

# Evidence-Based Practice in Child and Adolescent Mental Health

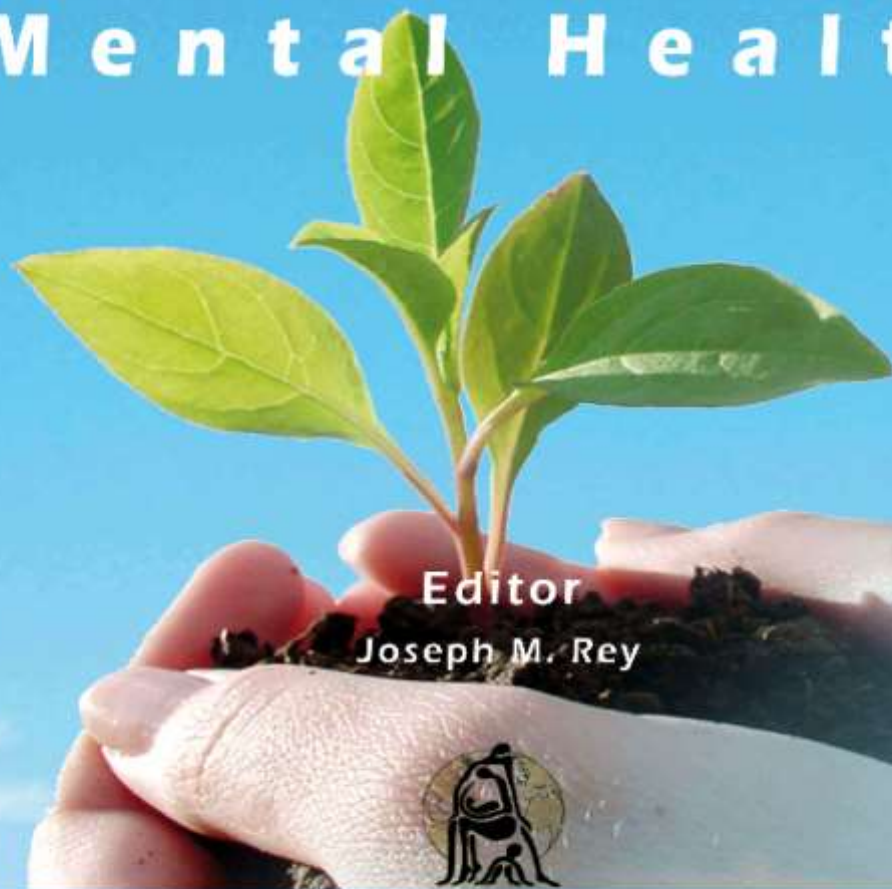
John Hamilton &  
Fusun Çuhadaroğlu-Çetin

**Companion Powerpoint  
Presentation**

Adapted by Henrikje Klasen

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## IACAPAP Textbook of Child and Adolescent Mental Health



**Editor**  
Joseph M. Rey



The “IACAPAP Textbook of Child and Adolescent Mental Health” is available at the IACAPAP website <http://iacapap.org/iacapap-textbook-of-child-and-adolescent-mental-health>

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**IACAPAP**

**International Association for  
Child and Adolescent Psychiatry  
and Allied Professions**

**...because every child matters**

# Learning objectives

1. Understand the statistical concepts relevant to align your clinical work with good evidence
2. Use good interviewing techniques to show whether a youth meets diagnostic criteria
3. Choosing a treatment
4. Search databases electronically available at no cost to anyone with an Internet connection
5. Translate clinical questions and dilemmas into answerable (PICO) questions
6. Find treatments most likely to help *your* patient



# Statistical Concepts

The biggest enemies of truth: random error and bias

- Random errors are due to unknown and/or unpredictable changes in measuring instrument or environment
  - Diminished by larger sample sizes
- Bias (=systematic error) are inaccuracies that are consistently in the same direction
  - An ever present risk!



