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Evidence-Based Practice Nov 2015

Professor Carl Heneghan
University of Oxford
Director CEBM

Developing Evidence-Based Practice?

Carl Heneghan *MA, MRCGP*
Centre for Evidence Based Medicine
University of Oxford

One day Introduction to Evidence-Based Medicine
Friday 19th June 2015

Start	*Topic*
08:45	**Arrival & Registration** (Ruth Davis)
09:15	**Plenary**: What is Evidence-based practice (Carl Heneghan)
10:00	**Group Tutorial**: Asking well-formulated questions (Carl Heneghan)
10:30	*Morning Coffee*
10:45	**Plenary**: Finding the best evidence (searching basics) (Outreach Librarian at Bodleian Health Care Libraries)
11:15	**Lab Tutorial**: Cochrane and PubMed Searching (hands-on) (Outreach Librarian at Bodleian Health Care Libraries)
12.15	*Lunch*
1:00	**Plenary**: Rapid Critical Appraisal of Randomised Controlled Trials (Kamal Mahtani)
2:00	**Small Group Tutorial**: Followed by group work critical Appraisal of intervention studies (David Nunan)
3:00	*Afternoon Tea*
3:15	**Plenary & Small Group Tutorial**: Critical Appraisal of Systematic Reviews (David Nunan)
4:45	Where to from here? / Evaluation / Close (Carl Heneghan)

CEBM Presentations

This page contains all of the slide presentations used at recent CEBM workshops. The presentations are in either PDF of PowerPoint (PPT or PPTX) format.

2013

November – One Day Introduction to Evidence-Based Practice

Rapid Critical Appraisal of Controlled Trials (ppt – 5.4MB) – Annette Pluddemann Finding the Best Evidence (pptx – 0.2MB) – Owen Coxall

April – Workshop on How to Practice Evidence-Based Health Care

RECOMMENDED CONTENT

Finding the Evidence 1 - Using PICO to formulate a search question

A mini tutorial on finding the evidence provided by Neal Thurley and Owen Coxall who regularly tutor on CEBM courses. It is recommended that you watch them in order.

Finding the Evidence

Finding the evidence is the second step in evidence-based practice, after formulating a clearly focused clinical

Every 1-day Workshop

The foll ions and templates to run a One-Day course tice

After the works

1. formulate
2. track dow
3. do rapid c
4. apply the
5. evaluate the effectiveness and efficiency of your educational process.

Presentations

Presentations should be cited as: name, title, Place the title of the overall website next and underline it, include the date of access. Also, place a link to the website at the end of the citation. Copy and paste the URL so that you ensure you have it down accurately.

Introduction (Carl Heneghan) [PDF | PowerPoint]
Randomised Controlled Trial (Carl Heneghan) [PDF | PowerPoint]
Finding the Best Evidence (Owen Coxall) [PDF | PowerPoint]

Worksheets

RCT Appraisal Worksheet [PDF]
Systematic Review Appraisal Worksheet [PDF]

RECOMMENDED CONTENT

The Practice of Evidence-Based Medicine

The Practice of Evidence-Based Medicine Workshop Date Spring 2015 TBC Venue TBC This workshop is aimed at clinicians and other health care professionals who wish to gain knowledge of critical appraisal
Read More

Practice of EBHC – what to expect

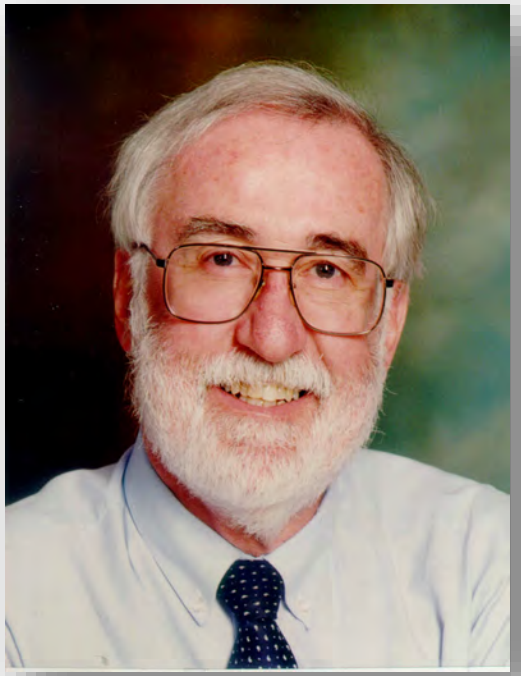

I am here because?
•I wanted 3 days of work
•Formulate an answerable question

The aim of today

1. To understand what is EBM
2. To recognize health related problems when they arise
3. To develop a focussed clinical questions
4. To find an answer to your clinical questions
5. To assess the validity of a RCT
6. To assess the validity of a systematic review

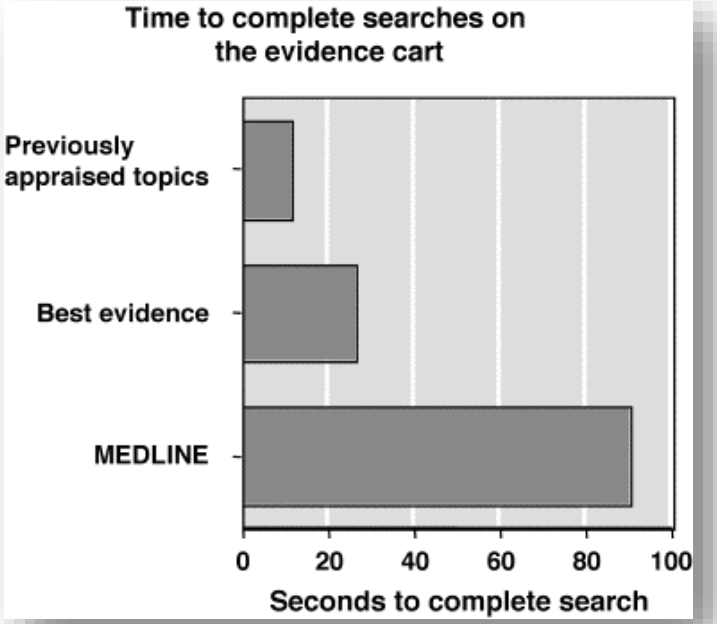
What is Evidence-Based Medicine?

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

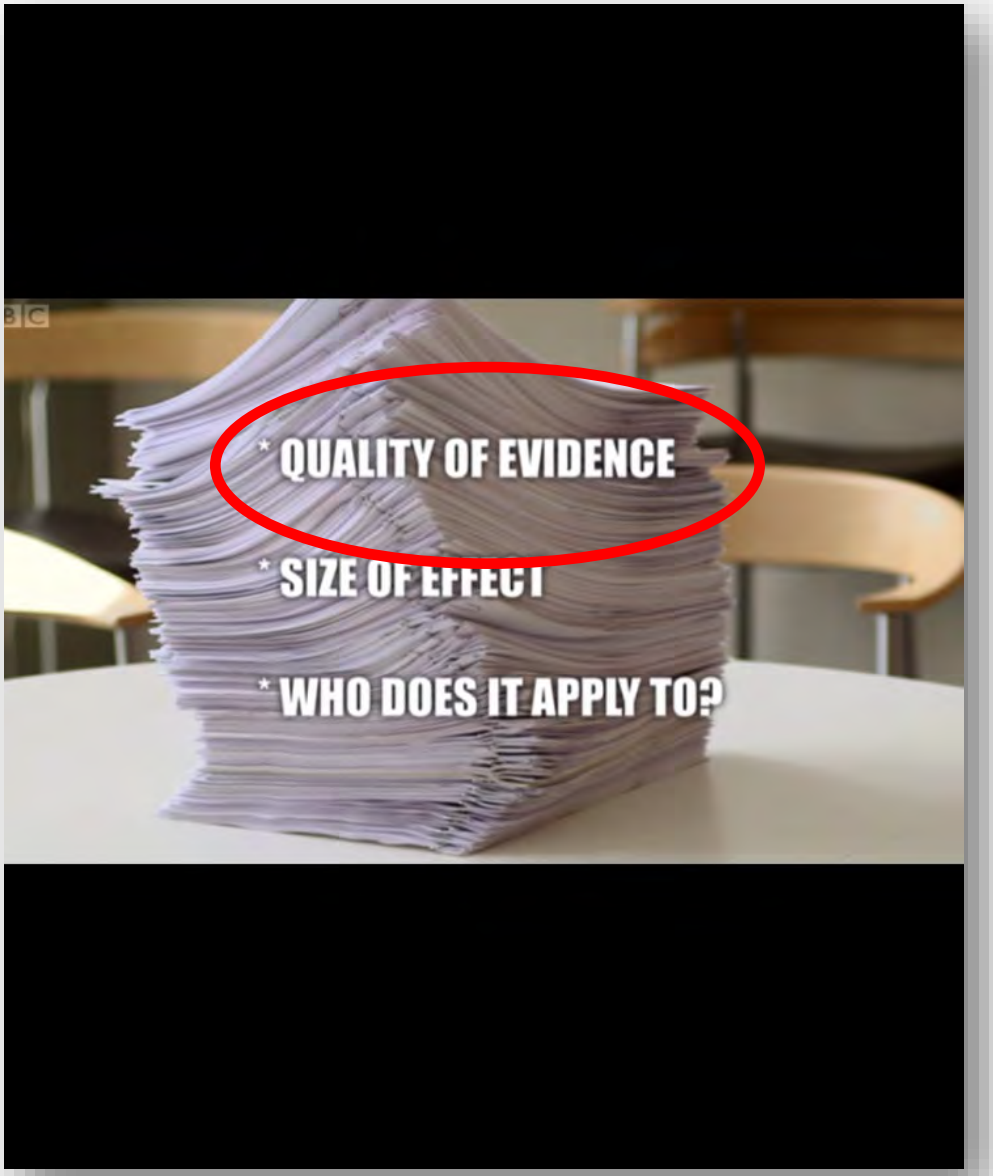


“Just in Time” learning
The EBM Alternative Approach

- Shift focus to current patient problems (“just in time” education)
  - Relevant to YOUR practice
  - Memorable
  - Up to date
- Learn to obtain best current answers



Develop strategies to assess the quality of evidence for health claims, effectiveness and applicability.



» Pharma Blog » 2010 » September » 16

Do You Know Who Frances Kelsey Is?

By Ed Silverman // September 16th, 2010 // 12:35 pm 6 Comments

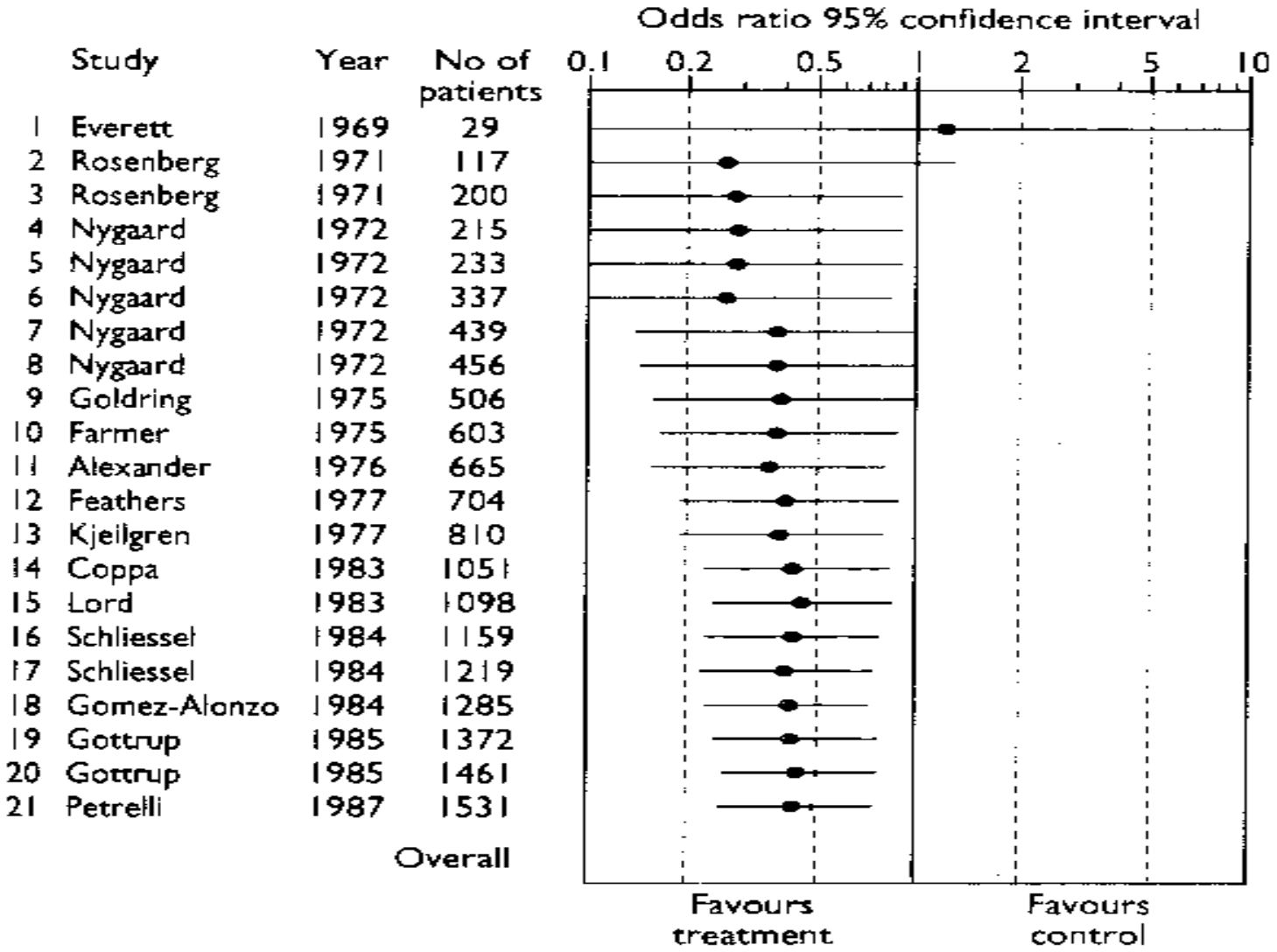
The odds are that you don't, but her actions a half-century ago helped transform the way prescription drugs are tested and approved. Kelsey, you see, was a new FDA employee in 1960, when she was assigned to review Kevadon, which was the brand name for thalidomide. The drug caused severe birth defects in thousands of babies born overseas after being prescribed to help women sleep or manage morning sickness. But babies often had limbless arms, malformed legs or extra appendages.

