



# Assessing the Quality and Applicability of Systematic Reviews (AQASR)

*Marcel Dijkers, PhD, FACRM  
Icahn School of Medicine at Mount Sinai*

An online workshop sponsored by SEDL's Center on  
Knowledge Translation for Disability and Rehabilitation Research (KTDRR)

*Funded by NIDRR, US Department of Education, PR# H133A120012*

# 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

# Objectives:

- Review the various sections of AQASR and the items in each
- Apply the instrument to several systematic reviews to increase familiarity with its elements and application



Questions?

## My background

- Research professor of rehabilitation medicine at Icahn School of Medicine at Mount Sinai
- Trained as a social scientist, with expertise in statistics and methodology
- 30+ year of experience in rehabilitation research, especially TBI and SCI
- Last 10 years special focus on evidence-based practice, systematic reviewing/meta-analysis
- Co-author of a number of reviews and guidelines
- Lead author of the development of AQASR

## Logistical and emotional support

- Joann Starks, M.Ed., SEDL's Center on Knowledge Translation for Disability and Rehabilitation Research
- Collaborator on AQASR development

# Introductions

- Your name
- Your academic or other affiliation(s)
- Your job/function(s)
- Your familiarity with
  - Reading a systematic review
  - Critically evaluating a systematic review
  - Applying a systematic review in your professional work
  - Creating a systematic review

# Some background to AQASR / to systematic reviewing

- (initial 7 pages of the AQASR manual)



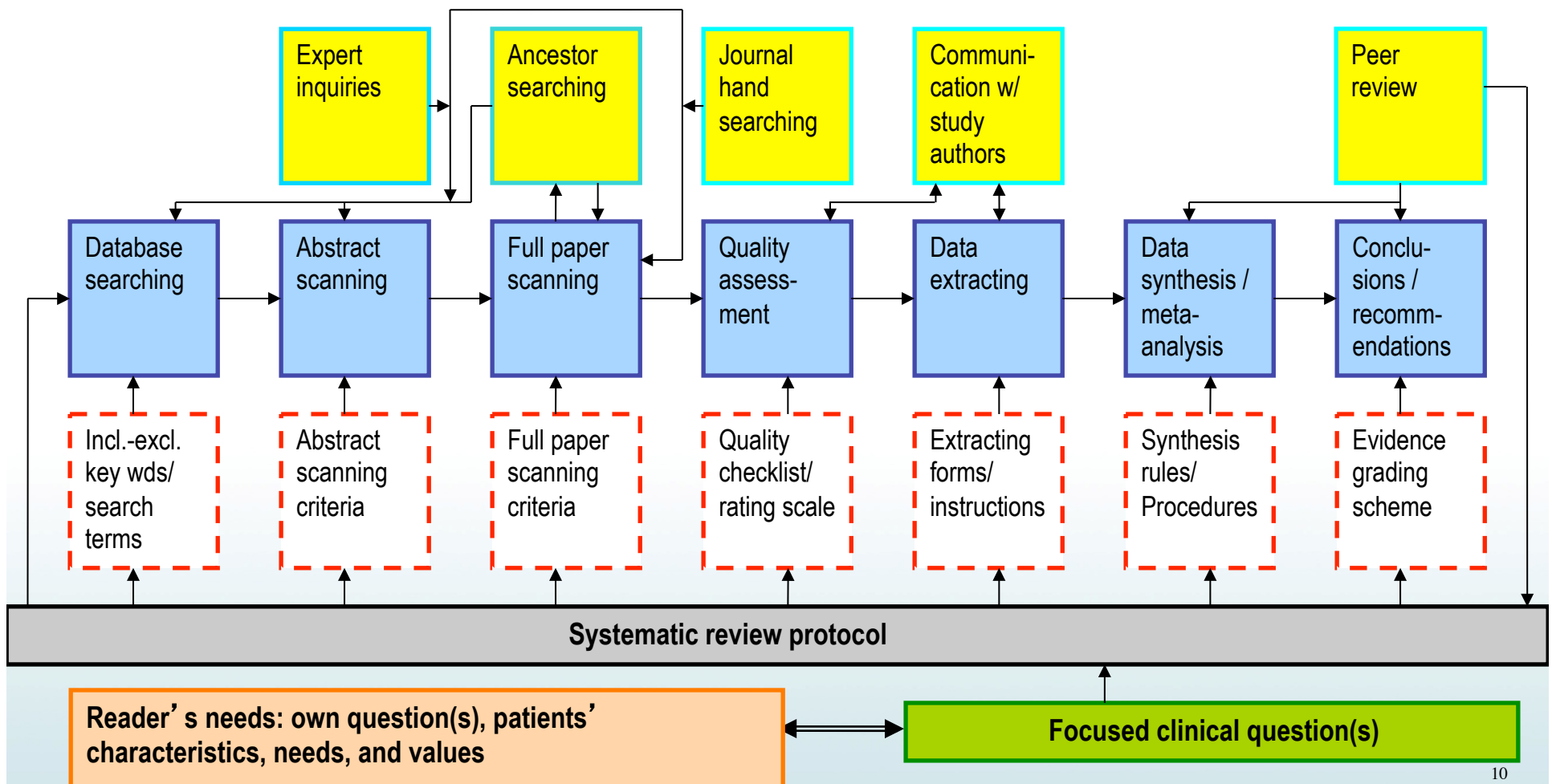
## MedLine: definition of “Review”

