INSTRUCTIONS FOR AUTHORS

OF AACAP PRACTICE PARAMETERS

AMERICAN ACADEMY OF CHILD AND ADOLESCENT PSYCHIATRY

COMMITTEE ON QUALITY ISSUES

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GENERAL PRINCIPLES

The Committee on Quality Issues develops practice parameters for the American Academy of Child and Adolescent Psychiatry in accordance with these general principles:

1. The purpose of the practice parameters is to encourage best practices in the discipline of child and adolescent psychiatry.

2. Parameters are developed in accordance with standards established by the American Medical Association (AMA Policy H-410.968) and other major professional organizations, as follows (Appendix I provides additional information):

   A. **Documentation.** Clinical practice guideline sponsors have provided sufficient documentation to enable an assessment of the process of development of the guideline.

   B. **Involvement of Physicians/Physician Organizations.** The guideline was developed with representation from practicing physicians and/or physician organizations.

   C. **Literature Review.** A literature search was performed; the inclusion/exclusion criteria for the literature search were specified, and the evidence derived from the literature search was rated.

   D. **Experts’ Credentials.** If expert opinion was used in the development of the guideline, credentials of the experts were described.

   E. **Appropriateness.** The guideline addresses the appropriateness of its recommendations to specific clinical conditions and settings.

   F. **Generalizability.** The guideline includes disclaimers and/or a discussion of the limitations and/or degree of generalizability of the recommendations specific to clinical conditions.

   G. **Currentness.** The guideline has been developed, reviewed, or updated within the last 5 years.

   H. **Update Mechanism.** There is a mechanism in place to update the guideline.

   I. **Wide Dissemination.** There is a mechanism in place to ensure that the guideline is readily available to all physicians who may be affected by its recommendations.

3. Parameter authors are selected by the Committee on Quality Issues on the basis of their national reputation for expertise in the parameter topic area.

4. Parameters undergo extensive review by key constituent groups, including members of the Committee on Quality Issues, acknowledged experts in the topic area, members of AACAP, relevant AACAP committees, and representatives from the AACAP Assembly of Regional Organizations and the AACAP Council. Final approval of AACAP Practice Parameters rests with the AACAP Council.

5. Practice parameter recommendations (for treatment parameters) or principles (for other parameters) are based on the critical appraisal of empirical evidence (when available) and clinical consensus (when not).
6. Practice parameters are not intended to be taken in isolation as standards of medical care. The standard of medical care in a particular situation depends on the details and circumstances of the case. Practice parameters are only one factor that should be considered in determining the appropriate care in a specific clinical situation.

7. While developed to guide the practice of child and adolescent psychiatrists, it is hoped that the practice parameters will be relevant and helpful to other medical and mental health professionals who work with children and adolescents with psychiatric disorders.

AUTHORS AND OTHER CONTRIBUTORS

QUALIFICATIONS

Parameter authors are selected by the Committee on Quality Issues on the basis of knowledge, expertise, experience, and leadership in the areas addressed by the parameter. The first author may select up to two co-authors, for a recommended total of three principal authors (including the first author). All principal authors must reach the standard for authorship set by the Journal of the AACAP, which requires “substantial” contributions to all of the following: 1) conception and design of the study or analysis and interpretation of the data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. Moreover, authors must have participated sufficiently to take public responsibility for the content.

The order of the principal authors is determined by the first author. If the first author cannot make a determination about the order of the authors, the Committee on Quality Issues will order the authors alphabetically after the first author.

If the first author decides to relinquish that role during the course of parameter development, the Committee on Quality Issues will re-assign first authorship to another individual. The Committee also may re-assign first authorship if the parameter development exceeds the 18 month timeline.

With few exceptions, authors are child and adolescent psychiatrists and members of AACAP. The exceptions may include authors of parameters requiring interdisciplinary expertise (e.g., a practice parameter on neuropsychological testing) or authors of parameters developed in collaboration with other professional organizations.

Authors may ask experts in the topic area to review the parameters (including members of AACAP committees); these experts will be acknowledged in the Attributions section of the parameters. In some cases, trainees or research assistants may provide assistance to authors; they also will be acknowledged in the attribution section.
DUTIES

Authors of practice parameters accept the following responsibilities:

1. Be thoroughly familiar with the *Instructions for Authors of AACAP Practice Parameters*.

2. Partner with the CQI parameter shepherd and the AACAP liaison to complete all parameter development tasks.

3. Collaborate with relevant AACAP committees (if applicable) in parameter development.

4. Prepare the initial parameter draft and subsequent revisions in a timely fashion (approximately 18 months from initiation to approval).

5. Present parameter drafts at CQI meetings as invited.

6. Incorporate comments of CQI members into subsequent parameter drafts.

7. Select and incorporate comments of expert reviewers.

8. Present the parameter at the Member Forum at the AACAP Annual Meeting.

9. Incorporate comments of AACAP membership into the parameter.

10. Incorporate comments of CQI Consensus Group into the parameter.

11. Incorporate comments of AACAP Council (if applicable) into the parameter.

12. Write (or suggest other authors to write) periodic updates of the parameter as invited by the CQI.

AUTHORSHIP AND COPYRIGHT

Attribution is given to authors in the Attributions section of the parameter. Since 1998, authors are not indexed in MedLine; rather, authorship is attributed to the American Academy of Child and Adolescent Psychiatry.

Responsibility for parameter content and review rests with the author(s), the Committee on Quality Issues, the CQI Consensus Group, and the AACAP Council. Responsibility for stylistic issues rests with the Journal of the AACAP.

Copyright to the practice parameters belongs to AACAP. Authors assign copyright to AACAP using a Copyright Assignment Form.
CONFLICT OF INTEREST

Practice parameters incorporate the values expressed in the AACAP Code of Ethics. Authors and reviewers are required to disclose potential conflicts of interest related to the parameter. Authors with conflicts or biases that could affect scientific objectivity are asked to decline participation.

PARAMETER DEVELOPMENT PROCESS

Parameter development proceeds as follows:

1. **Identification of Topics and Authors.** The CQI identifies new parameter topics, topics due for revision and potential parameter authors. The CQI also considers suggestions for parameter topics and authors offered by AACAP members, committees, and executive leadership.

2. **Identification of CQI Shepherd and AACAP Liaison.** The CQI assigns one of its members to “shepherd” the author in parameter development, assisted by the AACAP Liaison. The shepherd and liaison will be responsible for assisting the author in following the Instructions for Authors, incorporating CQI members’ and other reviewers’ comments into drafts of the parameter, and inviting the author to present the parameter drafts at CQI meetings.

3. **Preparation of Parameter Drafts.** Preparation of the parameter should begin with a literature search, which should be performed and documented according to the guidelines outlined under the METHODOLOGY section below (and expanded in the attached Appendix II). The results of the literature search should be used to generate a list of approximately 8-12 recommendations (for patient-oriented parameters) or principles (for clinician-oriented parameters) for best practices in the topic area. The results of the literature search and list of recommendations/principles are presented at the initial CQI meeting attended by the author.

After the initial meeting, the author works with the shepherd to develop a complete draft of the parameter, incorporating comments of CQI members. When a complete first draft has been written and reviewed by the shepherd, the shepherd invites the author to present the draft at follow-up CQI meetings. After each follow-up meeting, the author works with the shepherd to incorporate the comments of CQI members. Follow-up drafts usually will be presented (at the shepherd’s invitation) to the CQI via telephone conference call. The target timeline for this entire process should approximate 18 months. If the timeline should exceed 18 months, the authorship of the parameter is subject to re-assignment by the CQI.

4. **Revised Author Instructions.** The Instructions for Authors of AACAP Practice Parameters will be periodically revised by the CQI in accordance with changes in national and international standards for clinical practice guideline development. As such, authors may be asked to make additional revisions in parameter drafts when new Instructions are released.
5. **Expert Review.** Following CQI review, the author asks acknowledged experts in the parameter topic area for additional review via email. Experts may include members of relevant AACAP committees. The author incorporates experts’ comments into a subsequent parameter draft.

6. **AACAP Member Review.** Following expert review, the draft of the parameter is posted on the AACAP website (on or around September 1) and is presented at the Member Forum at the AACAP Annual Meeting (in October). The author incorporates members’ comments into a subsequent parameter draft.

7. **Consensus Group.** Following AACAP member review, the draft of the parameter is reviewed via email (and conference call if indicated) by a Consensus Group convened by the CQI. The Consensus Group typically comprises the following:

   A. A Chair of the CQI
   B. The parameter author(s)
   C. The parameter shepherd
   D. One or two additional CQI members
   E. Several experts in the parameter topic area
   F. One or two representatives from relevant AACAP Committees (if applicable), who are expected to keep their committees apprised of the process
   G. Two representatives from the AACAP Assembly of Regional Organizations, who are expected to represent the interests of AACAP members
   H. Two representatives from the AACAP Council, who are expected to represent the interests and authority of the AACAP leadership

   If consensus cannot be achieved via email or telephone communication, members of the Consensus Group may meet face-to-face, preferably at the AACAP Annual Meeting, to resolve differences.

8. **Final Edits.** Following Consensus Group approval, the draft of the parameter is edited by the CQI chairs and liaison as needed to assure conformity to the *Instructions for Authors.* Following CQI editing, the draft is sent for professional editing as needed.

9. **Approval by AACAP Council.** The final, edited parameter draft must be approved unanimously by the AACAP Council. It is anticipated that the Council will only make substantive changes in extraordinary circumstances. Any substantive changes suggested by Council will be submitted to the CQI Consensus Group for consideration.

10. **Publication.** The approved practice parameter will be published in the *Journal of the American Academy of Child and Adolescent Psychiatry,* and will be posted on the AACAP website. The parameter may also be published and distributed by AACAP in other ways.

11. **Update.** The author (or his/her designee) will be asked to update the parameter at periodic intervals.
CONTENT AND FORMAT OF PRACTICE PARAMETERS

CONTENT

The AACAP publishes two broad types of parameters: patient-oriented parameters and clinician-oriented parameters.

Patient-oriented parameters are created to guide clinicians toward the best assessment and treatment practices. These parameters provide specific recommendations about:

- The assessment and treatment of specific disorders (e.g., ADHD, depression, anxiety)
- The provision of specific treatments (e.g., atypical antipsychotic medication, psychodynamic psychotherapy)

Clinician-oriented parameters are created to provide clinicians with the knowledge needed to develop practice-based skills. These parameters provide specific principles guiding:

- General and special psychiatric assessments (e.g., diagnostic, family, forensic)
- Clinical assessment and management of specific populations (e.g., youth in foster care, gay/lesbian/bisexual/transgender youth).

