



Assessing the Quality and Applicability of Systematic Reviews (AQASR)

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Objectives:

- Delineate steps and issues in the development of systematic reviews
- Introduce *Assessing the Quality and Applicability of Systematic Reviews (AQASR)* (© SEDL/NCDDR 2011)
- Describe how AQASR can be used in evaluating whether a particular systematic review can be trusted to provide an unbiased, reliable answer to one's (clinical, research, policy) question

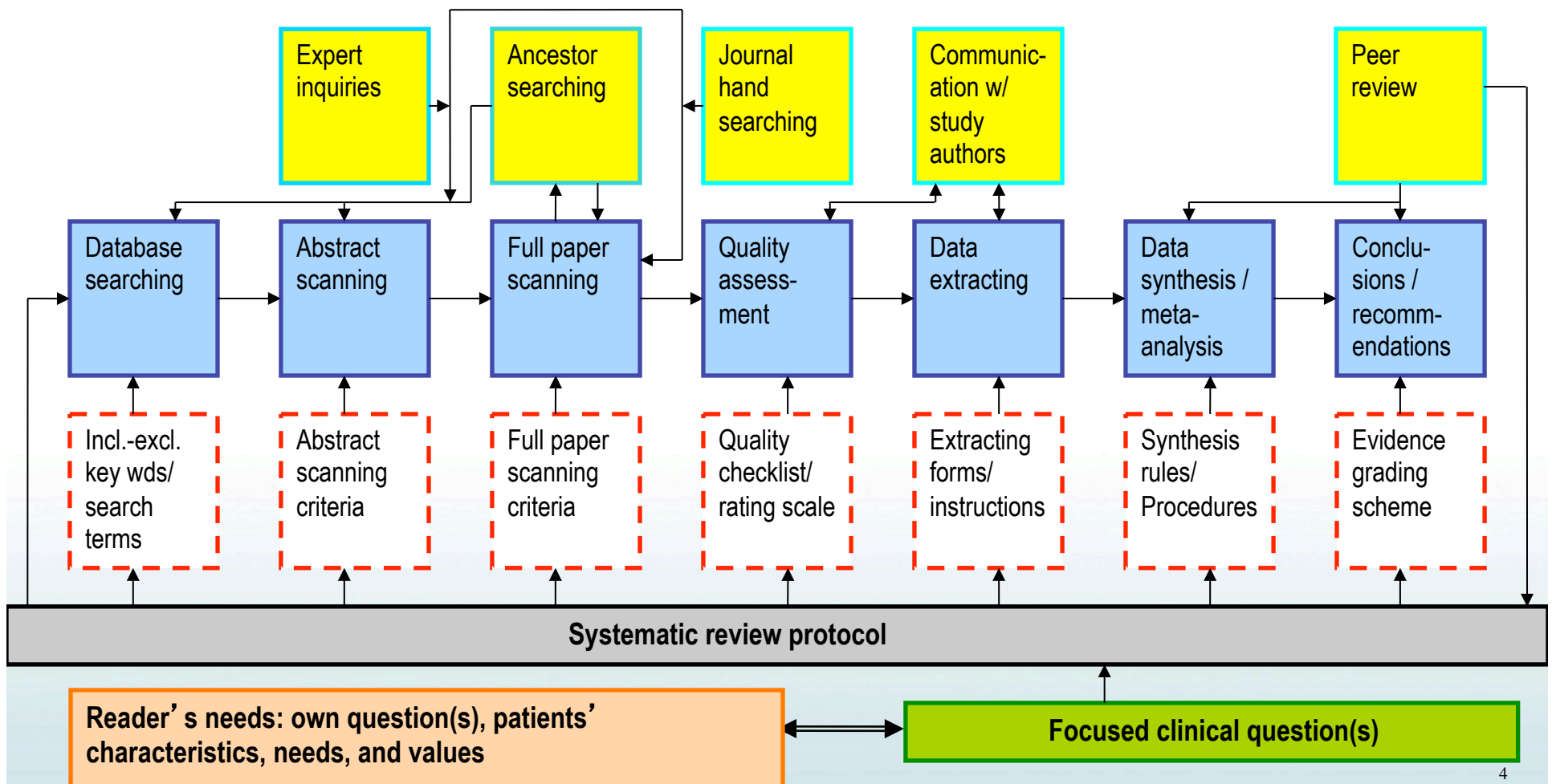
MedLine: definition of “Review”

