Evidence Based Medicine in Mental Health

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Pre-Lecture Exam
Question 1

1. True or False: The mental health literature is growing even faster than the general professional.

Question 2

2. Evidence Based Medicine emphasizes all but which of the following:

A. Use of current evidence

B. Use of best available evidence

C. Reliance on anecdotal experience

D. Integrating evidence-based recommendations with individual patients needs and preferences

E. Practical application of statistical and epidemiological concepts

Question 3

3. **Formulation of a clinical question usually involves any of the following except:**

A. Consideration of individualized clinical observations
B. Judicious use of astrological data
C. Choice of possible intervention
D. Attention to potential outcomes
E. Comparison of treatment alternatives

Question 4

4. Which of the following pairs of questions and methods is incorrect?

A. Diagnostic question – Cross-sectional study

B. Treatment effectiveness study – Randomized controlled trial

C. Comparison of outcomes – Cohort study

D. Investigation of pathophysiology – case registry

E. Investigation of etiology – Case-control study

Question 5

5. Effect size is measured by which of the following:

A. P-value

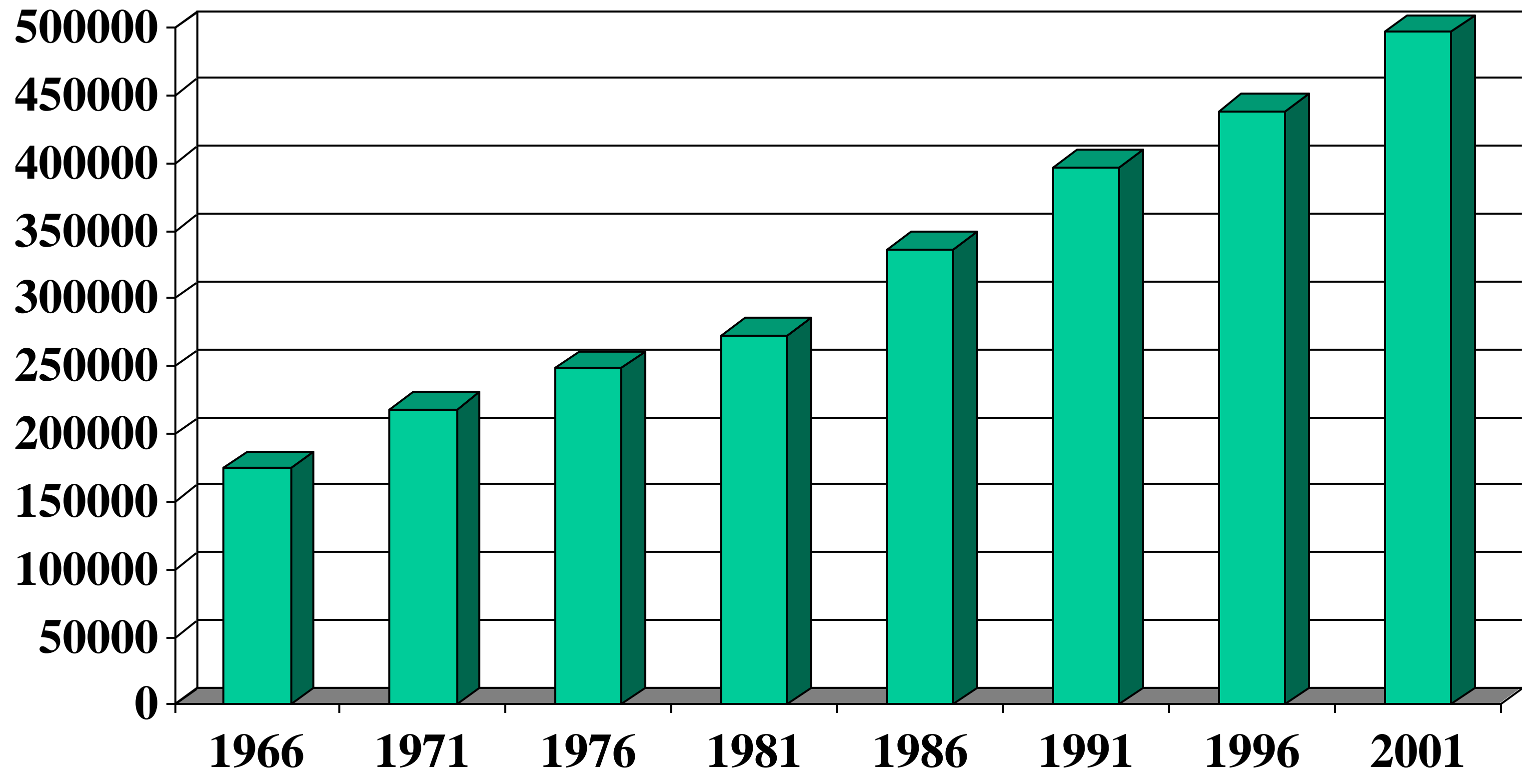
B. Number needed to treat (NNT)