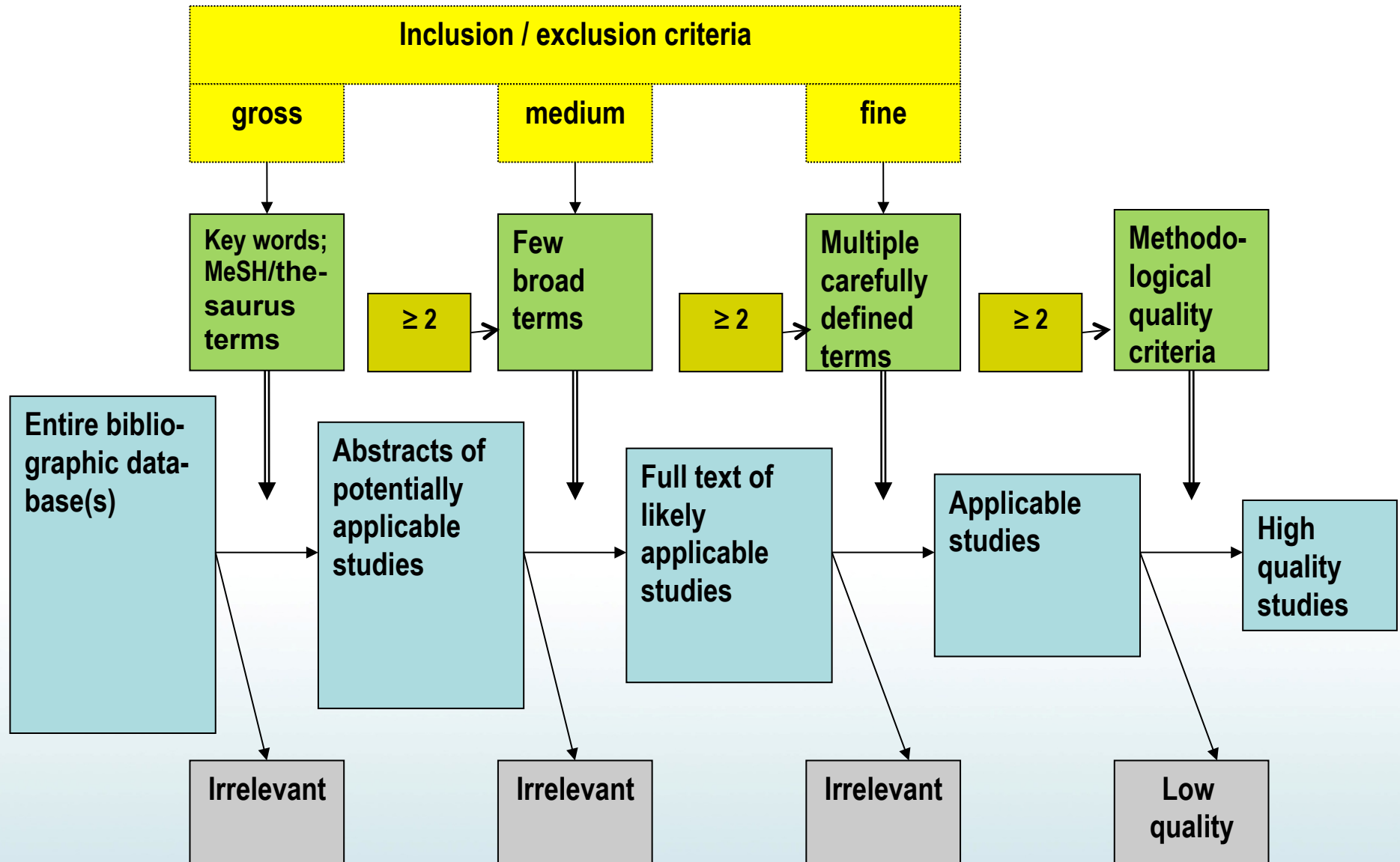
- An article or book published after examination of published material on a subject. It may be comprehensive to various degrees and the time range of material scrutinized may be broad or narrow, but the reviews most often desired are reviews of the current literature. The textual material examined may 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”

