

Using and Teaching Evidence-Based Medicine in Child Psychiatry

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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) 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 informed 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)
 - 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)
- 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
- A comparison of NNT and NNH helps with obtaining the 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
- 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/index.aspx?o=1216>
- 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)
- ❖ 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): D