

# An Introduction to Evidence-Informed Public Health and A Compendium of Critical Appraisal Tools for Public Health Practice

Donna Ciliska • Helen Thomas • Cathy Buffett

**February, 2008**

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National Collaborating Centre  
for Methods and Tools

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des méthodes et outils

# An Introduction to Evidence-Informed Public Health and A Compendium of Critical Appraisal Tools for Public Health Practice

Prepared for the National Collaborating Centre for Methods and Tools by

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Acknowledgements: L. Buffett, K. Barnett

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## Appendix 1 - Compendium of Critical Appraisal Tools

### Purpose

To provide some tools for conducting critical appraisal (step 3 below).

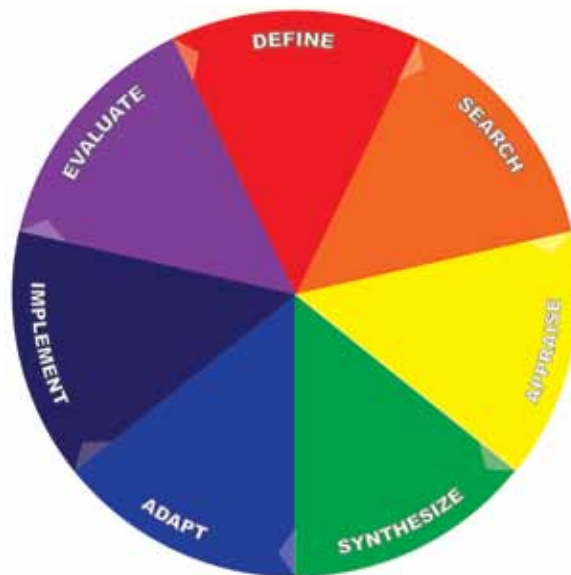
### Audience

Public health decision makers in practice or policy.

### Introduction to Evidence-Informed Public Health

The evidence-informed decision-making process includes the following steps:

#### Stages in Evidence-Informed Public Health



<b>Stage in EIPH</b>	<b>Description</b>
DEFINE	Clearly define the question or problem.
SEARCH	Efficiently search for research evidence
APPRAISE	Critically and efficiently appraise the research sources
SYNTHESIZE	Interpret/ form recommendations for practice based on the literature found
ADAPT	Adapt the information to a local context
IMPLEMENT	Decide whether (and plan how) to implement the adapted evidence into practice or policy
EVALUATE	Evaluate the effectiveness of implementation efforts

## How to use this tool

Consider the type of question you are asking (first column); then consider the type of evidence you have found. That will lead you to what tool to use.

This is not an exhaustive list of critical appraisal tools; merely a listing of tools that are commonly used.

The status **Recommended** indicates that the tool 1) was judged as relevant for most studies in public health, and 2) includes an explanation of criteria within the tool, so the use of the criteria are self-explanatory.

<i>Type of Research</i>	<i>Website Link</i>	<i>Type of Study - Link to Tools</i>
<b>Quantitative</b> <ul style="list-style-type: none"> <li>• What is the effectiveness of....?</li> <li>• What is the result of exposure to...? (causation or harm)</li> <li>• Guidelines for...?</li> </ul>	Critical Appraisal Skills Programme (CASP) (UK): <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/what-we-do/public-health-workforce/resources/critical-appraisals-skills-programme/">http://www.sph.nhs.uk/what-we-do/public-health-workforce/resources/critical-appraisals-skills-programme/</a></li> </ul> <p style="text-align: center; color: #800080; font-weight: bold;">Recommended</p>	randomized control trials: <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/sph-files/rct%20appraisal%20tool.pdf">http://www.sph.nhs.uk/sph-files/rct%20appraisal%20tool.pdf</a></li> </ul> cohort studies: <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/sph-files/cohort%2012%20questions.pdf">http://www.sph.nhs.uk/sph-files/cohort%2012%20questions.pdf</a></li> </ul> case control studies: <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/sph-files/Case%20Control%2011%20Questions.pdf">http://www.sph.nhs.uk/sph-files/Case%20Control%2011%20Questions.pdf</a></li> </ul> diagnostic studies: <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/sph-files/Diagnostic%20Tests%2012%20Questions.pdf">http://www.sph.nhs.uk/sph-files/Diagnostic%20Tests%2012%20Questions.pdf</a></li> </ul>