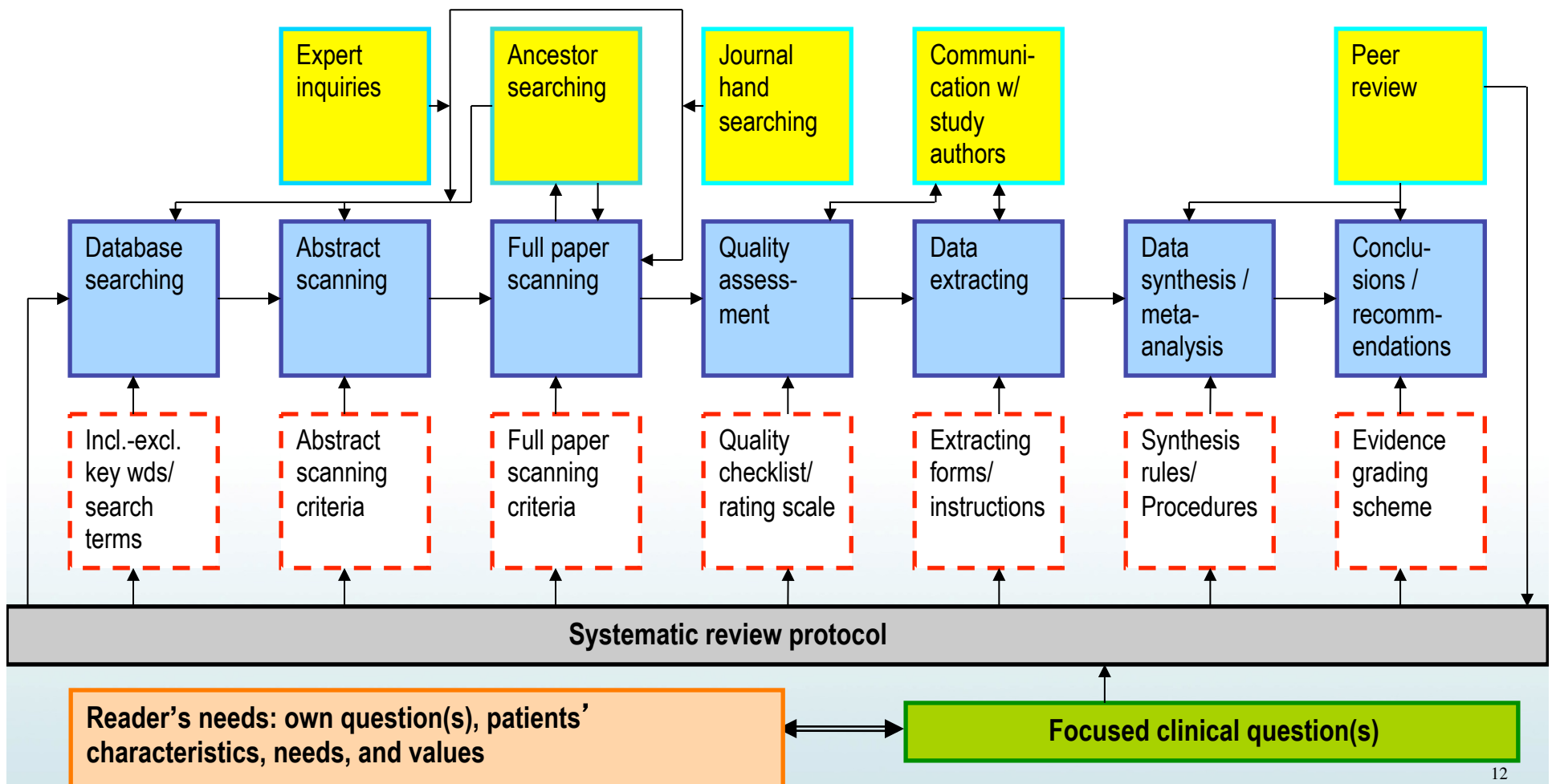
- A systematic review synthesizes research evidence *focused on a particular question* and follows an *a priori protocol* to systematically *find* primary studies, *assess* them for quality, *extract* relevant information and *synthesize* it, qualitatively or quantitatively (meta-analysis).
- Systematic 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](http://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