Following a brief background review of the topic, parameters are designed to succinctly present the most important treatment recommendations or clinical principles pertinent to the parameter topic. Assessment and treatment recommendations are based on the critical appraisal of empirical evidence (when available) and clinical consensus (when not), and are graded according to the strength of the empirical and clinical support (see Evidence Base for Practice Parameters below). Although empirical evidence may be available to support certain principles, principles are primarily based on clinical consensus.

Parameters have a 10,000 word limit, including references and tables; therefore, material presented in the background review should not be duplicated under the recommendations/principles; material presented in tables should not be duplicated in the text, and references should be pertinent, important, and recent.

FORMAT

The format varies somewhat according to the type of parameter. The most common format is as follows:

TITLE

Typical titles of each of the types of parameters are as follows:
Patient-Oriented Parameters:

1. Practice Parameter for the Assessment and Treatment of Children and Adolescents with Depressive Disorders
2. Practice Parameter for the Use of Antipsychotic Medications in Children and Adolescents.

Clinician-Oriented Parameters:

1. Practice Parameter for the Psychiatric Assessment of Children and Adolescents
2. Practice Parameter for the Assessment and Management of Youth in Foster Care

ABSTRACT

A one-paragraph (150 word limit) abstract should summarize the content of the parameter. Up to seven key terms are listed at the end of the abstract. The terms “practice parameter”, “practice guideline”, “child and adolescent psychiatry”, and other terms of the author’s choice can be used.

DEVELOPMENT AND ATTRIBUTION

The development and attribution section summarizes the process of parameter development, and indicates the name(s) of all authors and reviewers. Correct titles should be provided (e.g., M.D., Ph.D.). Academic affiliations are not included. Potential conflicts of interest are disclosed at the end of the parameter for all principal authors and the CQI chairs. Disclosures for all other named individuals are available on the AACAP website. The attribution boilerplate is as follows:

This parameter was developed by [authors’ names], and the American Academy of Child and Adolescent Psychiatry (AACAP) Committee on Quality Issues (CQI): [names of co-chairs, names of members]. AACAP liaison: [names].

AACAP Practice Parameters are developed by the AACAP CQI in accordance with American Medical Association policy. Parameter development is an iterative process between the primary author(s), the CQI, topic experts, and representatives from multiple constituent groups, including the AACAP membership, relevant AACAP Committees, the AACAP Assembly of Regional Organizations, and the AACAP Council. Details of the parameter development process can be accessed on the AACAP Web site. Responsibility for parameter content and review rests with the author(s), the CQI, the CQI Consensus Group, and the AACAP Council.

The AACAP develops both patient-oriented and clinician-oriented Practice Parameters. Patient-oriented parameters provide recommendations to guide clinicians toward best assessment and treatment practices. Recommendations are based on the critical appraisal of empirical evidence
(when available) and clinical consensus (when not), and are graded according to the strength of the empirical and clinical support. Clinician-oriented parameters provide clinicians with the information (stated as principles) needed to develop practice-based skills. Although empirical evidence may be available to support certain principles, principles are primarily based on clinical consensus. This parameter is a [     ]-oriented parameter.

The primary intended audience for the AACAP Practice Parameters is child and adolescent psychiatrists; however, the information contained therein may also be useful for other mental health clinicians.

The authors wish to acknowledge the following experts for their contributions to this parameter: [experts’ names].

This Practice Parameter was reviewed at the Member Forum at the AACAP Annual Meeting in [month, year].

From [month, year] to [month, year], this parameter was reviewed by a Consensus Group convened by the CQI. Consensus Group members and their constituent groups were as follows: [co-chair’s name, shepherd’s name, members’ names] (CQI); [names] (Topic Experts); [names and component affiliations] (AACAP Committees); [names] (AACAP Assembly of Regional Organizations); and [names] (AACAP Council).

Disclosures of potential conflicts of interest for authors and CQI chairs are provided at the end of the parameter. Disclosures of potential conflicts of interest for all other individuals named above are provided on the AACAP Web site on the Practice Parameters page.

This Practice Parameter was approved by the AACAP Council on [date].

This Practice Parameter is available on the internet (www.aacap.org).

Correspondence to the AACAP Communications Department, 3615 Wisconsin Ave., NW, Washington, D.C. 20016.

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INTRODUCTION

According to the American Medical Association (Appendix I), the following information should be included in the introduction section of the parameter:

- The purpose of the parameter
- The rationale for the parameter (Example: “Because the process of evaluating child custody disputes is complex and requires special expertise and unique approaches, this parameter can be of help for clinicians and ultimately, for the families they evaluate”)
• The patient population for whom the parameter is appropriate (Example: “Recommendations [principles] in this parameter are applicable to children and adolescents under the age of 18”)

Other information that should be included in the introduction:

• Any important assumptions underlying the parameter (Example: “This parameter assumes familiarity with normal child development and the principles of child psychiatric diagnosis and treatment.”)
• Clarification of terminology (Example: “In this parameter, unless otherwise noted, the term ‘child’ refers to both children and adolescents unless otherwise noted. Also unless otherwise noted, ‘parents’ refers to the child’s primary caregivers, regardless of whether they are the biological or adoptive parents or legal guardians.”)

The Introduction section should approximate 200 words.

METHODOLOGY

AACAP practice parameters should critically appraise evidence using transparent literature review methodology consistent with worldwide standards. The single most useful guide for this process is The Cochrane Library’s Handbook for Authors. The most relevant pages from this Handbook are attached to these Instructions as Appendix II and are summarized below.

1. To ensure a complete search (i.e., all relevant results are found), use Medical Index Subject Heading (MeSH) terms for all searches in MEDLINE and thesaurus terms for all searches in PsychINFO. Key word searches can also be used, but only as a supplement to MeSH and thesaurus terms.

2. Search first for systematic reviews and meta-analyses (quantitative summaries of reviews) that used well-defined methodology as the highest level of empirical evidence. Systematic reviews of randomized controlled trials are the most likely to be free of bias. The Cochrane Database of Systematic Reviews (CDSR) contains many systematic reviews (SR); however if the topic is not found in CDSR, search other databases using “filters” that retrieve only systematic reviews and/or meta-analyses.

3. Search for individual studies.

A. For each treatment recommendation, create two sets of search terms: 1) terms to search for the disorder of interest (e.g., Dysthymic Disorder [MESH term]); and 2) terms to search for the treatment to be evaluated (e.g., Cognitive Therapy [MESH term]). If multiple terms are used for each set, join the terms with the Boolean ‘OR’ operator (e.g., Dysthymic Disorder OR Major Depressive Disorder; Cognitive Therapy OR Behavioral Therapy). Example of search outcome:

1. Dysthymic Disorder [MESH Term]: 1207 references
2. Cognitive Therapy [MESH Term]: 11266 references
B. Join the two sets of terms with the ‘AND’ operator (Dysthymic Disorder OR Major Depressive Disorder AND Cognitive Therapy OR Behavioral Therapy). Then use “filters” to search for specific study designs (e.g., randomized controlled trials, cohort studies, case reports) and other “winnowing” criteria (e.g., age group). Avoid using filters in the initial search; rather, include them in subsequent searches so the reader can follow how the search began with a sensitive, inclusive search, but then became highly specific by focusing on the most relevant studies with the least bias. Report the results for each search as the numbers narrow (“winnowing”). This ensures transparency, as anyone should be able to duplicate the search and obtain the same results. Do not ask the reader to take “on faith” a large reduction from over 2000 references in the initial search to the 50 listed in the parameter’s bibliography without documenting the winnowing process. To continue the example above:

3. #1 and #2: 57 references
4. #3 limited to RCTs: 26 references
5. #4 limited to age 0 to 18: 8 references

3. Search multiple databases. The most fruitful databases in child and adolescent psychiatry are CENTRAL, MEDLINE, EMBASE, and PsychINFO. Searching these four databases will suffice if the bibliographies of retrieved articles are also examined for relevant references not included in the databases.

4. Finally, for all parameters the entire search process summarized above should be documented in the Methodology section of the parameter, including the following specific information:
   - Titles of databases searched (e.g., MEDLINE)
   - Names of the hosts (e.g., PubMed)
   - Date searches were run (month, day, year)
   - Time period covered by the search
   - Search terms used (always including MeSH terms in MEDLINE and thesaurus terms in PsycINFO)
   - Number of hits in initial searches and at each stage of the winnowing process

Example (can be written in narrative form in the parameter):

MEDLINE
PubMed
April 15, 2011
[2000-2010]
1. Dysthymic Disorder [MESH Term]: 1207 references
2. Cognitive Therapy [MESH Term]: 11266 references
3. #1 and #2: 57 references
4. #3 limited to RCTs: 26 references
5. #4 limited to age 0 to 18: 8 references
DEFINITIONS

Unfamiliar terms should be defined in this section, listed alphabetically.

HISTORICAL REVIEW

Brief history of the topic can be provided, describing changes over time in assessment, treatment, or approach to the issue (e.g., changes in policies of seclusion and restraint, changes in federal mandates pertaining to the education of children with disabilities, changes in the power of the state in child welfare decisions).

The Historical Review section should approximate 400 words.

The following sections are appropriate for parameters pertaining to specific disorders. (If the parameter addresses a specific disorder, the author should refer the reader to the DSM-IV-TR for a review of the diagnostic criteria for the disorder). These five sections combined should approximate 1800 words.

CLINICAL PRESENTATION AND COURSE

EPIDEMIOLOGY

ETIOLOGY or RISK AND PROTECTIVE FACTORS

DIFFERENTIAL DIAGNOSIS

COMORBIDITIES

DESCRIPTION OF PROCEDURE

This section is appropriate for parameters pertaining to specific tests or procedures (e.g., neuropsychological testing, psychotherapy).