# Statistical Concepts

The biggest enemies of truth: random error and bias

**Table A.6.1 Common sources of bias and strategies to reduce them.**

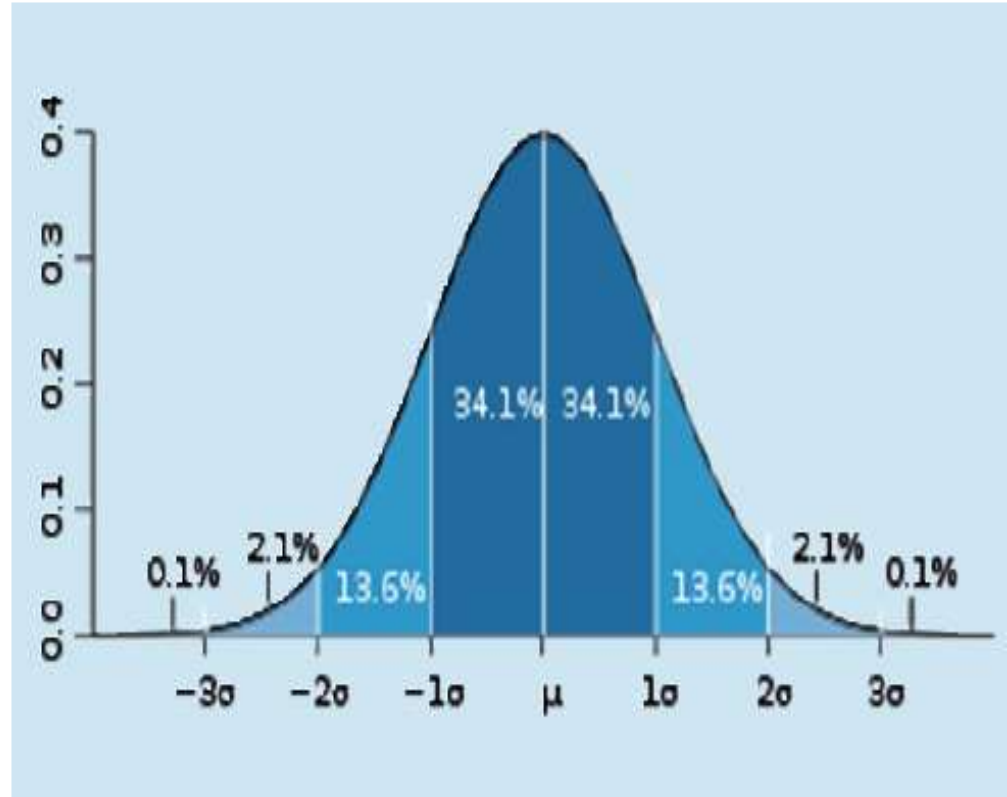
Source of bias	Strategy to reduce the source of bias
<ul style="list-style-type: none"> <li>Treatment and control patients differ in prognosis</li> </ul>	<ul style="list-style-type: none"> <li>Random allocation to treatment or control</li> </ul>
<ul style="list-style-type: none"> <li>Placebo effects of treatment</li> </ul>	<ul style="list-style-type: none"> <li>Patients blinded to active treatment or control</li> </ul>
<ul style="list-style-type: none"> <li>Caregivers add other treatments</li> </ul>	<ul style="list-style-type: none"> <li>Caregivers blinded to treatment or control</li> </ul>
<ul style="list-style-type: none"> <li>Assessors of outcome are biased</li> </ul>	<ul style="list-style-type: none"> <li>Assessors of outcome blinded to treatment or control status of cases they assess</li> </ul>
<ul style="list-style-type: none"> <li>Loss to follow-up</li> </ul>	<ul style="list-style-type: none"> <li>Follow-up of all or at least a high proportion of cases entering the study</li> </ul>



# Statistical Concepts

## A few useful basic concepts (i)

- **Mean ( $\mu$ ):**  
the most common value in a normal distribution
- **Standard deviation (SD):** measures variability
- **Effect size:**  
standardized difference between groups



# Statistical Concepts

## A few useful basic concepts (ii)

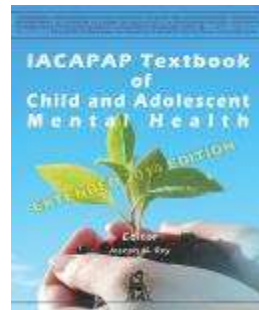
- **Absolute risk reduction (ARR):** how much does one treatment reduce the risk of a bad outcome compared to an alternative (treatment or placebo)
- **Confidence Interval (CI):** an indication of the precision/imprecision of the study sample as an estimate of the true population value
- **Number needed to treat (NNT):** number of people we must treat to prevent *one* additional bad outcome
- **Number needed to harm (NNH):** quantifies the risk of harmful side effects

# Statistical Concepts

Got that? Examples:

- After 12 weeks on the TADS study 65% of patients on placebo were not improved compared to 39% of patients on fluoxetine.
- **What is the ARR? What is the NNT?**
- In the same study 12% of those treated with fluoxetine reported some harm-related event, compared to 5% of those on placebo.
- **What is the NNH?**

**Would you use this treatment?**





# Statistical Concepts

Understanding a study by looking at its statistics (i)

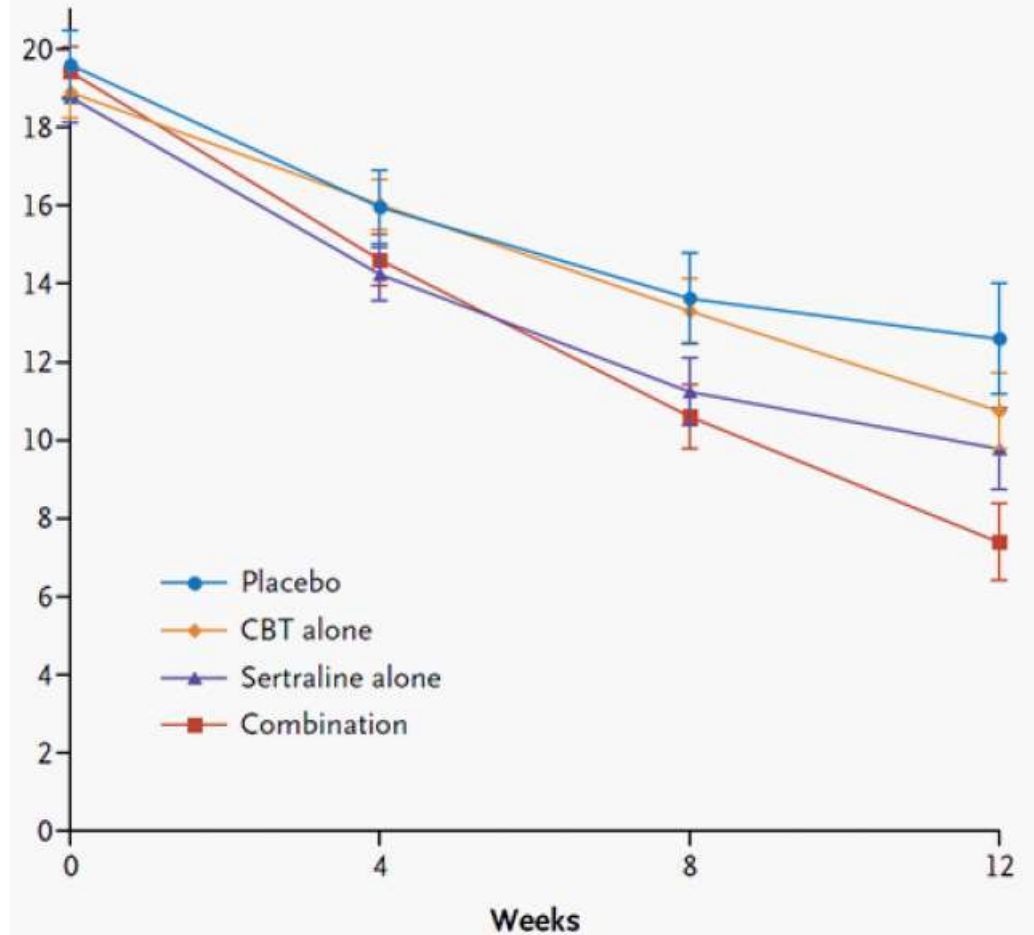
Child/Adolescent  
Anxiety Multimodal  
Study (CAMS)

Comparing:

- Placebo
- CBT alone
- Sertraline alone
- CBT + Sertraline

Graph shows scores for  
PARS (Pediatric Anxiety  
Rating Scale)

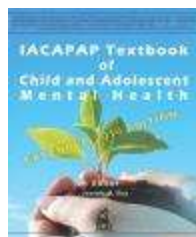
- Note error bars



# Statistical Concepts

Understanding a study by looking at its statistics (ii)

- Effect size (based on improvements in PARS):
  - CBT alone: 0.31 (small/medium effect)
  - Sertraline alone: 0.45 (medium effect)
  - Combination: 0.86 (large effect)
- NNT: based on improvement (very much improved)
  - CBT alone 3
  - Sertraline alone 3
  - Combination: 2 (that is low = encouraging)



# A valid and reliable diagnosis

The foundation of evidence based medicine (EBM)