A physician and pharmacologist, Kelsey questioned its safety. "It just came with so many extravagant claims that I didn't believe," Kelsey, now 96, tells The Washington Post. Her decision set in motion a lot of intrigue as the manufacturer, Merrell, pushed back by complaining about her to the FDA. But kelsey held her ground and after the scandal became known, President John Kennedy gave her the Federal Civilian Service award.

Congress, meanwhile, amended the Food, Drug & Cosmetic Act to require safety and effectiveness testing and informed consent in clinical trials. What did informed consent have to do with it? As the paper notes, Merrell gave the drug to more than 1,000 US docs to distribute to 20,000 patients as part of a so-called investigational trial, but some patients were not informed they were participating in a trial. The upshot - about 40 babies in US were born with deformities.

Would any of you have agreed to participate in a placebo controlled trial of prophylactic antibiotics for colorectal surgery after 1975?

Reduction of perioperative deaths by antibiotic prophylaxis for colorectal surgery

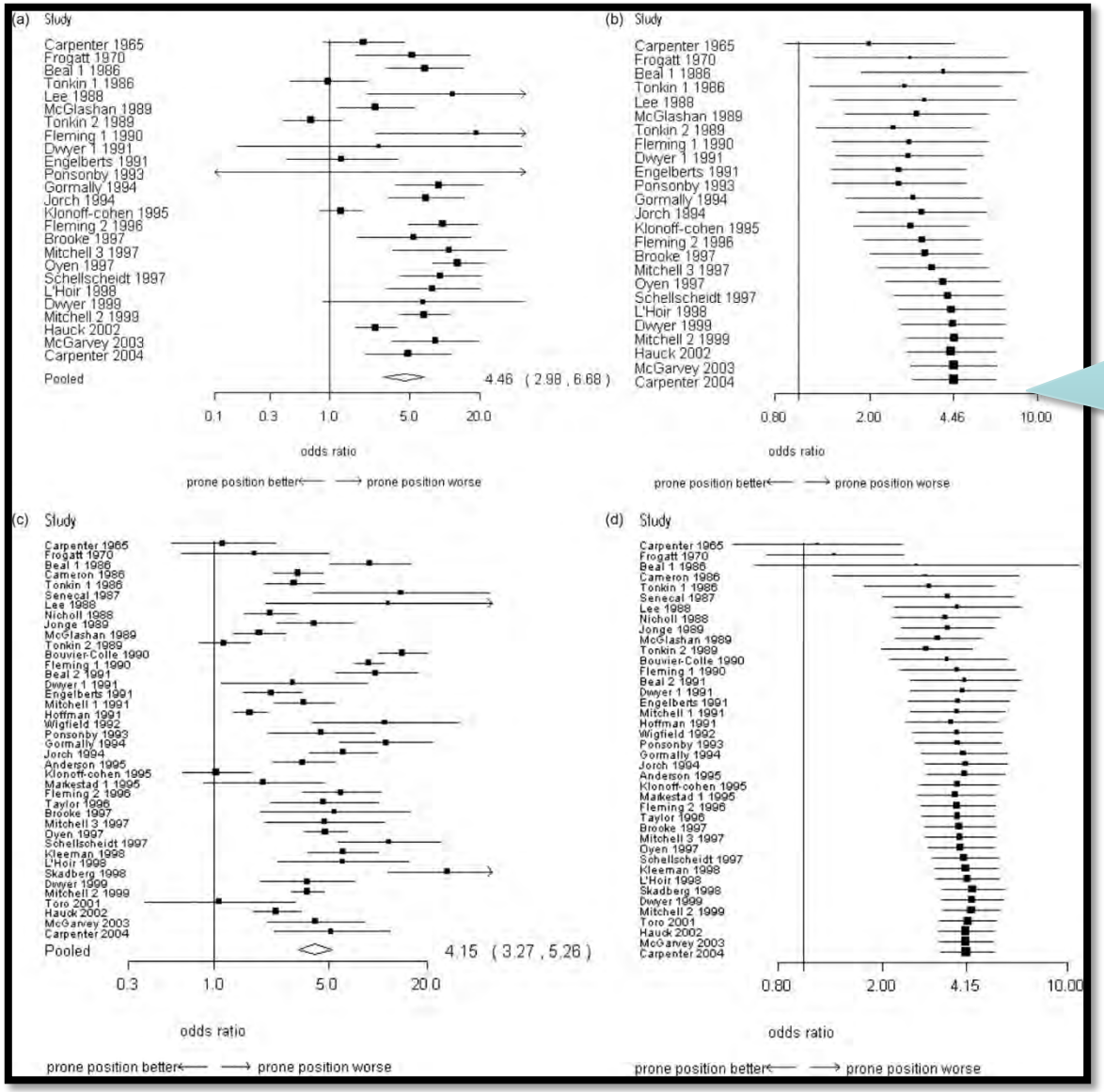


	Study	Year	No of patients
1	Everett	1969	29
2	Rosenberg	1971	117
3	Rosenberg	1971	200
4	Nygaard	1972	215
5	Nygaard	1972	233
6	Nygaard	1972	337
7	Nygaard	1972	439
8	Nygaard	1972	456
9	Goldring	1975	506
10	Farmer	1975	603
11	Alexander	1976	665
12	Feathers	1977	704
13	Kjellgren	1977	810
14	Coppa	1983	1051
15	Lord	1983	1098
16	Schliessel	1984	1159
17	Schliessel	1984	1219
18	Gomez-Alonzo	1984	1285
19	Gottrup	1985	1372
20	Gottrup	1985	1461
21	Petrelli	1987	1531
	Overall		

Would you ever have put babies to sleep on their tummies?

Expert opinion

Baby and Child Care" has actually sold more that 50 million copies, only outmatched in sales by the Bible

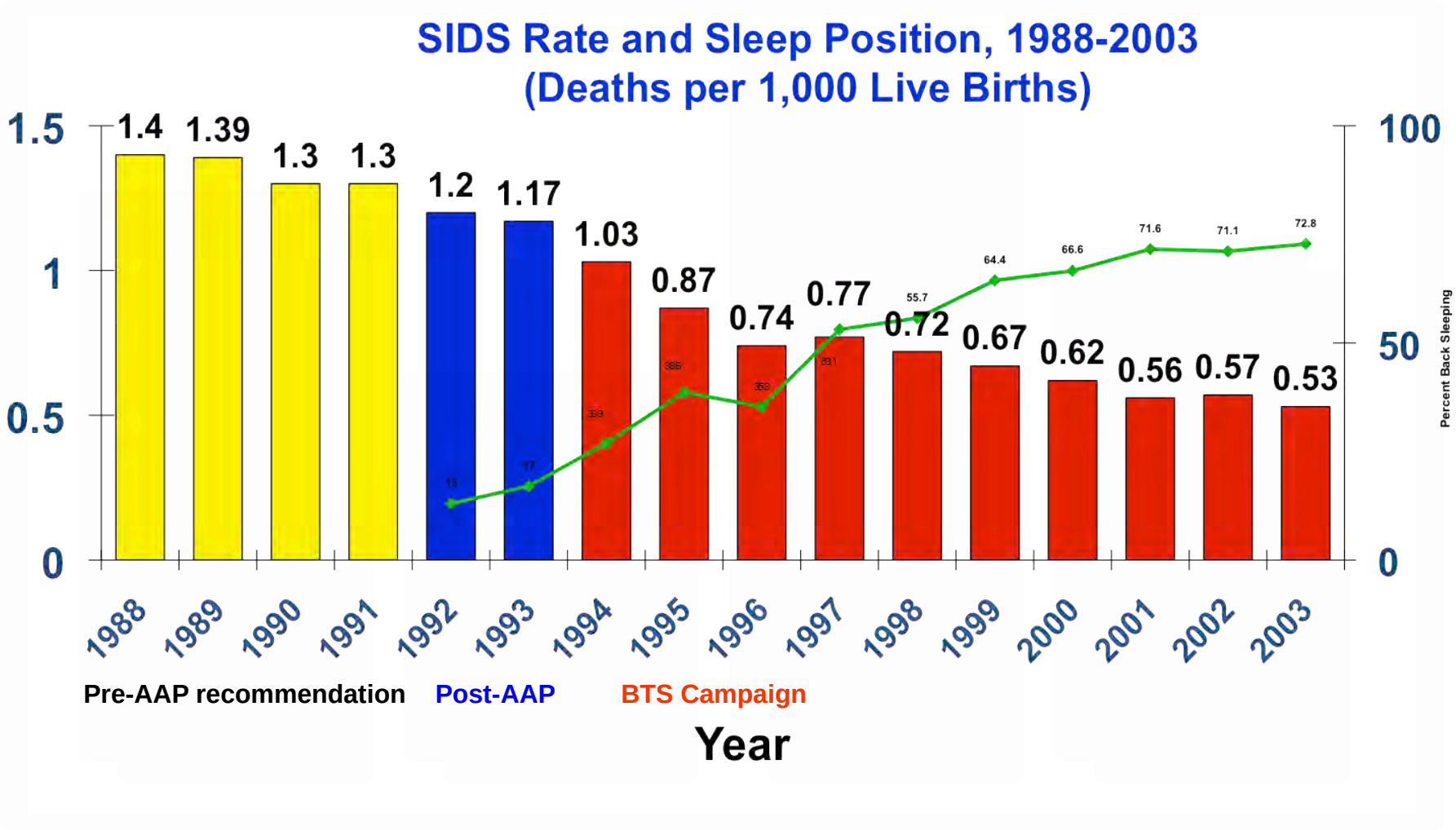


Front vs. back

Over four fold increase risk of sudden infant death syndrome

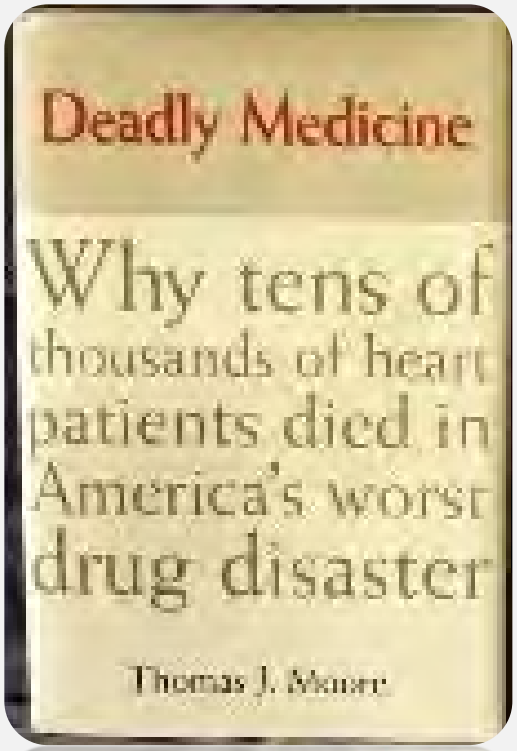
front vs. non-front

Ruth Gilbert et al. Int. J. Epidemiol. 2005;34:874-887



Sleep Position Source: NICHD Household Survey
SIDS Rate Source: National Center for Health Statistics, CDC

Why do we need RANDOMIZED CONTROLLED TRIALS ?