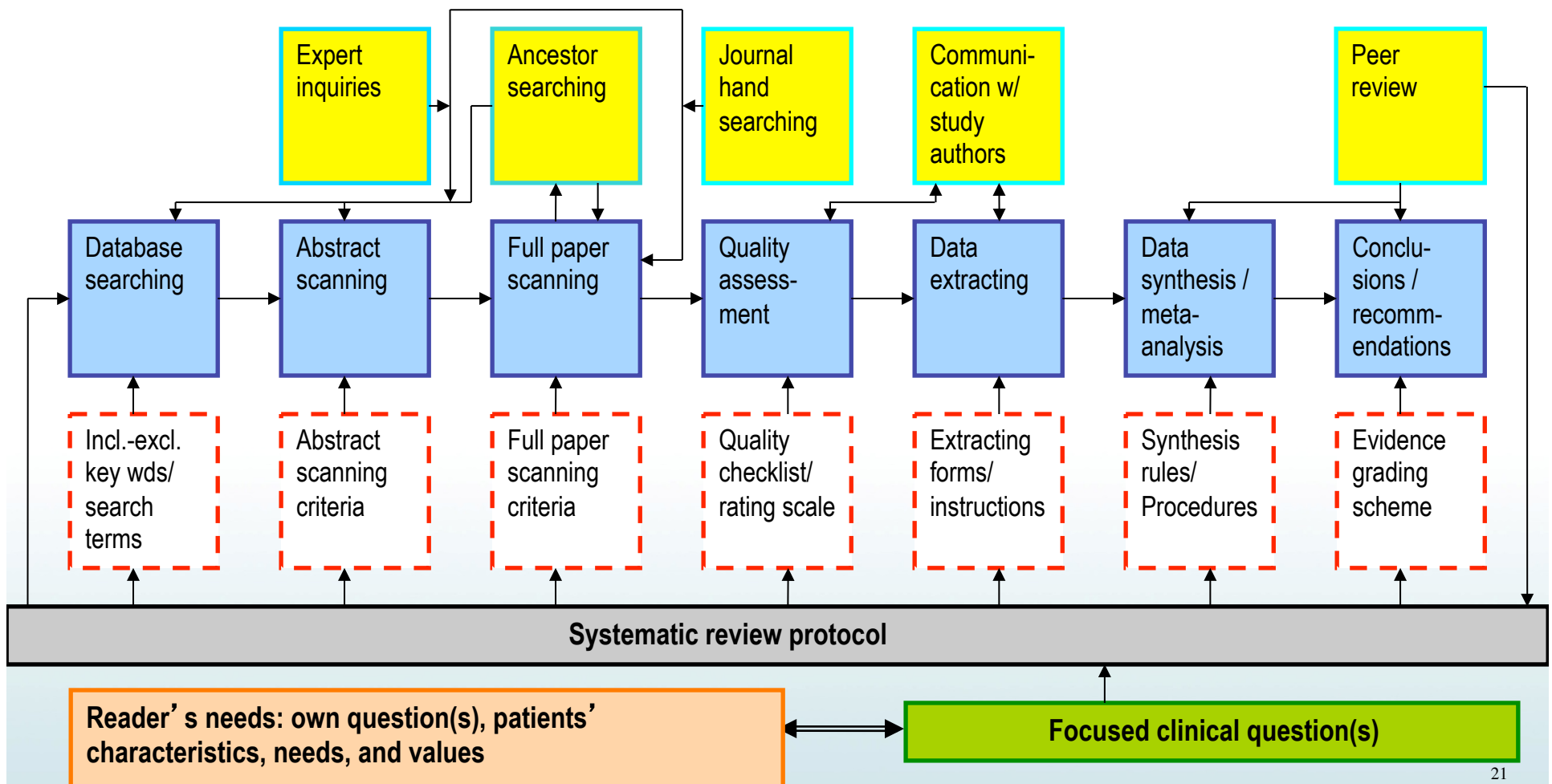


Questions?

