



Evidence-based practice, systematic reviews and Cochrane

Martin Burton

Director, Cochrane UK

Professor of Otolaryngology, University of Oxford

Co-ordinating Editor
Cochrane ENT

**Trusted evidence.
Informed decisions.
Better health.**



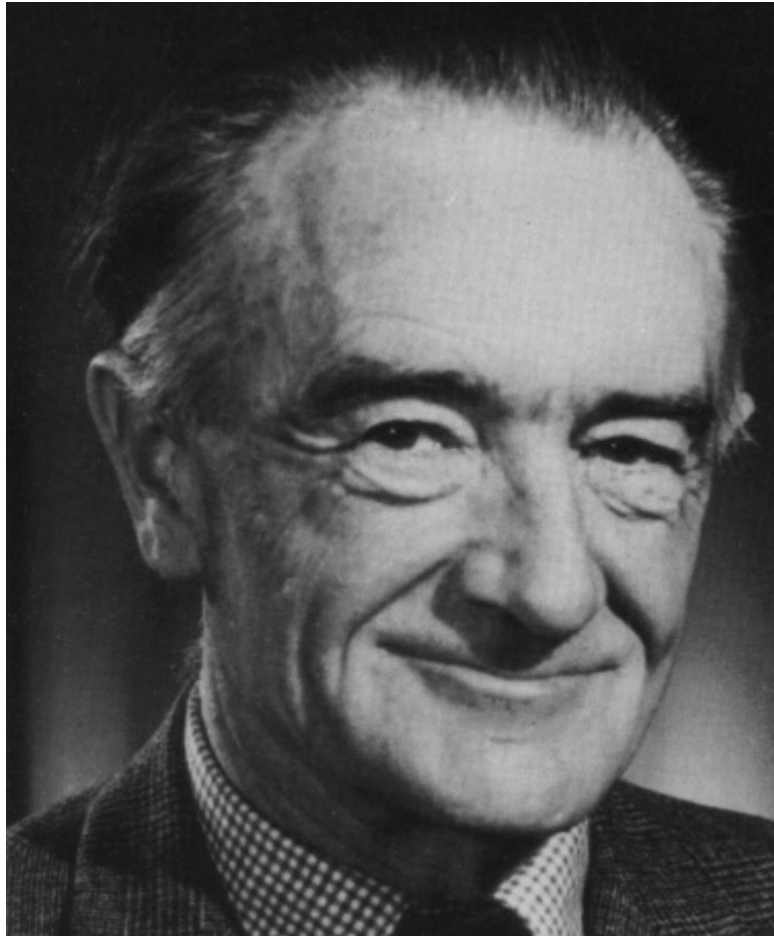




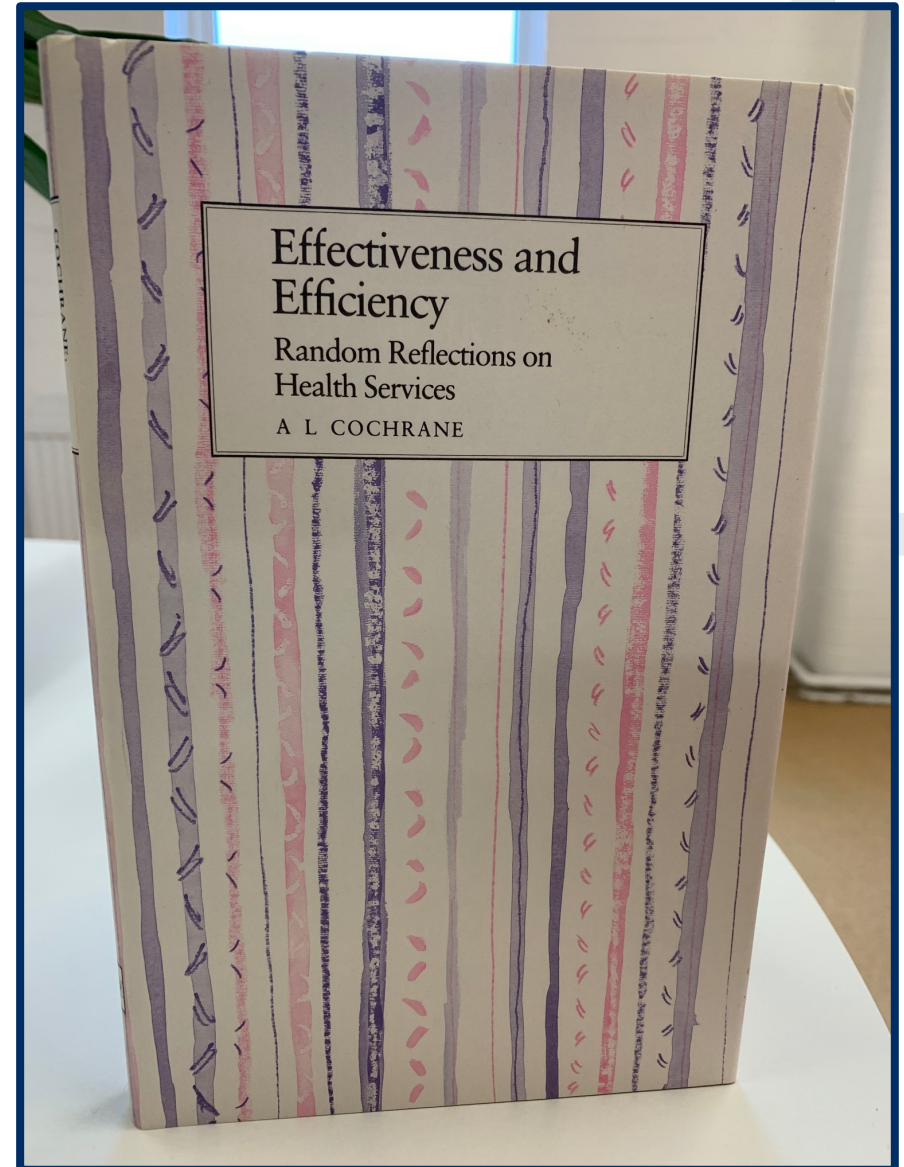
“On reflection it was not a good trial. I was testing the wrong hypothesis. The oedema was not wet beri-beri. Furthermore the numbers were too small, the time too short, and the outcome measure poor. Yet the treatment worked. I still do not know why.....