C. Intention to treat analysis

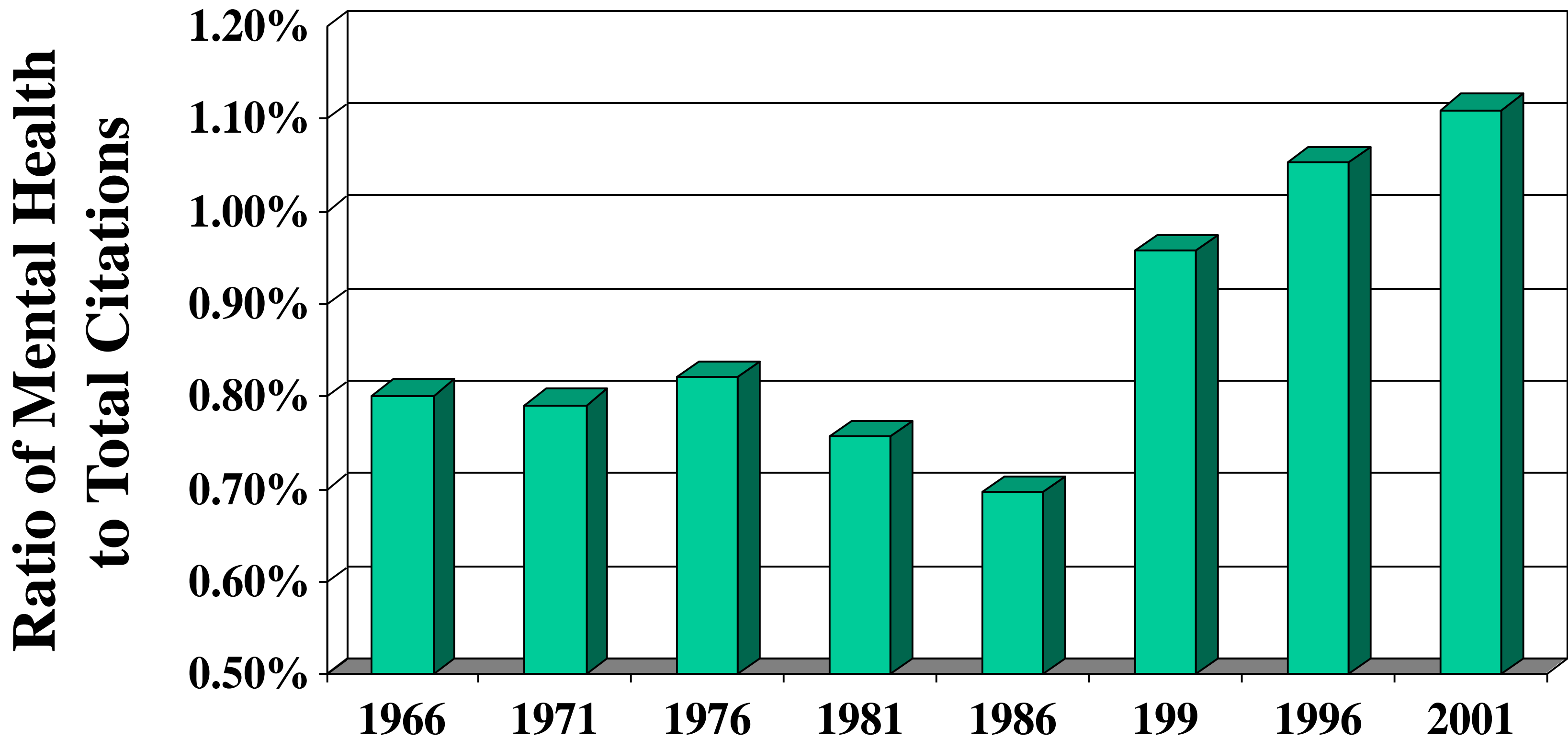
D. Coreopsis parameters

E. Confidence interval

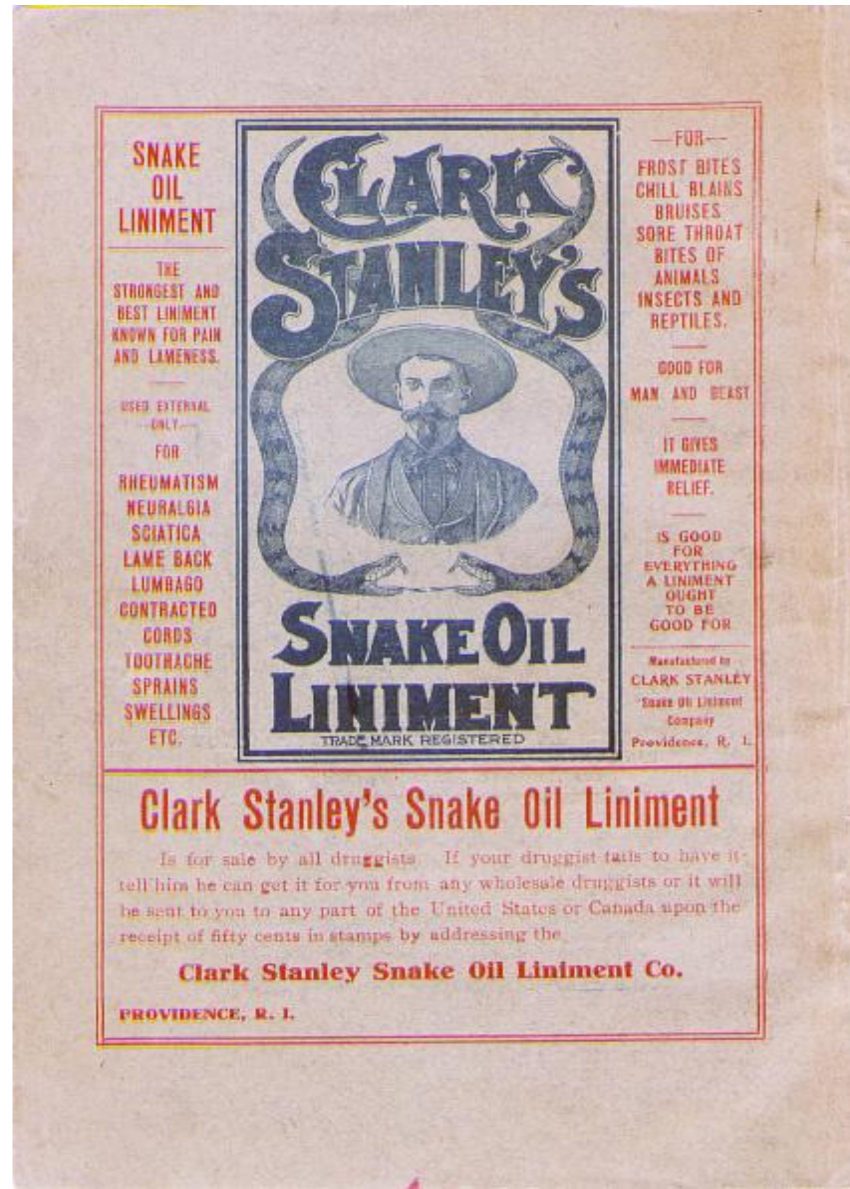
