brief literature review	**Additional elements for a more comprehensive literature review**	**Tips and resources**
1. There needs to be a clear statement of the type(s) of study sought to answer the review question(s). More than one study design may be included in the review	The inclusion criteria for a more comprehensive literature review would tend to encompass all relevant published and unpublished studies capable of answering the review question, from any country (where this is consistent with the review's purpose)	The choice of studies to include/exclude is not an inherent feature of the systematic review method, but a decision made by the reviewers. It is guided by the review question, by theoretical considerations, and by the needs of anticipated users of the review. Guidance on setting appropriate inclusion and exclusion criteria can be found in: • Cochrane Collaboration reviewer's handbook (chapters 3 and 4): www.cochrane.dk/cochrane/handbook/hbook.htm • *CRD Report 4: Undertaking Systematic Reviews of Research on Effectiveness* (see www.york.ac.uk/inst/crd/report4.htm and in particular Stage II, Phase 4 for guidance on this topic)
2. Restricted inclusion criteria: The inclusion/exclusion criteria for brief literature reviews may be restricted in many ways – see 'tips' for examples	The inclusion/exclusion criteria should describe clearly which study designs, populations, interventions and outcomes are included and excluded in the review	The inclusion/exclusion criteria for brief literature reviews may be restricted in many ways – e.g. a brief review may be limited to systematic reviews alone; to particular study designs; to studies from particular countries or particular languages (such as English); and/or studies carried out within a restricted time frame (e.g. past 10 years) Inclusion/exclusion criteria sometimes exclude unpublished and other grey literature for reasons of cost and difficulty of access The inclusion/exclusion criteria for a review are also determined by the outcomes of interest, e.g. systematic reviews investigating the adverse effects of interventions may include observational study designs (such as case-control studies and cohort studies). Such studies may also be included in reviews that explore causal relationships (e.g. reviews of aetiology) Systematic reviews that include qualitative research are also possible, and these may help answer questions about meanings and experiences, and about the implementation of interventions (among other things)
3. It is common practice to include a statement outlining which countries/ languages are eligible for inclusion (or exclusion). This gives readers an idea of the degree of comprehensiveness of the review		
4. A statement is needed outlining the study designs, interventions and populations that are eligible for inclusion	The inclusion/exclusion criteria should be described in detail in the final report or journal article	

Step E: Literature search		
Essential steps in a brief literature review	**Additional elements for a more comprehensive literature review**	**Tips and resources**
The literature review should be explicit about the search strategies used. Specific issues that need to be recorded include:	Involve a librarian or information specialist on search terms, search strategies and databases	www.evidencenetwork.org
1. Range of years (publication dates) included		
2. Literature database/s searched		www.evidencenetwork.org/resources.asp
3. Details of search terms used		You may wish to keep your search terms broad to identify the full range of relevant information, but this may mean being overwhelmed with the number of hits. When short of time, aim for specificity rather than sensitivity (a high ratio of relevant to irrelevant hits)
4. Languages of articles included		
5. List of experts contacted (if any)		
6. Whether grey literature was included, and how it was identified		Specify search criteria and sources used, e.g. Internet, contact with organisations, date/s of search
	Search cited references from articles identified	
	Hand-search contents of potentially relevant journals	
7. Number of articles or reports identified by the search that contribute to the literature review	A tally should be kept of: • total number of items identified before inclusion and exclusion criteria are applied • number that meet inclusion criteria • number excluded (with reasons) Ideally, two independent assessors should apply the inclusion and exclusion criteria	It is important to ensure removal of duplicate records of identical papers found in different databases. Where a series of articles present different results from the same study population, it is valid to include these, but where similar results are reported more than once (e.g. five-year and 10-year follow-up; or an identical study reported in different papers), ensure there is no double-counting when considering the weight of evidence
8. Comments on any constraints, e.g. if the literature review was limited by time, access to databases, or inability to obtain copies of papers		