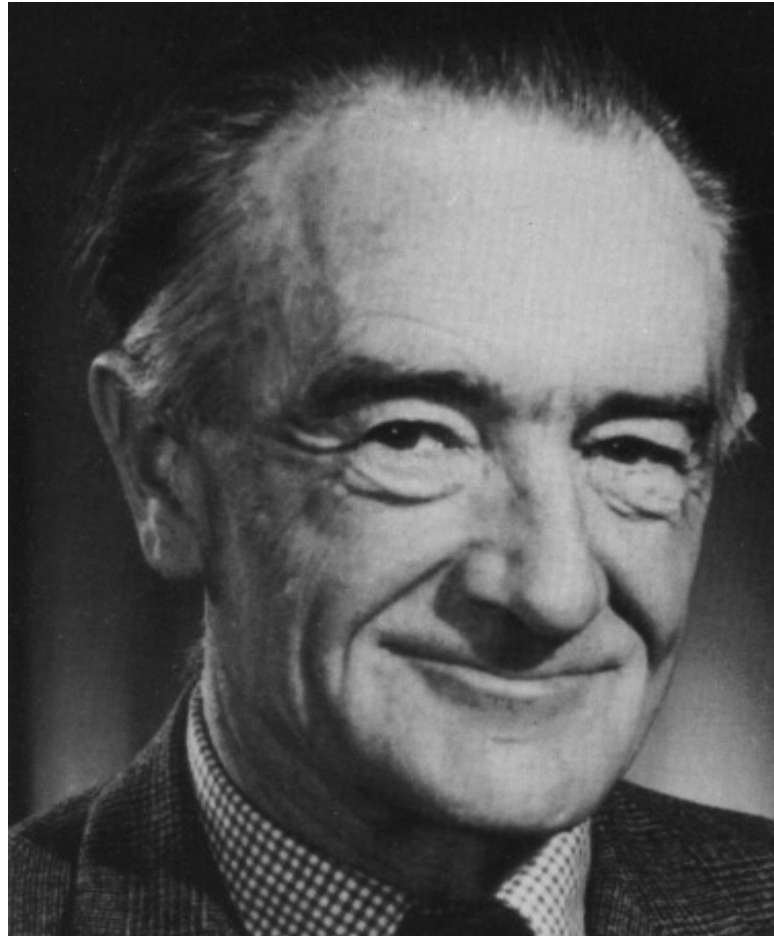
....

The German doctor’s remark when I asked for more help was “Artze sind überflüssing (“doctors are superfluous”). This was probably correct, but it was amazing what a little bit of science and a little bit of luck achieved”



Effectiveness and
Efficiency
Random Reflections on
Health Services
1972





“It is surely a great criticism of our profession that we have not organised a critical summary, by specialty or subspecialty, adapted periodically, of all relevant randomised controlled trials.”

1988

Effective Care in Pregnancy and Childbirth



1988

Effective Care in Pregnancy and
Childbirth

1992

First Cochrane Centre opened in Oxford



1988

Effective Care in Pregnancy and
Childbirth

1992

First Cochrane Centre opened in Oxford

1993

The Cochrane Collaboration created





Cochrane





Evidence based medicine:



Evidence based medicine:

but

what does “evidence based”
mean?



The conscientious, explicit and
judicious use of current best
evidence in making decisions about
the care of individual patients

Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS.
Evidence based medicine: what it is and what it isn't. *BMJ* 1996;**312**:71–2.

The conscientious, explicit and
judicious use of current best
evidence in making decisions about
the care of individual patients

Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS.
Evidence based medicine: what it is and what it isn't. *BMJ* 1996;**312**:71–2.