EVIDENCE BASE FOR PRACTICE PARAMETERS

For patient-oriented (treatment) parameters, the following boilerplate (adapted from Zarin DA, Seigle L, Pincus HA, McIntyre JS, Evidence-based practice guidelines. Psychopharmacology Bulletin 33: 641-646, 1997) is added:

In this parameter, recommendations for best assessment and treatment practices are stated in accordance with the strength of the underlying empirical and/or clinical support, as follows:
• Clinical Standard [CS] is applied to recommendations that are based on rigorous empirical evidence (e.g., meta-analyses, systematic reviews, individual randomized controlled trials) and/or overwhelming clinical consensus

• Clinical Guideline [CG] is applied to recommendations that are based on strong empirical evidence (e.g., non-randomized controlled trials, cohort studies, case-control studies) and/or strong clinical consensus

• Clinical Option [OP] is applied to recommendations that are based on emerging empirical evidence (e.g., uncontrolled trials or case series/reports) or clinical opinion, but lack strong empirical evidence and/or strong clinical consensus

• Not Endorsed [NE] is applied to practices that are known to be ineffective or contraindicated

The strength of the empirical evidence is rated in descending order as follows:

• [rct] Randomized, controlled trial is applied to studies in which subjects are randomly assigned to two or more treatment conditions

• [ct] Controlled trial is applied to studies in which subjects are non-randomly assigned to two or more treatment conditions

• [ut] Uncontrolled trial is applied to studies in which subjects are assigned to one treatment condition

• [cs] Case series/report is applied to a case series or a case report

RECOMMENDATIONS/PRINCIPLES

Authors should think of this section as the most important practical “do’s and don’ts” regarding this topic (approximately 8-12). Recommendations/principles should be a single declarative statement. They should be clustered by topic area; for example, all recommendations/principles pertaining to screening and assessment should be grouped together under an Assessment heading; all recommendations/principles pertaining to treatment should be grouped together under a Treatment heading.

Recommendations/principles should be sequenced in a logical order; for example, recommendations pertaining to screening for a disorder should precede recommendations pertaining to comprehensively assessing a disorder; and recommendations pertaining to identifying target symptoms for a medication should precede information about medication doses and side effects. Treatments with the strongest empirical and/or clinical support should be addressed before treatments with less support.
The following are examples of recommendations from a patient-oriented parameter:

- The psychiatric assessment of children and adolescents should routinely include screening questions about depressive symptomatology.
- During all treatment phases, for a child or adolescent who is not responding to appropriate pharmacological and/or psychotherapeutic treatments, consider factors associated with poor response.
- Children with risk factors associated with development of depressive disorders should have access to early intervention services.

The following are examples of principles from a clinician-oriented parameter:

- Clinicians should understand how to initiate, develop, and maintain consultative relationships with schools.
- Clinicians should be knowledgeable about legislation that establishes and protects the educational rights of students with mental disabilities.
- Clinicians should be able to conduct a comprehensive assessment of a student with an emphasis on understanding barriers to learning, and participate in comprehensive treatment planning with clinical, school, home, and community components as indicated.

ALGORITHMS/TABLES/FIGURES

Authors are encouraged to develop visual summaries of practice parameter content. Tables and figures are formatted in the style of the JAACAP and authors are referred to recent issues for examples.

PARAMETER LIMITATIONS

The following disclaimer is included as boilerplate:

AACAP practice parameters are developed to assist clinicians in psychiatric decision making. These parameters are not intended to define the sole standard of care. As such, the parameters should not be deemed inclusive of all proper methods of care nor exclusive of other methods of care directed at obtaining the desired results. The ultimate judgment regarding the care of a particular patient must be made by the clinician in light of all of the circumstances presented by the patient and his or her family, the diagnostic and treatment options available, and available resources.

REFERENCES

It is not necessary to be exhaustive in developing the references. The purpose of the parameters is to present literature that is compelling, relevant, and integral to the parameter topic. The most important references are marked with an asterisk, to indicate to readers those that are particularly recommended.
PREPARATION OF DRAFTS

At all phases of production, drafts are submitted to the AACAP Clinical Affairs Department for reproduction and distribution to the Committee, the general membership, reviewers, Council, and Assembly. Drafts are submitted via email.

LENGTH

The draft should not exceed 10,000 words, including abstract, introduction, methodology, background, recommendations/principles, tables and references. All drafts should have an accurate word count on the cover sheet. Some practice parameters will be much less than 10,000 words.

STYLE

Style refers to the preferred usage for spelling, punctuation, and references. The AACAP uses the AMA Manual of Style, the APA American Psychiatric Glossary, and Webster's Collegiate Dictionary.

The text should be justified to the left side of the page. Do not attempt to hyphenate words in order to justify the right side of the page, since the hyphenation changes as the drafts evolve.

After the draft has been submitted, the staff of the Clinical Practice Department will copyedit the material and prepare it for distribution. The staff will take care of the headers, the footers, and line numbers. Staff will return to the edited version of the parameter to the authors. Please use this copy to make revisions for the next draft.

COVER SHEET AND FIRST PAGE

The cover sheet of the draft should include the following information: title of the practice parameter; first author’s name, address, telephone, fax number and email address. The first page of parameter should list the title, draft date and word count followed by the parameter content beginning with the abstract section.

Do not indicate the draft number (e.g., Draft #1 or Draft #4). Simply put the date on which the author finished the draft and is submitting it to the Clinical Affairs Department.

HEADING LEVELS

Heading levels for the narrative portion of the parameters are as follows:

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TITLE: Uppercase, boldface, centered at the top of the page.
Example:

**PRACTICE PARAMETER FOR THE ASSESSMENT AND TREATMENT OF CHILDREN AND ADOLESCENTS WITH SCHIZOPHRENIA**

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**LEVEL 1:** Upper case, boldface, flush left, freestanding.

Example:

**TREATMENT**

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**LEVEL 2:** Upper case, roman (non-bold), flush left, freestanding.

Example:

**STIMULANT MEDICATION**

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**LEVEL 3:** Mixed case, roman (non-bold), flush left, freestanding.

Example:

Uses of Stimulants in Children

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**LEVEL 4:** First word capitalized, indented as for a paragraph, italic, with a period at the end of the phrase.

Example:

*Medication efficacy and side effects.*

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**REFERENCES**

References should be in the style of the *Journal*. If using bibliographic software please be sure that the software is formatted appropriately. **DRAFTS WITH REFERENCES IN INCORRECT STYLE WILL BE RETURNED TO THE AUTHOR FOR REVISION.** Every effort should be made to list references accurately from primary source materials.

Authors should make sure that every citation in the text of the parameter has an appropriate entry in the References. Also, that all items in the References were actually cited in the text.

References that are particularly relevant to the parameter or that have been heavily relied on in the preparation of the parameter should be marked with an
asterisk. A statement is included before the first reference: “References marked with an asterisk are particularly recommended.”

References for all Practice Parameters scheduled to be published in 2008 and forward must adhere to the AMA Manual of Style, 10th Edition. If you are using End Note or Reference Manager as a bibliographic tool, choose JAMA as the reference style to prepare your references in the text and list.
APPENDIX I

STANDARDS FOR DEVELOPING SCIENTIFICALLY SOUND GUIDELINES*

STANDARDS ON GUIDELINE DEVELOPMENT AND FORMAT

1. Purpose of the guideline is specified
2. Rationale and importance of the guideline are explained
3. The participants in the guideline development process and their areas of expertise are specified
4. Targeted health problem or technology is clearly defined
5. Targeted patient population is specified
6. Intended audience or users of the guideline are specified
7. The principal preventive, diagnostic, or therapeutic options available to clinicians and patients are specified
8. The health outcomes are specified
9. The method by which the guideline underwent external review is specified
10. An expiration date or date of scheduled review is specified

STANDARDS ON EVIDENCE IDENTIFICATION AND SUMMARY

11. Method of identifying scientific evidence is specified
12. Time period from which evidence is reviewed is specified
13. The evidence used is identified by citation and referenced
14. Method of data extraction is specified
15. Method for grading or classifying the scientific evidence is specified
16. Formal methods of combining evidence or expert opinion are used and described
17. Benefits and harms of specific health practices are specified
18. Benefits and harms are quantified
19. The effect on health care costs from specific health practices is specified
20. Costs are quantified

STANDARDS ON THE FORMULATION OF RECOMMENDATIONS

21. The role of value judgments used by the guideline developers in Making recommendations is discussed
22. The role of patient preferences is discussed
23. Recommendations are specific and apply to the stated goals of the guideline
24. Recommendations are graded according to the strength of the evidence
25. Flexibility in the recommendations is specified

APPENDIX II

INSTRUCTIONS TO AUTHORS OF PRACTICE PARAMETERS: DEFINING CENTRAL QUESTIONS, SEARCHING, AND SYNTHESIZING

Introduction

AACAP Practice Parameters should organize knowledge on a clearly defined topic using transparent methodology consistent with worldwide standards of compiling and summarizing information. In addition, the methodology used for searching and synthesizing information should be consistent with the methodology used both by other professional organizations (e.g., the American Medical Association, the American Academy of Pediatrics and the American Psychiatric Association) as well as organizations that are global leaders in finding and synthesizing medical knowledge (e.g., The Cochrane Library). The standards for finding and summarizing evidence for a Practice Parameter (henceforth PP) set by these organizations are high.

The single most useful guide for this work is The Cochrane Library's Handbook for Authors (henceforth Handbook), published online as a guide for authors of Cochrane Systematic Reviews. We highly recommend this Handbook as an available source of information on defining the most relevant questions, and searching for and synthesizing the results of clinical trials. It is available at www.cochrane.org or through the Work Group on Quality Issues.

Defining the Practice Parameter: what questions will be answered?

Authors will benefit from framing their searches in terms of questions they need to answer from the literature in order to write their PP; they then can organize their search questions in the standard epidemiological format of a population, an intervention, a control group, and an outcome. Well-defined questions are more likely to be useful as guides to searching than overly broad, ill-defined ones. The WCQI suggests 10 such questions as a maximum and asks to be closely involved in the development of these questions.

The population/intervention/control (or comparison)/outcome format (or PICO) is the most widely used format for assessing results. A good discussion of this format and how it can be used to generate well-defined questions to pose to the literature is included in the Handbook. A PP will benefit if expert authors initially frame major issues as questions for the literature. For example, answering the question "What is the evidence that there is a psychosocial intervention with foster children and their foster parents that increases time in placement relative to a control group not receiving the intervention?" might be a specific question to be searched in making a PP focusing on the unique issues of foster children. The central point here is that a series of well-defined questions, searched and answered from the literature, should form the "backbone" of a PP. A single, general, "cover the waterfront" search with no clearly defined questions is to be avoided. Such a search generates vast numbers of irrelevant references, and no logical winnowing of references with valid data directly
applicable to an important question is possible. In brief, target searches looking for data on a specific question are necessary. Hence, defining important, well-defined questions is an essential and vital first step in beginning a PP. A professional medical librarian or your WGQI "shepherd" can help authors define these questions.

