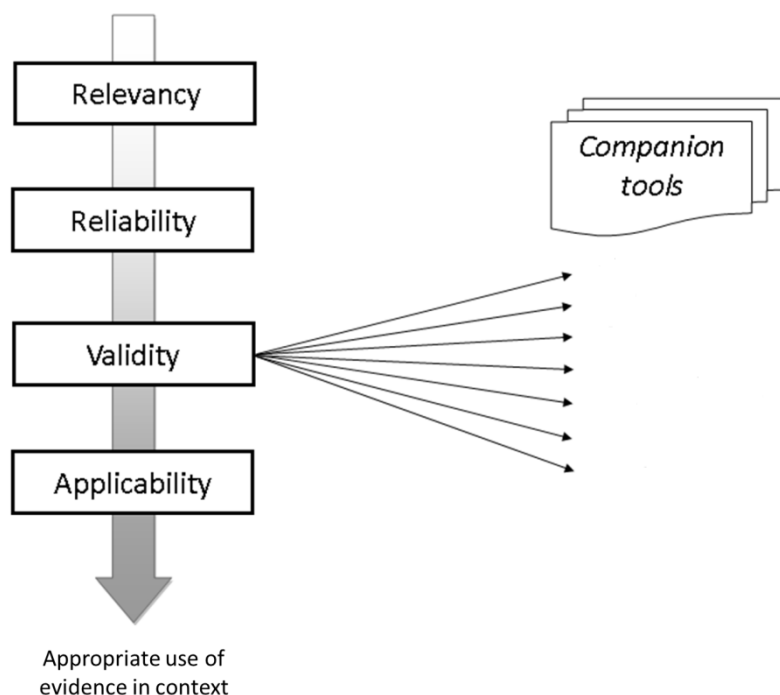


# Companion tools: recommended research design-specific CATs

Due to the generic nature of the MetaQAT form, you may find that you require more specific guidance for appraising certain study types, specifically when appraising the validity of a study. In those cases, you can refer to one of the resources listed below. Companion tools were selected from commonly-used CATs, with a preference for validated and peer-reviewed tools. Ease of use was also considered, and checklist style tools relying on a numerical score were excluded. Completing the MetaQAT while referring to the preselected companion tools allows for consistency across PHO.

Review the companion tool and use its criteria to inform your completion of the MetaQAT assessment of validity, or, if you prefer, complete the companion tool and attach it to the MetaQAT with the other sections completed. Keep in mind that not all study designs have CATs but the general appraisal framework can still be used to complete a quality assessment.

## *Appraisal Framework*



CATs recommended for various research designs are listed in the table below. These tools were selected for being widely used and recommended by reputable sources.

Note that some resources included on the list are reporting guidelines: to use a reporting guideline as a CAT, first consider the presence of the listed items and then consider their appropriateness.

**Table 1: Recommended research design-specific CATs (2024 Update)**

Research design	Recommended CAT	Summary
Systematic reviews and meta-analyses	<a href="#"><u>AMSTAR 2 Instrument</u></a> <a href="#"><u>AMSTAR 2 (2017) research article</u></a> <a href="#"><u>AMSTAR (2007) research article</u></a>	<p>Assessment of Multiple Systematic Reviews (AMSTAR) is an 11-item assessment tool used to assess the methodological quality of systematic reviews. It was developed by researchers at the VU University Medical Centre in Amsterdam and the University of Ottawa, Institute of Population Health, and CIETcanada in Ottawa.</p> <p>The revised instrument (AMSTAR 2) underwent further development in 2017 to enable the appraisal of systematic reviews of randomised and non-randomised studies of healthcare interventions.</p> <p>For further information on research methods and reporting, consult the research articles published in The BMJ.</p>
Cohort studies	<a href="#"><u>CASP Cohort Study Checklist</u></a>	CASP Cohort Study Checklist is one of several critical appraisal tools developed at Oxford University’s Critical Appraisal Skills Program (CASP). Presented in a checklist format.
Case control studies	<a href="#"><u>CASP Case Control Study Checklist</u></a>	CASP Case Control Study Checklist is a tool used for the appraisal of case control studies.
Economic evaluation studies	<a href="#"><u>CASP Economic Evaluation Study Checklist</u></a>	CASP Economic Evaluation Studies Checklist is a tool used for appraising economic evaluation studies.
Non-randomised controlled trials	<a href="#"><u>The TREND Statement</u></a>	<p>The Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) statement (developed by the TREND group), is a reporting guide for controlled trials without random assignment.</p> <p>The TREND statement contains a 22-item checklist and complements the widely adopted Consolidated Standards of Reporting Trials (CONSORT) statement developed for randomized controlled trials.</p>
Randomised controlled trials	<a href="#"><u>The CONSORT Statement</u></a> <a href="#"><u>Flow Diagram</u></a>	<p>The Consolidated Standards of Reporting Trials (CONSORT) Statement is an evidence-based, minimum set of recommendations for reporting randomised trials.</p> <p>It comprises a 25-item checklist and a flow diagram. It was developed by the CONSORT Group.</p>