The conscientious, explicit and
judicious use of current best
evidence in helping individual
patients make decisions about their
care



The conscientious, explicit and
judicious use of current best
evidence in helping individual
patients make decisions about their
care



Current best evidence is.....

- Up to date
- Relevant
- Comprehensive
- Unbiased
- Reliable
- Easy to access and use



Where do we find
“best evidence”?



What sort of evidence are we looking for?

- Evidence from trials
- The types of trials most likely to give an unbiased result and be closest to “the truth”
- Randomized controlled trials (RCTs)



“Current medical reviews do not routinely use scientific methods to identify, assess, and synthesize information”



Cochrane



Systematic reviews

A systematic review attempts to

- locate,
- appraise, and
- synthesize

evidence from scientific studies



Systematic reviews

A systematic review attempts to

- locate,
- appraise, and
- synthesize

evidence from scientific studies

all the evidence that meets pre-specified criteria to answer a given research question.



Systematic reviews

A systematic review attempts to

- locate,
- appraise, and
- synthesize

evidence from scientific studies

all the evidence that meets pre-specified criteria to answer a given research question.



PICO

- Which patients?
- Which intervention?
- Which comparison?
- Which outcome?

P

I

C

O



Tonsillectomy?

In

children with recurrent tonsillitis
and/or sore throats, is
tonsillectomy better than,
watchful waiting, in
reducing the number of sore throat
episodes

Tonsillectomy?

In

P articipants	children with recurrent tonsillitis and/or sore throats, is
I ntervention	tonsillectomy better than,
C omparator	watchful waiting, in
O utcome	reducing the number of sore throat episodes

PICO structure:

Should I take aspirin every day now I am 60?

Participant – 60 year old man, fairly fit and healthy

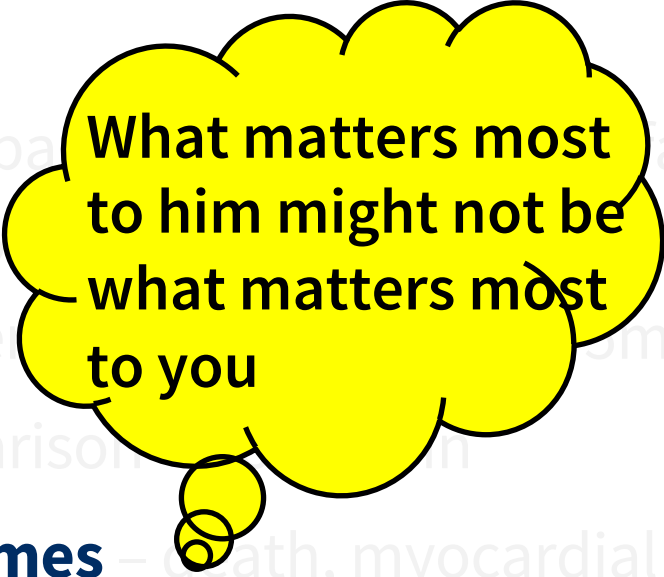
Intervention – daily aspirin 75mg

Comparison – no aspirin

Outcomes – death, myocardial infarction, stroke, side effects

PICO structure:

Should I take aspirin every day now I am 60?



What matters most to him might not be what matters most to you

Outcomes – death, myocardial infarction, stroke, side effects



PICO structure : Getting this right

Participant – what sort of people in the studies?

Intervention – what drug, treatment, dosage, intervention, time course

Comparison – placebo, ‘standard care’

Outcomes – what, when (time point), how measured, ‘minimally clinically important effect’



PICO structure : Getting this right

Participant – what sort of people in the studies?

Intervention – what drug, treatment, dosage, intervention, time course

Comparison – placebo, ‘standard care’

Outcomes – what, when (time point), how measured, ‘minimally clinically important effect’



PICO structure : Getting this right

Participant – what sort of people in the studies?

Intervention – what drug, treatment, dosage, intervention, time course

Comparison – placebo, ‘standard care’

Outcomes – what, when (time point), how measured, ‘minimally clinically important effect’



PICO structure : Getting this right

Participant – what sort of people in the studies?

Intervention – what drug, treatment, dosage, intervention, time course

Comparison – placebo, ‘standard care’

Outcomes – what, when (time point), how measured, ‘minimally clinically important effect’