Complete and Transparent Searching in multiple databases

A central aspect of creating a Practice Parameter (PP) is finding and managing information in the literature to answer the series of questions the authors, in collaboration with the Workgroup, define as central to the PP's topic. Thorough searches are then done in multiple databases using transparent and widely-accepted search methodologies that would be acceptable to professional medical librarians. This is a demanding task, and the advice and assistance of a professional librarian is recommended. No single database (e.g., MEDLINE) will suffice. The most fruitful electronic databases in general for searching the results of clinical trials in child and adolescent psychiatry are MEDLINE, Cochrane Library's CENTRAL, EMBASE (often called the European MEDLINE), and PsycINFO (the database of the American Psychological Association). Searching these 4 databases will suffice if the bibliographies of retrieved articles are also examined for relevant references not included in these 4 databases.

Searching using both controlled vocabulary terms (MeSH terms in MEDLINE, Thesaurus terms in PsycINFO) and key words in the text are both essential. A good strategy for identifying controlled vocabulary terms in a database is to retrieve articles from that database which meet the inclusion criteria for that question, noting both common text words and the controlled vocabulary terms (i.e., MeSH terms in MEDLINE) that the indexers had applied to the articles. Then use both these common text words and the controlled vocabulary term in a full search. In addition, create branching chains of references from the bibliographies and authors' names of the most useful references. For example, once you find an especially relevant article, enter the author's name in the search box and find other pieces she has written. Also note the MeSH subject term for a reference you find very helpful and use it for a MeSH search. This approach often quickly creates an expanding web of relevant references. One good article leads to another. In addition, searching for case reports of adverse effects of medications is useful, as not all adverse effects occur in randomized trials.

It is also essential to find any meta-analyses and systematic reviews summarizing multiple trials relevant to the question at hand; the search for these publications needs to be done by publication type in multiple databases. Each one retrieved needs to be carefully assessed for methodology, and for this task, the assistance of a statistician may be useful. If the Cochrane Library's Systematic Reviews has reviewed one or more aspects of the topic under subject, the result should be included in the PP because of the Cochrane Library's transparent, uniform, and consensus-driven methodology.

Note that "transparent" here means that the author has supplied sufficient detail that the reader could walk into a medical library and perform the identical search. Therefore it is necessary to include the controlled vocabulary terms, the keywords, the databases, the time period, age limits, and how the sets of references
generated by the Boolean operators were combined for each question searched. If a list of authors is searched, the PP should have an objective means of choosing those authors and excluding others.

**Unpublished Trial Information: Conference Proceedings, Drug Companies**

Many trials reported in conference proceedings are never published elsewhere. Since those that are either never published or published later have been shown to be significantly and systematically different than those published earlier (e.g., less likely to be consistent with a null result or supporting a difference between the comparison groups), not searching for these trials can invalidate an entire review. Drug company websites and the CRISP website at NIH are other important sources of both unpublished trial data and the protocols of upcoming studies.

**Synthesizing and Weighing Trial Information to Answer the Series of Questions**

The AMA's well-known book on Evidence-Based Practice (Guyatt and Rennie, 2002) and the Handbook are both excellent sources of information for valid methods of synthesizing trial data and are highly recommended to authors. Each of the most prominent recommendations made should be based on one of the answerable questions that was thoroughly searched in preparing the PP. For example, to continue with the central question about foster care children mentioned above, a search in MEDLINE alone reveals 18 RCTs that appearance to the key words "foster care." Scanning these by eye one quickly comes to a study from the Oregon Social Learning Center, the Early Intervention Foster Care program (EIFC), whose authors (Fisher, Burraston, and Pears, 2007) conclude: "Children in EIFC had significantly fewer failed permanent placements than children in the regular foster care comparison condition. The number of prior placements was positively associated with the risk of failed permanent placements for children in the comparison condition but not for children in EIFC. These results provide the foundation of an evidence base for the EIFC program as a preventive intervention to improve permanent placement outcomes for preschool-aged foster children.” But several other relevant studies appear. For examples in addition there is at least one study of improving co-parenting between the foster parents and the biological parents (Linares et al., 2006). A narrative synthesis (rather than a quantitative synthesis) will suffice for the purposes of PPs unless a quantitative synthesis of the evidence directly relevant to the question at hand already exists in the literature.

In general, the well-known hierarchies of the validity of evidence espoused by the AMA and widely-published should be followed. Thus, searches to answer well-defined questions should focus first on the results of meta-analyses and systematic reviews (especially those done with well-defined methodologies) and randomized controlled trials, but not excluding cohort studies and even case reports if they add information the authors assess as valid and not available through RCT data. For example, there are case reports of life-threatening rashes in adolescents on lamotrigine that would be relevant to reviewing its use in bipolar youth if such data is not available in RCT data on lamotrigine. Authors should not hesitate to consult acknowledged experts on the subject of how to synthesize information from multiple trials.
Conclusion
More than ever, child and adolescent psychiatry is an international discipline with far more rigorous studies being conducted than even 10 or 20 years ago. For example, there were 233 RCTs in the 0 to 18 age group under the MeSH term "depression" (exploded to all subheadings) published in the ten years before July, 2007. Yet since 1950 there were only 375 RCTs published using the same search criteria, meaning there were more RCTs published in MEDLINE on this topic in the past 10 years than the preceding 46 years. Since RCTs generate among the most valid knowledge we have about how to treat young people, well-defined search questions examined thoroughly in multiple databases and then synthesized in readable form is well worth the investment.

Attached below are guidelines from the Cochrane Handbook regards two central aspects of writing a PP: formulating questions and searching for answers. Authors should take the time to examine at least these sections of the Handbook, as they contain many helpful clarifications. The entire handbook is readily available at no charge on the Cochrane Library website. WGQI stands ready to assist authors in this ambitious enterprise in every way that we can.
4 Formulating the problem

4.1 Rationale for well-formulated questions

Poorly focused questions lead to unclear decisions about what research to include and how to summarise it.

As with any research, the first and most important decision in preparing a review is to determine its focus (Light 1984b). This is best done by asking clearly framed questions. Such questions are essential for determining the structure of a review (Jackson 1980, Cooper 1984, Hedges 1994). Specifically, they will guide much of the review process including strategies for locating and selecting studies or data, for critically appraising their relevance and validity, and for analysing variation among their results.

In addition to guiding the review process, a review’s questions and objectives are used by readers in their initial assessments of relevance. The readers use the stated questions and objectives to judge whether the review is likely to be interesting and directly relevant to the issues they face.

4.2 Key components of a question

There are several key components to a well-formulated question (Richardson 1995, Counsell 1997) and these should be set in the Criteria for selecting studies section of the review. A clearly defined question should specify the types of people (participants), types of interventions or exposures, and the types of outcomes that are of interest. In addition, the types of studies that are relevant to answering the question should be specified. In general the more precise one is in defining components, the more focused the review. Equal precision in addressing each component is not necessary. For example, one might wish to concentrate on various treatments for a particular stage of breast cancer, or alternately to focus on a particular drug for any stage of breast cancer. In the former example the stage and severity of the disease would be defined very precisely within the Types of participants. Whereas, in the latter example, the treatment formulation would be defined very precisely within the Types of intervention.

An overview of the key components follows with examples of useful issues to consider for each component. Authors need to ensure that they understand the terminology used to describe these components in different places and settings.

4.2.1 What types of people (participants)?

It is often helpful to consider the types of people that are of interest in two steps. First, define the diseases or conditions that are of interest. Explicit criteria sufficient for establishing the presence of the disease or condition should be developed. Second, identify the population and setting of interest. This involves deciding whether one is
interested in a special population group determined on the basis of factors such as age, sex, race, educational status, or the presence of a particular condition such as angina or shortness of breath. One might also be interested in a particular setting on the basis of factors such as whether people are living in the community; are hospitalised, in nursing homes or chronic care institutions; or are outpatients. Any restrictions with respect to specific population characteristics or settings should be based on sound evidence. For example, focusing a review of the effectiveness of mammographic screening on women between 40 and 50 years old can be justified on the basis of biological plausibility, previously published systematic reviews and existing controversy. On the other hand, focusing a review on a particular subgroup of people on the basis of their age, sex or astrological birth-sign simply because of personal interests when there is no underlying biologic or sociological justification for doing so should be avoided. When there is uncertainty about whether there are important differences in effects among various subgroups of people, it is probably best to include all of the relevant subgroups and then test for important and plausible differences in effect in the analysis (see section 4.5 below and section 8).

4.2.2 What types of comparisons (interventions)?
The next key component of a well-formulated question is to specify the interventions that are of interest. It is also important to define the interventions against which these will be compared, such as the types of control groups that are acceptable for the review. Give thought to whether persons in a control group might receive interventions other than a placebo, and whether those interventions overlap in any way with the active intervention being tested. This issue is discussed further in the section on assessing the quality of studies (section 6).

4.2.3 What types of outcomes?
The third key component of a well-formulated question is the delineation of particular outcomes that are of interest. While all important outcomes should be included in Cochrane reviews, trivial outcomes should not be included. Authors need to avoid overwhelming readers with data that is of little or no importance. At the same time that they must be careful not to leave out important data. If explicit criteria are necessary for establishing the presence of those outcomes these should be specified. Likewise if combinations of outcomes will be considered these need to be specified. For example, if a study only has data on nonfatal and fatal strokes combined, will this be included if the question specifically relates to stroke death? In general, Cochrane reviews should include all reported outcomes that are likely to be meaningful to people making a decision about the healthcare problem the review addresses. Beyond this, it may be important to specify outcomes that are important to decision makers, even when it is unlikely that data will be found. For example, quality of life is an important outcome, perhaps the most important outcome, for people considering whether or not to use chemotherapy for advanced cancer, even if the available studies only report survival data. In addition, authors (reviewers) should indicate how they will try to include data on adverse effects in their review. In regard to this, rather than including an exhaustive list of adverse outcomes it may be more informative to summarise ‘severe’ (e.g. severe enough to require withdrawal of treatment) and minor adverse outcomes and include appropriate description of these.
It is sometimes possible to acquire unpublished data from investigators in order to
disentangle combined outcomes, as well as for other purposes (see section 7). Before
excluding a study that seems to meet criteria for relevance, but has not reported
results in a way that is adequate for the review, it is worth considering trying to obtain
the necessary information from the investigators.