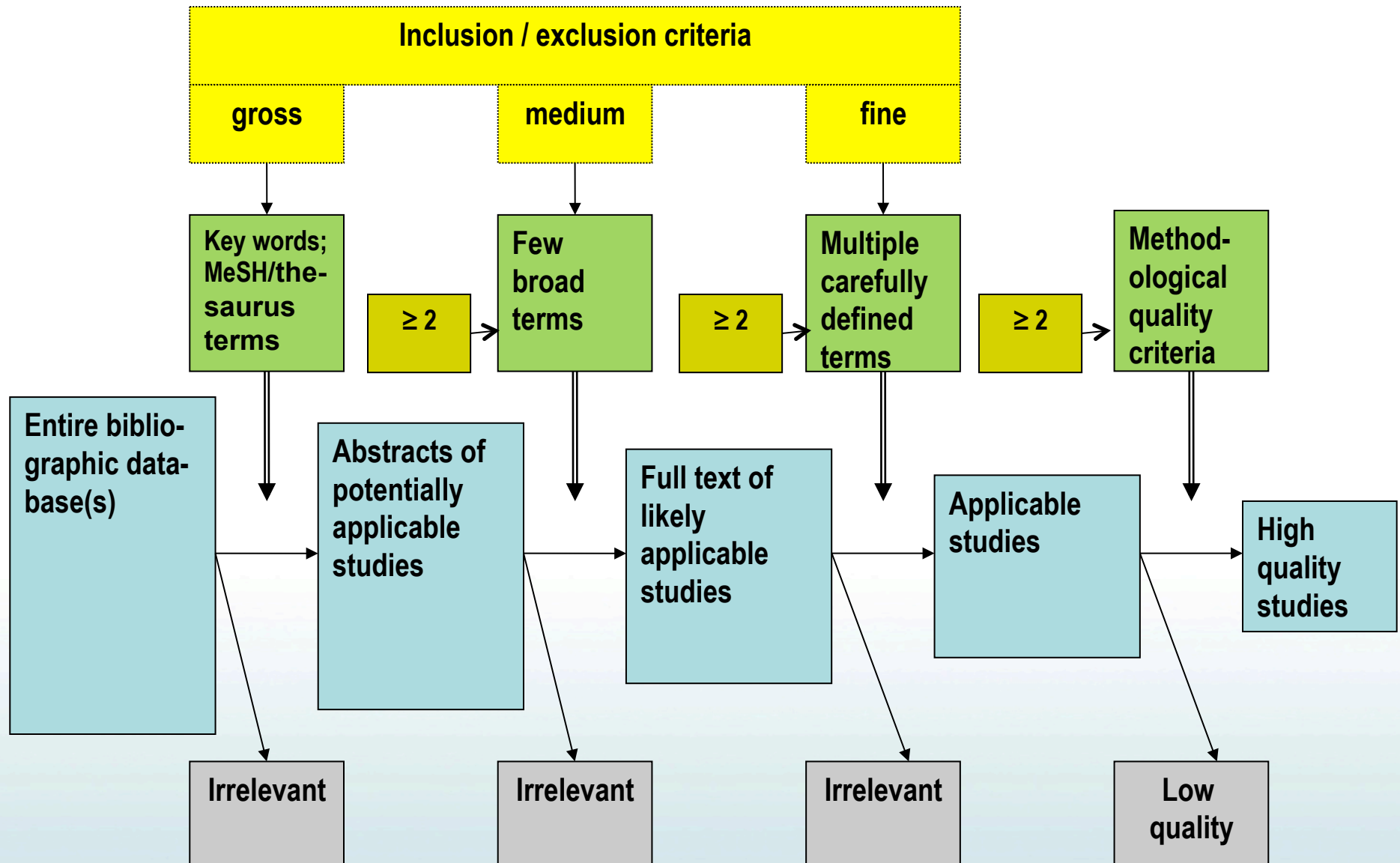
- An article or book published after examination of published material on a subject. It may be comprehensive to various degrees and the time range of material scrutinized may be broad or narrow, but the reviews most often desired are reviews of the current literature. The textual material examined may be equally broad and can encompass, in medicine specifically, clinical material as well as experimental research or case reports. State-of-the-art reviews tend to address more current matters. [...]