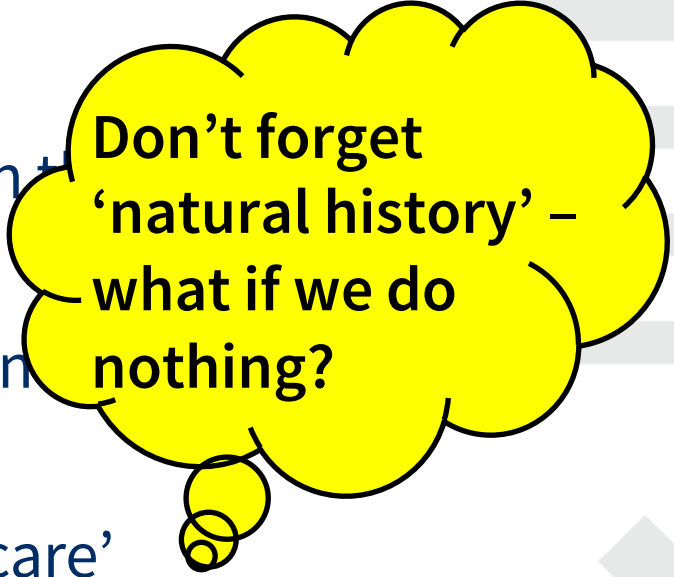
PICO structure : Getting this right

Participant – what sort of people in the studies?

Intervention – what drug, treatment, intervention, time course

Comparison – placebo, ‘standard care’

Outcomes – what, when (time point), how measured, ‘minimally clinically important effect’



Don't forget
‘natural history’ –
what if we do
nothing?

PICO structure :

Getting this right

Participant – what sort of people in the studies?

Intervention – what drug, treatment, dosage, intervention, time course

Comparison – placebo, ‘standard care’

Outcomes – what, when (time point), how measured, ‘minimally clinically important effect’



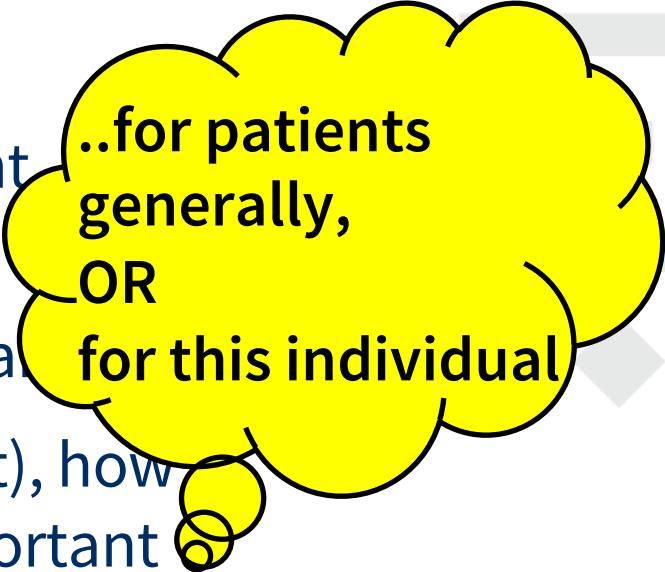
PICO structure : Getting this right

Participant – what sort of people in the studies?

Intervention – what drug, treatment, intervention, time course

Comparison – placebo, ‘standard care’

Outcomes – what, when (time point), how measured, ‘minimally clinically important effect’



..for patients generally,
OR
for this individual

Why systematic reviews?