4.2.4 What types of study designs?
Certain study designs are superior to others when answering particular questions.
Randomised controlled trials (RCTs) are considered by many the *sine qua non* when
addressing questions regarding therapeutic efficacy, whereas other study designs are
appropriate for addressing other types of questions. For example, questions relating to
aetiology or risk factors may be addressed by case-control and cohort studies. Authors
should consider up-front what study designs are likely to provide reliable data with
which to answer their questions.

Other aspects relevant to study design that are worth initial consideration are whether
to review studies that: have a placebo comparison group, evaluate outcomes in an
unbiased manner, or have a certain length of follow-up. The more restrictive authors
are in matching questions to particular aspects of design, the less likely they are to
find data specific to the restricted question. However, reviewing studies that are
unlikely to provide reliable data with which to answer the question is a poor use of
time and can result in misleading conclusions. If, for example, one is interested in
whether a therapy improves survival in patients with a chronic condition, it might be
inappropriate to look at studies of very short duration, except to make explicit the fact
that they cannot address the question of interest.

Because Cochrane reviews address questions about the effects of healthcare, they
focus primarily on RCTs. There are two reasons why one should be cautious about
including non-randomised studies in a review of the effects of healthcare, both
relating to bias. First, although it is possible to control for confounders that are known
and measured using other study designs, randomisation is the only way to control for
confounders that are not known or not measured. For clinical interventions, deciding
who receives an intervention and who does not is influenced by many factors,
including prognostic factors. Empirical evidence suggests that, on average, non-
randomised studies tend to overestimate the effects of healthcare (Sacks 1982,
Chalmers 1983, Schulz 1995). However, a systematic methodology review has shown
that the extent and even the direction of bias in non-randomised studies is often
impossible to predict (Kunz 1998).

Second, although it is often difficult to locate RCTs (Dickersin 1994) and reviews that
fail to include unpublished trials may be biased towards overestimating the
effectiveness of an intervention (Dickersin 1993). The efforts of the Cochrane
Collaboration to identify RCTs have not been matched for the identification of other
types of studies. Consequently, including studies other than controlled trials in a
review may require additional efforts to identify studies and to keep the review up-to-
date, and might increase the risk that the result of the review will be influenced by
publication bias.

Despite the above concerns, it may sometimes be appropriate to conduct a systematic
review of non-randomised studies of the effects of healthcare. For example,
occasionally the course of a disease is so uniform or the effects of an intervention are
so dramatic that it is unnecessary and unethical to conduct RCTs. Under such
circumstances it would be senseless to restrict a review to RCTs. While attention to
the risk of bias should guide decisions about what types of study designs to include in a review, individual authors and Collaborative Review Groups must decide what types of studies are best suited to specific questions.

4.3 Using the key components of a question to locate and select studies

Once one has a well-formulated question, one should determine which key components to focus on in initial searching strategies. For Cochrane reviews searching for studies is greatly facilitated by the availability of specialised registers compiled by CRGs. However, the extent to which these registers are developed varies and it may be necessary for authors to conduct supplemental searches. Searches that demand the simultaneous presence of several components or very specific formulations of certain components are likely to be too specific and miss important information. For example, if one searches for studies addressing long-term effects of insulin therapy on renal function in type II diabetics by demanding that they be indexed as 'type II diabetes', 'insulin', 'renal function' and 'long-term', relevant studies are likely to be missed. On the other hand if 'insulin' or 'type II diabetes' is used alone as a search term, hundreds of irrelevant reports are likely to be identified. In general, useful key components to use when searching include the condition or disease of interest and the intervention or exposure being evaluated. Although one may be specifically interested in a particular setting, studies are often not indexed by the type of setting in electronic databases. Also, multiple outcomes may be evaluated in studies, some of which may be relevant to the review, but not part of the indexing of the article. This issue is discussed further in the next section on locating and selecting studies (section 5).

Whatever search strategies are used, it will be necessary to go through a number of reports and decide which ones are relevant and which ones are not relevant. Formulating a question in terms of the types of participants, interventions, outcomes and study designs of interest will lead naturally to specifying the criteria that will be used to select studies. However, some additional effort is often needed to clarify the selection criteria and develop decision rules that are sensible and reproducible. If, for example, you are reviewing studies of therapies for constipation, you must decide if you will review studies addressing acute and/or chronic constipation as well as acceptable criteria for acute and chronic. Are you interested in the entire spectrum of severity of constipation or only in severe constipation and how will you define 'severe'? Do you want to review studies that define constipation on the basis of a certain frequency of bowel movements per week or limit yourself to studies that define constipation on the basis of symptoms such as straining and hard stools? Will you only review studies that have determined the underlying pathophysiologic mechanism of constipation or limit your review to certain specific pathophysiologic disorders? Will you consider studies that merely state that participants were 'constipated'.
4.4 Using the key components of a question to guide data collection

Details relevant to key components of questions are what authors will be collecting from individual studies. Thus well-formulated questions are directly linked to the data collection process because they guide: determination of final criteria that will be used to select appropriate studies for review, and what data should be abstracted from studies meeting those selection criteria. Components of questions may also be directly related to how one chooses to present and analyse data. These issues are discussed further in section 6, section 7 and section 8.

4.5 Broad versus narrow questions

The questions that a review addresses may be broad or narrow in scope. For example, a review might address a broad question regarding whether antiplatelet agents in general are effective in preventing thrombotic events in humans. Alternatively, a review might address whether a particular antiplatelet agent, such as aspirin, is effective in decreasing the risks of a particular thrombotic event, stroke, in elderly persons with a previous history of stroke. As another example, separate reviews might be done to investigate the effectiveness of antibiotics to treat respiratory tract infections in young children and adults.

Determining the scope of a review question is a decision dependent upon multiple factors including perspectives regarding a question's relevance and potential impact; supporting theoretical, biologic and epidemiological information; the potential generalisability and validity of answers to the questions; and available resources.

There are several advantages and disadvantages to initially asking broad or narrow questions. Narrowly focused reviews may not be generalisable to multiple settings, populations and formulations of an intervention. They can also result in spurious or biased conclusions in the same way that subgroup analyses sometimes do (see section 8.7). For example, a review of the effectiveness of aspirin for preventing strokes in women could lead to a false conclusion that aspirin was not effective in women when in truth there were not enough data to detect any significant difference in effect between men and women. A narrow focus is at high risk of resulting in biased conclusions when the author is familiar with the literature in an area and narrows the inclusion criteria in such a way that one or more studies with results that are in conflict with the author's beliefs are excluded. There is also a danger that the known results of a series of studies of a class of interventions might influence the choice of a specific intervention from this class for a narrow review.

The validity of very broadly defined reviews may be criticised for mixing apples and oranges, particularly when there is good biologic or sociological evidence to suggest that various formulations of an intervention behave very differently or that various definitions of the condition of interest are associated with markedly different effects of the intervention. It is fine to mix apples and oranges, if your question is about fruit, but not if your question is about vitamin C and you know that apples and oranges are different with respect to vitamin C.

Searches for data relevant to broad questions may be more time-consuming and more expensive than searches relevant to narrowly defined questions. As broad questions may be addressed by large sets of heterogeneous studies, the synthesis and
interpretation of data may be particularly challenging. Broadly focused reviews can also become unwieldy to present, maintain and understand. One option that has been found useful is to build a broadly focused review on the basis of a series of more narrowly focused reviews. For example, healthcare providers and pregnant women who want to quit smoking are likely to want to know which smoking cessation strategy to use - a broad question. A review that helps them to answer this question could be built upon a series of more focused reviews that ask what the effectiveness of a specific strategy, such as behaviour modification, is. Whether it makes most sense to start with narrower questions and build up to a broader question, or to start with a broad question and then divide it into a number of smaller questions depends on the nature of the problem (e.g. how complex it is, how well understood it is, how much research is available) and the particular circumstances of the authors and their CRG (e.g. how well developed their specialised register is, the availability of resources, time and interest).

4.6 Changing questions

While questions should be posed in the protocol before initiating the full review, these questions should not become a straightjacket that prevents exploration of unexpected issues (NHS CRD 1996). Reviews are analyses of existing data that are constrained by previously chosen study populations, settings, intervention formulations, outcome measures and study designs. It is generally not possible to formulate an answerable question for a review without knowing some of the studies relevant to the question, and it may become clear that the questions a review addresses need to be modified in light of evidence accumulated in the process of conducting the review. Although a certain fluidity and refinement of questions is to be expected in reviews as one gains a fuller understanding of the problem, it is important to guard against bias in modifying questions. *Post-hoc* questions are more susceptible to bias than those asked *a priori*, and data-driven questions can generate false conclusions based on spurious results. Any changes to the protocol that result from revising the question for the review should be documented. When refining questions it is useful to ask the following questions:

- What is the motivation for the refinement?
- Was it made after you had seen and been influenced by results from a particular study or was it simply that you had not initially considered alternate but acceptable ways of defining the participants, interventions or outcomes of interest?
- Are your search strategies appropriate for the refined question (especially any that have already been undertaken)?
- Is your data collection tailored to the refined question?

4.7 References


5 Locating and selecting studies

Systematic reviews of the effects of health care interventions generally focus on reports from randomized controlled trials (RCTs), when such data are available, because of the general acceptance that this study design will lead to the most reliable estimates of effects. A comprehensive search for relevant RCTs, which seeks to minimize bias, is one of the essential steps in doing a systematic review, and one of the factors that distinguishes a systematic review from a traditional review.

A ‘quick and dirty’ search of, for example MEDLINE, is generally not considered adequate. Studies have shown that only 30 - 80% of all known published RCTs were identifiable using MEDLINE (depending on the area or specific question) (Dickersin 1994). Even if relevant records are in MEDLINE it can be difficult to retrieve them easily. A comprehensive search is important not only for ensuring that as many studies as possible are identified but also to minimize selection bias for those that are found. Relying exclusively on a MEDLINE search may retrieve a set of reports unrepresentative of all reports that would have been identified through a comprehensive search of several sources. For example, the majority of the journals indexed in MEDLINE are published in English. If studies showing an intervention to be effective are more likely to be published in English, then any summary of only the English language reports retrieved through a MEDLINE search may result in an overestimate of effectiveness due to a language bias (Gregoire 1995; Moher 1996; Egger 1997; Juni 2002). In addition, the results of many studies are never published, and most of these probably remain unknown. If studies showing an intervention to be effective are more likely to be published, then any summary of only the published reports may result in an overestimate of effectiveness due to a publication bias (Simes 1986; Dickersin 1987; Simes 1987; Begg 1988; Hetherington 1989; Easterbrook 1991; Dickersin 1993; Song 2000).