- To make good use of EBM, diagnoses need to be aligned between research and practice
- **Reliability:** consistency of a measuring instrument across time, individuals and clinicians
  - Test-retest reliability
  - Inter-rater reliability
- **Validity:** the extent by which a diagnostic instrument measures what it claims to measure
  - Often measured indirectly, prediction of course, outcome
  - Correlation coefficients, factor loading can quantify



# A valid and reliable diagnosis

The foundation of evidence based medicine (EBM)

Disorder	Instrument
Anxiety disorders including generalized anxiety disorder and separation anxiety disorder	<ul style="list-style-type: none"> <li>• Screen for Child Anxiety Related Emotional Disorders (SCARED)</li> <li>• See also Chapters F.1 and F.2</li> </ul>
Depressive disorders including major depressive disorder and dysthymia	<ul style="list-style-type: none"> <li>• Hamilton Rating Scale for Depression (HAM-D-21)</li> <li>• Johns Hopkins Depression Checklist for Children (HDCL-C)</li> <li>• See also Chapter E.1</li> </ul>
Attention deficit/hyperactivity disorder	<ul style="list-style-type: none"> <li>• Swanson Scale for ADHD (SWAN ADHD)</li> <li>• The SNAP-IV Teacher and Parent Rating Scale</li> <li>• Vanderbilt ADHD Diagnostic Parent Rating Scale</li> <li>• See also Chapter D.1</li> </ul>
Obsessive-compulsive disorder	<ul style="list-style-type: none"> <li>• Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS)</li> <li>• See also Chapter F.3</li> </ul>

**N. B. Most instruments have only been tested in the US and Europe**



# A valid and reliable diagnosis

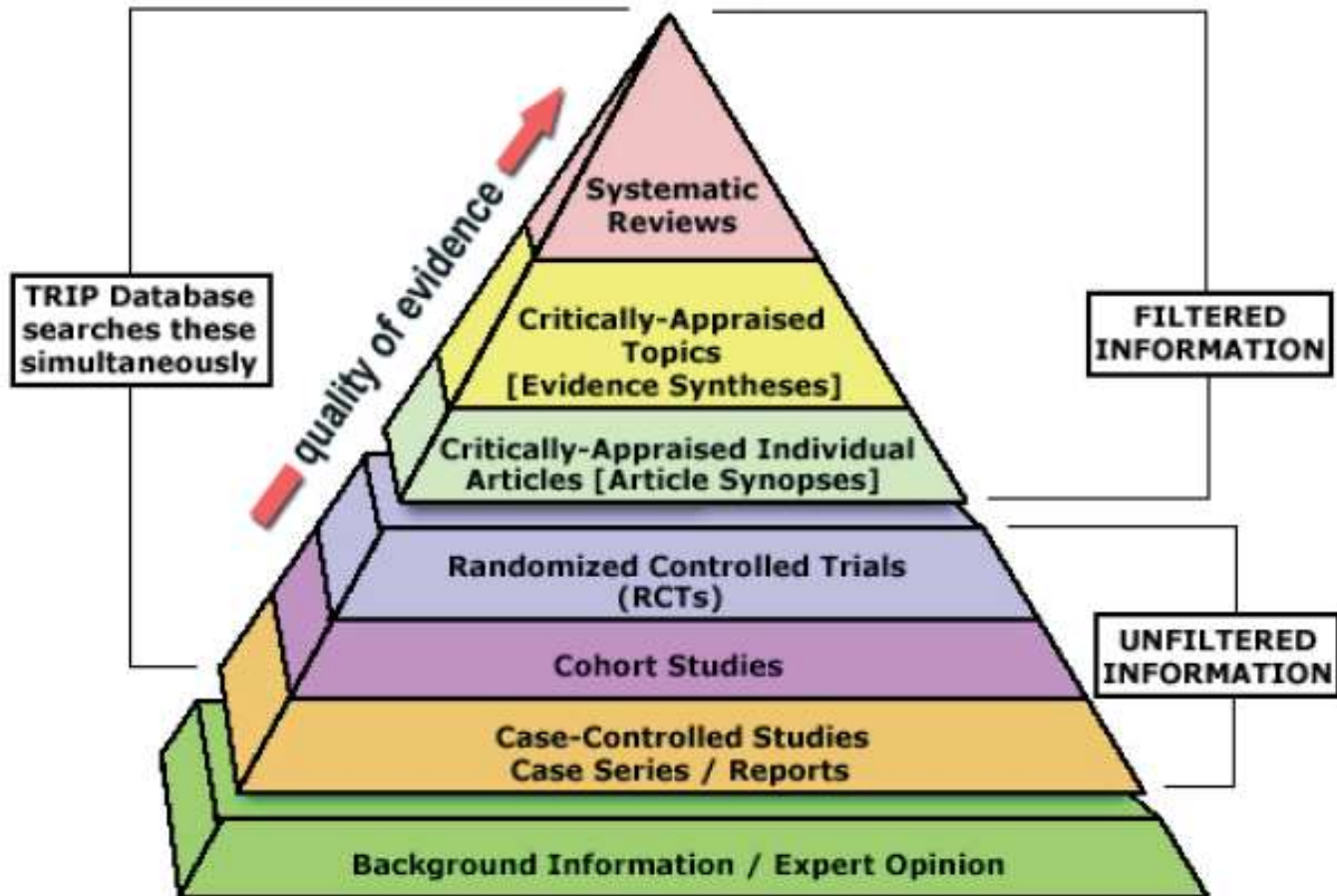
The foundation of evidence based medicine (EBM)