<b>Type of Research</b>	<b>Website Link</b>	<b>Type of Study - Link to Tools</b>
	<p>Scottish Intercollegiate Guidelines Network (SIGN):</p> <ul style="list-style-type: none"> <li>• <a href="http://www.sign.ac.uk/">http://www.sign.ac.uk/</a></li> </ul>	<p>randomized control trials tool and guidelines:</p> <p>checklist:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/checklist2.html">http://sign.ac.uk/guidelines/fulltext/50/checklist2.html</a></li> </ul> <p>notes on use:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/notes2.html">http://sign.ac.uk/guidelines/fulltext/50/notes2.html</a></li> </ul> <p>cohort studies tool and guidelines:</p> <p>checklist:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/checklist3.html">http://sign.ac.uk/guidelines/fulltext/50/checklist3.html</a></li> </ul> <p>notes on use:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/notes3.html">http://sign.ac.uk/guidelines/fulltext/50/notes3.html</a></li> </ul> <p>case-control studies tool and guidelines:</p> <p>checklist:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/checklist4.html">http://sign.ac.uk/guidelines/fulltext/50/checklist4.html</a></li> </ul> <p>notes on use:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/notes4.html">http://sign.ac.uk/guidelines/fulltext/50/notes4.html</a></li> </ul> <p>diagnostic studies tool and guidelines:</p> <p>checklist:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/checklist5.html">http://sign.ac.uk/guidelines/fulltext/50/checklist5.html</a></li> </ul> <p>notes on use:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/notes5.html">http://sign.ac.uk/guidelines/fulltext/50/notes5.html</a></li> </ul>
<p><b>Qualitative</b></p> <ul style="list-style-type: none"> <li>• What is the experience of or meaning of..?</li> </ul>	<p>Critical Appraisal Skills Programme (CASP) (UK):</p> <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/what-we-do/public-health-workforce/resources/critical-appraisals-skills-programme/">http://www.sph.nhs.uk/what-we-do/public-health-workforce/resources/critical-appraisals-skills-programme/</a></li> </ul> <p><b>Recommended</b></p>	<p>qualitative research studies:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/sph-files/Qualitative%20Appraisal%20Tool.pdf">http://www.sph.nhs.uk/sph-files/Qualitative%20Appraisal%20Tool.pdf</a></li> </ul>

<b>Type of Research</b>	<b>Website Link</b>	<b>Type of Study - Link to Tools</b>
	<p>Reading Qualitative Studies</p> <p>Sandelowski M., &amp; Barroso J. (2002), Reading Qualitative Studies. <i>International Journal of Qualitative Methods</i> 2002, 1(1)</p> <p>Article link:</p> <ul style="list-style-type: none"> <li>• <a href="http://ejournals.library.ualberta.ca/index.php/IJQM/article/view/4615/3764">http://ejournals.library.ualberta.ca/index.php/IJQM/article/view/4615/3764</a></li> </ul> <p>Evaluating non-randomised intervention studies</p> <p>Deeks J.J., Dinnes J., D'Amico R., Sowden A.J., Sakarovitch C., Song F., et al. (2003). Evaluating non-randomised intervention studies. <i>Health Technology Assess.</i> 7(27).</p> <p>Article link:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.hta.ac.uk/fullmono/mon727.pdf">http://www.hta.ac.uk/fullmono/mon727.pdf</a></li> </ul>	
<p><b>Systematic Reviews</b></p> <ul style="list-style-type: none"> <li>• What is the effectiveness of...?</li> </ul>	<p>Critical Appraisal Skills Programme (CASP) (UK):</p> <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/what-we-do/public-health-workforce/resources/critical-appraisals-skills-programme/">http://www.sph.nhs.uk/what-we-do/public-health-workforce/resources/critical-appraisals-skills-programme/</a></li> </ul> <p>Recommended for critical appraisal of systematic reviews</p> <p>Scottish Intercollegiate Guidelines Network (SIGN):</p> <ul style="list-style-type: none"> <li>• <a href="http://www.sign.ac.uk/">http://www.sign.ac.uk/</a></li> </ul> <p>Cochrane Handbook for Systematic Reviews of Interventions</p> <ul style="list-style-type: none"> <li>• <a href="http://www.cochrane.org/">http://www.cochrane.org/</a></li> </ul>	<p>systematic reviews:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/sph-files/S.Reviews%20Appraisal%20Tool.pdf">http://www.sph.nhs.uk/sph-files/S.Reviews%20Appraisal%20Tool.pdf</a></li> </ul> <p>Systematic reviews and meta-analysis tools and guidelines:</p> <p>checklist:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/checklist1.html">http://sign.ac.uk/guidelines/fulltext/50/checklist1.html</a></li> </ul> <p>notes on use:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/notes1.html">http://sign.ac.uk/guidelines/fulltext/50/notes1.html</a></li> </ul> <p>Handbook link:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.cochrane-handbook.org/">http://www.cochrane-handbook.org/</a></li> </ul>