This section contains information about locating and selecting studies for systematic reviews. The first section describes some of the sources and approaches that can be used. The second section provides guidance on developing and documenting search strategies and organizing the records retrieved.

5.1 Searching for studies

5.1.1 Electronic databases

A search for relevant studies generally begins with health-related electronic bibliographic databases. Searches of electronic databases are generally the easiest and least time-consuming way to identify an initial set of relevant reports. Some electronic bibliographic databases, such as MEDLINE and EMBASE, include abstracts for the majority of recent records. Often a searcher can determine an article’s relevance to a review based on the abstract, and can thereby avoid retrieving the full journal article, if the reported study is clearly not eligible for inclusion. Another advantage of these databases is that they can be searched electronically, for either words in the title and abstract, or using standardized subject related indexing terms that have been assigned to the record. For example, the MEDLINE indexing term RANDOMIZED-CONTROLLED-TRIAL (Publication Type)
was introduced in 1991 and allows a user to search for articles describing individual randomized trials.

Hundreds of electronic bibliographic databases exist. Some databases, such as MEDLINE/PubMed and EMBASE, cover all areas of health care and index journals published from around the world. Other databases, such as the Australasian Medical Index, the Chinese Biomedical Literature Database, the Latin American Caribbean Health Sciences Literature (LILACS), and the Japan Information Centre of Science and Technology File on Science, Technology and Medicine (JICST-E) index journals published in specific regions of the world. Others, such as the Cumulative Index of Nursing and Allied Health (CINAHL) and AIDSLINE, focus on specific areas of health. The Cochrane Collaboration has been developing an electronic database of reports of controlled trials ("CENTRAL") that is now the best single source of information about records that relate to studies, which might be eligible for inclusion in Cochrane reviews (Dickersin 2002). Details of other databases that might contain eligible records are available in the Gale Directory of Online, Portable and Internet databases (http://www.dialog.com). The three electronic bibliographic databases generally considered as the richest sources of trials - MEDLINE, EMBASE, and CENTRAL - are described in more detail below.

5.1.1.1 MEDLINE and EMBASE

Index Medicus (published by the US National Library of Medicine (NLM)) and Excerpta Medica (published by Elsevier) are indexes of healthcare journals that are available in electronic form as MEDLINE and EMBASE, respectively. MEDLINE indexes about 4600 journals from the United States and 70 other countries, and in February 2002 contained over 11 million records from 1966 forward. (Some pre-1966 records have been added recently.) PubMed is a free, online MEDLINE database that also includes up-to-date citations not yet indexed (http://www.ncbi.nlm.nih.gov). EMBASE, which is often considered the European counterpart to MEDLINE, indexes nearly 4000 journals from over 70 countries and, in May 2002, contained approximately 9 million citations. The overlap in journals covered by MEDLINE and EMBASE has been estimated to be approximately 34% (Smith 1992). The actual degree of reference overlap depends on the topic, with reported overlap values in particular areas ranging from 10% to 75% (Kleijnen 1992; Odaka 1992; Smith 1992; Rovers 1993; Ramos-Remus 1994). Studies comparing searches of the two databases have generally concluded that a comprehensive search requires that both databases be searched. Although MEDLINE and EMBASE searches tend not to identify the same sets of references, they have been found to return similar numbers of relevant references.

MEDLINE and EMBASE can be searched using standardized subject terms assigned by indexers employed by the publishing organization. Standardized subject terms (as part of a "controlled vocabulary") are useful because they provide a way of retrieving articles that may use different words to describe the same concept and because they provide information beyond what is simply contained in the words of the title and abstract. Using the appropriate standardized subject terms, a simple search strategy can quickly identify articles pertinent to the topic of interest. This approach works well if the goal is to identify a few good articles on a topic or to identify one particular article. However, when searching for studies for a systematic review the precision with which subject terms are applied to references should be viewed with healthy skepticism. Authors may not describe their methods or objectives well, indexers are not always expert in the subject
area of the article that they are indexing, and indexers make mistakes, like all people. In addition, the available indexing terms might not correspond to the terms the searcher wishes to use. The controlled vocabulary search terms for MEDLINE and EMBASE are not identical. Search strategies need to be customized for each database. One way to begin to identify controlled vocabulary terms for a particular database is to retrieve articles from that database, which meet the inclusion criteria for the review and to note common text words and the terms the indexers had applied to the articles, which could then be used for a full search.

Assuming that search results from each database are of approximately equal value, the choice of which to search first may often be a matter of cost, with MEDLINE typically being the less costly option. As noted earlier, PubMed provides free online access to MEDLINE. Other NLM databases, including AIDSLINE, and HealthSTAR are being phased out and their unique journal citations are migrating to PubMed. PubMed also provides links to full-text versions of articles on other publishers’ web sites. A particularly useful feature of PubMed is that a list of ‘Related articles’ can be obtained for each relevant record identified. The NLM is developing a new database, called the Gateway, which allows users to search PubMed and multiple other NLM retrieval systems simultaneously. The current Gateway (http://gateway.nlm.nih.gov/gw/Cmd) searches PubMed, OLDMEDLINE, LOCATORplus, MEDLINEplus, DIRLINE, AIDS Meetings, Health Services Research Meetings, Space Life Sciences Meetings, and HSRProj.

5.1.1.2 The Cochrane Central Register of Controlled Trials (CENTRAL)

The Cochrane Central Register of Controlled Trials (CENTRAL) serves as the most comprehensive source of records related to controlled trials. As of January 2003, CENTRAL contained just over 350,000 citations to reports of trials and other studies potentially relevant to Cochrane reviews. CENTRAL includes citations to reports of controlled trials that might not indexed in MEDLINE, EMBASE or other bibliographic databases; citations published in many languages; and citations that are available only in conference proceedings or other sources that are difficult to access (Dickersin 2002). Guidance on searching CENTRAL has been prepared as part of the CENTRAL Management Plan (http://www.cochrane.us/manage.htm). Many of the records in CENTRAL have been identified through systematic searches of MEDLINE and EMBASE, as described in the paragraph below.

The US Cochrane Center (as the former New England Cochrane Center, Providence Office) and the UK Cochrane Centre have searched MEDLINE for publication years 1966-2000 using phases 1 and 2 of the Cochrane highly sensitive search strategy (Appendix 5b) (Dickersin 1994). Each year, the US Cochrane Center updates this searching of MEDLINE. Hundreds of thousands of records have been retrieved and reviewed to date. If, on the basis of their title and abstract, the retrieved citations were judged to meet the Cochrane definitions for reports of randomized controlled trials (RCTs) and controlled clinical trials (CCTs), they have been assigned the Publication Type RANDOMIZED CONTROLLED TRIAL or CONTROLLED CLINICAL TRIAL in MEDLINE and also included in CENTRAL (with the permission of the NLM) (see Appendix 5a.1 for Cochrane and Appendix 5a.2 for NLM definitions of RCT and CCT). Similarly, in an ongoing project, the UK Cochrane Centre is retrieving records from EMBASE, checking their titles and abstracts and submitting these for inclusion in CENTRAL when appropriate (with the permission of Elsevier). A search of EMBASE
using five free text terms (ie, random*, crossover*, cross-over*, factorial*, and placebo*), and covering the years 1974-1999, was run in 1999 to identify reports of trials. The results of this search are published in each quarterly release of CENTRAL. Additional searching of EMBASE began in December 2000, and this stage of the project includes searching using additional free text terms and EMBASE (EMTREE) thesaurus terms (Dickersin 2002).

Other general healthcare databases published in Australia, China, and Brazil are undergoing similar systematic searches to identify reports of trials for CENTRAL. The Australasian Cochrane Centre is coordinating the search of the National Library of Australia’s Australasian Medical Index; the Chinese Cochrane Centre is coordinating the search of the Chinese Biomedical Literature Database; and the Brazilian Cochrane Centre is coordinating the search of the Pan American Health Organization’s database LILACS (Latin American Caribbean Health Sciences Literature).

Each Collaborative Review Group (CRG) is responsible for the development of a subject specific specialized register of trials, which serves to ensure that individual authors (reviewers) within the CRG have easy and reliable access to the maximum possible number of studies relevant to their review topic. Typically, the editorial team will assume at least some, if not all, responsibility for examining new studies and forwarding them to appropriate authors. CRGs use all the methods described in this chapter to identify trials for their specialized registers, with the exception of generalized searches of MEDLINE and EMBASE, which, as described above, are performed by the US Cochrane Center and the United Kingdom Cochrane Centre. Many CRGs also have systems to ensure that reports identified by authors for their review(s) are contributed to the CRG’s specialized register. The registers should, in turn, be submitted for inclusion in CENTRAL. Thus, records included in the specialized register of one CRG become accessible to all other CRGs through CENTRAL.

More detailed information about the development and contents of CENTRAL is included in a recent article (Dickersin 2002) and The Cochrane Library help file for CENTRAL.

5.1.1.3 SciSearch
SciSearch is an electronic database that lists published "source" articles from 4500 major scientific and technical journals and the articles that cite them. SciSearch can be used to identify studies for a review by identifying in the database a known relevant source article, and checking each of the articles citing the source article, to see if it is also relevant to the review. It is a way of searching forward in time from the publication of an important article. SciSearch also includes reference lists for records it indexes.

5.1.2 Handsearching
Handsearching involves a manual page-by-page examination of the entire contents of a journal issue to identify all eligible reports of trials, whether they appear in articles, abstracts, news columns, editorials, letters or other text. Handsearching health care journals is a necessary adjunct to searching electronic databases for at least two reasons: 1) not all trial reports are included on electronic bibliographic databases, and 2) even when they are included, they may not be indexed with terms that allow them to be easily identified as trials. Each journal year should be handsearched thoroughly and competently by a well-trained handsearcher for all reports of trials so that once a journal year has been handsearched, it will not need to be searched again. A recent study has
found that a combination of handsearching and electronic searching is necessary for full identification of relevant reports published in journals that are indexed in MEDLINE, especially for articles published before 1991 when the NLM system for indexing trial reports was not as well developed as it is today and for those articles that are in parts of journals (such as supplements and correspondence) which are not indexed in MEDLINE (Hopewell 2002).