- Screening questions and homing in:
  - E.g., semi-structured interviews such as K-SADS
    - Interviewers do not have to ask each question.
    - If probing questions are answered negatively the rest of the section can be skipped
    - Clear thresholds for when to count a symptom as present or absent and when to home in (e.g., 2 alcoholic drinks per week for past 4 weeks)
    - Using the interview requires specific training! Probing questions are useful anyway.



# Choosing a treatment

## The pyramid of evidence



# Search databases electronically

Using the Internet and the pyramid

- Remain curious when doing clinical work
- Ask questions relevant to the patients you see
- Use the Internet to find answers to improve the care of *your* patients
- Aim for a practical result, what is *good enough* within time and resources available
- **Pubmed**, **PsychINFO** (both US based) are free and good places to start
- **CENTRAL** from the Cochrane Library is good on RCTs
- **EMBASE** is good on European publications



# Search databases electronically

Using the Internet and the pyramid: example

*Terry is 10 years old and has ADHD-I (inattentive type). He was helped by methylphenidate 15mg three times/day, but lost a lot of weight. Stimulants and atomoxetine both suppress appetite.*

*Guanfacine is known to help ADHD combined type, but is it also effective for ADHD-I?*

- What is the evidence that Guanfacine is effective in a 10 year old with ADHD-I?
- If effective, what is the effect size?





# Search databases electronically

Using the Internet and the pyramid: example\*

- Begin with PubMed. Click on “Advanced”, select “ADHD” from the MeSH terms, then “search”
- There are too many hits – over 16 000
- Now repeat the previous steps for “guanfacine” “AND” and “ALL FIELDS”, then “search” (94 hits)
- Click “Limits” and select “meta-analysis” (2 hits), but both do not apply to your patient
- Change your limits to “RCT” (9 hits), 2 of them applicable to a 10 year old with ADHD without tics
- 1 article is free, but funded by pharmaceutical companies (possible bias?) and concerns extended release guanfacine

\*These data were accurate at the time of writing the chapter; it is bound to be different now.



# Search databases electronically

Using the Internet and the pyramid: example

- Half life guanfacine: 13-14 hours, so twice-daily dose might mimic extended release form
- Effect size? Depending on dose between 0.58 and 1.34 for ADHD *total* scores
- And for inattention specifically?
- No effect size given, but reductions in absolute scores on a rating scale are bigger for inattention than for hyperactivity
- Result: It is reasonable to conclude that a 10 year old with ADHD-I may significantly improve with guanfacine at a dose of 1-2mg twice/day

# Search databases electronically

Using the Internet and the pyramid

## **Take home message:**

*Keep search strategies transparent and clear and always monitor how many hits result; these data allow you to be continually adjusting your search to your purposes, time and interest.*