Digression or clarification





Cochrane
ENT

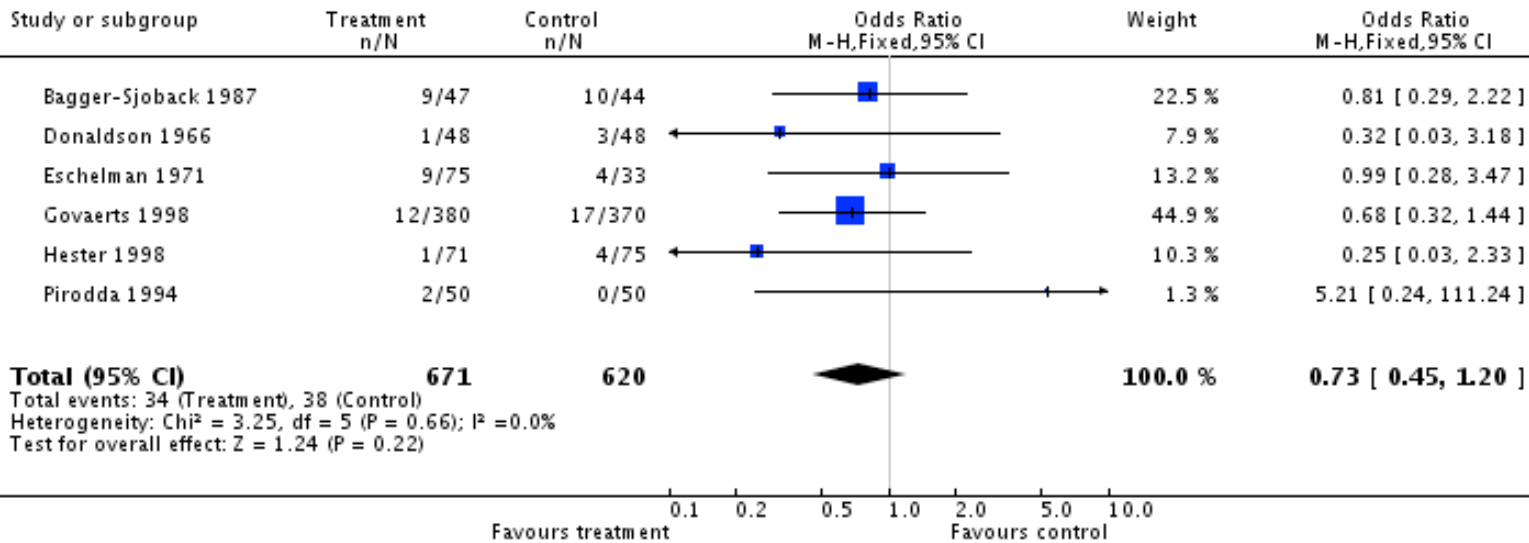




Odds *versus* Risk

Object	Sides	Risk or chance	Odds
Coin	2	1 in 2 = 0.5	1 to 1 = 1
Dice	6	1 in 6 = 0.16	1 to 5 = 0.2
Polygon	1000	1 in 1000 =0.001	1 to 999≈ 0.001

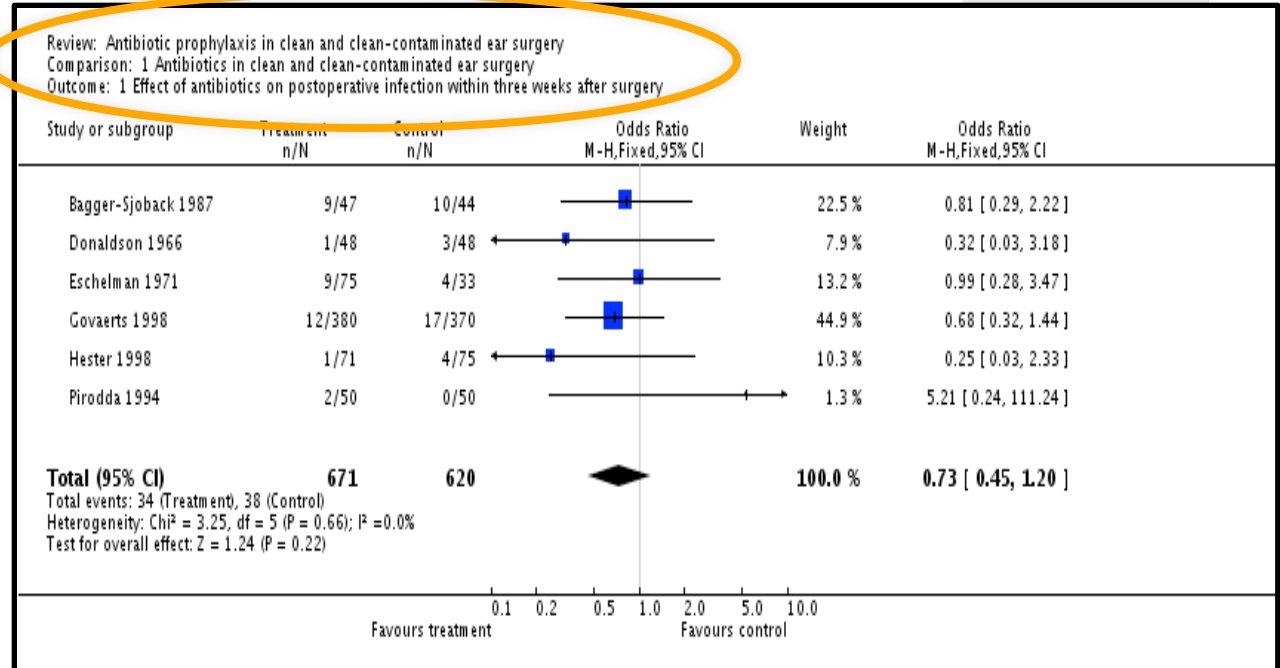
Review: Antibiotic prophylaxis in clean and clean-contaminated ear surgery
 Comparison: 1 Antibiotics in clean and clean-contaminated ear surgery
 Outcome: 1 Effect of antibiotics on postoperative infection within three weeks after surgery






Review: Antibiotic prophylaxis in clean and clean-contaminated ear surgery
Comparison: 1 Antibiotics in clean and clean-contaminated ear surgery
Outcome: 1 Effect of antibiotics on postoperative infection within three weeks after surgery

There is a label to tell you what the comparison is and what the outcome of interest is



Outcome: 1 Effect of antibiotics on postoperative infection within three weeks after surgery

Study or subgroup	Treatment n/N	Control n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Bagger-Sjoback 1987	9/47	10/44		22.5 %	0.81 [0.29, 2.22]

