

# Evidence-based Healthcare

Bridging the gap between  
research and practice

Evidence-based medicine is the practice of making medical decisions based on clinical evidence in the medical literature rather than on intuition

Evidence-based medicine working group  
JAMA 1992;268:2420

Evidence-based medicine is  
of making medical decisions based on  
clinical evidence in the medical literature  
institution

Cookbook  
medicine!

Too  
expensive!

Ignores  
patients!

Rationing!

Ignores  
doctors!!

No evidence!

## Reviewers' conclusions for 50 questions

<b>Conclusion</b>	<b>Number</b>	<b>%</b>
Answer	17	34
No answer	18	36
Answer, but ...	15	30

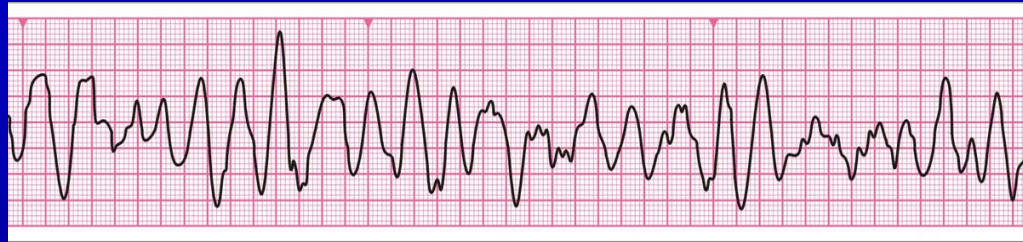
## Reviewers' conclusions for 50 questions

<b>Conclusion</b>	<b>2003</b>	<b>2005</b>
Answer	48%	34%
No answer	32%	36%
Answer, but ...	20%	30%

# A hierarchy of strength of evidence for treatment decisions

- N of 1 randomized controlled trial
- Systematic reviews of randomized trials
- Single randomized trial
- Systematic review of observational studies addressing patient-important outcomes
- Single observational study addressing patient-important outcomes
- Physiologic studies (studies of blood pressure, cardiac output, exercise capacity, bone density, and so forth)
- Unsystematic clinical observations