Step F: Critical appraisal		
Essential steps in a brief literature review	**Additional elements for a more comprehensive literature review**	**Tips and resources**
1. Any weaknesses in a study that may affect your confidence in its conclusion (which may affect the quality of the literature review) should be explicitly noted, e.g. lack of impartiality of sources; suitability and rigour of research methods (including sufficient sample size); how far conclusions are supported by results	Apply appropriate quality criteria according to the study design of each article or literature review identified for inclusion in the review (if such a tool exists)	It may be more efficient in a time-limited review to use relevant critical appraisal tools, or to specify a few 'fatal flaws' to look out for, e.g. when appraising an existing review, if the search strategy is so inadequate (or not specified at all) that the review findings are meaningless, you may exclude it without further appraisal For examples of quality appraisal tools: www.lho.org.uk/HIA/ReviewingEvidenceHIA/Attachments/Word_Files/HIAQualityCriteria.doc www.nhmrc.gov.au/publications/synopses/cp65syn.htm www.fhi.se/templates/Page_1305.aspx
2. It should be stated explicitly if any articles or reports have been excluded on the grounds of quality	Report on any method used to grade the quality of each paper (e.g. strong–weak; 1–5; good enough/not good enough)	If the literature is sparse, there may be a need to include lower-quality studies or articles but their deficiencies should be highlighted when discussing the study and its findings and drawing conclusions. However, a lower-quality study may be answering a different question, or be from a real-life setting, so may have better external validity
	Quality should be appraised by two independent assessors, and discrepancies detailed	
	If quality criteria are used to exclude studies, specify how this was done and detail the studies excluded	

Framing the question/s, conducting the literature search and reviewing the literature are all parts of an iterative process, as findings can suggest further questions that then need to be answered, or may clarify earlier questions. It is therefore helpful to describe how you reached your conclusions, to clarify the process followed.

Step G: Interpretation		
Essential steps in a brief literature review include:	**Additional elements for a more comprehensive literature review include:**	**Tips and resources**
	Details of method/s used for extracting data from individual articles and reports	
1. Details of any process or methods used to combine and synthesise the findings of the studies identified (either quantitative or narrative methods)	Methods of synthesising study findings (e.g. thematic analysis, content analysis around themes or questions, or meta-analysis if appropriate). Are the techniques applied appropriate? (e.g. statistics) Is there heterogeneity between studies?	See HDA paper on integrating qualitative and quantitative research: www.hda-online.org.uk/documents/integrative_approaches.pdf ESRC project on narrative synthesis: www.ccsr.ac.uk/methods/projects/posters/popay.shtml
2. Discussion of gaps in the evidence found by the literature search		
3. Factors affecting the quality of the literature review (e.g. bias, confounding of articles, search; Step E)	Is there any suggestion of publication bias?	The smaller or shorter a study, the lower its power to detect a real difference. If most small studies show large positive effects, this may be due to selective publication of positive studies. This can be assessed formally.
4. If applicable, specific consideration of the evidence for effectiveness of interventions or mitigation measures		
5. If available, specific consideration of the evidence for effect on inequalities		
6. If available, specific consideration of the evidence from economic appraisals		
7. A summary of all studies included in the review – must contain full references for the studies	Ideally, a summary of all studies should also contain: • study design, location and context • methods used to collect information (e.g. survey design) • methods used to analyse information • results and conclusions drawn	