In the early 1980s newly introduced antiarrhythmics were found to be highly successful at suppressing arrhythmias.

Not until a RCT was performed was it realized that, although these drugs suppressed arrhythmias, they actually increased mortality.

The CAST trial revealed Excess mortality of 56/1000.

By the time the results of this trial were published, at least 100,000 such patients had been taking these drugs.

Effect of rosiglitazone on the frequency of diabetes in patients with impaired glucose tolerance or impaired fasting glucose: a randomised controlled trial

*The DREAM (Diabetes REduction Assessment with ramipril and rosiglitazone Medication) Trial Investigators**

Published Online
September 15, 2006
DOI:10.1016/S0140-6736(06)69420-8

*Group members are listed at the end of the report

Correspondence to:
DREAM Project Office, Population Health Research Institute, 237 Barton Street East, 2nd Floor, Hamilton, Ontario L8L 2X2, Canada
dream@cardio.on.ca

Summary

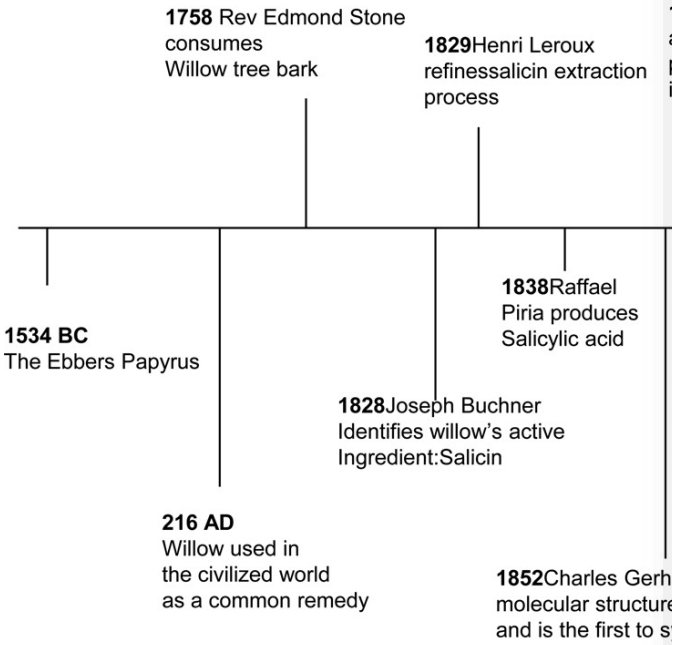
Background Rosiglitazone is a thiazolidinedione that reduces insulin resistance and might preserve insulin secretion. The aim of this study was to assess prospectively the drug's ability to prevent type 2 diabetes in individuals at high risk of developing the condition.

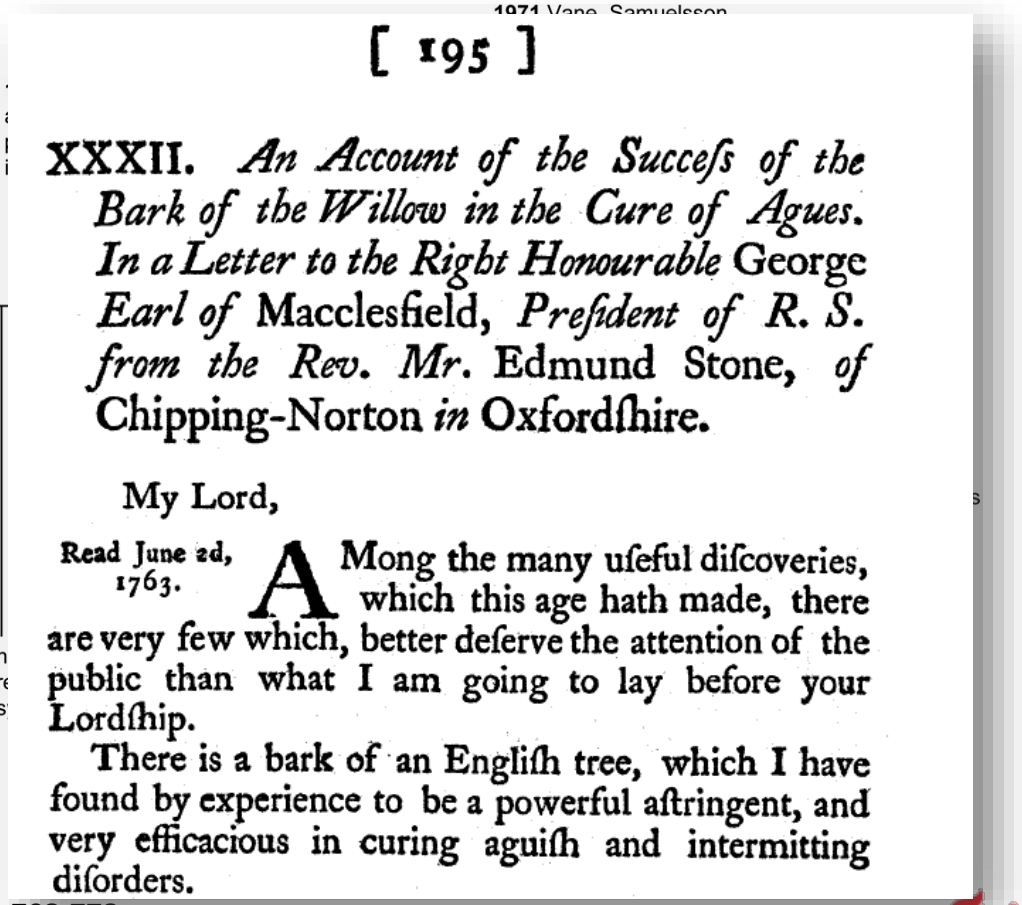
Methods 5269 adults aged 30 years or more with impaired fasting glucose or impaired glucose tolerance, or both, and no previous cardiovascular disease were recruited from 191 sites in 21 countries and randomly assigned to receive rosiglitazone (8 mg daily; n=2365) or placebo (2634) and followed for a median of 3 years. The primary outcome was a composite of incident diabetes or death. Analyses were done by intention to treat. This trial is registered at ClinicalTrials.gov, number NCT00095654.

Findings At the end of study, 59 individuals had dropped out from the rosiglitazone group and 46 from the placebo group. 306 (11·6%) individuals given rosiglitazone and 686 (26·0%) given placebo developed the composite primary outcome (hazard ratio 0·40, 95% CI 0·35–0·46; p<0·0001); 1330 (50·5%) individuals in the rosiglitazone group and 798 (30·3%) in the placebo group became normoglycaemic (1·71, 1·57–1·87; p<0·0001). Cardiovascular event rates were much the same in both groups, although 14 (0·5%) participants in the rosiglitazone group and two (0·1%) in the placebo group developed heart failure (p=0·01).

Interpretation Rosiglitazone at 8 mg daily for 3 years substantially reduces incident type 2 diabetes and increases the likelihood of regression to normoglycaemia in adults with impaired fasting glucose or impaired glucose tolerance, or both.

Timeline of historical events in the development of aspirin.





[195]

XXXII. *An Account of the Succeſs of the Bark of the Willow in the Cure of Agues. In a Letter to the Right Honourable* George *Earl of* Macclesfield, *Preſident of R. S. from the Rev. Mr.* Edmund Stone, *of* Chipping-Norton *in* Oxfordſhire.

My Lord,

Read June 2d, 1763.

AMong the many uſeful diſcoveries, which this age hath made, there are very few which, better deſerve the attention of the public than what I am going to lay before your Lordſhip.

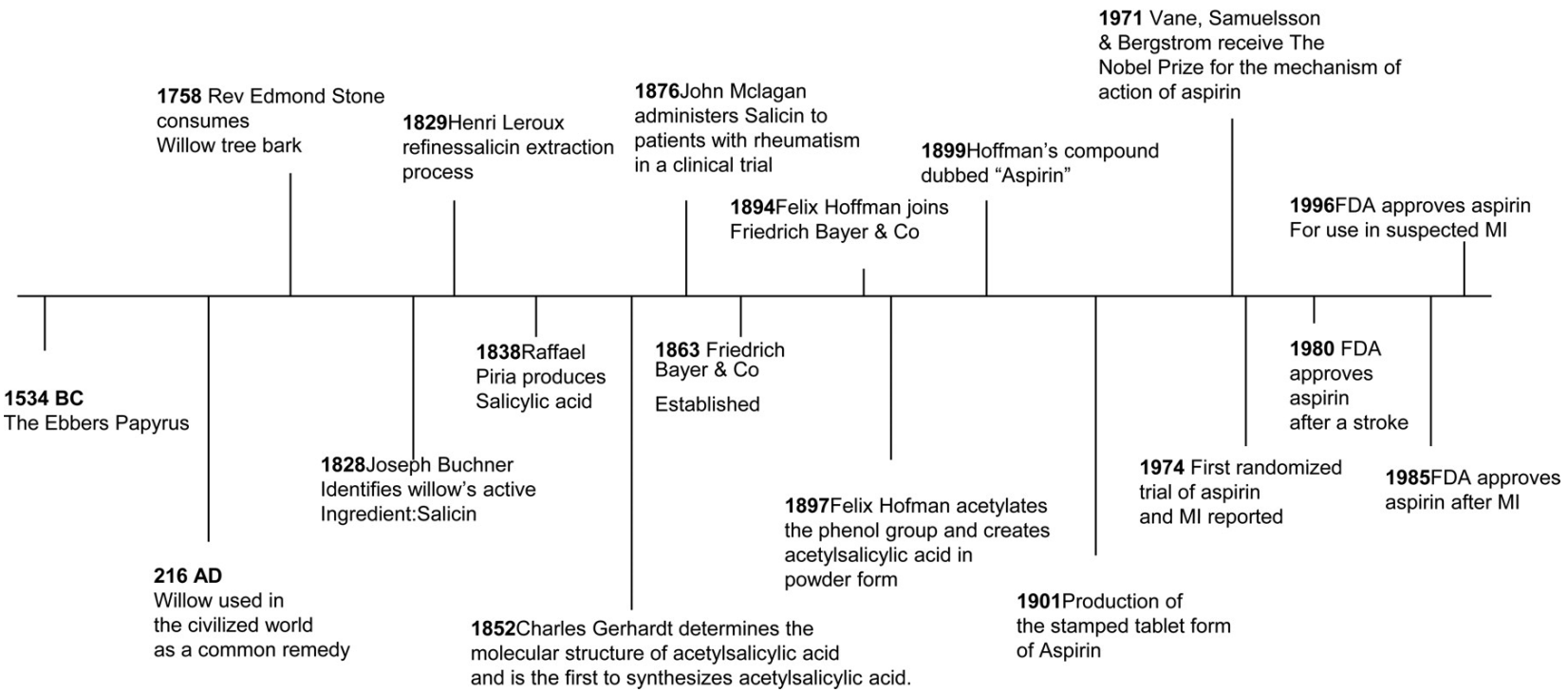
There is a bark of an Engliſh tree, which I have found by experience to be a powerful aſtringent, and very efficacious in curing aguiſh and intermitting diſorders.