## Clinician 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

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



## Policy maker/administrator review users' steps:

- (Have a question that research literature can answer)
- Determine one's own needs (needs of the population served, their values and relevant characteristics; positive changes that are desired; diagnostic tools/interventions that are available and their relative costs and benefits)
- 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

## Researcher review users' steps:

- Have a question that research literature can answer
  - Incidence/prevalence of a disorder of interest
  - Suitable diagnostic or assessment tool
  - Feasible, cost-efficient interventions to be adapted
- 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 developing one's research proposal



## 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)

# Exergames and Cardiac Rehabilitation

## A REVIEW - **Jorge A. Ruivo , MD**

- Applicability?

# Exergames and Cardiac Rehabilitation

## A REVIEW - Jorge A. Ruivo , MD

- Quality?
  - Systematic review protocol
  - Literature searches
  - Scanning of abstracts and full papers
  - Assessment of the quality of the primary studies
  - Extracting data
  - Synthesizing the data qualitatively
  - Drawing conclusions, making recommendations
  - Synthesizing the data quantitatively (meta-analysis)



# SYSTEMATIC REVIEW QUESTION / CLINICAL APPLICABILITY

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 interventions and treatments for specific situations and types of persons.

RQ2. Is there a rationale for the review? Is the clinical / scientific background for the review discussed, the guiding problem defined?

- **Look for:**

- A discussion of the major issues and background leading to the framing of the question.
- Importance of the question and of the problem addressed, presented concisely and in understandable language.
- Discussion of gaps in the knowledge base.



RQ2. Is there a rationale for the review? Is the clinical / scientific background for the review discussed, the guiding problem defined?

- **Rationale:**

- Background information on the state of knowledge helps to frame the issue and guides the conceptualization of the review.
- It also provides context for where the results of the review fit into the current body of knowledge.

RQ3. Do the authors refer to systematic reviews in this area done previously? Do they justify the need for a new review?

- **Look for:**

- Summary of previous reviews and their findings relevant to the review question.
- Discussion of the limitations of previous reviews in addressing the issue at hand.
- Suggestions from previous reviews of needed directions in research and in future reviews.
- Discussion of how this review helps to fill the gaps identified in previous research reviews.
- Mention of the time since the previous review(s) were published and the publication of new primary studies since.

RQ3. Do the authors refer to systematic reviews in this area done previously? Do they justify the need for a new review?

- **Rationale:**

- The importance of the review will depend on the degree to which it builds on the current state of knowledge.
- The gaps identified in the previous reviews should help shape the question and protocol developed for the new review.
- Absence of reviews or the time elapsed since the last one was published may suggest the need for a new one.

RQ4. Are the outcome(s) of interest described / defined? Are all important outcomes considered

- **Look for:**
  - Explicit definition(s) for outcome(s) chosen.
  - Justification for outcomes chosen, including the degree to which these outcomes are meaningful to patients, clients and clinicians, and conceptually sound.
  - Exclusion of trivial outcomes.

RQ4. Are the outcome(s) of interest described / defined? Are all important outcomes considered?

- **Rationale:**

- There should be a clear description of the patient outcomes that are to be reported in the primary studies.
- It is important not to pick and choose only outcomes that have the most data or are most favorable.

## RQ5. Are (potential) harms described / defined?

- **Look for:**
  - Description of potential adverse effects of an intervention.
  - Specification of potential harms from specific interventions or for specific target groups.
  - Discussion of risks versus benefits.

## RQ5. Are (potential) harms described / defined?

- **Rationale:**

- A comprehensive review needs to include potential risks in order to allow practitioners and researchers to weigh the risks *and* benefits of an intervention for specific target group.
- For example, screening programs can result in false positives, high costs, or adverse health outcomes for subsets of the target group.

## RQ6. Is the population(s) of interest described / defined?

- **Look for:**
  - Discussion of specific inclusion and exclusion criteria for the target population.
  - Specific information on reasons for exclusion .
  - Definitions of all the terms describing the population (e.g., type of condition/disability, level of disability, age, ethnicity, gender) and the settings they reside in (e.g., hospital, community).