Research design	Recommended CAT	Summary
Mixed methods research	<a href="#"><u>Evaluation Tool for Mixed Methods Studies</u></a>	This tool is designed to assess both the qualitative and quantitative aspects of a mixed method design. It was developed by the Health Care Practice Research & Development Unit (HCPDRU), at the School of Nursing, University of Salford.
Qualitative research	<a href="#"><u>CASP Qualitative Checklist</u></a>	CASP Qualitative Checklist is a tool for appraising qualitative studies.
Clinical guidelines	<a href="#"><u>AGREE II Instrument (2017 update)</u></a> <a href="#"><u>AGREE II Instrument (2013 update)</u></a>	The Appraisal of Guidelines for Research & Evaluation (AGREE) Instrument is a tool to appraise the guideline development process and reporting. The instrument consists of 23 items organized within six domains, followed by two global rating items for an overall assessment. It was developed by the AGREE Collaboration.  AGREE II is an updated version of AGREE (2003).
Environmental health studies	<a href="#"><u>Navigation Guide framework</u></a> <a href="#"><u>Navigation Guide instructions (p.33-42)</u></a>	The Navigation Guide is an evidence grading process developed for use in environmental health. Evidence grading is a larger process that involves assessing risk of bias for individual studies, across a group of studies, and integrating the strength of the recommendations. The individual risk of bias component is recommended as a companion tool.
Grey literature	<a href="#"><u>PHO Guide to Appraising Grey Literature</u></a>	Internal guide to appraisal of non-commercially produced or non-standard knowledge products.

*\*We recommend consulting the most current tools listed for each research design.*

*\*Should you find a tool that is useful for a study design, please send it to [library@oahpp.ca](mailto:library@oahpp.ca) so we can update the companion tools.*

# Additional resources

---

AGREE Next Steps Consortium. Appraisal of guidelines for research & evaluation (AGREE) II instrument [Internet]. Hamilton, ON: The AGREE Research Trust; c2009 [updated 2013 Sep; cited 2015 May 14]. Available from: [http://www.agreetrust.org/wp-content/uploads/2013/10/AGREE-II-Users-Manual-and-23-item-Instrument\\_2009\\_UPDATE\\_2013.pdf](http://www.agreetrust.org/wp-content/uploads/2013/10/AGREE-II-Users-Manual-and-23-item-Instrument_2009_UPDATE_2013.pdf)

Bai A, Shukla V, Bak G, Wells G. Quality assessment tools project report. Ottawa, ON: Canadian Agency for Drugs and Technologies in Health; 2012. Available from: [https://www.cadth.ca/media/pdf/QAT\\_final.pdf](https://www.cadth.ca/media/pdf/QAT_final.pdf)

Benos DJ, Bashari E, Chaves JM, Gaggar A, Kapoor N, LaFrance M, et al. The ups and downs of peer review. *Adv Physiol Educ.* 2007;31(2):145-52. Available from: <http://advan.physiology.org/content/31/2/145.long>

Brownson RC, Fielding JE, Maylahn CM. Evidence-based public health: a fundamental concept for public health practice. *Annu Rev Public Health.* 2009;30:175-201.

Burls A. What is critical appraisal? 2nd ed. London, UK: Hayword Medical Communications; 2009. Available from: [http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/what\\_is\\_critical\\_appraisal.pdf](http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/what_is_critical_appraisal.pdf)

Canadian Health Services Research Foundation. Research use week (Northeastern Ontario): tools, strategies and stories of using evidence in rural and remote health services delivery and policy development [Internet]. Ottawa, ON: Canadian Health Services Research Foundation; 2007 [cited 2015 May 14]. Available from: <http://files.deslibris.ca/cppc/213/213137.pdf>

Ciliska D, Thomas H, Buffett C. A compendium of critical appraisal tools for public health practice [Internet]. Hamilton, ON: National Collaborating Centre for Methods and Tools; 2012 [cited 2015 May 14]. Available from: <http://www.nccmt.ca/pubs/CompendiumToolENG.pdf>

Cochrane Public Health Group. Review authors [Internet]. Victoria, AU: The Cochrane Collaboration; 2015 [updated 2015 Apr 15; cited 2015 May 14]. Available from: <http://ph.cochrane.org/review-authors>

Community Guide. Systematic review methods [Internet]. Atlanta, GA: U.S. Department of Health & Human Services, The Community Guide; 2014 [updated 2014 Jun 3; cited 2015 May 14]. Available from: <http://www.thecommunityguide.org/about/methods.html>