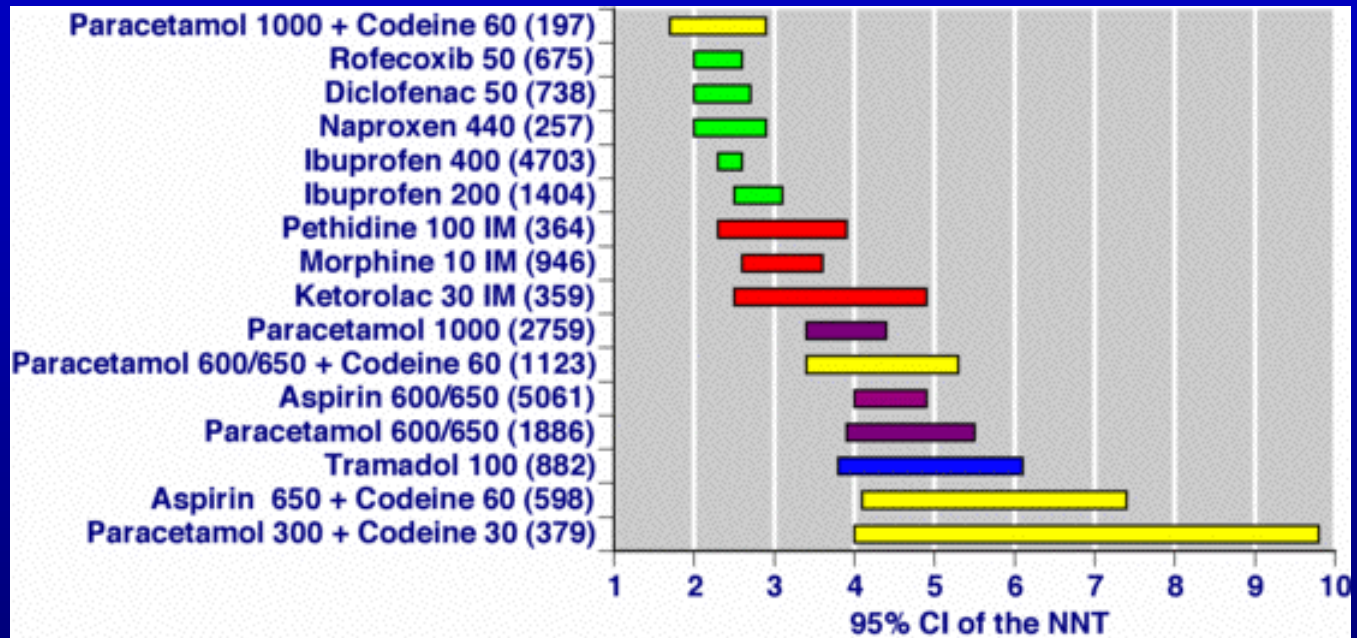
# Clinical experience as evidence



# A hierarchy of strength of evidence for treatment decisions

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# Patient experience as evidence



# Patient experience as evidence

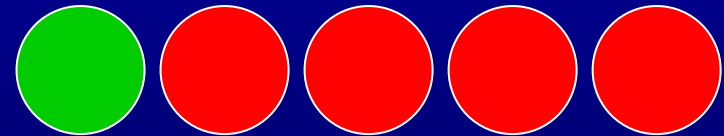
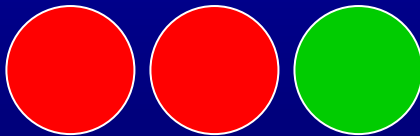
Paracetamol 1000mg  
+ Codeine 60mg

OR

Tramadol 100mg

NNT = 3

NNT = 5



Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values

Sackett et al. Evidence-Based Medicine, How to Practice and Teach EBM 2<sup>nd</sup> ed. Edinburgh: Churchill Livingstone, 2000

Evidence-based medicine is about asking questions, finding and appraising the relevant data, and harnessing that information for everyday clinical practice