Fuster V , and Sweeny J M Circulation 2011;123:768-778

American Heart Association

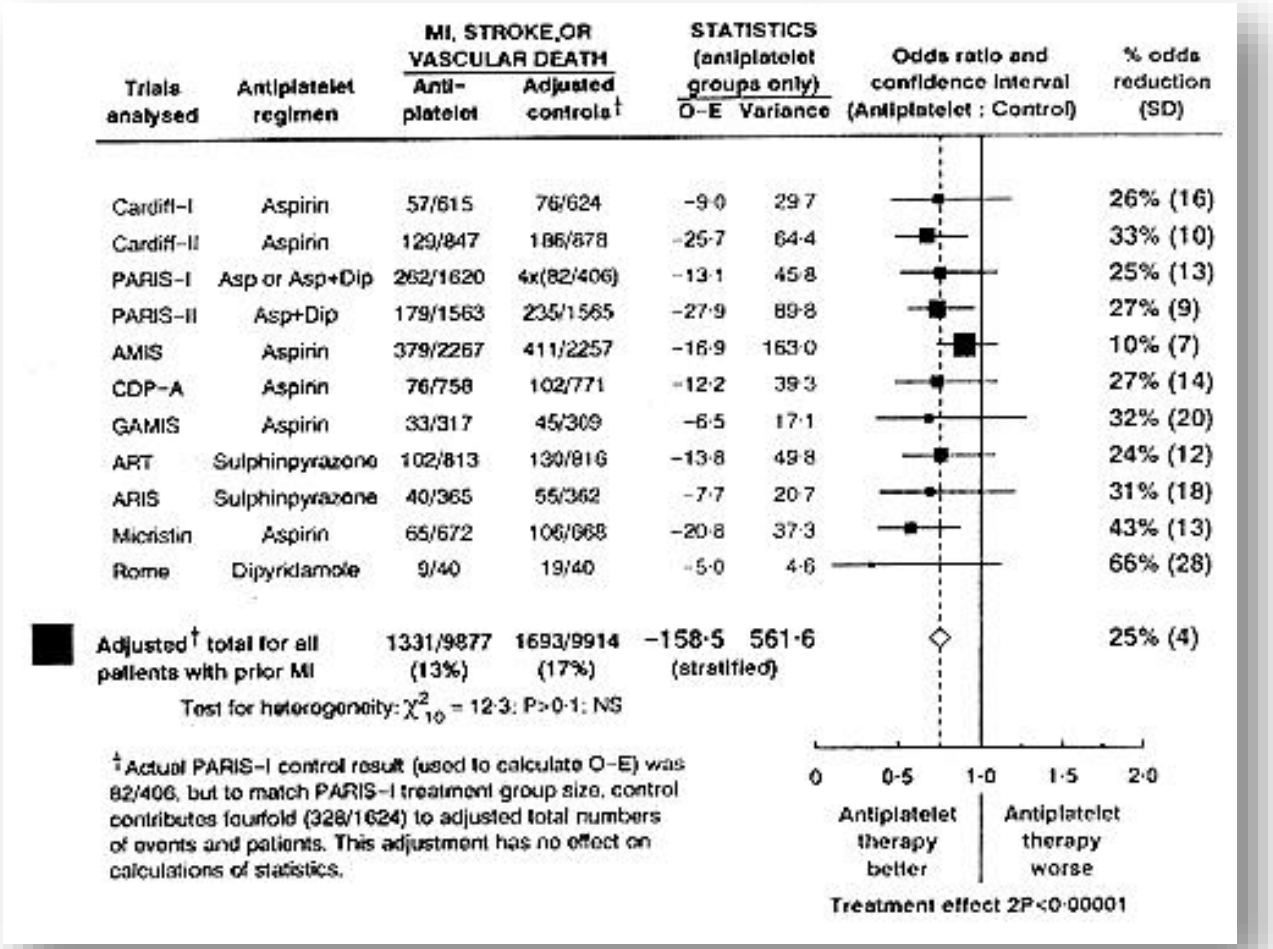
Learn and Live

Timeline of historical events in the development of aspirin.



Fuster V , and Sweeny J M Circulation 2011;123:768-778

Proportional effects on vascular events (myocardial infarction, stroke, or vascular death) in 11 randomised trials of prolonged antiplatelet therapy (for one month or more) versus control in patients with prior myocardial infarction.



Antiplatelet Trialists' Collaboration BMJ 1994;308:81-106

2005

"Aspirin for everyone older than 50?"

2009

Aspirin in the primary and secondary prevention of vascular disease: collaborative meta-analysis of individual participant data from randomised trials

Antithrombotic Trialists' (ATT) Collaboration

Summary

Background

Low-dose aspirin is of definite and substantial net benefit for many people who already have occlusive vascular disease. We have assessed the benefits and risks in primary prevention.

Methods

We undertook meta-analyses of serious vascular events (myocardial infarction, stroke, or vascular death) and major bleeds in six primary prevention trials (95 000 individuals at low average risk, 660 000 person-years, 3554 serious vascular events) and 16 secondary prevention trials (17 000 individuals at high average risk, 43 000 person-years, 3306 serious vascular events) that compared long-term aspirin versus control. We report intention-to-treat analyses of first events during the scheduled treatment period.

Findings

In the primary prevention trials, aspirin allocation yielded a 12% proportional reduction in serious vascular events (0·51% aspirin *vs* 0·57% control per year, p=0·0001), due mainly to a reduction of about a fifth in non-fatal myocardial infarction (0·18% *vs* 0·23% per year, p<0·0001). The net effect on stroke was not significant (0·20% *vs* 0·21% per year, p=0·4: haemorrhagic stroke 0·04% *vs* 0·03%, p=0·05; other stroke 0·16% *vs* 0·18% per year, p=0·08). Vascular mortality did not differ significantly (0·19% *vs* 0·19% per year, p=0·7). Aspirin allocation increased major gastrointestinal and extracranial bleeds (0·10% *vs* 0·07% per year, p<0·0001), and the main risk factors for coronary disease were also risk factors for bleeding. In the secondary prevention trials, aspirin allocation yielded a greater absolute reduction in serious vascular events (6·7% *vs* 8·2% per year, p<0.0001), with a non-significant increase in haemorrhagic stroke but reductions of about a fifth in total stroke (2·08% *vs* 2·54% per year, p=0·002) and in coronary events (4·3% *vs* 5·3% per year, p<0·0001). In both primary and secondary prevention trials, the proportional reductions in the aggregate of all serious vascular events seemed similar for men and women.

Interpretation

In primary prevention without previous disease, aspirin is of uncertain net value as the reduction in occlusive events needs to be weighed against any increase in major bleeds. Further trials are in progress.

Funding

2012

Effect of daily aspirin on risk of cancer metastasis: a study of incident cancers during randomised controlled trials

Prof Peter M Rothwell FMedSci [a], Michelle Wilson MSc [a], Jacqueline F Price MD [b], Prof Jill FF Belch MD [c], Prof Tom W Meade FRS [d], Ziyah Mehta PhD [a]

Summary

Background

Daily aspirin reduces the long-term incidence of some adenocarcinomas, but effects on mortality due to some cancers appear after only a few years, suggesting that it might also reduce growth or metastasis. We established the frequency of distant metastasis in patients who developed cancer during trials of daily aspirin versus control.

Methods

Our analysis included all five large randomised trials of daily aspirin (≥75 mg daily) versus control for the prevention of vascular events in the UK. Electronic and paper records were reviewed for all patients with incident cancer. The effect of aspirin on risk of metastases at presentation or on subsequent follow-up (including post-trial follow-up of in-trial cancers) was stratified by tumour histology (adenocarcinoma *vs* other) and clinical characteristics.

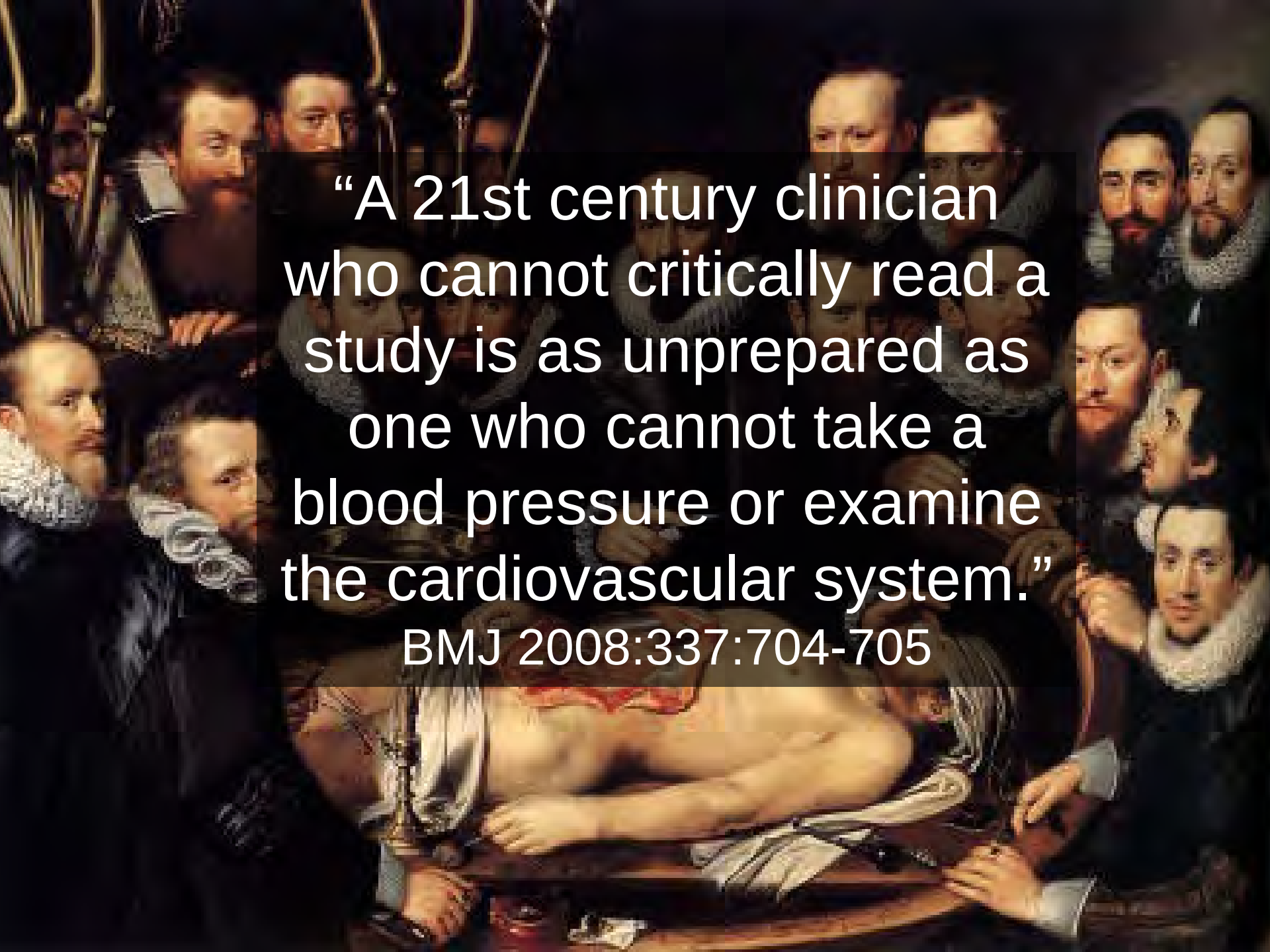
Findings

Of 17 285 trial participants, 987 had a new solid cancer diagnosed during mean in-trial follow-up of 6·5 years (SD 2·0). Allocation to aspirin reduced risk of cancer with distant metastasis (all cancers, hazard ratio [HR] 0·64, 95% CI 0·48—0·84, p=0·001; adenocarcinoma, HR 0·54, 95% CI 0·38—0·77, p=0·0007; other solid cancers, HR 0·82, 95% CI 0·53—1·28, p=0·39), due mainly to a reduction in proportion of adenocarcinomas that had metastatic versus local disease (odds ratio 0·52, 95% CI 0·35—0·75, p=0·0006). Aspirin reduced risk of adenocarcinoma with metastasis at initial diagnosis (HR 0·69, 95% CI 0·50—0·95, p=0·02) and risk of metastasis on subsequent follow-up in patients without metastasis initially (HR 0·45, 95% CI 0·28—0·72, p=0·0009), particularly in patients with colorectal cancer (HR 0·26, 95% CI 0·11—0·57, p=0·0008) and in patients who remained on trial treatment up to or after diagnosis (HR 0·31, 95% CI 0·15—0·62, p=0·0009). Allocation to aspirin reduced death due to cancer in patients who developed adenocarcinoma, particularly in those without metastasis at diagnosis (HR 0·50, 95% CI 0·34—0·74, p=0·0006). Consequently, aspirin reduced the overall risk of fatal adenocarcinoma in the trial populations (HR 0·65, 95% CI 0·53—0·82, p=0·0002), but not the risk of other fatal cancers (HR 1·06, 95% CI 0·84—1·32, p=0·64; difference, p=0·003). Effects were independent of age and sex, but absolute benefit was greatest in smokers. A low-dose, slow-release formulation of aspirin designed to inhibit platelets but to have little systemic bioavailability was as effective as higher doses.

Interpretation

That aspirin prevents distant metastasis could account for the early reduction in cancer deaths in trials of daily aspirin versus control. This finding suggests that aspirin might help in treatment of some cancers and provides proof of principle for pharmacological intervention specifically to prevent distant metastasis.

