

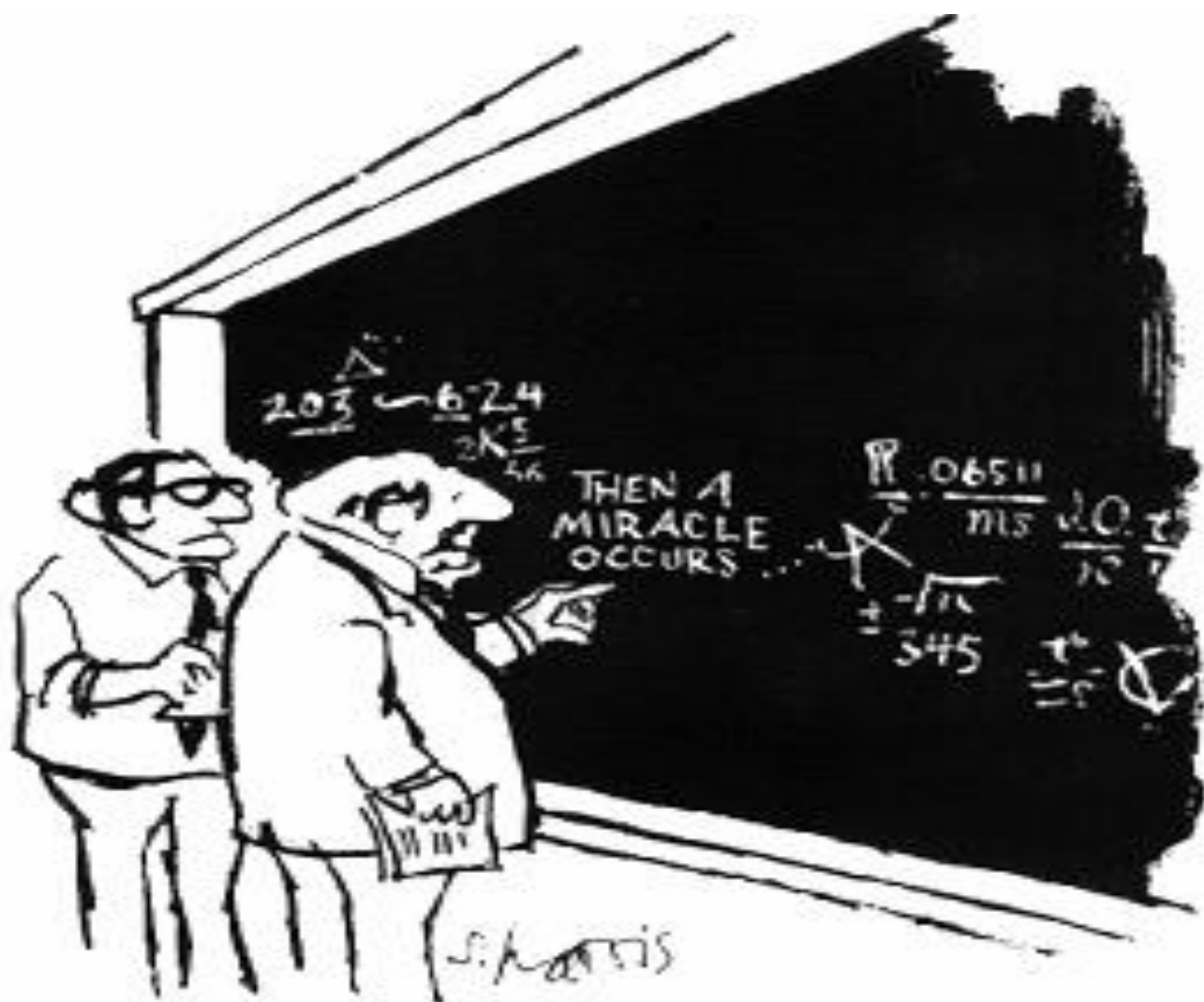
# Using and Teaching Evidence-Based Medicine in Child Psychiatry

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"I think you should be more explicit here in step two."

# Question 1

- 1) The term PECO, commonly used in EBM is used for:
- A) Building up the EBM question
  - B) Establishing risk-benefit ratio
  - C) Performing a meta-analysis
  - D) Searching the literature
  - E) None of the above

# Question 2

- 2) When used in child psychiatry, EBM can be applied to:
- A) Diagnosis
  - B) Treatment
  - C) Harm/Causation
  - D) Prognosis
  - E) All of the above

# Question 3

- 3) The EBM statistic commonly used to determine the effect of a treatment approach in improving patient function is:
- A) Number Needed to Treat
  - B) Odds ratio
  - C) Control event rate
  - D) Experimental event rate
  - E) Likelihood ratio

# Question 4

- 4) The EBM statistic commonly used to determine the effect of potentially harmful agents on patient function, morbidity & mortality is:
- A) Number Needed to Treat
  - B) Odds ratio
  - C) Control event rate
  - D) Experimental event rate
  - E) Likelihood ratio