Rosenberg W, Donald A, BMJ 1995;310:1122-6

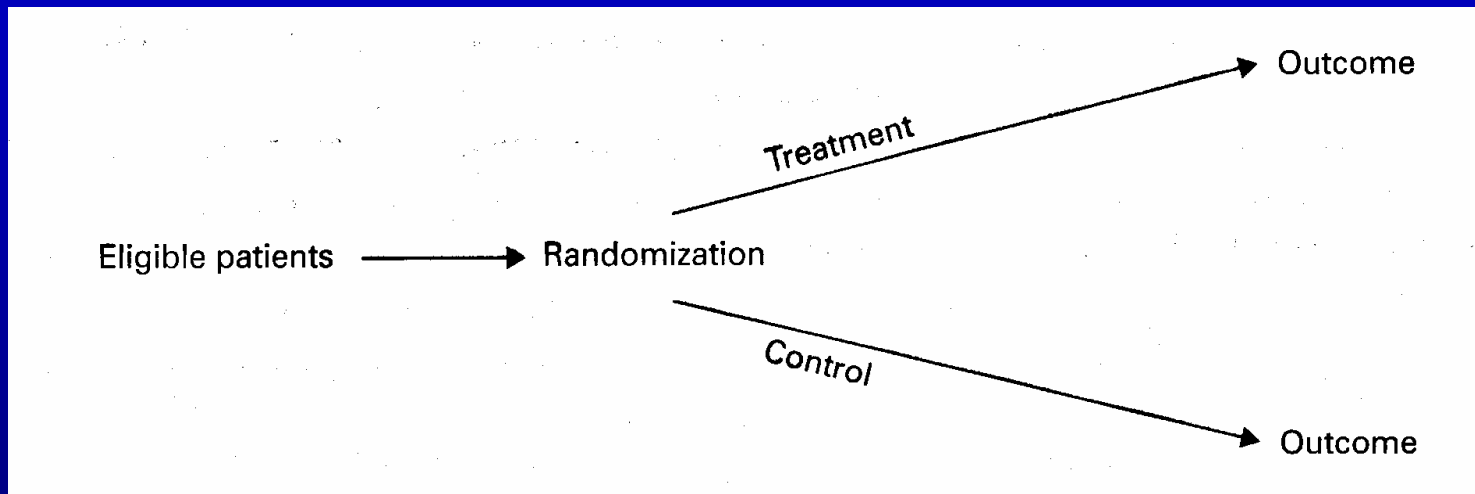
# Asking answerable questions

Element	Description
Patient or population	'How would I succinctly describe a group of patients similar to this one?'
Intervention	'What is the main action I am considering?'
Comparison	'What is (are) the other option(s)?'
Outcome(s)	'What do I want to happen/not happen?'

# Asking answerable questions

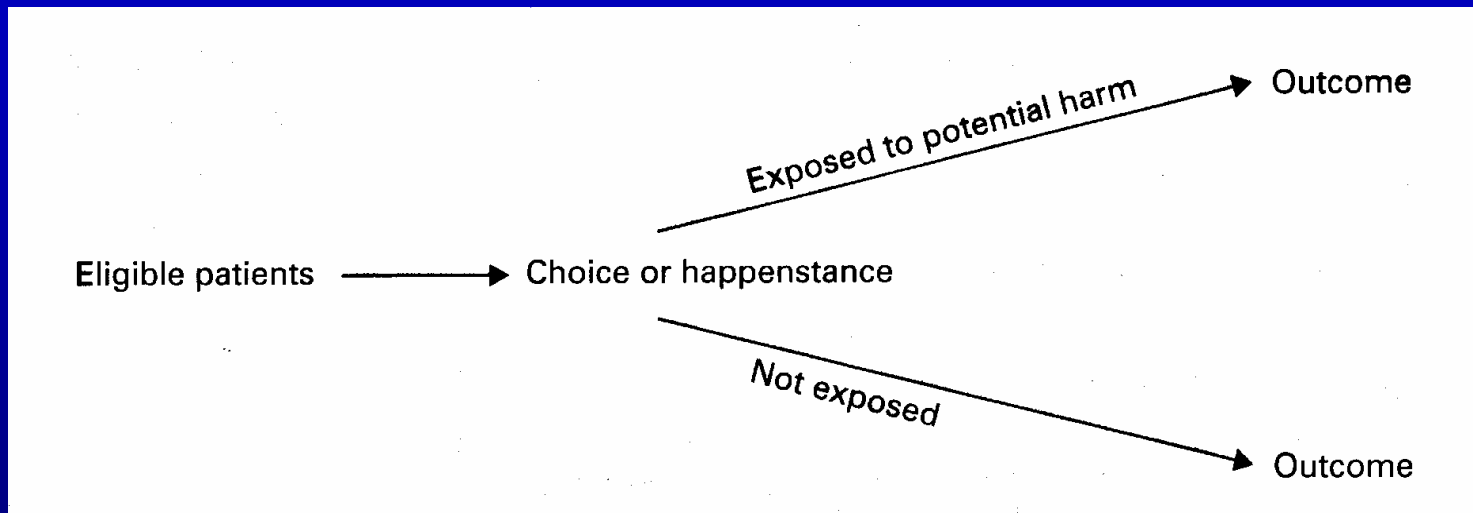
Element	Description
Patient or population	In ED patients with epigastric pain ...
Intervention	... is a proton pump inhibitor better than ...
Comparison	... placebo/antacid ...
Outcome(s)	... at providing pain relief?