35 Years of Medline: Total Citations Available by Year



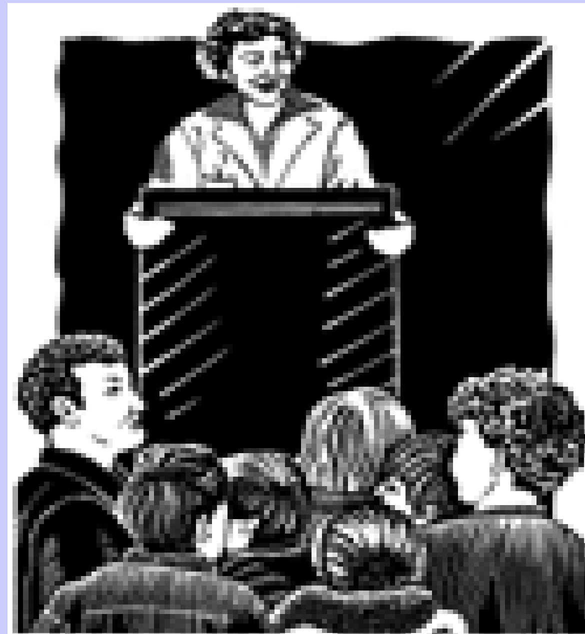
35 Years of Medline:
Growing Proportion of Mental Health Citations