To facilitate the identification of all published trials the Cochrane Collaboration has organized extensive handsearching efforts. Overall coordination of the Collaboration’s handsearch of the world’s medical literature is managed by the US Cochrane Center, which oversees prospective registration of all potential handsearching on the Master List of Journals being Searched (http://www.cochrane.us/cochranemainpage.asp). Almost 2200 journals have been, or are being, searched within the Collaboration, and are included in the Master List. "Stand-alone" conference proceedings being searched are also included. The Master List enables search progress to be recorded and monitored for each title and also serves to prevent the duplication of effort that might otherwise arise if journals or conference proceedings in overlapping specialties were to be searched by more than one group or individual.

Cochrane entities and authors can prioritize handsearching based on where they expect to identify the most trial reports. This prioritization can be informed by searching CENTRAL, MEDLINE, and EMBASE in a topic area and identifying which journals appear to be associated with the most retrieved citations. Preliminary evidence suggests that most of the journals with a high yield of trial reports are indexed in MEDLINE (Dickersin 2002), but this may reflect the fact that Cochrane contributors have concentrated early efforts on searching these journals.

Conference proceedings are important to handsearch because individual conference abstracts are not included on MEDLINE and are not usually included in other databases. Abstracts and other grey literature have been shown to be sources of approximately 10% of the studies referenced in Cochrane reviews (Mallett 2002). Over one-half of trials reported in conference abstract never reach full publication, and those that are eventually published in full have been shown to be systematically different than those that are never published in full (Scherer 2003). In addition, grey literature in general has been found to be more likely than health care journals to contain ‘negative’ reports (McAuley 2000). Thus, failure to identify trials reported in conference proceedings might affect the results or threaten the validity of a systematic review.

Authors who wish to handsearch journals or conference proceedings to identify reports of studies for their review should first consult with the editorial based of their CRG. The CRG’s Trials Search Coordinator/Review Group Coordinator can determine whether the journal or conference proceedings has already been searched, and, if it has not, the Coordinator can register the search on the Master List and provide training in handsearching. Training material is available on the US Cochrane Center web site (http://www.cochrane.us/hsmain.htm). All correspondence regarding the initiation of a journal search, progress of a journal search, status of a search etc needs to be between staff at the US Cochrane Center and the Trials Search Coordinator/Review Group Coordinator.

5.1.3 Checking reference lists
Authors should check the reference lists of articles obtained (including those from previously published systematic reviews) to identify relevant reports. The process of following up references from one article to another is generally an efficient means of identifying studies for possible inclusion in a review. Because investigators may selectively cite studies with positive results (Gotzsche 1987; Ravnskov 1992), reference lists should never be used as a sole approach to identifying reports for a review, but rather as an adjunct to other approaches.

5.1.4 Checking other reviews

Some of the most convenient and obvious sources of references to potentially relevant studies are existing reviews. Copies of previously published reviews on the topic of interest should be obtained and checked for references to the original studies. As well as the Cochrane Database of Systematic Reviews, The Cochrane Library includes the Database of Abstracts of Reviews of Effects (DARE) a database produced by the NHS Centre for Reviews and Dissemination in York, UK, that provides information on previously published reviews of the effects of healthcare. MEDLINE, EMBASE and other bibliographic databases can also be used to identify review articles. In MEDLINE, the most appropriate review articles would be indexed under the Publication Type terms META-ANALYSIS and REVIEW, ACADEMIC. Search strategies have been developed to enhance identification of these types of publication (Boynton 1998).

5.1.5 Print versions of electronic databases

While MEDLINE and EMBASE include citations from 1966 and 1974 to the present, respectively, Index Medicus and Excerpta Medica, the print versions of these databases, include citations from 1879 and 1948, respectively. Searching the earlier printed subject indexes may be worthwhile, especially if there is reason to believe that there were early studies of the intervention being reviewed.

Science Citation Index is the print version of SciSearch (see Section 5.1.1.3) and is used for the same general purpose, i.e. for listings of where a published article was subsequently cited. Science Citation Index is more comprehensive than SciSearch, which began in 1974.

5.1.6 Identifying unpublished studies

Some completed studies are never published. If it could be assumed that unpublished studies of a given intervention were comparable to published studies on the same intervention, the failure to identify unpublished results would not be an important threat to the validity of a systematic review. However, an association between significant results and publication has been documented across a number of studies (Dickersin 1997). Finding out about unpublished studies, and including them in a systematic review, when eligible, may be important to minimizing bias. Unfortunately, there is no easy way to obtain information about studies that have been completed but never published. Colleagues can be an important source of information about unpublished studies, and informal channels of communication can sometimes be the only means of identifying unpublished data. Formal letters of request for information can also be used to identify completed but unpublished studies. One way of doing this is to send a comprehensive list
of relevant articles along with the inclusion criteria for the review to the first author of reports for included studies, asking if they know of any additional studies (published or unpublished) that might be relevant. It may also be desirable to send the same letter to other experts and pharmaceutical companies or others with an interest in the area. However, it should be borne in mind that asking researchers for information about completed but never published studies has not typically been fruitful (Hetherington 1989; Horton 1997).

Identifying ongoing studies may also be important so that when a review is later updated, these can be assessed for possible inclusion. Unfortunately no single, central register of ongoing randomized trials currently exists and instead there are hundreds of distinct, predominantly online registers that vary widely in content, quality, and accessibility. These may have limited use as a means of identifying studies relevant to systematic reviews. Various efforts have been made by independent groups to begin to provide central access to ongoing trials, mostly through web sites that provide links to hundreds of registers of ongoing clinical trials. Two such examples are TrialsCentral™ (www.trialscentral.org) and Current Controlled Trials (www.controlled-trials.com). Current Controlled Trials also has a searchable database of information about thousands of ongoing and completed trials, including those registered on ClinicalTrials.gov.

5.1.7 Evidence on adverse effects
The first sources to investigate for information on adverse effects are reports from trials or other studies included in the systematic review. Excluded reports might also provide some useful information.
There are a number of sources of information on adverse effects of drugs, including Current Problems produced by the UK Medicines Control Agency (http://www.open.gov.uk/mca), MedWatch produced by the US Food and Drug Administration, and the Australian Adverse Drug Reactions Bulletin (http://www.health.gov.au/). Other regulatory authorities and the drug manufacturer may also be able to provide some information. Information on adverse effects might also be sought from other types of studies than those considered appropriate for the systematic review (e.g., cohort and case-control studies, uncontrolled trials, case series and case reports). However, all such studies and reports are subject to bias to a greater extent than randomized trials, and findings must be interpreted with caution.

5.2 Developing and documenting a search strategy for studies and organizing search results

5.2.1 Developing a search strategy
The ultimate goal in developing a specialized register for a CRG is that it can serve as an all-inclusive source of reports relevant to the CRG’s scope and topic area, such that a relatively simple search using some key words related to the intervention could be run against the specialized register to identify all relevant studies. Most CRG specialized registers have not yet reached this point of comprehensiveness. Nevertheless, for many CRGs, the specialized register is still the best available source of studies for a given
review. Different CRGs have different systems of ensuring authors have access to reports included in their specialized registers. Many Trials Search Coordinators/Review Group Coordinators search their CRG’s specialized register for authors on request. Specialized registers can also be searched through CENTRAL, which contains a recent version of the registers for most CRGs.

It is always necessary to strike a balance between comprehensiveness and precision when developing a search strategy. Increasing the comprehensiveness of a search entails reducing its precision and retrieving more non-relevant articles. Developing a search strategy is an iterative process in which the terms that are used are modified, based on what has already been retrieved. There are diminishing returns for search efforts; after a certain stage, each additional unit of time invested in searching returns fewer references that are relevant to the review. Consequently there comes a point where the rewards of further searching may not be worth the effort required to identify the additional references. The decision as to how much to invest in the search process depends on the question a review addresses, the extent to which the CRG's specialised register is developed, and the resources that are available.

It is a good idea to search other electronic bibliographic databases regardless of whether CENTRAL or a CRG’s specialized register is searched. If authors wish to conduct their own additional searches, information specialists with expertise in electronic searching should be sought to design and run the search strategy. The assistance of an information specialist should help to avoid many errors, and ensure that database-specific search term syntax will be appropriate and that advanced searching techniques (e.g. ‘exploding’ controlled vocabulary terms) can be employed where available. If information specialists are involved in developing the search strategy, they should be made aware of the greater importance of high recall (i.e. sensitivity) as compared to precision in searching for studies for systematic reviews. Ideally, authors should be present when the search is done. There are often costs associated with searching each database and with each record that is downloaded. Therefore, judgments about what to download often need to be made while the search is being done. The exact search performed and material retrieved for each search should be recorded in the Search Strategies for Identification of Studies section of the Cochrane review.

An electronic search strategy should generally have three sets of terms: 1) terms to search for the health condition of interest; 2) terms to search for the intervention(s) evaluated; and 3) terms to search for the types of study design to be included (typically randomized trials). The exception to this is CENTRAL, which aims to contain only reports with study designs possibly relevant for inclusion in Cochrane reviews, so searches of CENTRAL should be based on health condition and intervention only. A good approach to developing an electronic search strategy is to begin with multiple terms that describe the health condition of interest and join these together with the Boolean 'OR' operator. This means you will retrieve articles containing at least one of these search terms. You can do likewise for a second set of terms related to the intervention(s) and for a third set of terms related to the appropriate study design. These three sets of terms can then be joined together with the ‘AND’ operator. This final step of joining the three sets with the ‘AND’ operator limits the retrieved set to articles of the appropriate study design that address both the health condition of interest and the intervention(s) to be evaluated. A note of caution about this approach is warranted however: if an article does not contain at least one term from each of the three sets, it will not be identified. For example, if an index term has not been added to the record for the intervention or the intervention is not
mentioned in the title and abstract, the article would be missed. A possible remedy is to omit one of the three sets of terms and decide which records to check on the basis of the number retrieved and the time available to check them.

No language restrictions should be included in the search strategy. Date restrictions should be applied only if it is known for certain that relevant studies could only have been reported during a specific time period.