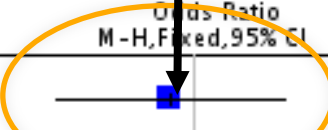
For each study there is an ID

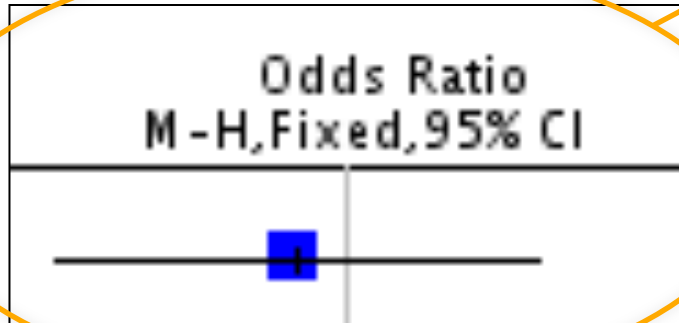
The data for each trial are here, divided into the treatment and control groups

This is the % weight given to this study in the pooled analysis

The label above the graph tells you what statistic has been used

Outcome: 1 Effect of antibiotics on postoperative infection within three weeks after surgery

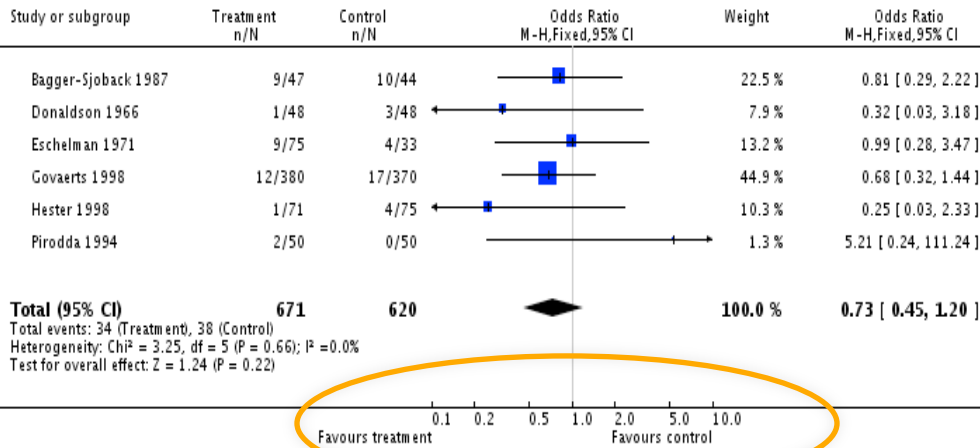
Study or subgroup	Treatment n/N	Control n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Bagger-Sjoback 1987	9/47	10/44		22.5 %	0.81 [0.29, 2.22]



The data shown in the graph are also given numerically

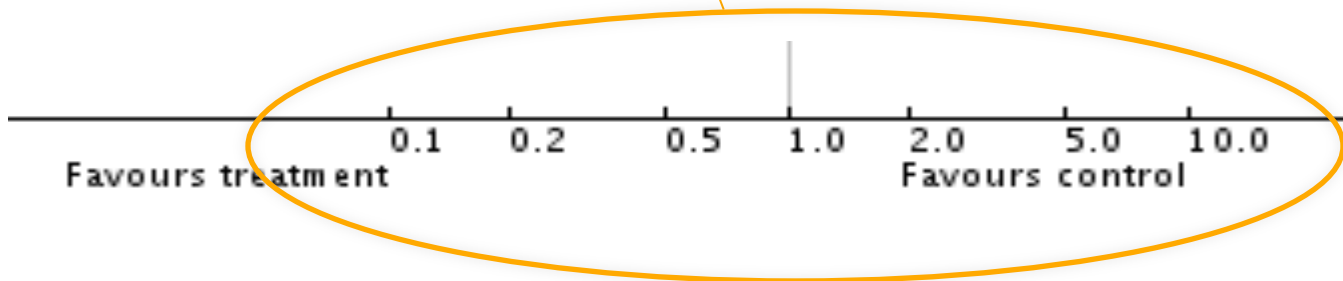
- Each study is given a blob, placed where the data measure the effect.
- The size of the blob is proportional to the % weight
- The horizontal line a 95% confidence interval