Evaluating the Quality of Data Requires Vigilance and an Organized Approach



Corporately Sponsored Education Does Not Always Provide Balanced Guidance



Medical Decision-Making is Under Increasing Scrutiny by Regulatory Agencies, Press, and Public

What Determines Prescribing Choices?

Is EBM the Solution?

"Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decision about the care of individual patients"[1]

"...the integration of best research evidence with clinical expertise and patient values"[2]

1. Sackett et al. 1996; 2. Sackett et al. 2000

History of EBM

- Dept of Epidemiology and Biostatistics, McMaster University
- Enthusiastic reception in UK
  - Centre for EMB at Oxford University
  - UK Cochrane Centre
- Gradual acceptance in US
  - AHRQ
  - ACP Journal Club

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SECOND EDITION

EVIDENCE-BASED MEDICINE

How to Practice and Teach EBM

David L. Sackett
Sharon E. Straus
W. Scott Richardson
William Rosenberg
R. Brian Haynes

CHURCHILL LIVINGSTONE

EBM in Mental Health?

- Promoted by:
  - Centre of EBMH at Oxford
  - "Evidence-Based Mental Health"
  - AHCPR/AHQR
- Resistance:
  - New paradigm
  - New skills
  - Need to reconcile with honored values

How Is EBM Implemented?

1) Formulate Question

- Areas of interest:
  - Clinical findings
  - Etiology
  - Clinical manifestations
  - Differential diagnosis
  - Diagnostic tests
  - Prognosis
  - Therapy
  - Prevention

Sackett et al. 2000

- “PICO”
  - **P**atients or problem
  - **I**ntervention
  - **C**ontrol or alternative treatment
  - **O**utcome
- Example: “In **geriatric patients with Alzheimer’s Disease**, does treatment with **donepezil**, compared to **no cholinesterase inhibitor**, improve **cognitive functioning**?”

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2) Search for Answers

- Match best study type to question
  - Dx: Cross-sectional study
  - Tx: RCT
  - Prognosis: Cohort study
  - Etiology: Cohort or case-control

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Use Best Available Evidence

- 1a/b: RCT (Review, individual)
- 1c: All or none case series
- 2a,b: Cohort studies (review, individual)
- 2c: Outcomes research; ecological studies
- 3a,b: Case-control (review, individual)
- 4: Case series
- 5: Expert opinion

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Find the Best Evidence

- Textbooks may be out of date
- Journals contain much that is irrelevant
- General databases may be cluttered with less useful sources
- EBM sources are increasingly available
  - EBMH Journal
  - Cochrane Reviews
  - ACP Journal Club

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Online Resources: Of Growing Value

EBMH Online

Evidence-Based Mental Health

3) Appraise the Evidence

- Methods
  - Concealed randomization?
  - Double blind?
  - All subjects accounted for and analyzed in groups?
    - 80% follow up necessary for valid results
    - ITT analysis
  - Were groups comparable?
  - Aside from experimental treatment, treated equally?

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- Results
  - How important?
    - Was a clinically significant outcome chosen?
    - How large was the treatment effect (NNT)?
    - How precise are the results (CI)?

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What is the Value of the P-Value?

- Probability that a particular outcome occurred by chance.
- Most frequently chosen limit is $p < 0.05$
- Use of multiple statistical comparisons without correction affects true probabilities.
- Significant p value does not clarify effect size or number of subjects likely to respond to intervention.

Effect Size: Calculating NNT

- CER (Control Event Rate)
- EER (Experimental Event Rate)
- AAR (Absolute Risk Reduction: CER-EER)
- CI = **1.96*{[CER*(1-CER)/Nc]+[EER*(1-EER)]/Ne}$^{1/2}$**
- NNT = 1/AAR

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4) Apply the Results

- How applicable?
  - Is my patient like those studied?
  - Is treatment consistent with my patient's values and preferences?
  - Is treatment feasible in my practice setting?