## RQ6. Is the population(s) of interest described / defined?

- **Rationale:**

- The population characteristics need to be clearly delineated to enable researchers and clinicians to assess the applicability of the interventions/treatments to a particular target group.
- Inclusion and exclusion criteria help to define the population more precisely.
- It must be very clear as to which populations the review findings can be generalized.



ADVANCING RESEARCH, IMPROVING EDUCATION

Center on Knowledge Translation for  
Disability and Rehabilitation Research

# PROTOCOL

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.

PR2. IF YES to PR1: Was the protocol (in report or protocol template in reference manual) complete? (i.e. specifying: background; objectives; patients/ interventions/ tests/ outcomes; criteria for selecting studies; literature search strategies; review methods; coding instructions; methods/ rules for translating evidence into recommendations; conflicts of interest)

- **Look for:**
  - A listing of the elements of the protocol
  - A reference to a template protocol, and a statement that it was followed
  - A reference to the protocol in an appendix, a website or a separate report

PR2. IF YES to PR1: Was the protocol (in report or protocol template in reference manual) complete?

- **Rationale:**
  - Systematic review readers need to be able to review the protocol (just like they can read the “Methodology” section in a primary study) so as to convince themselves that a pre-planned method was followed systematically, and have a basis against which deviations can be assessed

PR3. IF YES TO PR1: Was the protocol reviewed by an independent group of experts and/or an outside organization?

- **Look for:**
  - A statement that a group of experts other than the individuals doing the review had scrutinized the protocol, and had approved it (with or without modifications)
  - A list of the names of these experts
  - A list of names of organizations that appointed the experts

PR3. IF YES TO PR1: Was the protocol reviewed by an independent group of experts and/or an outside organization?

- **Rationale:**
  - Outside experts may have methodological and substantive information that the reviewers do not have, and that may improve the ultimate result
  - An outside panel may also be ideal in identifying potential conflicts of interest or biases in the reviewer group



PR4. Were there deviations from the protocol?  
Were deviations acknowledged/ justified by the authors?

- **Look for:**
  - A statement that the reviewers decided (were forced) to abandon part of the original plan.
  - A justification for such a deviation
  - Any apparent discrepancy between the original protocol and the procedures actually followed that are not acknowledged by the authors.
  - Any discrepancy between the protocol as published/ as received from the authors and the procedures actually followed.

## PR4. Were there deviations from the protocol? Were deviations acknowledged/ justified by the authors?

- **Rationale:**

- Sometimes there are good reasons to deviate from the protocol. However, the authors should describe such discrepancies and justify them.
- If they do not, it sometimes is possible for the careful reader of their report to identify inconsistencies that suggest protocol deviations.
- However, generally it is only careful comparison of the report with the original protocol that will make it possible to find such problems – a step that most readers cannot afford to take.

## PR5. Were (acknowledged or non-acknowledged) deviations justifiable?

- **Look for:**
  - A justification by the authors of the need to deviate from their original protocol
  - Whether the change(s) (acknowledged or not) result in a systematic review that is still useful in answering your clinical question

## PR5. Were (acknowledged or non-acknowledged) deviations justifiable?

- **Rationale:**

- Whether or not the *authors* of the systematic review think protocol deviations were justifiable, the readers should make their own decision.
- This often will come down to positive answers to all the other questions in this checklist: Was the right literature searched for? Did they use a proper way of evaluating the quality of studies? Etc.
- If the reader can answer all such questions positively, the systematic review is likely to be a good and useful one, whether or not the review published was created using a process that deviated from an earlier protocol.



Questions?

## For the next session:

- Read manual sections/AQASR questions on
  - Database searching
  - Other searches
  - Search limitations
  - Abstract and full paper scanning

## For the next session:

- Identify three systematic reviews you would like to use/might use in your work, focusing on
  - Intervention or Prevention or Economic evaluation
  - Diagnostic or Prognostic
  - Measurement
- Not too long; of good, middling or poor quality
- Of presumed general interest (not too specialistic)
- Send ABSTRACTS to Joann Starks
- We will pick six to use in later sessions

## Wrapping Up

*Thank you for participating!*

We invite you to:

- Provide your input on today's session
- Share your ideas for future sessions
- Describe special needs you may have
- PLEASE CONTACT US:

[joann.starks@sedl.org](mailto:joann.starks@sedl.org)