AQASR Glossary: definition of “Systematic Review”

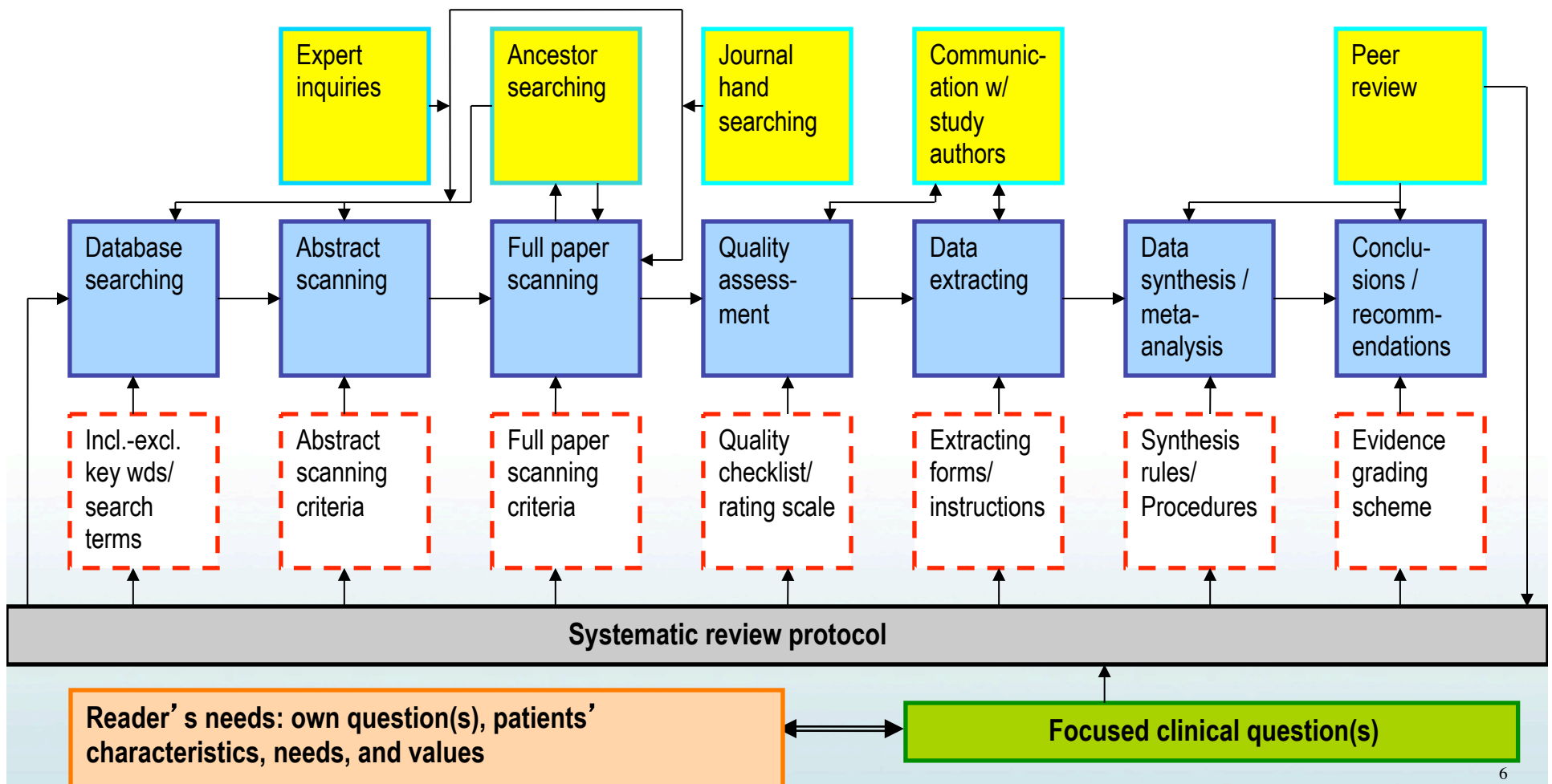
- A systematic review synthesizes research evidence *focused on a particular question* and follows an *a priori protocol* to systematically *find* primary studies, *assess* them for quality, *extract* relevant information and *synthesize* it, qualitatively or quantitatively (meta-analysis).
- Systematic reviews *reduce bias* in the review process and *improve the dependability* of the answer to the question, through use of a protocol, electronic and manual literature search, careful extracting of data and critical appraisal of individual studies.