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Two Examples from Geriatric Psychiatry

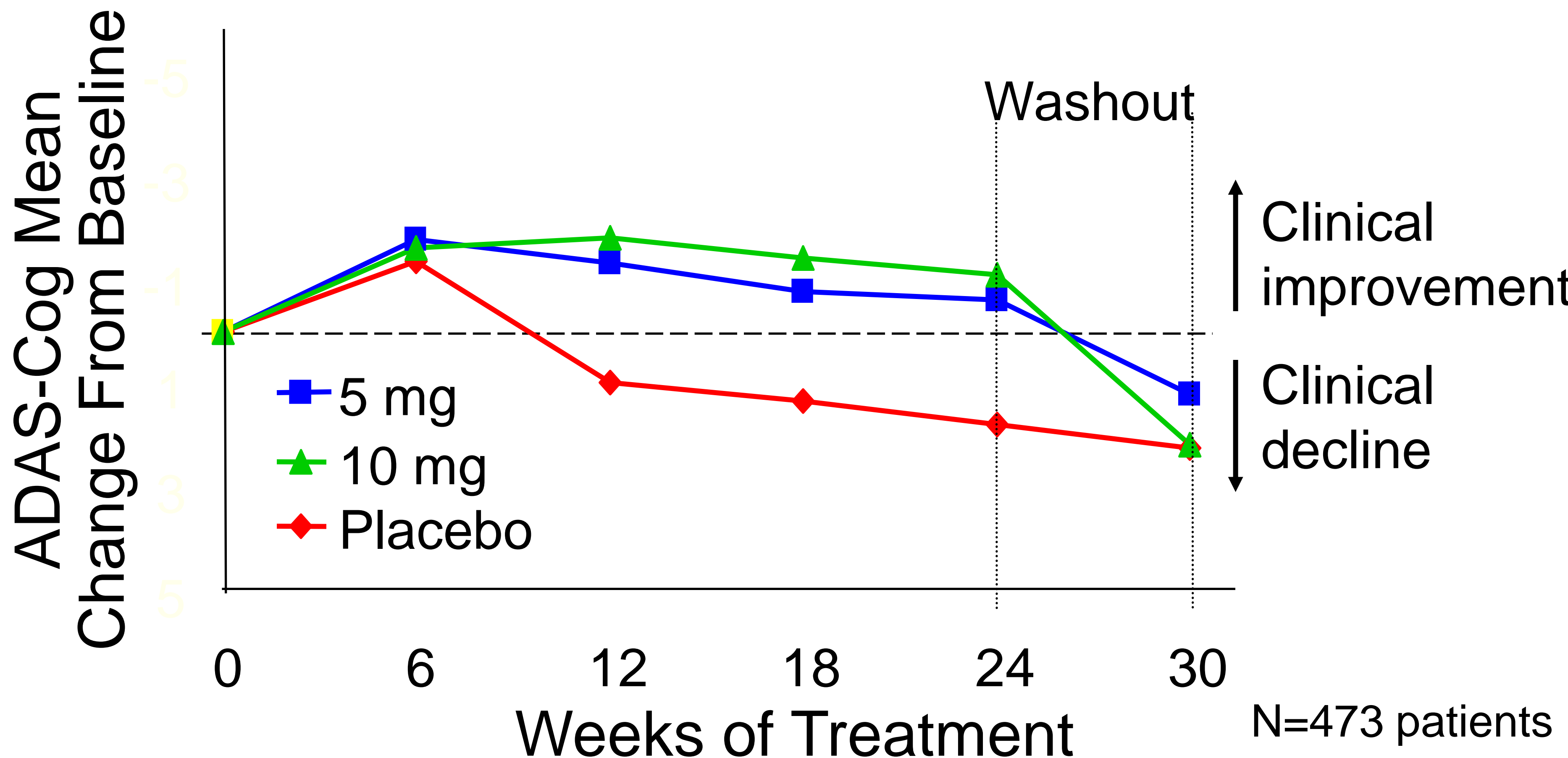
"In my **geriatric patient with Alzheimer's Disease**, will treatment with **donepezil**, compared to **no cholinesterase inhibitor**, improve **cognitive functioning**?"

Best Result of Search:

Rogers SL, Farlow MR, Doody RS et al: A 24-week, double-blind, placebo-controlled trial of donepezil in patients with Alzheimer's disease. Neurology 1998;50:136-45.

