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Rehabilitation**

**13TH ISPRM WORLD CONGRESS – 2019**

**Cochrane rehabilitation workshop: Apply**

**CochRane Evidence with Confidence**

**(ACREC)**

**10 th June 2019**

**Trusted evidence.  
Informed decisions.  
Better health.**





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# CRITICAL APPRAISAL OF SYSTEMATIC REVIEWS

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# Conflict of Interest Disclosure

	<b>No, nothing to disclose</b>
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# Seventy-Five Trials and Eleven Systematic Reviews a Day: How Will We Ever Keep Up?

Hilda Bastian , Paul Glasziou, Iain ChalmersPublished: September 21, 2010 • <https://doi.org/10.1371/journal.pmed.1000326>

Article

Authors

Metrics

Comments

Media Coverage



The Landscape

Where Are We Now?

How Close Are We to  
Archie Cochrane's Goal?

## Figures

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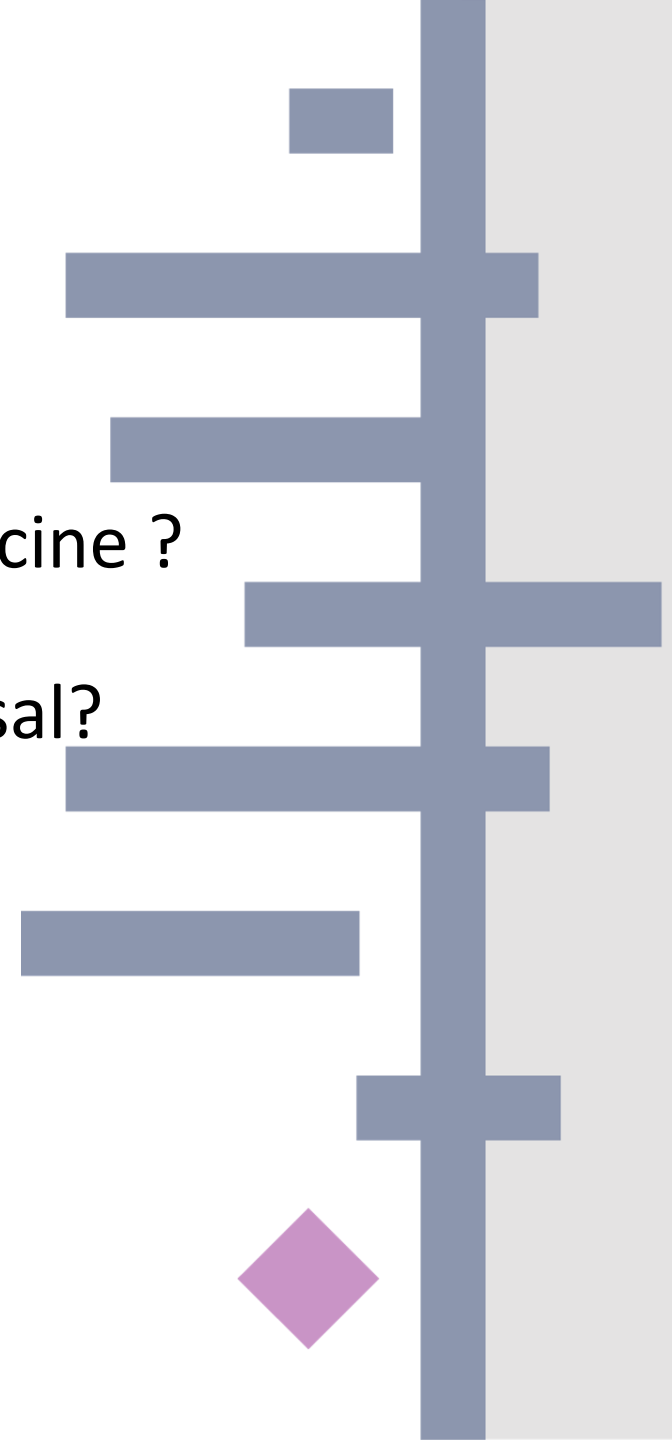