<b>Type of Research</b>	<b>Website Link</b>	<b>Type of Study - Link to Tools</b>
	<p>Centre for Reviews and Dissemination (CRD) University of York (UK):</p> <p>Undertaking systematic reviews of research on effectiveness, CRD's guidance for those carrying out or commissioning reviews</p> <p>Systematic reviews, CRD's guidance for undertaking reviews in health care</p> <ul style="list-style-type: none"> <li>• <a href="http://www.york.ac.uk/inst/crd/">http://www.york.ac.uk/inst/crd/</a></li> </ul>	<p>Handbook link</p> <ul style="list-style-type: none"> <li>• <a href="http://www.york.ac.uk/inst/crd/SysRev/SSL/WebHelp/SysRev3.htm">http://www.york.ac.uk/inst/crd/SysRev/SSL/WebHelp/SysRev3.htm</a></li> </ul>
	<p>Evidence for Policy and Practice Information and Coordinating Centre (EPPI-centre) (University of London, UK):</p> <ul style="list-style-type: none"> <li>• <a href="http://eppi.ioe.ac.uk/cms/">http://eppi.ioe.ac.uk/cms/</a></li> </ul>	<p>Methods: Stages of a Systematic review link:</p> <ul style="list-style-type: none"> <li>• <a href="http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=89">http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=89</a></li> </ul> <p>Quality Assessment and Relevance of evidence:</p> <ul style="list-style-type: none"> <li>• <a href="http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=177">http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=177</a></li> </ul>
	<p>PHRED Effective Public Health Practice Project</p> <ul style="list-style-type: none"> <li>• <a href="http://www.phred-redsp.on.ca/">http://www.phred-redsp.on.ca/</a> <a href="http://oldhamilton.ca/phcs/ephpp/Reviews-Portal.asp">http://oldhamilton.ca/phcs/ephpp/Reviews-Portal.asp</a></li> </ul> <p style="text-align: center;"><b>Recommended for conduct of systematic reviews</b></p>	
	<p>Campbell Collaboration C2-SPECTR Database</p> <ul style="list-style-type: none"> <li>• <a href="http://www.campbellcollaboration.org/">www.campbellcollaboration.org/</a></li> </ul>	
<p><b>Health Services Research</b></p> <ul style="list-style-type: none"> <li>• What is the cost-effectiveness?</li> <li>• Cost-benefit?</li> <li>• Cost-utility?</li> </ul>	<p>Critical Appraisal Skills Programme (CASP) (UK):</p> <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/what-we-do/public-health-workforce/resources/critical-appraisals-skills-programme/">http://www.sph.nhs.uk/what-we-do/public-health-workforce/resources/critical-appraisals-skills-programme/</a></li> </ul> <p style="text-align: center;"><b>Recommended</b></p>	<p>Economic evaluation studies:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.sph.nhs.uk/sph-files/Economic%20Evaluations%2010%20Questions.pdf">http://www.sph.nhs.uk/sph-files/Economic%20Evaluations%2010%20Questions.pdf</a></li> </ul>
	<p>National Health Services Economic Database</p>	<p><a href="http://www.crd.york.ac.uk/crdweb/">http://www.crd.york.ac.uk/crdweb/</a></p>