Step G: Interpretation *continued*		
Essential steps in a brief literature review	**Additional elements for a more comprehensive literature review**	**Tips and resources**
8. The review should discuss the comparability of the studies reviewed with the specific context of the HIA	If the literature review is carried out not for a specific HIA, the generalisability of specific studies and overall findings should be discussed	For a generic review of a subject, it is important to consider the transferability of the findings of specific studies to other situations (often referred to as generalisability). A review undertaken for a specific HIA needs to consider only whether the circumstances (and therefore the findings) of specific studies are transferable to the particular situation of that HIA (relevance and transferability to the population groups and topic areas of interest in the HIA).
9. Consider whether the literature being reviewed has addressed issues of cause and effect	Consider whether the literature being reviewed has addressed issues of cause and effect: • chance • bias • confounding • criteria for assessing causality	• Hill, AB. (1965) The environment and disease: association or causation? *Proc. Roy. Soc. Med.* 58: 295–300. • Assessing causality: www.lho.org.uk/hia/ReviewingEvidenceHIA.htm
10. Ideally, if the information is available, the literature review should report any exposure-effect / dose-response relationship.	More detailed information on the shape of any causal relationship, and the existence and threshold level for any effect should be stated. The magnitude of any effect should be estimated.	For most environmental exposures or determinants of health, the effects on health increase as the exposure increases (e.g. particulate air pollution, income and education each have a graded effect on health) www.environment-agency.gov.uk
11. If there is conflicting evidence identified in the review, the principles used to draw conclusions should be stated explicitly, e.g. the weight given to the evidence could be determined using quality criteria (Step F)		Some people have a hierarchical view of evidence, but this is less relevant to most evidence reviews for HIA than is the suitability of the research design for answering the research question. See Petticrew M, Roberts H (2003) Evidence hierarchies and typologies: horses for courses. *Journal of Epidemiology and Community Health* **57**: 527–529. http://jech.bmjjournals.com/cgi/reprint/57/7/527

Step H: Conclusions
All reviews require the following:
1. The literature review should provide clear conclusions concerning the studies reviewed. These will not necessarily provide clear recommendations specifically about the options for an HIA, unless this was part of the review question
2. Conclusions should be: • based on the results presented • justified by the evidence – any limitations of the evidence should be described clearly, including gaps and bias. Conclusions should state if the evidence is of poor quality, conflicting or not comparable
3. Relevance to the topic and to the population groups of the HIA should be mentioned
4. If included, specific conclusions should be drawn regarding: • implications for interventions and mitigation measures • reversibility • effect on inequalities • economic appraisal

Step I: Reporting		
Essential steps in a brief literature review	**Additional elements for a more comprehensive literature review**	**Tips and resources**
1. The report should contain all the information listed as essential in the steps described above: B1–2, C1–3, D1–4, E1–8, F1–2, G1–11, H1–4	Ideally, those reviewing the literature should produce a detailed report, giving as much information as is available	CRD's *Effective Health Care* bulletins are a good example of how to present detailed information simply for a review: www.york.ac.uk/inst/crd/ehcb.htm
2. A short 'lay summary' should also be prepared for distribution to local stakeholders, including community members. It should: • be easy to read, but rigorous in content • use lay language • make it clear that there is a detailed report, and how to obtain this	There may be a range of summaries for local practitioners, community members and other stakeholders	The format of the *Guide to Community Preventive Services (Community Guide)* illustrates one way of summarising the conclusions for local stakeholders: www.thecommunityguide.org The Canadian Health Services Research Foundation has developed a two-page guide to presenting and communicating research findings for policy-makers and practitioners: www.chsrf.ca/knowledge_transfer/pdf/cn-1325_e.pdf – the 1:3:25 method, referring to the need to publish: **1 page** (maximum) Summary of main message bullets **3 page** (maximum) Executive Summary **25 page** (maximum) full Report of the research
	Where possible, both lay summary and detailed report should be available both as hard copy and via the Internet	

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London Health Observatory

The London Health Observatory (LHO) was set up in 2001 following the government White Paper *Saving Lives – Our Healthier Nation* (1999; www.ohn.gov.uk). The LHO brings together the information and know-how needed to analyse and research health in the capital. It also has a role in helping all those working to improve the health of Londoners to make better use of health and health-related information. The LHO is part of a national network of public health observatories, and has a lead role on health inequalities, social exclusion, regeneration and tobacco. www.lho.org.uk

Further printed copies of this resource can be obtained from: London Health Observatory, 11–13 Cavendish Square, London W1G 0AN Tel: 020 7307 2826, Email: enquiries@lho.org.uk

This resource is also available on the Internet:

- as a web tool to use online: www.lho.org.uk
- as a pdf to download: www.lho.org.uk
  www.biomedcentral.com/bmcpublichealth
  www.publichealth.nice.org.uk

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