Critical Appraisal Skills Programme (CASP). CASP cohort study checklist [Internet]. Oxford, UK: CASP; 2013 [updated 2013 May 31; cited 2015 May 14]. Available from: [http://media.wix.com/ugd/dded87\\_e37a4ab637fe46a0869f9f977dacf134.pdf](http://media.wix.com/ugd/dded87_e37a4ab637fe46a0869f9f977dacf134.pdf)

Critical Appraisal Skills Programme (CASP). CASP case control study checklist [Internet]. Oxford, UK: CASP; 2013 [updated 2013 May 31; cited 2015 May 14]. Available from: [http://media.wix.com/ugd/dded87\\_63fb65dd4e0548e2bfd0a982295f839e.pdf](http://media.wix.com/ugd/dded87_63fb65dd4e0548e2bfd0a982295f839e.pdf)

Critical Appraisal Skills Programme(CASP). CASP economic evaluation studies checklist [Internet]. Oxford, UK: CASP; 2013 [updated 2013 May 31; cited 2015 May 14]. Available from: [http://media.wix.com/ugd/dded87\\_3b2bd5743feb4b1aac6ebdd68771d3f.pdf](http://media.wix.com/ugd/dded87_3b2bd5743feb4b1aac6ebdd68771d3f.pdf)

Crombie IK,. The pocket guide to critical appraisal: a handbook for health care professionals. London, UK: BMJ; 2008.

Crowe M, Sheppard L. A review of critical appraisal tools show they lack rigor: alternative tool structure is proposed. J Clin Epidemiol. 2011;64(1):79-89.

Des Jarlais DC, Lyles C, Crepaz N, TREND Group. Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: the TREND statement. Am J Public Health. 2004;94(3):361-6. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1448256/>

Dicenso A, Bayley L, Haynes RB. Accessing pre-appraised evidence: fine-tuning the 5S model into a 6S model. Evid Based Nurs. 2009;12(4):99-101.

European Centre for Disease Prevention and Control. Evidence-based methodologies for public health: how to assess the best available evidence when time is limited and there is a lack of sound evidence. Stockholm: European Centre for Disease Prevention and Control; 2011. Available from: [http://ecdc.europa.eu/en/publications/Publications/1109\\_TER\\_evidence\\_based\\_methods\\_for\\_public\\_health.pdf](http://ecdc.europa.eu/en/publications/Publications/1109_TER_evidence_based_methods_for_public_health.pdf)

Gugiu PC, Gugiu MR. A critical appraisal of standard guidelines for grading levels of evidence. Eval Health Prof. 2010;33(3):233-55.

Hannes K, Lockwood C, Pearson A. A comparative analysis of three online appraisal instruments' ability to assess validity in qualitative research. Qual Health Res. 2010;20(12):1736-43.

Health Evidence. Quality assessment tool - review articles [Internet]. Hamilton, ON: Health Evidence; 2013 [cited 2015 May 14]. Available from: [http://www.healthevidence.org/documents/our-appraisal-tools/QA\\_tool&dictionary\\_18.Mar.2013.pdf](http://www.healthevidence.org/documents/our-appraisal-tools/QA_tool&dictionary_18.Mar.2013.pdf)

Heller RF, Heller TD, Pattison S. Putting the public back into public health. Part II. How can public health be accountable to the public? Public Health. 2003;117(1):66-71.

Jeanfreau SG, Jack L,Jr. Appraising qualitative research in health education: guidelines for public health educators. Health Promot Pract. 2010;11(5):612-7. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3012622/>

Johnson PI, Sutton P, Atchley DS, Koustas E, Lam J, Sen S, et al. The Navigation Guide - evidence-based medicine meets environmental health: systematic review of human evidence for PFOA effects on fetal growth. Environ Health Perspect. 2014;122(10):1028-39. Available from: <http://ehp.niehs.nih.gov/1307893/>

Kahan B, Goodstadt M, editors. IDM best practices. [Internet]. Regina, SK: IDM Best Practices; cited 2015 May 14]. Available from: <http://www.idmbestpractices.ca/idm.php?content=resources-assessev>