Types of evidence affect the quality


“A 21st century clinician who cannot critically read a study is as unprepared as one who cannot take a blood pressure or examine the cardiovascular system.”
BMJ 2008:337:704-705

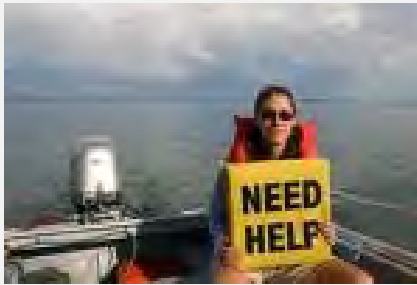
The 5 steps of EBM

1. Formulate an answerable question
2. Track down the best evidence
3. Critically appraise the evidence for validity, clinical relevance and applicability
4. Individualize, based clinical expertise and patient concerns
5. Evaluate your own performance

Getting Evidence in to Practice
How do you "do" EBP?

- What Evidence based practice do you do/help with?

- What other EBP do you know of?



JASPA*

(Journal associated score of personal angst)

J: Are you ambivalent about renewing your **JOURNAL** subscriptions?

A: Do you feel **ANGER** towards prolific authors?

S: Do you ever use journals to help you **SLEEP**?

P: Are you surrounded by **PILES of PERIODICALS**?

A: Do you feel **ANXIOUS** when journals arrive?

YOUR SCORE? (0 TO 5)

0 (?liar)
1–3 (normal range)
>3 (sick; at risk for polythenia gravis and related conditions)

* Modified from: BMJ 1995;311:1666-1668

Median minutes/week spent reading about my patients:

Self-reports at 17 Grand Rounds:

- Medical Students: 90 minutes
- House Officers (PGY1): 0 (up to 70%=none)
- SHOs (PGY2-4): 20 (up to 15%=none)
- Registrars: 45 (up to 40%=none)
- Sr. Registrars 30 (up to 15%=none)
- Consultants:
  - Grad. Post 1975: 45 (up to 30%=none)
  - Grad. Pre 1975: 30 (up to 40%=none)

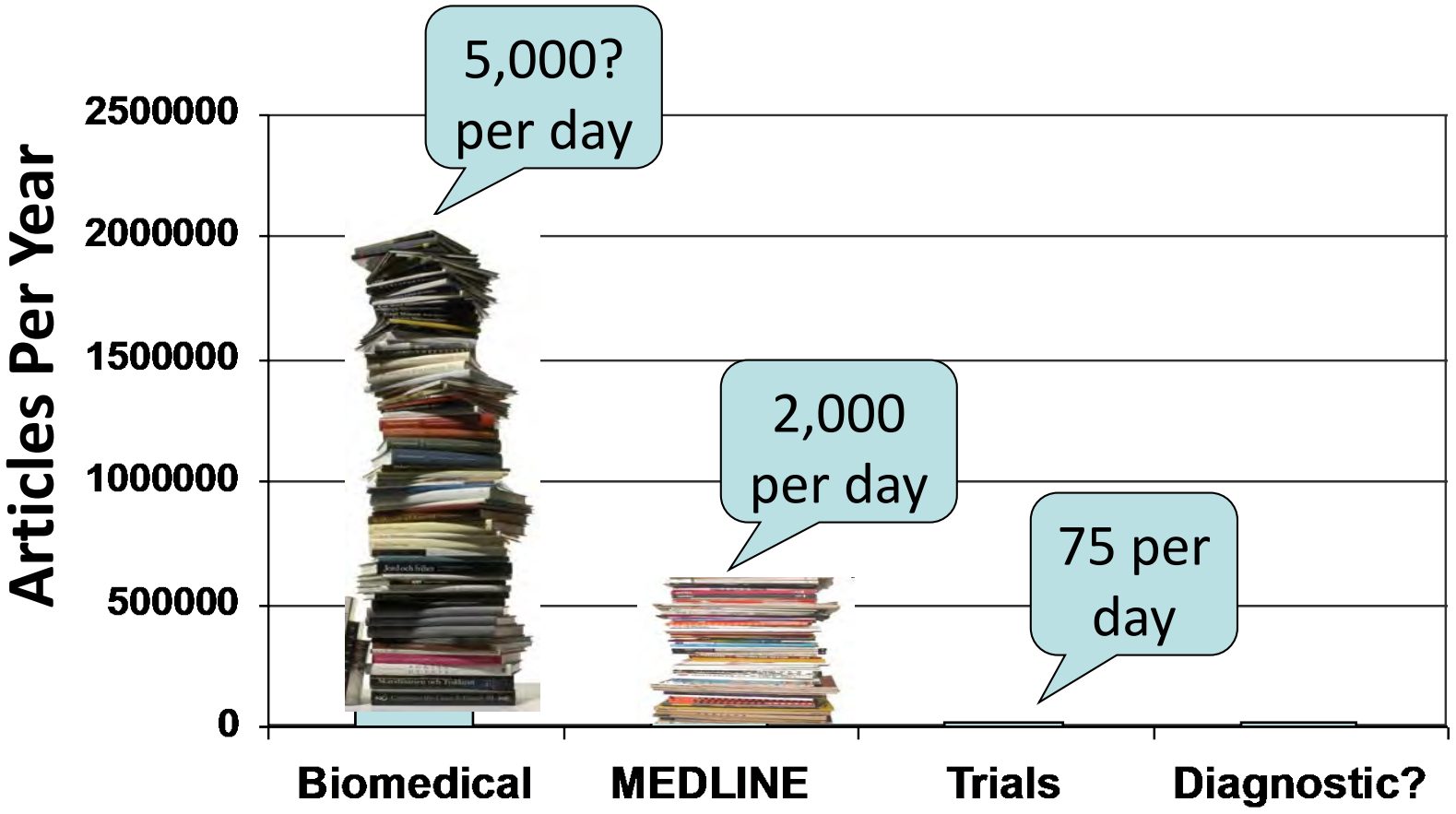
Size of Medical Knowledge

- NLM MetaThesaurus
  - 875,255 concepts
  - 2.14 million concept names
- Diagnosis Pro
  - 11,000 diseases
  - 30,000 abnormalities (symptoms, signs, lab, X-ray,)
  - 3,200 drugs (cf FDAs 18,283 products)

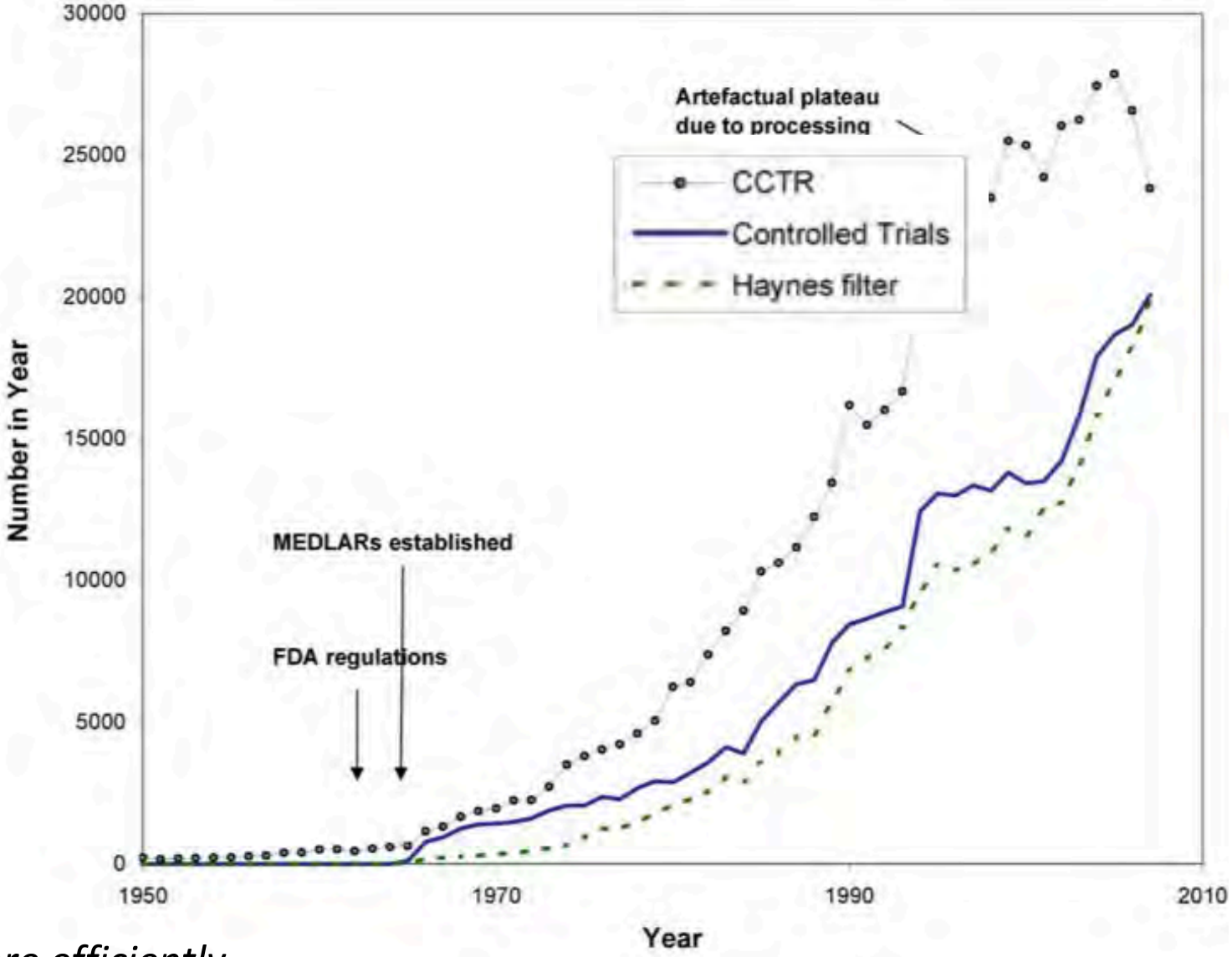
1 disease per day for 30 years

To cover the vast field of medicine in four years is an impossible task.
- William Olser

Why do we need to use evidence efficiently?



clinical evidence is increasing so rapidly we need better skills to keep up-to-date **more** efficiently than previous generations of clinicians

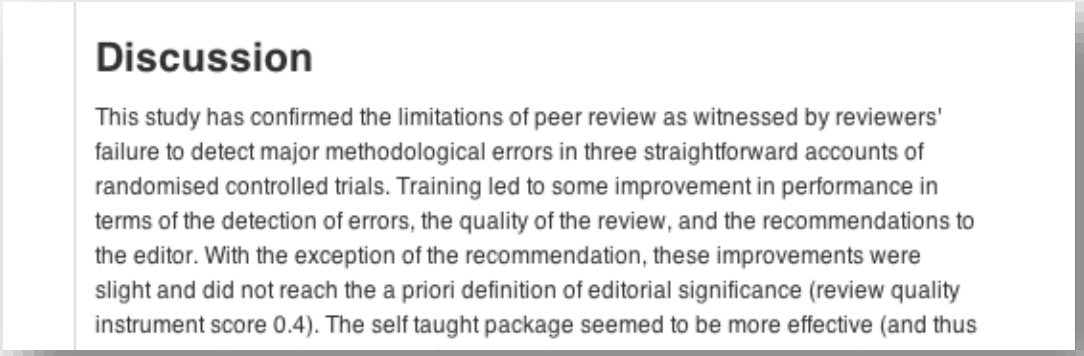


more efficiently

Bastian, Glasziou, Chalmers PLoS 2010 Vol 7 | Issue 9 | e1000326

But we are (currently) poorly equipped to tell good from bad research

- BMJ study of 607 reviewers
  - 14 deliberate errors inserted
- Detection rates
  - On average <3 of 9 major errors detected
  - Poor Randomisation (by name or day) - 47%
  - Not intention-to-treat analysis - 22%
  - Poor response rate - 41%



Discussion

This study has confirmed the limitations of peer review as witnessed by reviewers' failure to detect major methodological errors in three straightforward accounts of randomised controlled trials. Training led to some improvement in performance in terms of the detection of errors, the quality of the review, and the recommendations to the editor. With the exception of the recommendation, these improvements were slight and did not reach the a priori definition of editorial significance (review quality instrument score 0.4). The self taught package seemed to be more effective (and thus

Schroter S et al

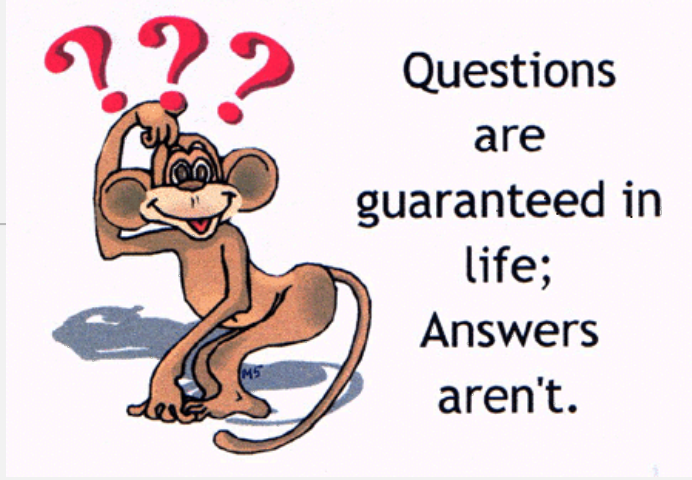
Managing Information
"Push" and "Pull" methods

- "Push" - alerts us to new information
  - "Just in Case" learning
    - Use ONLY for important, new, valid research
- "Pull" – access information when needed
  - "Just in Time" learning
    - Use whenever questions arise
    - EBM Steps: Question; search; appraise; apply

Your Clinical Questions

- Write down one recent patient problem

- What was the critical question?