- Double-blind, computerized randomization
- All subjects accounted for and analyzed in "Intent to Treat" analysis
- Were groups comparable?
  - Donepezil group significantly older (about 2 years)
  - Groups treated equivalently aside from donepezil vs placebo

Donepezil: Mean Change in ADAS-Cog From Baseline During 24 Wk Treatment, 6 Wk Washout



N=473 patients
5 mg, n = 154
10 mg, n = 157
Pla, n = 162

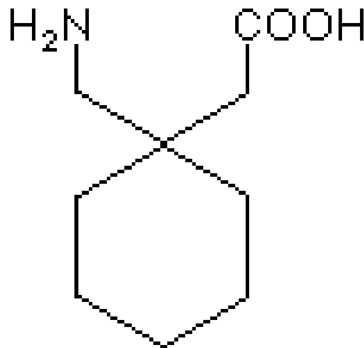
(Rogers et al. 1998)

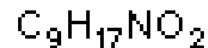
- Outcome: Percentage of patients in each group with improvement of 4 or 7 points on ADAS-COG
- p-value for change in ADAS-cog with donepezil is <0.0001
- NNT calculation for 10 mg/d dose:
  - CER for +4 point ADAS-cog .732
  - EER .465
  - AAR .267
  - NNT 4

- Applicability to my patient – Rogers et al studied patients with:
  - Age ≥ 50
  - MMSE 10-26
  - CDR 1 or 2
  - Medical illnesses, concurrent antidepressant, anticonvulsants, antipsychotics excluded
- Consistent with my patient's values and preferences?
  - Requires individualized assessment
  - Health care proxy?
- Feasible in my practice setting?
  - Depends on capacity for adherence

Example 2: Gabapentin for Agitation

"In my **geriatric patient with dementia**, will treatment with **gabapentin**, compared to **no treatment**, reduce **agitation**?"





Literature Search

1: Miller LJ.
   Gabapentin for treatment of behavioral and psychological symptoms of dementia.
   Ann Pharmacother. 2001 Apr;35(4):427-31.

2: Roane DM, Feinberg TE, Meckler L, Miner CR, Scicutella A, Rosenthal RN.
   Treatment of dementia-associated agitation with gabapentin.
   J Neuropsychiatry Clin Neurosci. 2000 Winter;12(1):40-3 (4 patients)

3: Low RA Jr, Brandes M.
   Gabapentin for the management of agitation.
   J Clin Psychopharmacol. 1999 Oct;19(5):482-3. No abstract available.

4: Goldenberg G, Kahaner K, Basavaraju N, Rangu S.
   Gabapentin for disruptive behaviour in an elderly demented patient.
   Drugs Aging. 1998 Aug;13(2):183-4. No abstract available.

5: Regan WM, Gordon SM.
   Gabapentin for behavioral agitation in Alzheimer's disease.
   J Clin Psychopharmacol. 1997 Feb;17(1):59-60. No abstract available.

6: Herrmann N, Lanctot K, Myszak M.
   Effectiveness of gabapentin for the treatment of behavioral disorders in dementia.
   J Clin Psychopharmacol. 2000 Feb;20(1):90-3. (12 patients, open label)

Best Result of Search:

Herrmann et al. Effectiveness of gabapentin for the treatment of behavioral disorders in dementia. J Clin Psychopharmacol. 2000 Feb;20(1):90-3.

- 12 subjects, open label, case series
- rank 4 level of evidence
- 10 of 12 completers analyzed (not ITT)
- No control group

- Outcomes:
  - Mean Change on NPI: -- NS
  - Mean Change on CMAI: -- NS
  - Number of improvers on CGI: --?
- CGI findings
  - 2 much improved, 3 minimally improved = 5
  - 6 not improved, 1 worse = 7
- 42% adverse effects, 2 subjects discontinued
- "…this trial showed …modestly effective…recommend further controlled trials."

- Applicability to “my patient”
  - Various dementia types
  - MMSE 0-12
  - Concurrent medications not noted
  - No assurance of absence of delirium
- Consistent with my patient’s values and preferences?
  - potentially
- Feasible in my practice setting?
  - Possibly
- How convincing?

Conclusions

- EBM is an important new paradigm
- It is applicable to mental health
- It can help us
  – Manage information overload
  – Appraise the value of treatment interventions
  – Increase clinical effectiveness

Post Lecture Exam
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Answers to Pre & Post Competency Exams

1. True
2. C
3. B
4. D
5. B