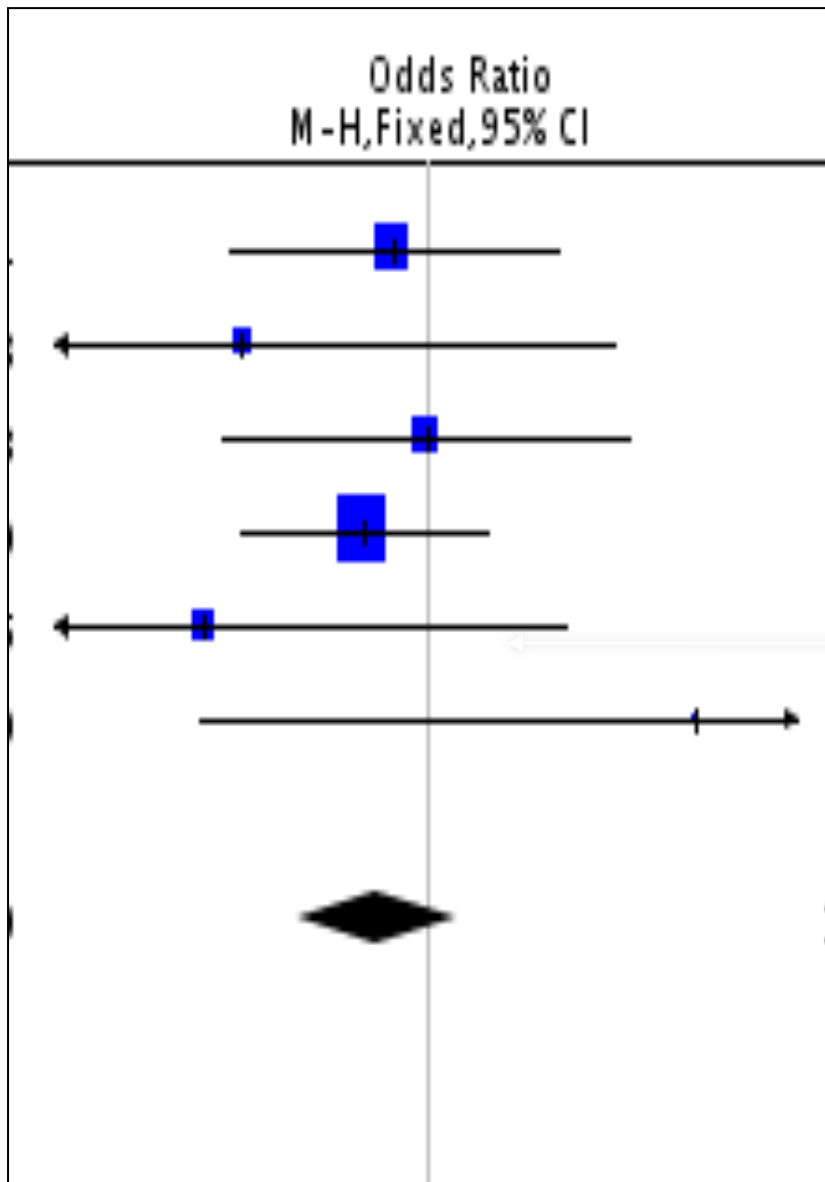
Review: Antibiotic prophylaxis in clean and clean-contaminated ear surgery
 Comparison: 1 Antibiotics in clean and clean-contaminated ear surgery
 Outcome: 1 Effect of antibiotics on postoperative infection within three weeks after surgery



At the bottom there's a horizontal line. This is the scale measuring the treatment effect.

Here the outcome is the effect of antibiotics on post-op infection (lower is better).





The vertical line in the middle is where the treatment and control have the same effect – there is no difference between the two

Total (95% CI)	671	620		100.0 %	0.73 [0.45, 1.20]
-----------------------	------------	------------	--	----------------	----------------------------

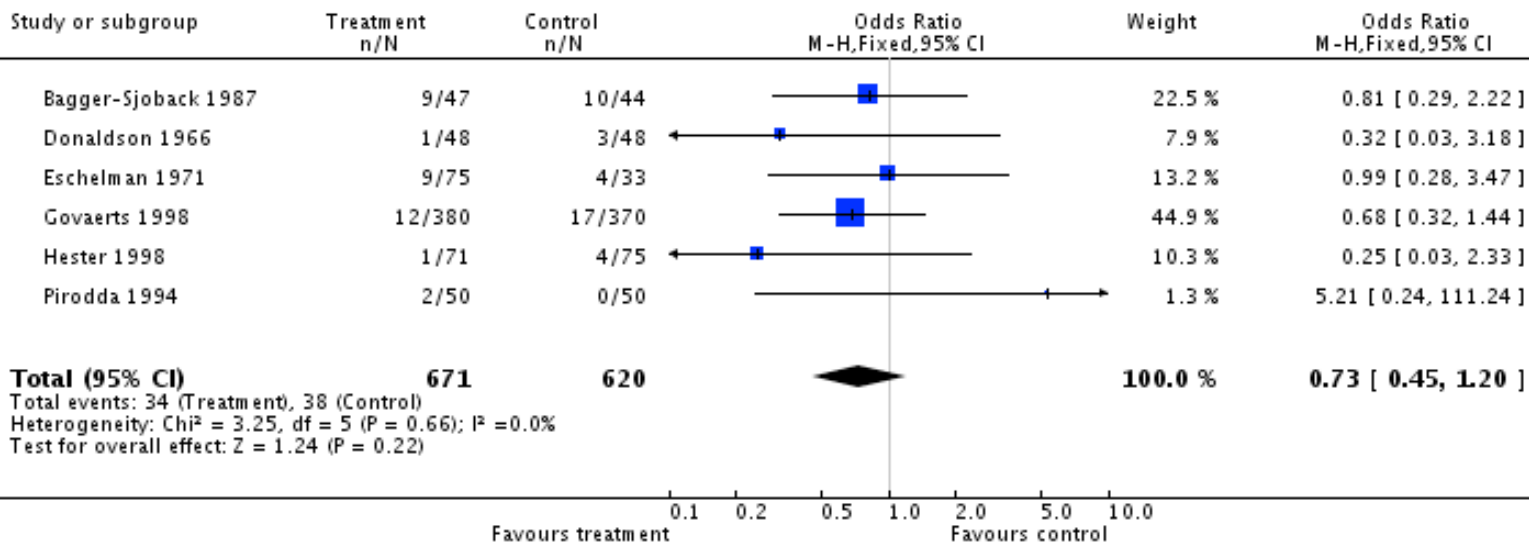
Total events: 34 (Treatment), 38 (Control)
Heterogeneity: $\text{Chi}^2 = 3.25$, $\text{df} = 5$ ($P = 0.66$); $I^2 = 0.0\%$
Test for overall effect: $Z = 1.24$ ($P = 0.22$)