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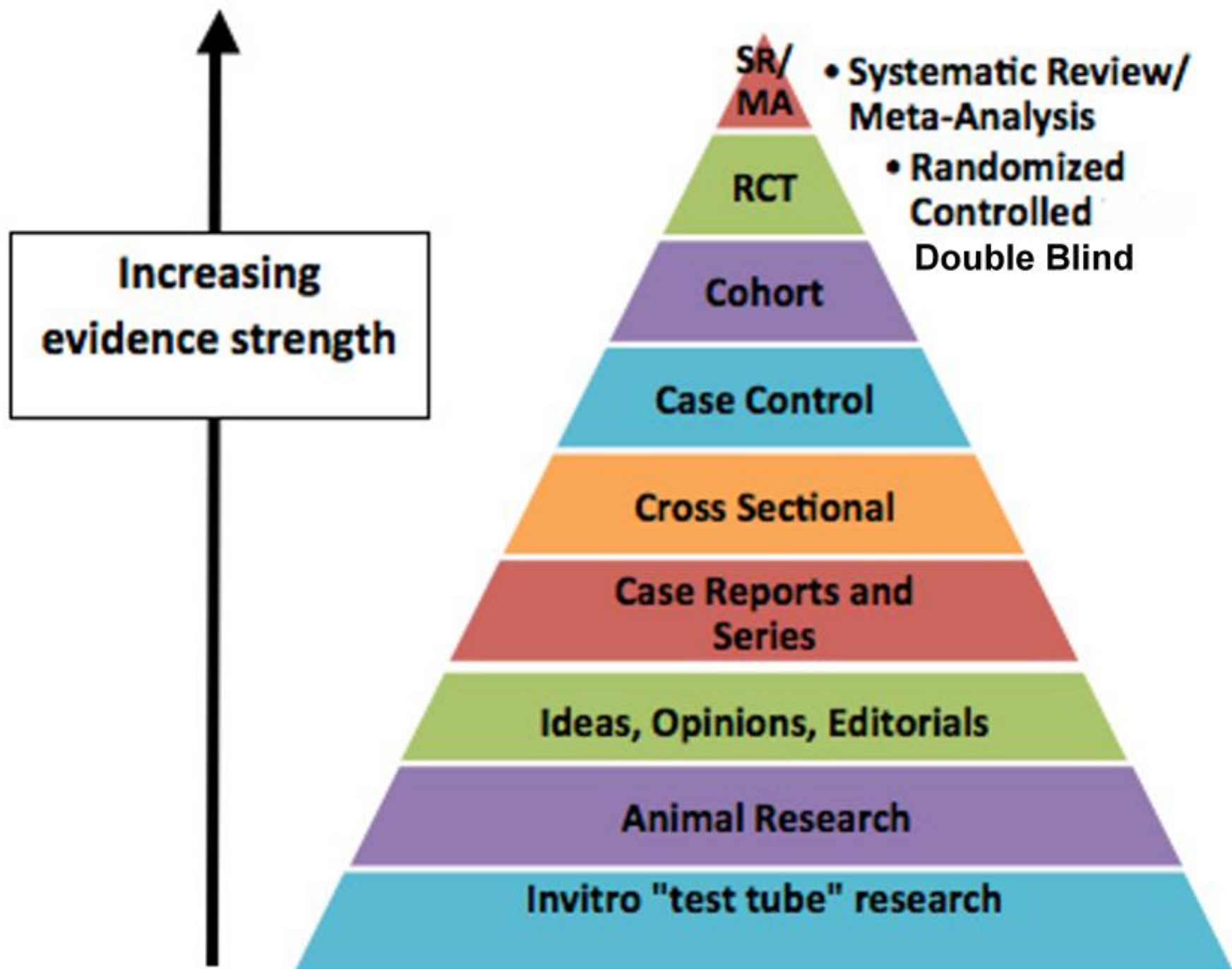
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# Outline

- What is critical appraisal?
- Role of critical appraisal in Evidence based medicine ?
- Advantages and disadvantages of critical appraisal?
- How to do critical appraisal?
- Hands on exercises
- Summary and take-home message



# EVIDENCE-BASED MEDICINE





# What is critical appraisal ?

Critical appraisal is the process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision

Hill and Spittlehouse, 2001

# What is critical appraisal ?

A **systematic process** used to identify the **strengths and weaknesses** of an article in order to assess the **usefulness and validity** of research findings.

# Critical appraisal is NOT

Negative dismissal of any piece of research

Assessment based on results alone

Based entirely on statistical analysis

Performed by experts only

Adapted from presentation by Chris Redman And Alex Sanchez-vivar for Health Protection Network



# The need for critical appraisal of a SR?

Increasing number of systematic reviews and expanding literature




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# The need for critical appraisal of an article ?