: Asking well-formulated questions

In your books

Angela is a new patient who recently moved to the area to be closer to her son and his family

She is 69 years old and has a history of congestive heart failure brought on by a recent myocardial infarctions.

She has been hospitalized twice within the last 6 months for worsening of heart failure and has a venous leg ulcer.

At the present time she reports she is extremely diligent about taking her medications (lisinopril and aspirin) and wants desperately to stay out of the hospital. She is mobile and lives alone with several cats but reports sometimes she forgets certain things.

She also tells you she is a bit hard of hearing, has a slight cough, is an ex-smoker of 20 cigs a day for 40 years. Her BP today is 170/90, her ankles are slightly swollen and her ulcer is painful and her pulse is 80 and slightly irregular.

What are your questions?

‘Background’ Questions

- **About the disorder, test, treatment, etc.**

2 components:

a. Root* + Verb: “What causes …”

b. Condition: “… Ebola?”

- *** Who, What, Where, When, Why, How**

‘Foreground’ Questions

- **About patient care decisions and actions**

4 (or 3) components:

a. Patient, problem, or population

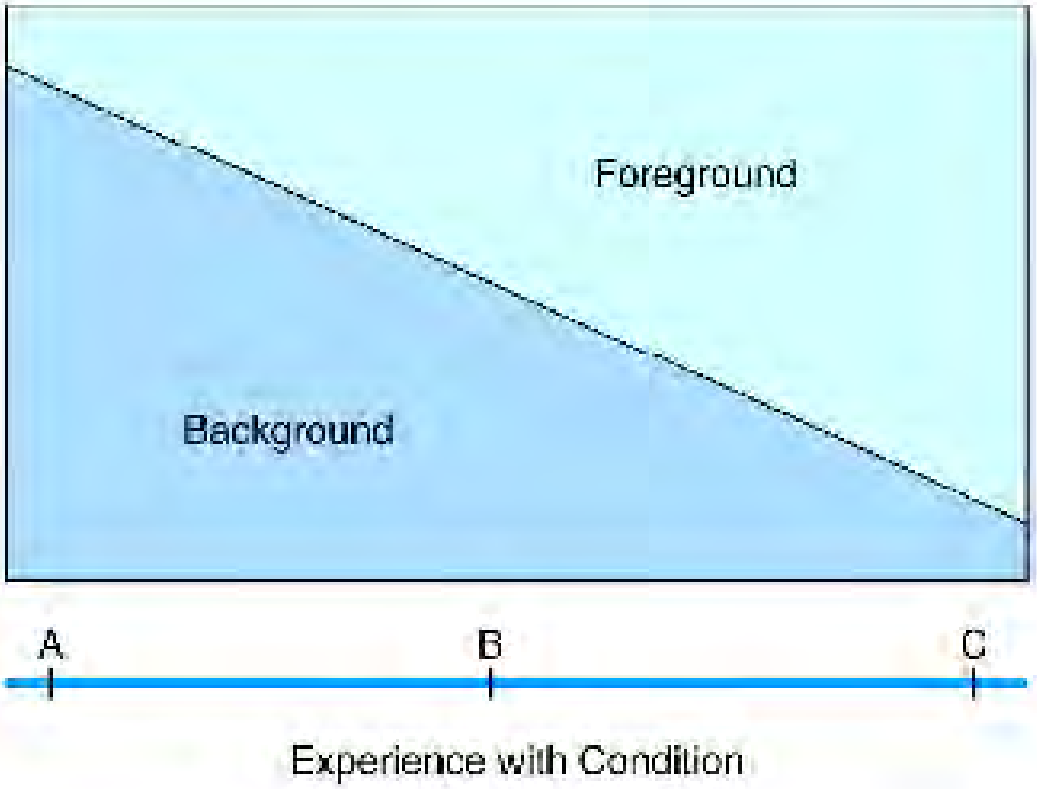
b. Intervention, exposure, or maneuver

c. Comparison (if relevant)

d. Clinical Outcomes (including time horizon)

Background & Foreground

Figure 1.1 Background and foreground questions.



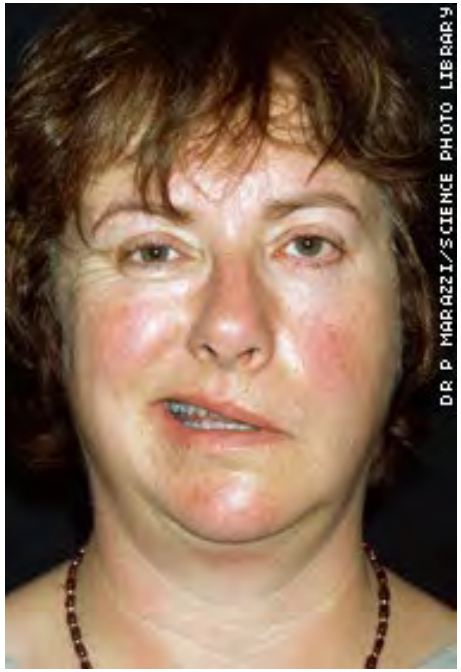
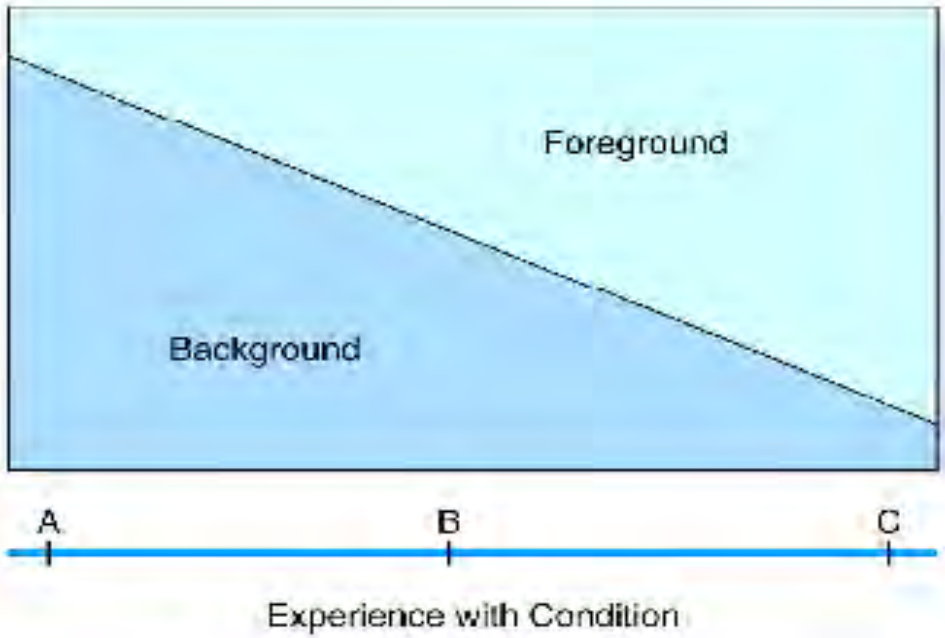
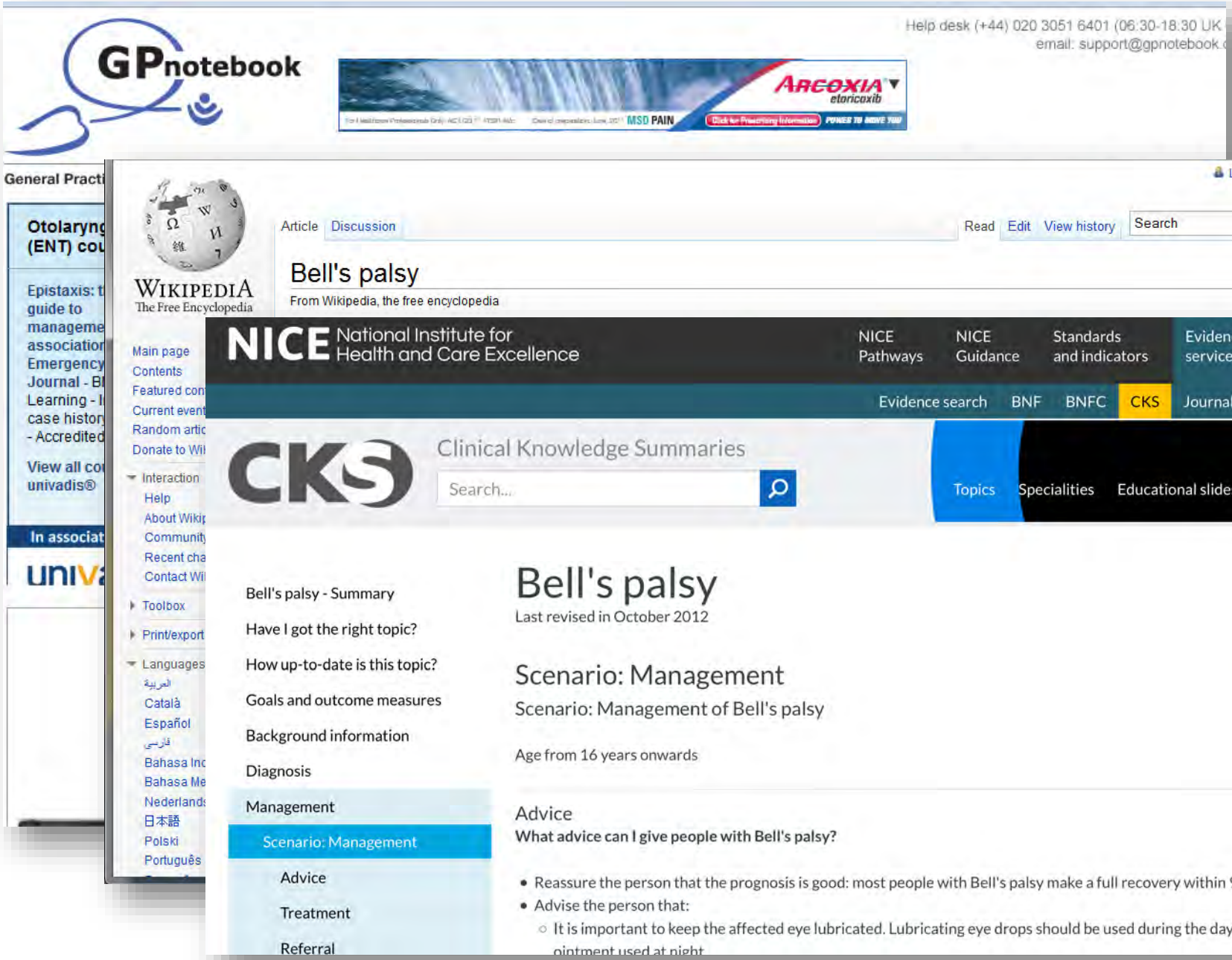


Figure 1.1 Background and foreground questions.