# Search – what to look for



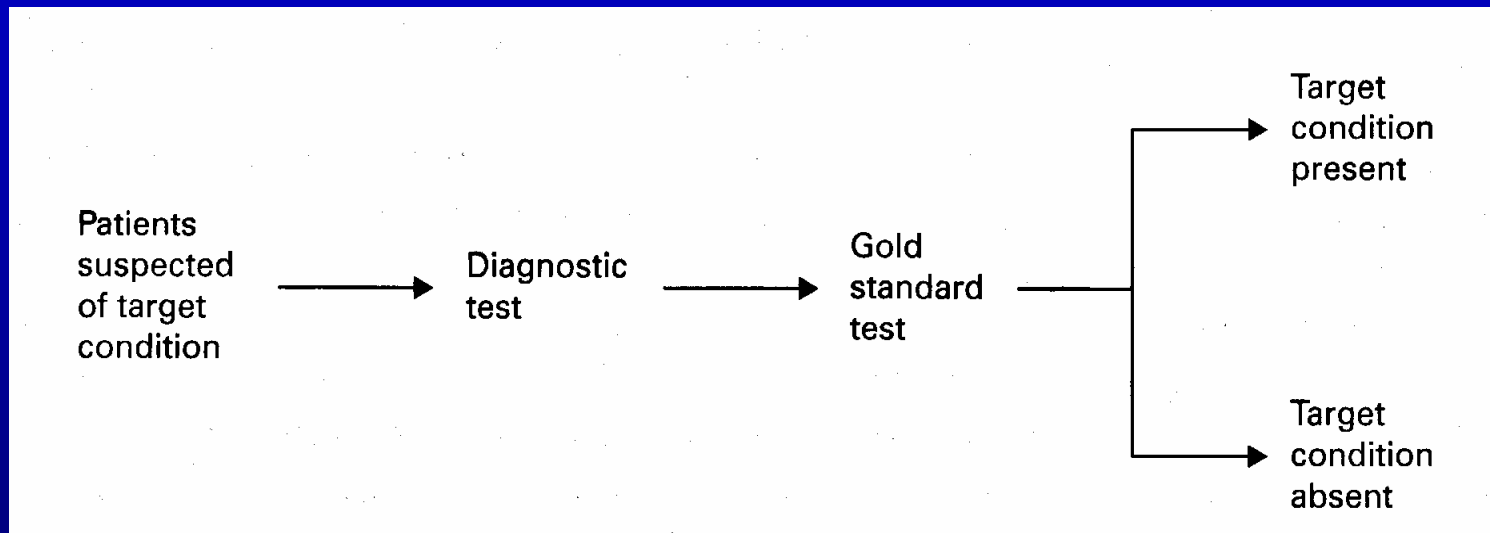
Randomised Controlled Trial

# Search – what to look for



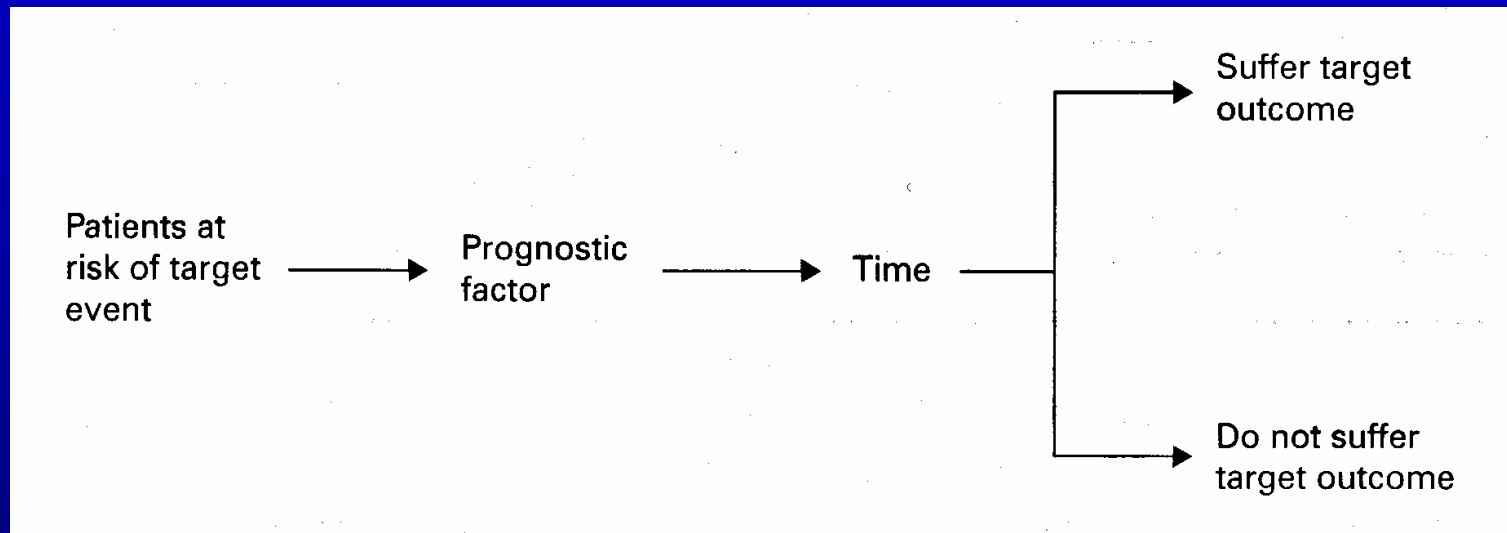