Increasing number of systematic reviews and expanding literature

Limited time

What to study ? How to study ? What to believe and what to disregard ?

Relevance to your patient (treatment, prognosis, cost evaluation)

# Advantages of critical appraisal of a SR ?

Identify high quality relevant information

Able to differentiate between statistical significance and clinical significance

Speed reading

Better patient care

**Helps become a better writer and peer reviewer !!**

Trusted evidence.

Informed decisions.

Better health.



# Disadvantages of critical appraisal?

Time consuming and focused exercise

Some Knowledge of statistics mandatory

Frustrating if do not get the answer



# How to do critical appraisal ?



# No 'gold-standard' instrument for critical appraisal exists

# General Points

- The criteria used to assess the validity and relevance of scientific literature are not static; they must evolve \*
- A structured approach to critical appraisal could potentially improve the quality of this process \*\*
- Simple checklists can be useful to screen out research that is of low quality or of little relevance

Trusted evidence.

Informed decisions.

\* MacAuley D *et al.* (1998) Randomised controlled trial of the READER method of critical appraisal in general practice. *BMJ* 316: 1134-37

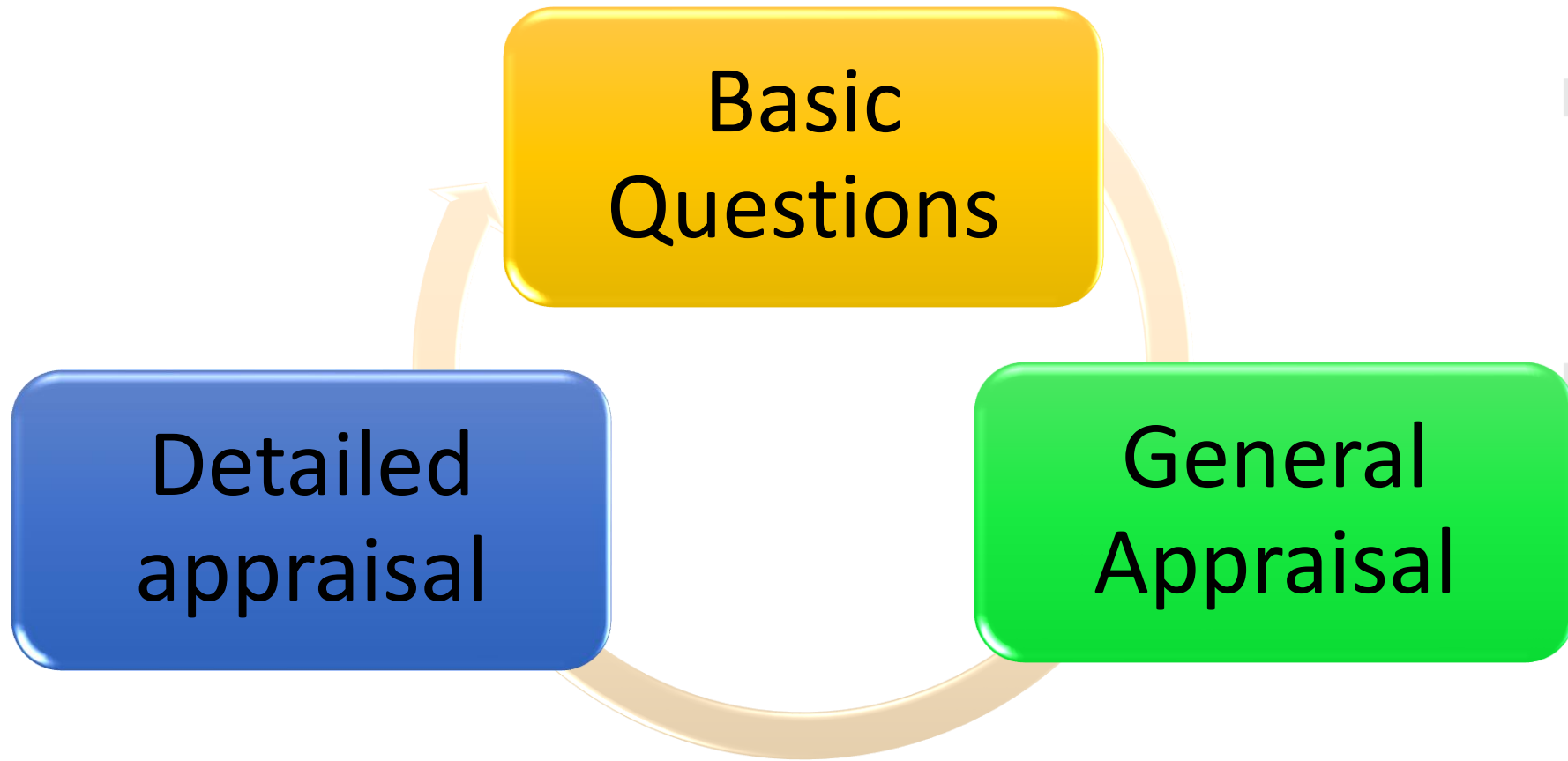
\*\* Parkes J *et al.* Teaching critical appraisal skills in health care settings (Review). *Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: cd001270. doi:10.1002/14651858.cd001270