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日本語
Polski
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NICE National Institute for Health and Care Excellence
NICE Pathways
NICE Guidance
Standards and indicators
Evidence services
Sign in
Evidence search
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BNFC
CKS
Journals and databases
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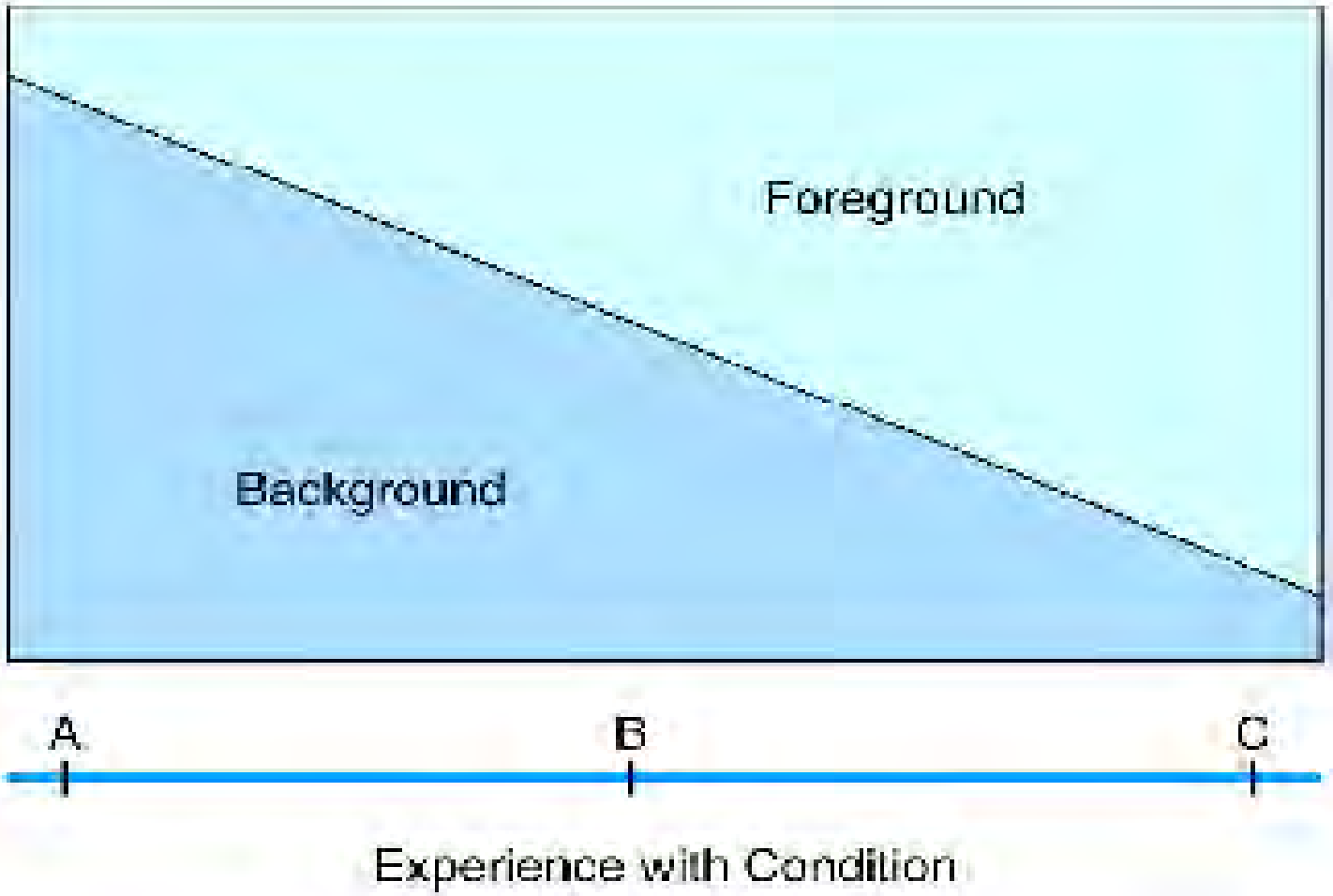
Clinical Knowledge Summaries
Search...
Topics
Specialities
Educational slides
What's new
Bell's palsy - Summary
Have I got the right topic?
How up-to-date is this topic?
Goals and outcome measures
Background information
Diagnosis
Management
Scenario: Management
Advice
Treatment
Referral
Bell's palsy
Last revised in October 2012
Back to top
Scenario: Management
Scenario: Management of Bell's palsy
Age from 16 years onwards
Advice
Back to top
What advice can I give people with Bell's palsy?
Reassure the person that the prognosis is good: most people with Bell's palsy make a full recovery within 9 months.
Advise the person that:
It is important to keep the affected eye lubricated. Lubricating eye drops should be used during the day and eye ointment used at night

Figure 1.1 Background and foreground questions.



‘Foreground’ Questions

About patient care decisions and actions

- **4 (or 3) components:**

- **a. In Patients with Bell’s Palsy**
- **b. Do (I) corticosteroids**
- **c. Compared to placebo**
- **d. Improve facial function (O) at 3 months**

ORIGINAL ARTICLE

Early Treatment with Prednisolone or A

Frank M. Sullivan, Ph.D., Iain R.C. Swan, M.D., Peter T. Donnan, Ph.D., Jillian M
McKinstry, M.D., Richard J. Davenport, D.M., Luke D. Vale, Ph.D., Janet E. Cla
Hayavi, Ph.D., Anne McAteer, M.Sc., Ken Stewart, M.D., and Fergus Daly, Ph

N Engl J Med 2007; 357:1598-1607 | October 18, 2007

BACKGROUND

Corticosteroids and antiviral agents are widely used to treat th
stages of idiopathic facial paralysis (i.e., Bell's palsy), but the
effectiveness is uncertain.

Full Text of Background...

METHODS

We conducted a double-blind, placebo-controlled, randomized
factorial trial involving patients with Bell's palsy who were recruited within 72 hours after the onset of symptoms. Patients were randomly assigned to receive 10 days of treatment with prednisolone, acyclovir, both agents, or placebo. The primary outcome was recovery of facial function, as rated on the House–Brackmann scale. Secondary outcomes included quality of life, appearance, and pain.

Full Text of Methods...

RESULTS

Final outcomes were assessed for 496 of 551 patients who underwent randomization. At 3 months, the proportions of patients who had recovered facial function were 83.0% in the prednisolone group as compared with 63.6% among patients who did not receive prednisolone ($P<0.001$) and 71.2% in the acyclovir group as compared with 75.7% among patients who did not receive acyclovir (adjusted $P=0.50$). After 9 months, these proportions were 94.4% for prednisolone and 81.6% for no prednisolone ($P<0.001$) and 85.4% for acyclovir and 90.8% for no acyclovir (adjusted $P=0.10$). For patients treated with both drugs, the proportions were 79.7% at 3 months

Slide

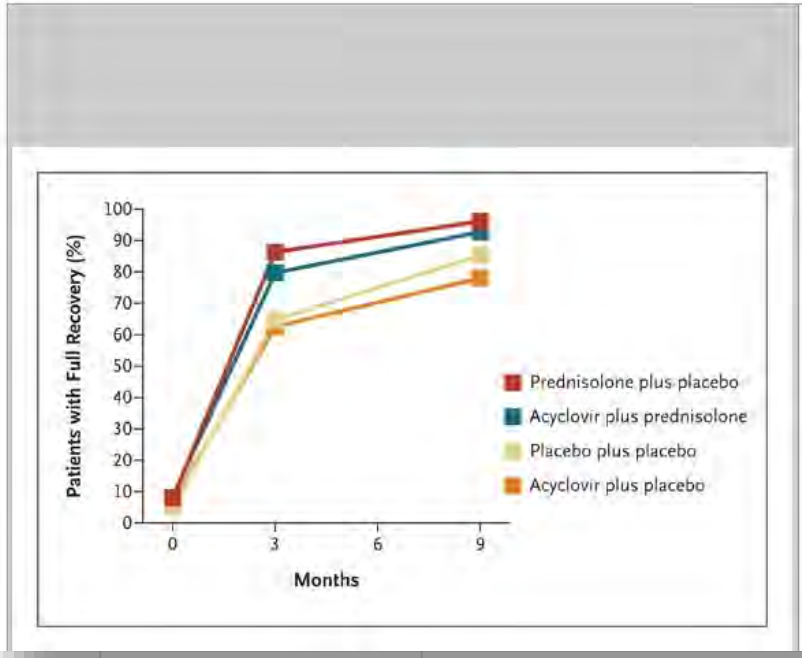
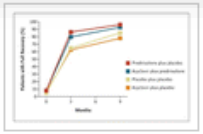


Figure 2 Patients Who Had a Full Recovery at 3 Months and 9 Months, According to Study Group.

Full recovery was defined as grade 1 on the House–Brackmann facial-nerve grading scale, which ranges from 1 to 6, with higher grades indicating worse facial paralysis.

FIGURE 2



Patients Who Had a Full Recovery at 3 Months and 9 Months, According to Study Group.

ARTICLE ACTIVITY

43 articles have cited this article ›

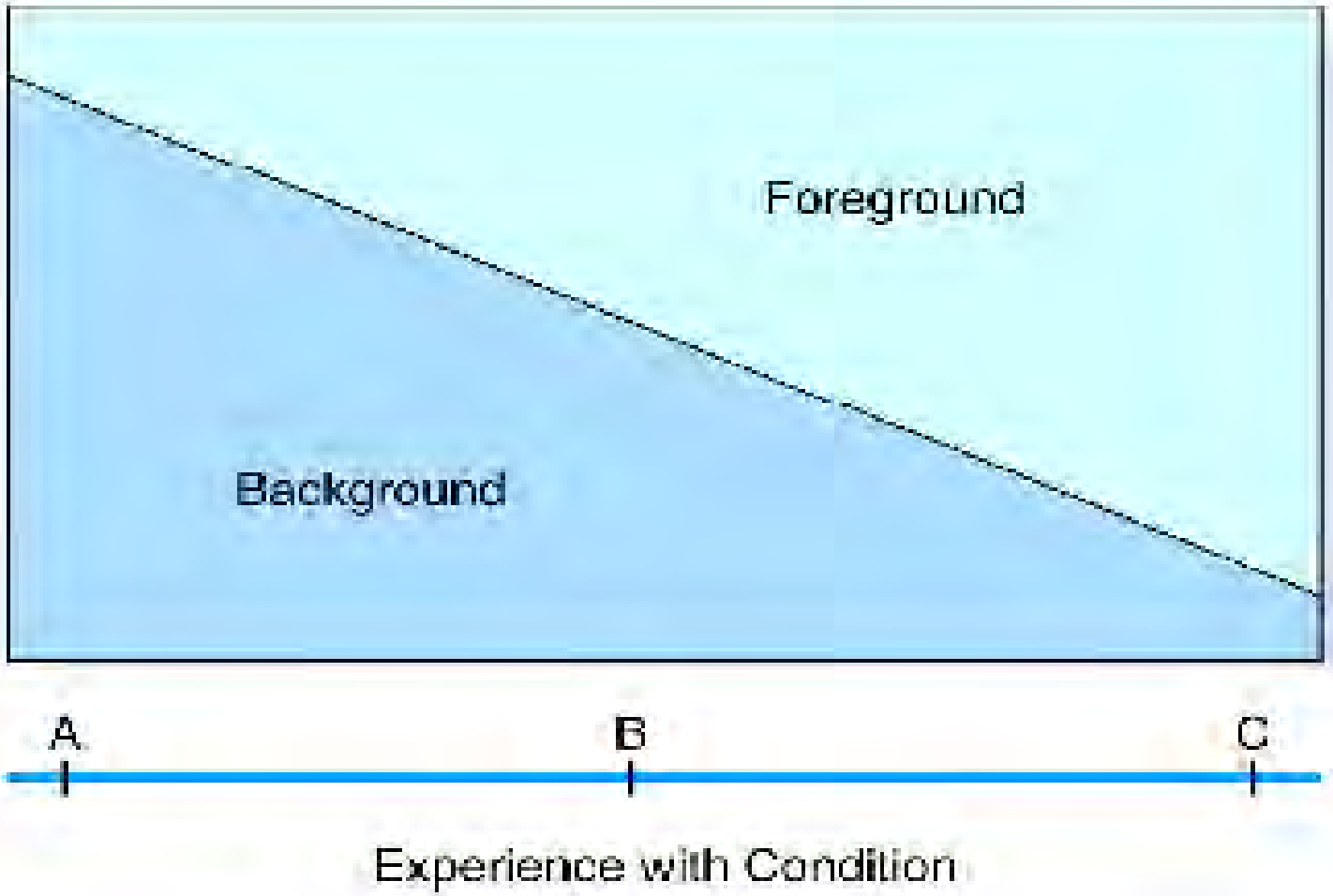
Does this intervention help?

For every 100 people with Bell's palsy at 3 months

- 83 in the corticosteroid group will have recovered facial function &
- 64 in the placebo group will have recovered facial function

- Risk difference = 19%
- Relative Risk Reduction = 23%
- Number Needed to Treat = 6
- Natural Frequency 19 per 100

Figure 1.1 Background and foreground questions.