Observational study assessing exposure

# Search – what to look for



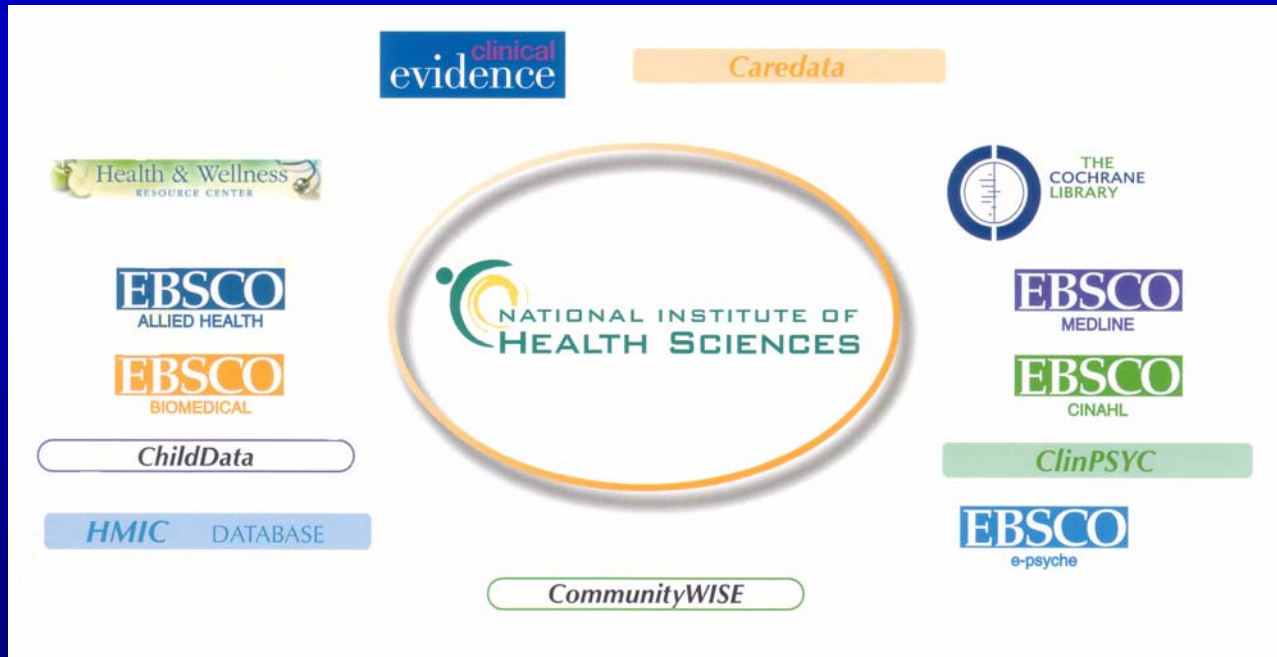
Study design to assess a diagnostic test