A Trials Search Coordinators or information specialist can often be helpful in suggesting terms for the health condition and intervention. In general, both controlled vocabulary terms and text words (i.e. those found in the title or abstract) should be used. You should assume that earlier articles are harder to identify. For example, abstracts are not included in MEDLINE for most articles published before 1976 and, so, text word searches will only apply to titles. In addition, few MEDLINE indexing terms relating to study design were available before the 1990s. In designing a search strategy, it may be helpful to look at published papers on the same topic and check the controlled vocabulary terms and text words. Although a research question may address particular populations, settings or outcomes, these concepts are often not well indexed with controlled vocabulary terms and generally do not lend themselves well to searching.

The Cochrane highly sensitive search strategy for MEDLINE (Dickersin 1994; Robinson 2002) was developed specifically with the needs of Cochrane reviews in mind. The earliest version of this search strategy was developed in 1994 and subsequent versions have been developed, each with a different syntax, specific to the version of MEDLINE being searched (e.g. Silver Platter MEDLINE, OVID MEDLINE, PubMed) (Appendix 5b).

As noted in Section 5.1.1.2, the first two phases of the strategy have already been applied to search MEDLINE for all years from 1966 to 2000. Records resulting from the search were downloaded, printed out, and classified as definite or possible randomized or quasi-randomized trials, or not using the information in the title and abstract. If no abstract was available, the decision was based on the title alone. Because identification relied solely on the titles and, where available, the abstracts, some relevant articles may not have been identified. Therefore, it may still be worthwhile for authors to search MEDLINE using the Cochrane highly sensitive search strategy and to obtain and check the full reports of possibly relevant citations.

None of the terms from phase 3 of the Cochrane highly sensitive search strategy were used for generalized searching for controlled trial reports on MEDLINE noted above because of a pilot assessment which showed an unfavorable ratio of effort and expense to results (Clarke 1999).

CRGs typically use phases 1-3 of the Cochrane highly sensitive search strategy plus subject matter terms (using the Boolean "AND") for searching MEDLINE. In developing a search strategy for other electronic bibliographic databases, the terms used to identify trials would generally be similar or the same as terms from the Cochrane highly sensitive search strategy. If an information specialist is assisting with developing a search strategy, she should be made aware of the Cochrane highly sensitive search strategy and how it is used.

5.2.2 Documenting a search strategy

5.2.2.1 Electronic databases
The search strategy for electronic databases should be described in sufficient detail in a review that the process could be replicated. The following information should be included for each electronic bibliographic database each time it is searched, including CENTRAL and specialized registers:

- Title of database searched (e.g. MEDLINE)
- Name of the host (e.g. Silver Platter version 2.0)
- Date search was run (month, day, year)
- Years covered by the search
- Complete search strategy used, including all search terms (preferably cut and pasted rather than retyped)
- One or two sentence summary of the search strategy indicating which lines of the search strategy were used to identify records related to the health condition and intervention, and which lines were used to identify studies of the appropriate design
- The absence of any language restrictions

A description of a search strategy for electronic databases is included as Appendix 5c.

5.2.2.2 Journal Handsearching

Any journal years searched specifically for the review should be listed in the Search Strategies for Identification of Studies section of the review, by journal title, in alphabetical order. Ideally the full titles should be used for the journals. The months and years searched should be stated.


5.2.2.3 Conference Proceedings

Details of the conference proceedings searched for the review should be provided as follows:

Proceedings with a title in addition to the conference name:


Proceedings without a separate title:

- Symposium on Nasal Polyp; 1984 Oct 5 6; Tokyo.

Proceedings in a language other than English:


Proceedings also published as part of a journal:

Note whether the printed proceedings were handsearched or an electronic database was searched.

5.2.2.4 Efforts to identify unpublished studies
Provide a brief summary including databases searched (e.g. SIGLE, National Research Register, HSRProj), giving database details as described in 5.2.2.1. Include also efforts to contact investigators for information about unpublished studies.

5.2.2.5 Other sources
Provide a brief summary of other sources searched (e.g. bibliographies, reference lists and web sites) specifically for the review, giving details of date searched, search terms used, and web sites if relevant.

The search strategies used to develop the specialized register of a CRG are described in their module and should not be reported in the text of Cochrane reviews, but it is helpful to include details of the strategy used to search the specialized register.

5.2.3 Selecting studies
It is generally for authors to decide which study design(s) to include in their review. Most Cochrane reviews include only randomized or quasi-randomized trials (Appendix 5a). Some reviews are more restrictive, and include only randomized trials, while others are less restrictive, and include other study designs as well, particularly when few randomized trials addressing the topic of the review are identified. For example, many of the reviews from the Cochrane Effective Practice and Organization of Care (EPOC) Collaborative Review Group include before-and-after studies and interrupted time series in addition to randomized and quasi-randomized trials.

The process by which studies will be selected for inclusion in a review should be described in the review protocol. The selection of studies for consideration for inclusion in a review is a process that involves several stages. The first stage of checking the results of an electronic search involves assessing titles and abstracts to determine whether each article might meet predetermined eligibility criteria. Authors must decide if more than one of them will assess the records retrieved by electronic databases. There is evidence that using at least two authors has an important effect on reducing the possibility that relevant reports will be discarded (Edwards 2002). If, given the information available, it can be determined that an article definitely does not meet inclusion criteria, it can be rejected. If the title or abstract leave room for doubt that the article cannot definitely be rejected, the full text of the article should be obtained. Reading the full text may lead the authors to exclude the study because it does not meet inclusion criteria. If the article is not rejected, information from it may then be formally extracted as described in Section 7. At all but the last stage of the selection process it is important to err on the side of over-inclusion because once a study has been excluded from the selection process it is unlikely to be reconsidered. Articles about which there is some doubt which are included at one stage can be excluded at a latter stage when more information becomes available. All reports of studies that are identified as potentially eligible must be assessed to see whether they meet the inclusion criteria for the review. Authors must decide:

- whether more than one author will assess the relevance of each report
• whether the decisions concerning relevance will be made by content area experts, non-experts, or both
• whether the people assessing the relevance of studies will know the names of the authors, institutions, journal of publication and results when they apply the inclusion criteria
• how disagreements will be handled if more than one author applies the criteria to each article

Decisions about which studies to include in a review often involve judgment. To help ensure that these judgments are reproducible, it is desirable for more than one author to apply the inclusion criteria to all the potentially relevant reports that are retrieved. However, the approach used varies from review to review. Whatever the case, the number of people assessing the relevance of each report should be stated in the Methods section of the review (if it is not stated in a description of the methods used by all of the authors in a particular CRG).

Experts in a particular area frequently have pre-formed opinions that can bias their assessments of both the relevance and validity of articles (Cooper 1989; Oxman 1993b). Thus, while it is important that at least one author is knowledgeable in the area under review, it may be an advantage to have a second author who is not an expert in the area. Some authors may decide that assessments of relevance should be made by people who are blind or masked to the journal from which the article comes, the authors, the institution, and the magnitude and direction of the results by editing copies of the articles (Berlin 1997a; Berlin 1997b). However, this takes much time, and may not be warranted given the resources required and the uncertain benefit in terms of protecting against bias (Berlin 1997b).

Disagreements about whether a study should be included can generally be resolved by discussion. Often the cause of disagreement is a simple oversight on the part of one of the authors. When the disagreement is due to a difference in interpretation, the issue should be resolved by consensus. Occasionally, it will not be possible to resolve disagreements about whether to include a study without additional information. In these cases, authors may choose to categorize the study in their review as one that is awaiting assessment until the additional information is obtained.

For most reviews it will be worthwhile to pilot test the inclusion criteria on a sample of articles (say ten to twelve papers, including ones that are thought to be definitely eligible, definitely not eligible and questionable). The pilot test can be used to refine and clarify the inclusion criteria, train the people who will be applying them and ensure that the criteria can be applied consistently by more than one person.

One approach to determining which studies to identify in the review as ‘excluded’ is to list any studies about which it is plausible to expect that a reader would question why the study was not included. This covers all studies that apparently meet the selection criteria but have had to be excluded and also any that do not meet all of the criteria but are well known, in the same general area as the review and likely to be thought relevant by some readers. By listing such studies as excluded and giving the reason for exclusion, the author can show that consideration has been given to these studies.

5.2.4 Keeping track of identified studies
Specially designed reference management systems such as ProCite, Reference Manager, and EndNote are useful and relatively easy to use to keep track of reports of studies. ProCite is the most widely used package and the one for which support to editorial bases is most widely available. It is also the preferred database for submitting controlled trials and specialized registers to CENTRAL. ProCite eases the work of identifying duplicate references. In addition, it facilitates storage of information about the methods and process of a search. For example, separate unused fields in ProCite can be used to store 1) when and from whom an article was ordered, and the date of article receipt; 2) reasons for article exclusion; and 3) name of electronic bibliographic database source from which an article was identified.

General database packages such as Access and FoxPro include powerful query capabilities and lend themselves well to customisation, but require some programming and database design skills to set up. An Access-based software (called 'MeerKat') has been developed by the UK Cochrane Centre, in association with Update Software, to address the specific needs of CRGs in managing their specialised registers (http://www.update-software.com/meerkat/). MeerKat allows for a specialized register to be organized around studies, instead of the publications or reports generated from these studies. Each study may have several associated reports. For example, a single randomized trial may have reports that relate to plans for the trial, baseline characteristics of the trial participants, initial results from the trial, and final results from the trial. In MeerKat, each of these reports can be associated with the corresponding study. MeerKat has also been designed specifically to facilitate the work of the Review Group Coordinator/Trials Search Coordinator. For example, MeerKat can produce tables to indicate which records have been assigned to a particular author or topic, and which records have been submitted to CENTRAL. MeerKat also allows complex database searches, including wildcard searches, Boolean searches, and searches of only specific fields. If adopted, MeerKat may ease the task of managing references within a CRG.

5.3 Summary

Conducting a comprehensive, objective, and reproducible search for studies can be the most time-consuming and challenging task in preparing a systematic review. Yet it is also one of the most important. Identifying all relevant studies, and documenting the search for studies with sufficient detail so that it can be reproduced is, after all, largely what distinguishes a systematic review from a traditional narrative review. Although currently it is necessary to search multiple sources to identify relevant published studies, it is envisioned that CENTRAL will eventually become a comprehensive source for published studies, thus reducing the searching burden for authors. Identifying ongoing studies, however, will continue to remain a challenge until a comprehensive, searchable, ongoing trials register is produced to track, organize, and disseminate reports for ongoing studies, as CENTRAL doing for reports of studies that have been published (Lefebvre 2001).

5.4 References