<b>Type of Research</b>	<b>Website Link</b>	<b>Type of Study - Link to Tools</b>
	<p>The Guide to Community Preventive Services.</p> <p>The Task Force on Community Preventive Services (US):</p> <ul style="list-style-type: none"> <li>• <a href="http://www.thecommunityguide.org/library/book/index.html">http://www.thecommunityguide.org/library/book/index.html</a></li> </ul>	<p>Chapter 11 “Understanding and Using the Economic Evidence” (tool):</p> <ul style="list-style-type: none"> <li>• <a href="http://www.thecommunityguide.org/library/economics.pdf">http://www.thecommunityguide.org/library/economics.pdf</a></li> </ul>
<p><b>Clinical Practice Guidelines</b></p> <ul style="list-style-type: none"> <li>• What is the best intervention/management of ....? (considers the best evidence, context and expert opinion)</li> </ul>	<p>Scottish Intercollegiate Guidelines Network (SIGN):</p> <ul style="list-style-type: none"> <li>• <a href="http://www.sign.ac.uk/">http://www.sign.ac.uk/</a></li> </ul>	<p>SIGN 50: A Guideline Developers’ Handbook:</p> <ul style="list-style-type: none"> <li>• <a href="http://sign.ac.uk/guidelines/fulltext/50/index.html">http://sign.ac.uk/guidelines/fulltext/50/index.html</a></li> </ul>
	<p>AGREE II (Appraisal of Guidelines Research and Evaluation) Collaboration</p> <ul style="list-style-type: none"> <li>• <a href="http://www.agreetrust.org/home/">http://www.agreetrust.org/home/</a></li> </ul> <p><b>Recommended</b></p>	<p>Critical appraisal tool for Guidelines – AGREE II Tool</p> <ul style="list-style-type: none"> <li>• <a href="http://www.agreetrust.org/resource-centre/agree-ii/">http://www.agreetrust.org/resource-centre/agree-ii/</a></li> </ul>
	<p>National Institutes for Health and Clinical Excellence</p> <ul style="list-style-type: none"> <li>• <a href="http://www.nice.org.uk/">http://www.nice.org.uk/</a></li> </ul>	
<p><b>Overviews of Critical Appraisal Methods/ Tools/Processes</b></p> <ul style="list-style-type: none"> <li>• What is the level of evidence?</li> </ul>	<p>The NIHR Health Technology Assessment Programme (NHS)</p> <ul style="list-style-type: none"> <li>• <a href="http://www.hta.ac.uk/1117">http://www.hta.ac.uk/1117</a></li> </ul> <p>Article: Evaluating non-randomised intervention studies</p> <p>Deeks J.J., Dinnes J., D’Amico R., Sowden A.J., Sakarovitch C., Song F., et al. (2003). Evaluating non-randomised intervention studies. <i>Health Technology Assess.</i> 7(27).</p> <p>Article link:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.hta.ac.uk/fullmono/mon727.pdf">http://www.hta.ac.uk/fullmono/mon727.pdf</a></li> </ul>	



<b>Type of Research</b>	<b>Website Link</b>	<b>Type of Study - Link to Tools</b>
	BioMed Central Systems article on grading the quality of evidence and the strength of recommendations II: Pilot study of a new system:  Article link: <ul style="list-style-type: none"> <li>• <a href="http://www.biomedcentral.com/content/pdf/1472-6963-5-25.pdf">http://www.biomedcentral.com/content/pdf/1472-6963-5-25.pdf</a></li> </ul>	
	Agency for Healthcare Research and Quality (AHRQ) (US): <ul style="list-style-type: none"> <li>• <a href="http://www.ahrq.gov/">http://www.ahrq.gov/</a></li> </ul>	
	The Guide to Community Preventive Services:  The Task Force on Community Preventive Services (US): <ul style="list-style-type: none"> <li>• <a href="http://www.thecommunityguide.org/library/book/index.html">http://www.thecommunityguide.org/library/book/index.html</a></li> </ul>	Chapter 10 “Methods Used for Reviewing Evidence and Linking Evidence to Recommendations” (tool): <ul style="list-style-type: none"> <li>• <a href="http://www.thecommunityguide.org/methods/methods.pdf">http://www.thecommunityguide.org/methods/methods.pdf</a></li> </ul>
	The Canadian Task Force on Preventive Health Care: <ul style="list-style-type: none"> <li>• <a href="http://www.ctfphc.org/">http://www.ctfphc.org/</a></li> </ul>	