The steps in a systematic review: schematic overview of systematic review production and the link of the results to the reader's interests





The steps in a systematic review: schematic overview of systematic review production and the link of the results to the reader's interests



Task Force on Systematic Review and Guidelines (2006-11)

- Convened by the National Center for the Dissemination of Disability Research
- Purpose: consider issues relevant to the production and use of systematic reviews and guidelines, specifically in disability and rehabilitation services, especially by NIDRR grantees
- Created papers, presented webcasts, made conference presentations

Major Task Force product:

- *Assessing the Quality and Applicability of Systematic Reviews (AQASR)*
 - Introduction to systematic reviews
 - AQASR Checklist
 - Section introductions
 - Questions to ask
 - “Look for” bulleted lists
 - Rationales for the importance of the questions
 - Glossary
- Published 2011 SEDL/NCDRR
- Revised August 2013: www.ktdrr.org/aqasr

Reasons for creating the AQASR checklist

- Ever-growing scientific/ professional literature > increasing need for practitioners/ administrators/ policy makers/ researchers to rely on reviews
- Limited training in methods of systematic reviewing > many potential users lack knowledge/ skills to assess quality and reliability of a systematic review
- Not much guidance available on how to assess systematic reviews for quality and utility
- **The basic purpose of the AQASR checklist is to help busy clinicians, administrators and researchers to ask the critical questions that will help reveal the strengths and weaknesses of a particular review, in general and as relevant to their question(s).**

Method of creating the checklist

- “Mining” the existing literature on the quality of systematic reviews for items/ questions/ issues
- Items sorted into categories (different than those currently used in AQASR)
- Discussed from a number of viewpoints:
 - Does the item/ question address the quality of a review?
 - Can the answer be found by just reading the review at hand?
 - Is it important to ask the question?
 - Does the question help the users of the checklist to better understand the strengths and limitations of the review at hand, and assist them to make better decisions to use it or not?

Method of creating the checklist (cont.)

- Discarded, combined, split items
- Wrote “Look for” and “Rationale” sections
- Wrote additional materials (introduction, glossary)

A checklist, not a rating scale

- Completing the checklist does not provide an *automatic* answer to the question: “**Should I rely on this review?**”
- There is no total score
- Completing the list reveals the strengths and weaknesses of a particular review, in general and as relevant to the user’s particular questions/ purposes

Review Users' steps:

- (Have a question that research literature can answer)
- Determine one's own needs (clients'/patients' needs, values, relevant characteristics)
- Search for systematic review(s)
- *Determine the correspondence* between one's own needs and the focused question(s) that the review addresses (*applicability* focus)
- *Critically assess the systematic review* (*quality* focus)
- Apply review findings/recommendations in one's practice