- Katrak P, Bialocerkowski AE, Massy-Westropp N, Kumar S, Grimmer KA. A systematic review of the content of critical appraisal tools. *BMC Med Res Methodol.* 2004;4:22. Available from: <http://www.biomedcentral.com/1471-2288/4/22>
- Lang S, Kleijnen J. Quality assessment tools for observational studies: lack of consensus. *Int J Evid Based Healthc.* 2010;8(4):247.
- Loney PL, Chambers LW, Bennett KJ, Roberts JG, Stratford PW. Critical appraisal of the health research literature: prevalence or incidence of a health problem. *Chronic Dis Can.* 1998;19(4):170-6. Available from: [http://www.collectionscanada.gc.ca/webarchives/20071212045422/http://www.phac-aspc.gc.ca/publicat/cdic-mcc/19-4/e\\_e.html](http://www.collectionscanada.gc.ca/webarchives/20071212045422/http://www.phac-aspc.gc.ca/publicat/cdic-mcc/19-4/e_e.html)
- Long A. Evaluation tool for mixed methods studies [Internet]. Manchester, UK: University of Salford; 2005 Available from: [http://usir.salford.ac.uk/13070/1/Evaluative\\_Tool\\_for\\_Mixed\\_Method\\_Studies.pdf](http://usir.salford.ac.uk/13070/1/Evaluative_Tool_for_Mixed_Method_Studies.pdf)
- Ontario Public Health Libraries Association (OPHLA). Critical appraisal of research evidence: a guide from the Ontario Public Health Libraries Association [Internet]. Toronto, ON: OPHLA; 2014 [cited 2015 May 5]. Available from: <http://www.ophla.ca/pdf/CriticalAppraisalResearchEvidenceApril2014.pdf>
- Rychetnik L, Frommer M. A schema for evaluating evidence on public health interventions. Version 4 [Internet]. Melbourne, AU: National Public Health Partnership; 2002 [cited 2015 May 14]. Available from: <http://www.nphp.gov.au/publications/phpractice/schemaV4.pdf>
- Schulz KF, Altman DG, Moher D, CONSORT Group. CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. *PLoS Med.* 2010;7(3):e1000251. Available from: <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1000251>
- Shamliyan T, Kane RL, Dickinson S. A systematic review of tools used to assess the quality of observational studies that examine incidence or prevalence and risk factors for diseases. *J Clin Epidemiol.* 2010;63(10):1061-70. Available from: <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1000251>
- Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, Hamel C, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. *BMC Med Res Methodol.* 2007;7:10. Available from: <http://www.biomedcentral.com/1471-2288/7/10>
- Sirriyeh R, Lawton R, Gardner P, Armitage G. Reviewing studies with diverse designs: the development and evaluation of a new tool. *J Eval Clin Pract.* 2012;18(4):746-52.
- Sterne J, Higgins J, Reeves B, on behalf of the development group for ACROBAT- NRSI. A Cochrane risk of bias assessment tool: for non-randomized studies of interventions (ACROBAT- NRSI), Version 1.0.0 [Internet]. London, UK: The Cochrane Collaboration; 2014 [cited 2015 Jun 19]. Available from: [https://53e94a67-a-62cb3a1a-s-sites.googlegroups.com/site/riskofbiastool/ACROBAT-NRSI%20Version%201\\_0\\_0.pdf?](https://53e94a67-a-62cb3a1a-s-sites.googlegroups.com/site/riskofbiastool/ACROBAT-NRSI%20Version%201_0_0.pdf?)

Stetler CB, Damschroder LJ, Helfrich CD, Hagedorn HJ. A guide for applying a revised version of the PARIHS framework for implementation. *Implement Sci.* 2011;6:99,5908-6-99. Available from: <http://www.implementationscience.com/content/6/1/99>

SUNY Downstate Medical Center. Guide to research methods: the evidence pyramid. [Internet]. New York: Medical Research Library of Brooklyn; c2014 [updated 2004 Jan 6; cited 2015 May 14]. Available from: <http://library.downstate.edu/EBM2/2100.htm>

Vlayen J, Aertgeerts B, Hannes K, Sermeus W, Ramaekers D. A systematic review of appraisal tools for clinical practice guidelines: multiple similarities and one common deficit. *Int J Qual Health Care.* 2005;17(3):235-42. Available from: <http://intqhc.oxfordjournals.org/content/17/3/235.long>

Woodruff TJ, Sutton P, Navigation Guide Work Group. An evidence-based medicine methodology to bridge the gap between clinical and environmental health sciences. *Health Aff (Millwood).* 2011;30(5):931-7. Available from: <http://content.healthaffairs.org/content/30/5/931.long>

Zaza S, Wright-De Aguero LK, Briss PA, Truman BI, Hopkins DP, Hennessy MH, et al. Data collection instrument and procedure for systematic reviews in the Guide to Community Preventive Services. Task Force on Community Preventive Services. *Am J Prev Med.* 2000;18(1 Suppl):44-74.

Public  
Health  
Ontario

Santé  
publique  
Ontario

**Public Health Ontario**

661 University Avenue, Suite 1701

Toronto, Ontario

M5G 1M1

416.235.6556

[communications@oahpp.ca](mailto:communications@oahpp.ca)

[publichealthontario.ca](http://publichealthontario.ca)

Ontario 