# Question 5

- 5) Survival curves are used for estimating
- A) Number needed to treat
  - B) Number needed to harm
  - C) Likelihood ratio
  - D) Future course of a patient's disease
  - E) Odds ratio

# Outline

- Evidence-Based Medicine (EBM) as applied to CAP training
- Simplified discussion of EBM as a technology for training and patient care
- Basic principles of teaching EBM
- Training and Research initiatives in Child Psychiatry



# Introduction

- EBM: “The conscientious, explicit & judicious use of current best evidence in making decisions about the care of individual patients.” (Sackett DL BMJ 1996; 312:71-72)
- Clinical issues, including doctor-patient preferences: Prominent place in discussion

# Teaching points

## ➤ PECO” or “PICO”

- ✓ What is the **p**opulation?
- ✓ What is the **e**xposure / **i**ntervention?
- ✓ What is the **c**ontrol or comparison condition?
- ✓ What is the desired **o**utcome?

## ➤ NNT: **N**umber **N**eeded to **T**reat

## ➤ NNH: **N**umber **N**eeded to **H**arm

## ➤ CAT: **C**ritically **A**ppraised **T**opic

# EBM

- EBM: Provides mechanism of “keeping up” with advances in medicine as they impact the care of problems seen in clinical work
- Feel empowered to critique the literature with respect to its helpfulness as a tool for clinical problem solving
- Trainees and faculty: Identify question → Read abstract/examine methods/methods for validity/sample size/results → Info. used through clinical experience → Best possible decision regarding patient care

# What is EBM?

- General approach:
  - Constructing a relevant, answerable question from a clinical case
  - Search clinical literature
  - Critically appraise literature for validity & usefulness
  - Apply the results to clinical care of patient
  - Evaluate the outcome and use this info to frame new questions!
- Not an algorithm that determines choices, but rather helps clinicians make better choices; not a threat to physician autonomy

# Why EBM in Child Psychiatry?

- 1) Reintegrating Psychiatry into Medicine
- 2) Easing the transition to a disease management approach
- 3) Integrating Psychiatry & Psychology within a common framework
- 4) Keeping Up!

(March JS, et al. Child Adolesc Psychiatric Clin N Am 2005; 14: 273-296)

# The practice of EBM

- Building up a question: “Anatomy” of a question!
- “PECO” or “PICO”
  - What is the **p**opulation?
  - What is the **e**xposure / **i**ntervention? (active treatment or diagnostic test)
  - What is the **c**ontrol or comparison condition? (can be a “gold standard” test or treatment)?
  - What is the desired **o**utcome?

(March JS, et al. Child Adolesc Psychiatric Clin N Am 2005; 14: 273-296)

# Searching the literature

- On line resources: Readily available, Timely info
- Systems (Comprehensive resources):
  - Clinical Evidence ([www.clinicalevidence.com](http://www.clinicalevidence.com))
  - Collections of evidence based guidelines
- Synopses (Structured abstracts):
  - Evidence based Mental Health (<http://ebmh.bmjournals.com>)
  - American college of Physicians Journal Club ([www.acpjc.org](http://www.acpjc.org))
- Syntheses (Systematic reviews):
  - Cochrane Database; DARE
- Studies (Original research):
  - PUBMED, OVID, PsychInfo

# EBM

- *“Goal NOT to answer the question of whether there is evidence but to condition clinical recommendations on the strength of clinical evidence”*
- Strength of evidence: Hierarchy (March JS, et al. Child Adolesc Psychiatric Clin N Am 2005; 14: 273-296)
  - Systematic review of randomized trials
  - Single randomized trial
  - Systematic review of observational studies addressing outcomes
  - Single observational study addressing outcomes
  - Physiologic studies
  - Unsystematic clinical observations



## EBM applied to diagnosis, therapy, harm & prognosis

- ✓ Diagnosis: Establishing the power of a test to differentiate between those with and without target condition or disease.
- ✓ Generation of possibilities & their likelihood ratios!
- ✓ Likelihood ratio: The odds that the test result comes from a person who has the disease for which the test was ordered!

# Treatment / Therapy

- Determining the effect of different treatments on improving patient function or avoiding adverse effects
- Need well-designed studies: Appropriately selected patients; random assignment to specified treatment or control; treatment; assessed for response
- NNT: Number needed to treat; EBM stat commonly used
- NNT: Inverse of Absolute Risk reduction or of absolute benefit increase
- Number needed to harm: For treatment induced A/E
- $NNT/NNH = \text{Benefit/Risk ratio!}$

# Treatment / Therapy

- NNT: Number of patients who must receive a particular treatment for one patient to benefit

	Experimental Treatment, X	Control Treatment, Y
Positive Outcome	a	b
Negative Outcome	c	d