# Search – what to look for



Observational study assessing prognosis

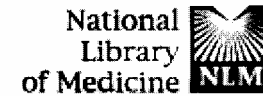
# Search – where to look



Pre-filtered

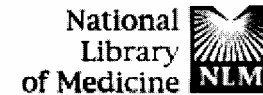
Original source

# Search – how to look



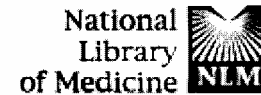
Search	Most Recent Queries	Time	Result
<u>#32</u>	Search abdominal pain OR epigastric pain OR dyspepsia OR gastritis OR peptic ulcer disease	10:08:43	<u>104975</u>

# Search – how to look



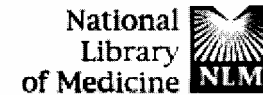
Search	Most Recent Queries	Time	Result
#33	Search <b>emergency department OR emergency medicine OR emergency service, hospital</b>	10:10:40	<u>57765</u>
#32	Search <b>abdominal pain OR epigastric pain OR dyspepsia OR gastritis OR peptic ulcer disease</b>	10:08:43	<u>104975</u>

# Search – how to look



Search	Most Recent Queries	Time	Result
<a href="#">#34</a>	Search PPI OR proton pump inhibitor OR omeprazole OR pantoprazole OR esomeprazole OR lansoprazole OR antacids	10:11:52	<a href="#">24136</a>
<a href="#">#33</a>	Search emergency department OR emergency medicine OR emergency service, hospital	10:10:40	<a href="#">57765</a>
<a href="#">#32</a>	Search abdominal pain OR epigastric pain OR dyspepsia OR gastritis OR peptic ulcer disease	10:08:43	<a href="#">104975</a>

# Search – how to look



Search	Most Recent Queries	Time	Result
<a href="#">#35</a>	Search <a href="#">#32</a> AND <a href="#">#33</a> AND <a href="#">#34</a>	10:12:48	<a href="#">20</a>
<a href="#">#34</a>	Search PPI OR proton pump inhibitor OR omeprazole OR pantoprazole OR esomeprazole OR lansoprazole OR antacids	10:11:52	<a href="#">24136</a>
<a href="#">#33</a>	Search emergency department OR emergency medicine OR emergency service, hospital	10:10:40	<a href="#">57765</a>
<a href="#">#32</a>	Search abdominal pain OR epigastric pain OR dyspepsia OR gastritis OR peptic ulcer disease	10:08:43	<a href="#">104975</a>

# Appraise

Are the results valid?

What are the results?

How can I apply the results to patient care?

# Appraising an article about therapy

## **Are the results valid?**

Did experimental and control groups begin the study with a similar prognosis?

- Were patients randomized?
- Was randomization concealed (blinded or masked)?
- Were patients analyzed in the groups to which they were randomized?
- Were patients in the treatment and control groups similar with respect to known prognostic factors?

Did experimental and control groups retain a similar prognosis after the study started?

- Were patients aware of group allocation?
- Were clinicians aware of group allocation?
- Were outcome assessors aware of group allocation?
- Was follow-up complete?

## **What are the results?**

- How large was the treatment effect?
- How precise was the estimate of the treatment effect?

## **How can I apply the results to patient care?**

- Were the study patients similar to my patient?
- Were all clinically important outcomes considered?
- Are the likely treatment benefits worth the potential harm and costs?

# Implementation

Intervention	Effective?
Audit & feedback	Y
Printed guidelines	?
Interactive workshops	Y
Didactic workshops	N
Educational outreach visits	Y
Opinion leaders	?
Target payments	?
Reminders	?

**Questions?**

# Summary

Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values