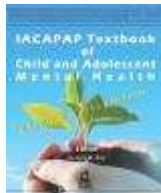


# Classic EBM and “the answerable question”

## Finding the best treatment for your patient

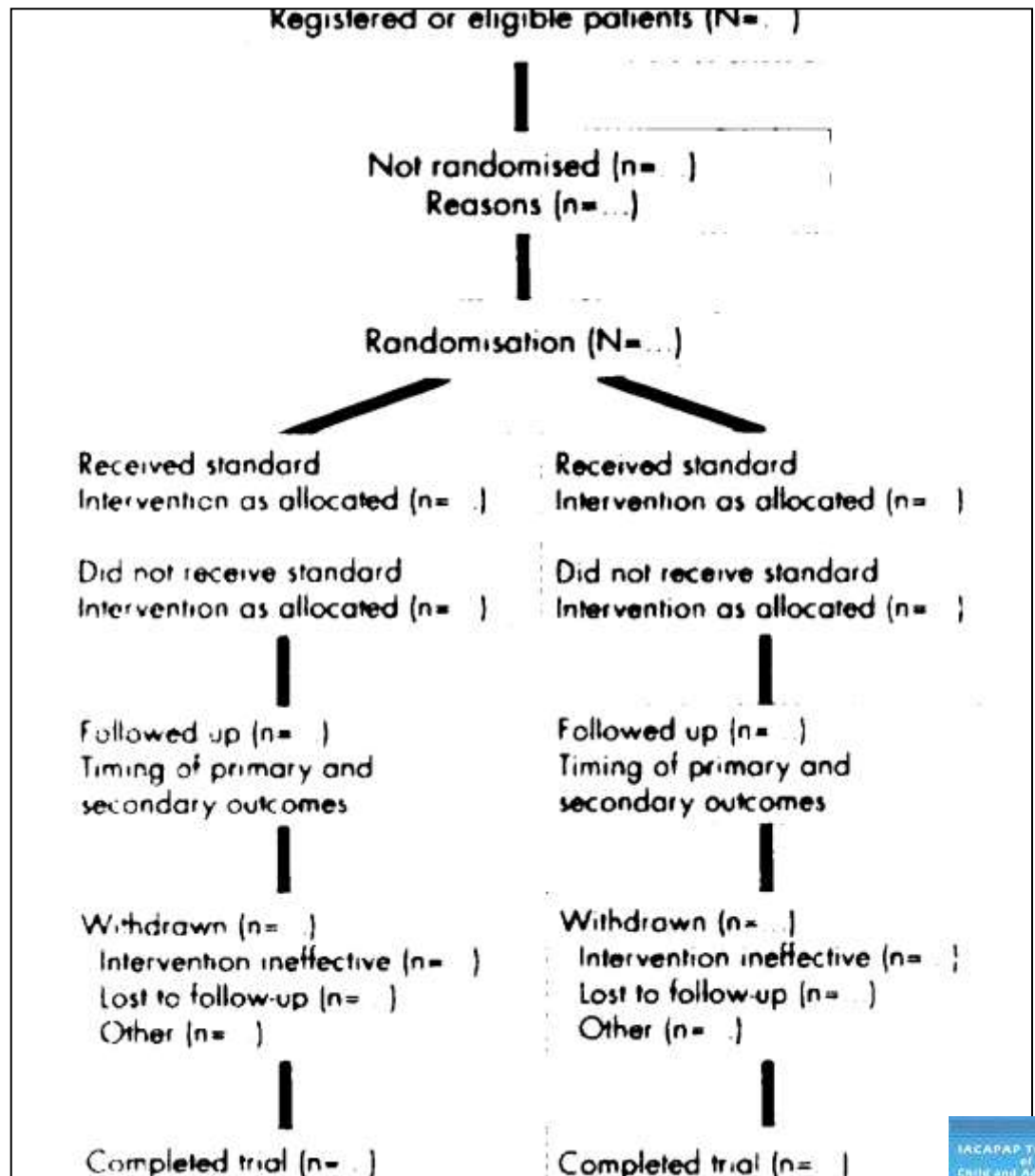
What is the evidence that...

- **P** - A specific *patient* or *problem*
  - **I** - treated with a specific *intervention*
  - **C** - yields in *comparison* to alternative treatment
  - **O** - what *outcome*?
- Search for answer using PICO questions
  - Critically appraise the evidence found
  - Integrate with clinical expertise and patient values
  - Evaluate the results



Evidence-Based Practice  
Classic EBM and  
“the answerable  
question”  
Finding the best  
treatment for your  
patient

Check each step  
of a paper for its  
standard



# Evidence based practice and local culture

The role of clinician is integration

- **Beliefs and values**
  - Understanding explanatory models (including your own) regarding the treatment of mental illness is crucial for a good therapeutic relationship
- **Assumptions in child-rearing practices**
  - How should boys behave? What is normal/abnormal?
- **Role of the extended family**
  - Sometimes parents don't take the decisions.
- **Influence of the Internet**
  - Can inform as well as misinform