- Control Event Rate (CER) =  $b/b+d$
- Experimental Event Rate (EER) =  $a/a+c$
- Absolute risk reduction (ARR) =  $|CER-EER|$
- $NNT = 1/ARR$

# Treatment / Therapy

- NNT Example:
  - If 70% patients respond to active treatment & 50% patients respond to placebo, absolute benefit increase is 0.2, implying that NNT is 5
  - NNT of 5 = The chance that one additional patient benefits from treatment is 1 in 5
- NNH: Number needed to harm: Similar statistic for treatment induced adverse effects

# Causation

- Ascertaining the effects of potentially harmful agents on patient function, morbidity and mortality
- Causation relies on observational studies for exposure vs. non-exposure to an agent
- EBM statistic: Odds ratio; ratio of odds in exposed vs. nonexposed subjects

# Prognosis

- Estimating future course of a patient's disease
- Helps with the choice of whether to treat and what to treat with.
- Survival curves: Represent the number of events occurring over time or the chance of being free of these events over time

# EBM applied to patient care guidelines

- Guidelines: Systematically developed statements that assist practitioners & patients in making decisions about appropriate health care for specific clinical circumstances.
- Unsystematic clinical reviews: Focus on content area
- Guideline:
  - 1) Begins with a clear question
  - 2) Uses explicit research strategy
  - 3) Specifies criteria for evaluating the evidence
  - 4) Provides a clear statement of bias in interpretation
  - 5) Concludes with a recommendation for patient care
- *“Expert Consultation (without the expert!) regarding best practice options ‘at the bedside’”*

## Applying the evidence to decisions about patient care

- The Essence: Validity, Clinical importance & applicability of evidence to patient care
- Questions:
  - 1) Trusting the information?
  - 2) Validity of information?
  - 3) Translates to patients' situation?
  - 4) Prognostic factors?
  - 5) Evaluating the outcome in the patient?



# Teaching EBM

- Need to know BASICS! Including DSM-IV-TR; EBM as a higher order skill depending on prior clinical experience & good clinical practice (based on good background readings!)
- EBM Didactics: Small group learning experiences; textbooks for theoretical knowledge with practical examples from real life
- EBM at the bedside: EBM prescription!
  - A learning assignment co-written by supervisor and resident/student that describes the clinical problem, defines the question as a PECO, identifies who is responsible for answering & when!
- Included on rounds, sign-out, supervision & journal clubs

# Rx

## Educational Prescription

Patient's name:

Learner:

### 3-part Clinical Question

.....  
Target Disorder:

.....  
Intervention (+/- comparison):

.....  
Outcome:

.....  
Date and Place to be filled:

.....  
Presentation will cover:

1. Search Strategy
2. Search Results
3. Validity of the evidence
4. Importance of this evidence
5. Can this evidence be applied to the patient
6. Your evaluation of this process

# Teaching EBM

- CAT: Critically Appraised Topic!
- CATs generated to appraise the evidence (obtained through a PECO) for its validity & applicability before putting it into clinical practice.
- Allows clinicians to integrate their academic skills and clinical expertise in a way they can apply to patient care.
- <http://www.cebm.net/catmaker.asp>
- Problems: Limited peer review, single-investigation basis, obsolescence!

# CAT

- “Keeping up with the literature”: Critically Appraised Topic (CAT) in 30 minutes
- Focus not only on grading the strength of evidence but on processes required by clinicians to continually update their knowledge / skills for problems of daily clinical practice
- Encourages trainees to develop critical thinking essential to life-long learning.

# EBM Seminar

- Multidisciplinary
- Weekly, 1.5 hours
- Beginning of academic year: EBM textbook by Sackett: Basic text; JAMA users' guides for EBM and Gray's EBM textbook: supplements
- Advanced trainees: Lead discussion at beginning of year; faculty focus stays on EBM; Evaluating the literature based on clinical questions (March JS, et al. Child Adolesc Psychiatric Clin N Am 2005; 14: 273-296)

# Teaching EBM

- Library tools & on-line resources
- EBM gadgets: Calculators, Textbooks, Literature reviews, Drug references
- <http://www.cebm.utoronto.ca/teach/materials/caworksheets.htm>
- PICOmaker: Univ. of Alberta
- Faculty Development: For transition to EBM, active faculty involvement needed; Small group methods, Enthusiastic Chief Resident!

# Child & Adolescent Psychiatry Trials Network

- ❖ Cultural shift towards EBM; need for integrating research with clinical practice
- ❖ NIH: Need for practical clinical trials designed to aid decision makers in patient care
- ❖ NIMH + Duke: CAPTN ([www.captan.org](http://www.captan.org))
- ❖ Focus on 2 major areas:
  - 1) Obtaining randomized evidence regarding the effectiveness of widely used but understudied combined drug treatments
  - 2) Short & Long term safety of pharmacotherapy
- ❖ Will help generate EBM literature!

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# Answers

1): A

2): E

3): A

4): B

5): D