The simple things **matter** most

# General Points

- Don't let yourself be taken in by scientific jargon and complex use of language!! Good articles are written in plain English.
- Even authoritative journals with a high impact factor contain bad articles and vice versa.
- Focus on research question (PICO), methodology and results.
- Don't worry too much about statistics!
- Be critical!! Always ask yourself: does this make sense?

# Steps in critical appraisal



# Basic Questions

- Is the journal peer reviewed ?
- Is the journal reputable ?
- What is the impact factor of the journal ?
- Do your colleagues/seniors/experts often quote this journal ?



# Title and abstract

- Does the title convey useful information ?
- Does the abstract make sense ?
- Can you identify the important information and main findings by reading the abstract ?
- Are keywords used similar to your keywords ?

# Introduction

Does the SR attempt to answer the same question as your clinical question?

Is the review recently published (within 5 years) – updated version

Are the aims /objectives clearly stated ?

# Materials and Methods

Are inclusion and exclusion criteria clearly described?

Are methods used available /relevant to your patient population ? Is the treatment feasible in your settings?

What types of interventions have been included ?

What are the outcome measures ?

# Materials and Methods

Selection of studies ? Data extraction and management?

Assessment of risk of bias

Are the outcome measures valid for the health condition you are researching?

Is the follow-up long enough to be meaningful ?

# Results

Are the subjects' demographics clearly mentioned?

Are the baseline demographics between groups similar?

Is your patient so different to those in the study that the results cannot apply?

Are the statistical tests appropriate for the study design and clinical question?

Trusted evidence.

Robert Mill, Critical Appraisal: A Checklist. Available from <https://www.students4bestevidence.net/critical-appraisal-checklist/>

Accessed on 10<sup>th</sup> March 2018

# Results

Are the results statistically significant and how large is the difference between groups?

CONSORT statement flowchart

Consolidated standards of reporting trials

# Discussion

Are the important results of the study summarized

Do the authors attempt to compare their findings with the local and global findings ?

Do the authors acknowledge limitations in the SR?

Are there any conflicts of interests mentioned?

# Detailed appraisal

- Making sense of the p-value
- Confidence intervals
- Relative risk reduction and absolute risk reduction
- Sample size estimation







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# CASP- Making sense of evidence

## Critical appraisal Skills Program

[www.casp-uk.net/](http://www.casp-uk.net/)

# CASP approach to Critical appraisal

1. Are the results of the study valid?
2. What are the results?
3. Will the results help locally?

## CEBM

The Centre for Evidence-Based Medicine develops, promotes and disseminates better evidence for healthcare.



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## Critical Appraisal tools

Critical appraisal is the systematic evaluation of clinical research papers in order to establish:

1. Does this study address a clearly focused question?
2. Did the study use valid methods to address this question?



### What's on

[Intro to Synthesising Qualitative Research](#)

02 July 2019

# Summary and Take home message

- Evidence based medicine can improve the quality of care and outcomes of health care interventions
- Increasing number of SR– limited time and increasing responsibilities
- Critical appraisal – important part of EBM
- Useful skill that can be learned and mastered
- Does not always require in-depth knowledge of statistics

“

IT'S NOT WHAT  
YOU LOOK AT  
THAT MATTERS,  
IT'S WHAT YOU  
SEE.”

Henry David Thoreau

# Questions ? Comments ? Additions ?

Copy of the presentation

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