AQASR has questions on the steps all systematic reviews have in common:

- The focused clinical question (6)
- Systematic review protocol (5)
- Literature searches (16)
- Scanning of abstracts and full papers (8)
- Assessment of the quality of the primary studies (6)
- Extracting data (4)
- Synthesizing the data qualitatively (7)
- Drawing conclusions, making recommendations (7)
- Synthesizing the data quantitatively (meta-analysis) (7)

In addition, AQASR has questions relevant to the focus of the systematic review:

- Intervention/prevention (13)
- Diagnostic procedure (8)
- Measurement instrument (10)
- Prognosis (6)
- Economic evaluation (7)

A sampling of AQASR questions

SYSTEMATIC REVIEW QUESTION / CLINICAL APPLICABILITY (RQ) (6 questions)

RQ1. Do the authors ask a concrete, concise, clearly stated question as the basis for their review?

- **Look for:**

- A specific well-defined question, including overall conceptual framework.
- Definitions of terms stated in the question.
- Specification of population, settings, condition(s) of interest, providers, and outcomes.
- If the question is changed during the review process, delineation of the rationale and process for modifying it.

RQ1. Do the authors ask a concrete, concise, clearly stated question as the basis for their review?

- **Rationale:**

- If the question is too broad, the findings lack sufficient relevance for answering practical clinical questions and formulating future research questions.
- A clinically focused review is most useful and relevant if it addresses an issue that is important and that informs decision-making around management (intervention, diagnosis, assessment, economic evaluation, prognosticating) for specific situations and types of persons.

PROTOCOL (PR) (5 questions)

PR1. Was an a priori protocol for the systematic review produced/available? (standard protocol or customized or ad-hoc)

- **Look for:**
 - A statement that a protocol had been prepared or protocol template identified before study start
 - A statement that a copy of the protocol is available from the authors, or on a website, in a publication, etc.

PR1. Was an a priori protocol for the systematic review produced/available? (standard protocol or customized or ad-hoc)

- **Rationale:**

- It is reasonable to assume that studies that followed a clear, pre-established protocol have better and more reliable results
- Without access to the protocol, it is difficult for the reader to determine whether there were unacknowledged deviations from the protocol.

INFORMATION RETRIEVAL: DATABASE SEARCHING (DB) (8 questions)

DB1. Was the method for locating evidence described?

- **Look for:**
 - a description of how studies and reports were identified, using one or more of the following methods:
 - bibliographic database searching
 - grey literature searching
 - hand searching journals
 - correspondence with experts
 - ancestry searches
 - searches for descendants

DB1. Was the method for locating evidence described?

- **Rationale:**
 - Without a description of how evidence was located, the reader cannot evaluate whether the evidence on which conclusions are based is incomplete or biased.
 - *Checks for the quality of the various methods of locating evidence are provided in the sections immediately following.*

SEARCH LIMITATIONS (SL) (8 questions)

SL1. Was the literature collected limited by language of the reports? If so, was this limitation justified/justifiable?

- **Look for:**
 - A statement regarding the languages of published reports included in the review

SL1. Was the literature collected limited by language of the reports? If so, was this limitation justified/justifiable?

- **Rationale (1):**

- Systematic reviews often include only publications in English, but this may limit the generalizability of the conclusions.
- Inclusion of publications in languages other than English may result in a larger and more representative evidence base.

SL1. Was the literature collected limited by language of the reports? If so, was this limitation justified/justifiable?

- **Rationale (2):**

- If publications in languages other than English are included there needs to be some consideration of the geographic variations in medical/rehabilitative care and cultural differences that may affect the results – for instance, in a prognostic study the mortality rates for a diagnostic group of interest may be much higher in third-world countries than in the USA.