Background:

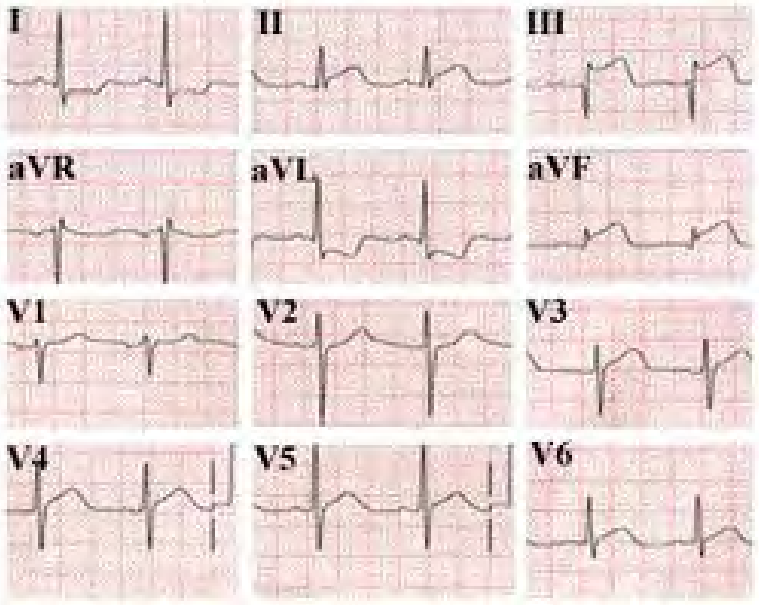
Patient presenting with MI

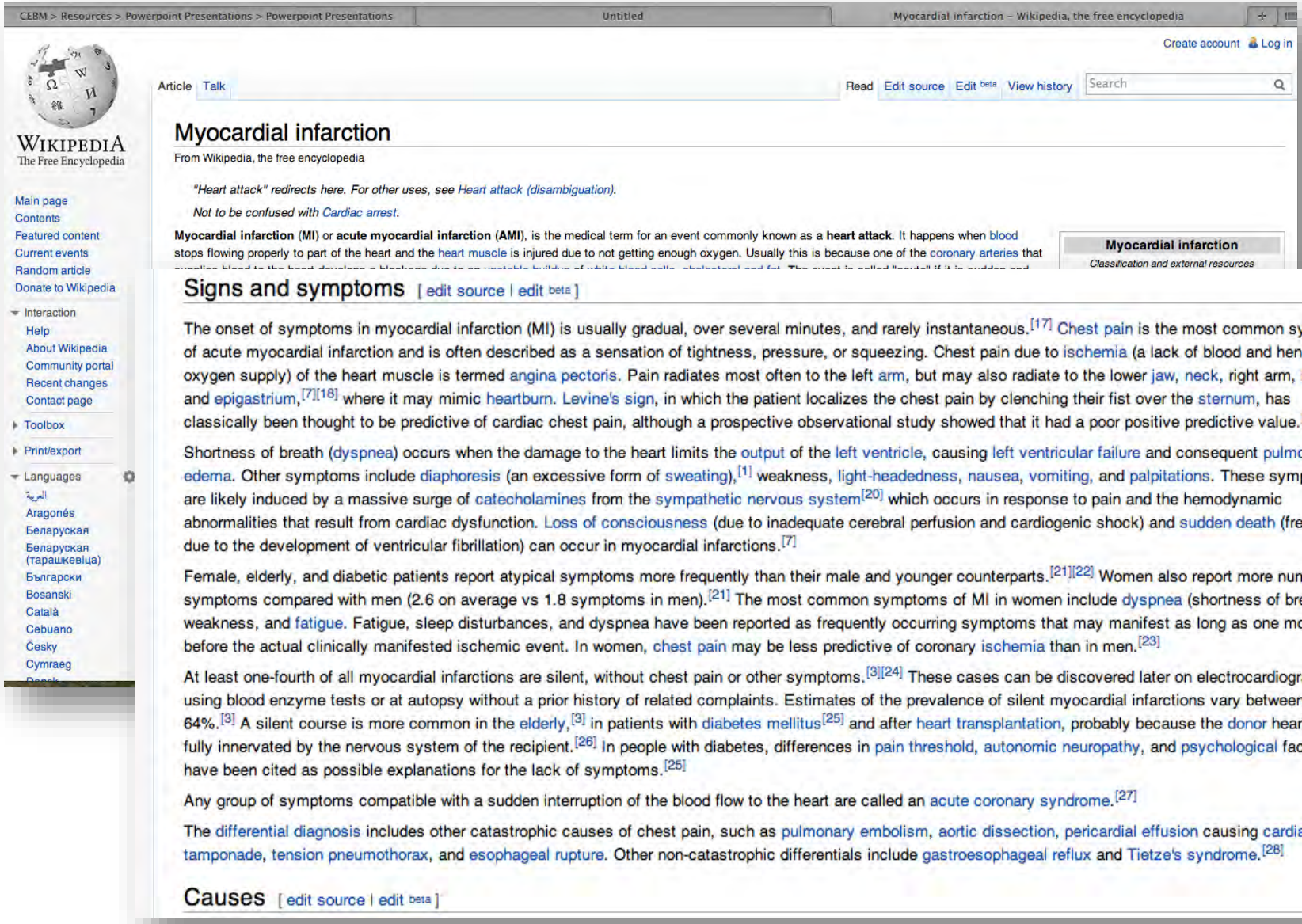
1. What are the symptoms and signs of someone presenting with MI?

1. What are the diagnostic tests for MI?

1. What are the causes of MI?

1. What are the treatments of MI?

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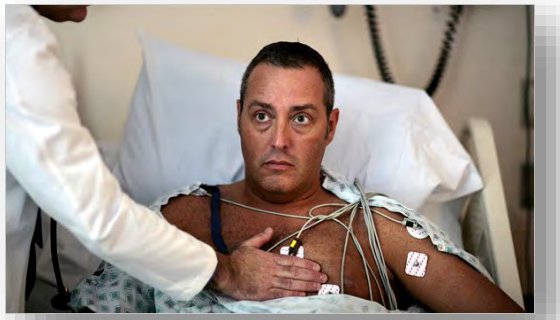
Untitled
Myocardial infarction – Wikipedia, the free encyclopedia
Create account
Log in
WIKIPEDIA
The Free Encyclopedia
Article
Talk
Read
Edit source
Edit beta
View history
Search
Myocardial infarction
From Wikipedia, the free encyclopedia
"Heart attack" redirects here. For other uses, see Heart attack (disambiguation).
Not to be confused with Cardiac arrest.
Myocardial infarction (MI) or acute myocardial infarction (AMI), is the medical term for an event commonly known as a heart attack. It happens when blood stops flowing properly to part of the heart and the heart muscle is injured due to not getting enough oxygen. Usually this is because one of the coronary arteries that
Myocardial infarction
Classification and external resources
Main page
Contents
Featured content
Current events
Random article
Donate to Wikipedia
Interaction
Help
About Wikipedia
Community portal
Recent changes
Contact page
Toolbox
Print/export
Languages
العربية
Aragonés
Беларуская
Беларуская (тарашкевіца)
Български
Bosanski
Català
Cebuano
Česky
Cymraeg
Signs and symptoms [edit source | edit beta]
The onset of symptoms in myocardial infarction (MI) is usually gradual, over several minutes, and rarely instantaneous.[17] Chest pain is the most common symptom of acute myocardial infarction and is often described as a sensation of tightness, pressure, or squeezing. Chest pain due to ischemia (a lack of blood and hence oxygen supply) of the heart muscle is termed angina pectoris. Pain radiates most often to the left arm, but may also radiate to the lower jaw, neck, right arm, back, and epigastrium,[7][18] where it may mimic heartburn. Levine's sign, in which the patient localizes the chest pain by clenching their fist over the sternum, has classically been thought to be predictive of cardiac chest pain, although a prospective observational study showed that it had a poor positive predictive value.[19]
Shortness of breath (dyspnea) occurs when the damage to the heart limits the output of the left ventricle, causing left ventricular failure and consequent pulmonary edema. Other symptoms include diaphoresis (an excessive form of sweating),[1] weakness, light-headedness, nausea, vomiting, and palpitations. These symptoms are likely induced by a massive surge of catecholamines from the sympathetic nervous system[20] which occurs in response to pain and the hemodynamic abnormalities that result from cardiac dysfunction. Loss of consciousness (due to inadequate cerebral perfusion and cardiogenic shock) and sudden death (frequently due to the development of ventricular fibrillation) can occur in myocardial infarctions.[7]
Female, elderly, and diabetic patients report atypical symptoms more frequently than their male and younger counterparts.[21][22] Women also report more numerous symptoms compared with men (2.6 on average vs 1.8 symptoms in men).[21] The most common symptoms of MI in women include dyspnea (shortness of breath), weakness, and fatigue. Fatigue, sleep disturbances, and dyspnea have been reported as frequently occurring symptoms that may manifest as long as one month before the actual clinically manifested ischemic event. In women, chest pain may be less predictive of coronary ischemia than in men.[23]
At least one-fourth of all myocardial infarctions are silent, without chest pain or other symptoms.[3][24] These cases can be discovered later on electrocardiograms, using blood enzyme tests or at autopsy without a prior history of related complaints. Estimates of the prevalence of silent myocardial infarctions vary between 22 and 64%.[3] A silent course is more common in the elderly,[3] in patients with diabetes mellitus[25] and after heart transplantation, probably because the donor heart is not fully innervated by the nervous system of the recipient.[26] In people with diabetes, differences in pain threshold, autonomic neuropathy, and psychological factors have been cited as possible explanations for the lack of symptoms.[25]
Any group of symptoms compatible with a sudden interruption of the blood flow to the heart are called an acute coronary syndrome.[27]
The differential diagnosis includes other catastrophic causes of chest pain, such as pulmonary embolism, aortic dissection, pericardial effusion causing cardiac tamponade, tension pneumothorax, and esophageal rupture. Other non-catastrophic differentials include gastroesophageal reflux and Tietze's syndrome.[28]
Causes [edit source | edit beta]

Know your background

Patient presenting with MI



Foreground’ Questions

About actual patient care decisions and actions

For treatment
4 (or 3) components:

In Patients with a MI
Does (I) cholesterol lowering therapy
Compared to placebo
reduce mortality (O)

Patient presenting with MI (7 types of questions)

1. How common is the problem	Prevalence
2. Is early detection worthwhile	Screening
3. Is the diagnostic test accurate	Diagnosis
4. What will happen if we do nothing	Prognosis
5. Does this intervention help	**Treatment**
6. What are the common harms of an intervention	
7. What are the rare harms of an intervention	

Example 1

Jean is a 55 year old woman who quite often crosses the Atlantic to visit her elderly mother. She tends to get swollen legs on these flights and is worried about her risk of developing deep vein thrombosis (DVT), because she has read quite a bit about this in the newspapers lately. She asks you if she would wear elastic stockings on her next trip to reduce her risk of this.

Example 2

CHILDHOOD SEIZURES

Childhood seizures are common and frightening for the parents, and the decision to initiate treatment is a difficult one. What is the risk of further recurrences following a single seizure of unknown cause? Are there any identifiable factors that modify this risk?

Example 3

VACCINATION AND NEEDLE LENGTH

You are the practice nurse and one of your colleagues tells you it is better to use a short needle than a long needle when immunising babies for their first ever vaccinations, as it reduces the swelling and decreases the parents anxiety about further vaccinations. You wonder if your colleague is correct?

Example 4

CHILDREN AND ANTIVIRALS

You are the GP and the next patient brings their 3 year old child who is unwell with a fever, the mother wants to know whether she should give the child tamiflu?

Example 5

INFLUENZA AND NEAR PATIENT TEST

Your next patient is adamant they have influenza and knowing the diagnosis would help them in their decision to take antiviral treatment. You wonder how accurate is the near patient test?

Further Example

Susan is expecting her first baby in two months. She has been reading about the potential benefits and harms of giving newborn babies vitamin K injections. She is alarmed by reports that vitamin K injections in newborn babies may cause childhood leukaemia. She asks you if this is true and, if so, what the risk for her baby will be.

Your Clinical Questions

- Write down one recent patient problem

- What is the PICO of the problem?

Questions

- **Recognize: your questions**
- **Select: which questions to pursue**
- **Guide: how to ask and answer**
- **Assess: how well & what to improve**

FAQ: How Long … ?

- **Proficient? Quickly**
- **Mastery? Lifetime**

- **Human expertise takes >10,000 hours, >10 years**

→Deliberate practice