ABSTRACT AND FULL PAPER SCANNING (SC) (8 questions)

Abstract and Full Paper Scanning: Question 1

- Were the inclusion and exclusion criteria used for selecting abstracts specified? Were the in/exclusion criteria used likely to result in (clinically) relevant articles being identified?

SC1. Were inclusion and exclusion criteria used for selecting abstracts specified?

- **Look for (1):**
 - statements describing
 - the conditions, diagnoses, disorders of interest
 - the demographic characteristics (age, gender, ethnicity, etc.) of the study samples
 - research design(s) of interest
 - other methodological terms used (e.g. prognos*)
 - key constructs of interest and the various terms in use
 - the time frame (if any) for outcomes

SC1. Were inclusion and exclusion criteria used for selecting abstracts specified?

- **Look for (2):**
 - statements defining
 - the time period that studies included in the review were to have been undertaken/published
 - the geographic regions in which studies included in the review were to have been completed
 - the languages of reports of studies included in the review
 - the selected research designs of these studies
 - any other characteristics of the subjects or studies used as in/exclusion criteria

SC1. Were inclusion and exclusion criteria used for selecting abstracts specified?

- **Rationale (1):**

- Statements on the inclusion and exclusion criteria used for studies need to provide a clear understanding of the population of people towards which the review is directed and for which full text reports and articles will be selected, as well as a clear description of the intervention / diagnostic procedure / prognostic variables of interest / etc.

SC1. Were inclusion and exclusion criteria used for selecting abstracts specified?

- **Rationale (2):**

- The in/exclusion criteria for abstracts may be more broad than those used for actually selecting the full text reports of studies to finally include in the review.
- This criterion ensures that as few studies as possible are overlooked in the selection process.

METHODOLOGICAL QUALITY ASSESSMENT AND USE (MQ) (6 questions)

MQ1. Were studies reviewed for methodological quality?

- **Look for:**
 - A list of criteria used to evaluate methodological quality
 - Entries in an evidence table of quality grades or scores

MQ1. Were studies reviewed for methodological quality?

- **Rationale:**

- A clear statement of methodological quality criteria helps users of reviews determine the thoroughness of the review and the usefulness of the review for their own work.
- Reference to well-established criteria may be sufficient, such as those of the AGREE Collaboration, the Campbell Collaboration, the American Academy of Neurology, the Agency for Healthcare Research and Quality, or The Cochrane Collaboration

DATA EXTRACTION (DE)

(4 questions)

DE1. Is an extracting form and syllabus described?
If so, is pilot-testing of the form/syllabus described?

- **Look for:**
 - A data extraction form created prior to beginning the process of extracting information from articles reviewed
 - The mention of a syllabus, a set of explicit, clear instructions to ensure that all reviewers completed the form in the same manner
 - A brief (likely one sentence) statement that reviewers practiced extracting data from a few ‘training’ articles prior to beginning the actual review

DE1. Is an extracting form and syllabus described?

If so, is pilot-testing of the form/syllabus described?

- **Rationale:**

- If reviewers did not follow standardized procedures in extracting data, data collected may be incomplete, inaccurate or biased.
- This would be similar to conducting a primary study in which different data collectors used different procedures for collecting study outcomes.
- Practice with the data extraction form and syllabus provides the authors with an indication of whether the form can be completed reliably by all reviewers.
- If this is not the case, changes can be made prior to beginning the actual review.



QUALITATIVE SYNTHESIS (QS) (6 questions)

QS2. Is the method for data synthesis (aggregating evidence across studies) described?

- **Look for:**

- A statement as to whether or not the data are synthesized qualitatively or are combined in a meta-analysis.
- **IF NO META-ANALYSIS IS PERFORMED:**
A description of the methods and criteria (to be) employed to combine the results of various studies and draw conclusions from their joint findings

QS2. Is the method for data synthesis (aggregating evidence across studies) described?

- **Rationale:**

- Depending upon the question that is asked, the primary studies that are extracted may be more or less heterogeneous. A narrowly based question will lend itself better to pooling of the data and a meta-analysis while a more broadly based question will lend itself to descriptive tables in which each study's results (evidence) are summarized, followed by synthesis into what the entirety of the literature shows, if warranted.

DISCUSSION OF FINDINGS AND RECOMMENDATIONS (DI) (7 questions)

DI1. Are study limitations discussed (e.g. publication bias, strength of studies, decisions on synthesis)?

- **Look for:**
 - A subsection of the discussion section labeled ‘study limitations’
 - One or more paragraphs in the discussion section that address limitations
 - Occurrence of such terms as publication bias, selective outcome reporting, attrition bias, funding bias

DI1. Are study limitations discussed (e.g. publication bias, strength of studies, decisions on synthesis)?

- **Rationale:**

- Authors of good reviews are aware of the weaknesses of the materials they had to work with and the impact of decisions they made, such as a crucial decision that may have increased the effect sizes of an intervention
- An informative discussion of effects on findings and conclusions of selective publication adds to confidence in the systematic review

META-ANALYSIS (MA) (7 questions)

MA1. Is it specified how missing values are handled?
Is this appropriate?

- **Look for:**
 - A statement on how reports with missing data were handled

MA1. Is it specified how missing values are handled? Is this appropriate?

- **Rationale:**

- Papers and other primary research reports may miss crucial information needed for a meta-analysis – e.g. N of cases, standard deviations corresponding to means, etc. This may be handled by omitting the report, estimating from other studies, estimating conservative values, etc. Any decision should be justifiable.

INTERVENTION STUDIES (IN)

(12 questions)

IN1. Are the interventions(s) and the comparator(s) of interest described/defined?

- **Look for:**

- Description of the intervention, including a definition of the procedures to which the intervention will be compared
- Previous findings regarding effectiveness of certain types of interventions
- Definitions of the intervention of interest, including those to be excluded
 - Information about the comparator(s), such as dose, frequency, intensity or duration

IN1. Are the interventions(s) and the comparator(s) of interest described/defined?

- **Rationale:**
 - Interventions must be specifically described so that practitioners and researchers can replicate or use them in practice or research
 - Must be presented in the context of other interventions and standard practice
 - Most useful if they make explicit comparisons of outcomes of alternative interventions

PROGNOSTIC STUDIES (PS) (6 questions)

PS1. Do the authors define the population of interest and do they specify criteria to make sure that all the primary studies involved deal with (a sample from) the same population?

- **Look for:**

- A specific definition of the population of interest.
- A set of criteria that help determine whether the samples studied satisfy the definition.
- A checklist or other mechanism for assessing whether the samples being followed over time is representative of the original samples.

PS1. Do the authors define the population of interest and do they specify criteria to make sure that all the primary studies involved dealt with (a sample from) the same population?

- **Rationale:**

- Readers (clinicians, researchers, others) have to be able to determine whether the findings will generalize to relevant patient groups.
- Provision of clear criteria (inclusion/exclusion) allows the reader to determine whether study samples from the various papers reviewed were representative of the population of interest.

DIAGNOSTIC ACCURACY STUDIES
(8 questions)

MEASUREMENT INSTRUMENT RESEARCH
(10 questions)

ECONOMIC EVALUATIONS
(7 questions)

Bottom line

- 56 questions + 6 to 13, depending on study purpose (+7 if meta-analysis) = 62 to 76 questions
- Some questions not applicable to all reviews (preceded by IF)
- Yet always significant investment
- While glossary helps, training in AQASR use seems helpful to many people
- SEDL's KTDRR is planning an online training course (3-4 sessions) fall 2013
- *INQUIRE!*

Wrapping Up

Thank you for participating!

We invite you to:

- Provide your input on today's webcast
- Share your thoughts on future webcast topics
- Participate in the Community of Practice to continue the dialogue
- PLEASE CONTACT US:

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