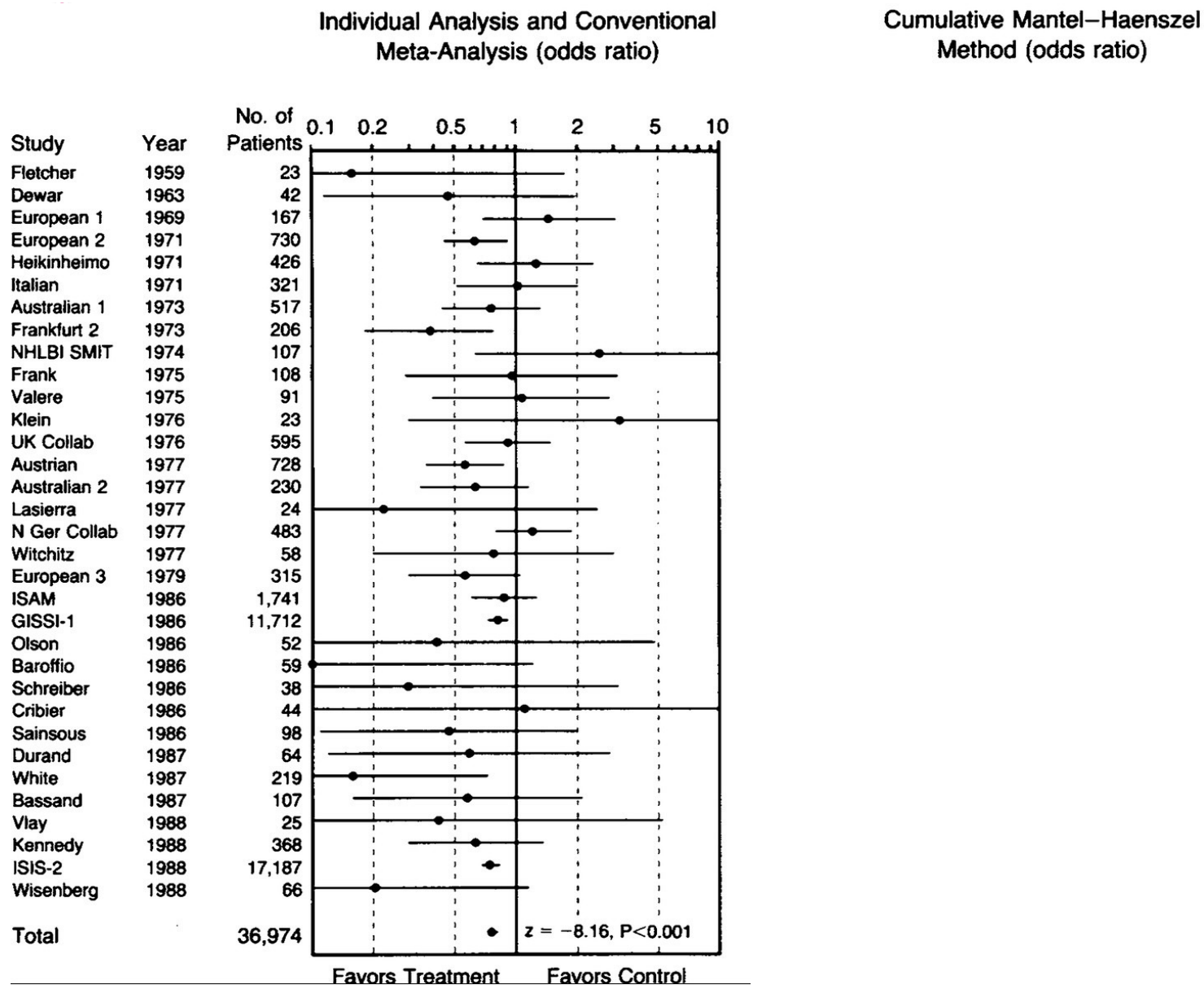
The pooled analysis is given a diamond shape where the widest bit in the middle is located at the calculated best guess (point estimate), and the horizontal width is the confidence interval

Note on interpretation

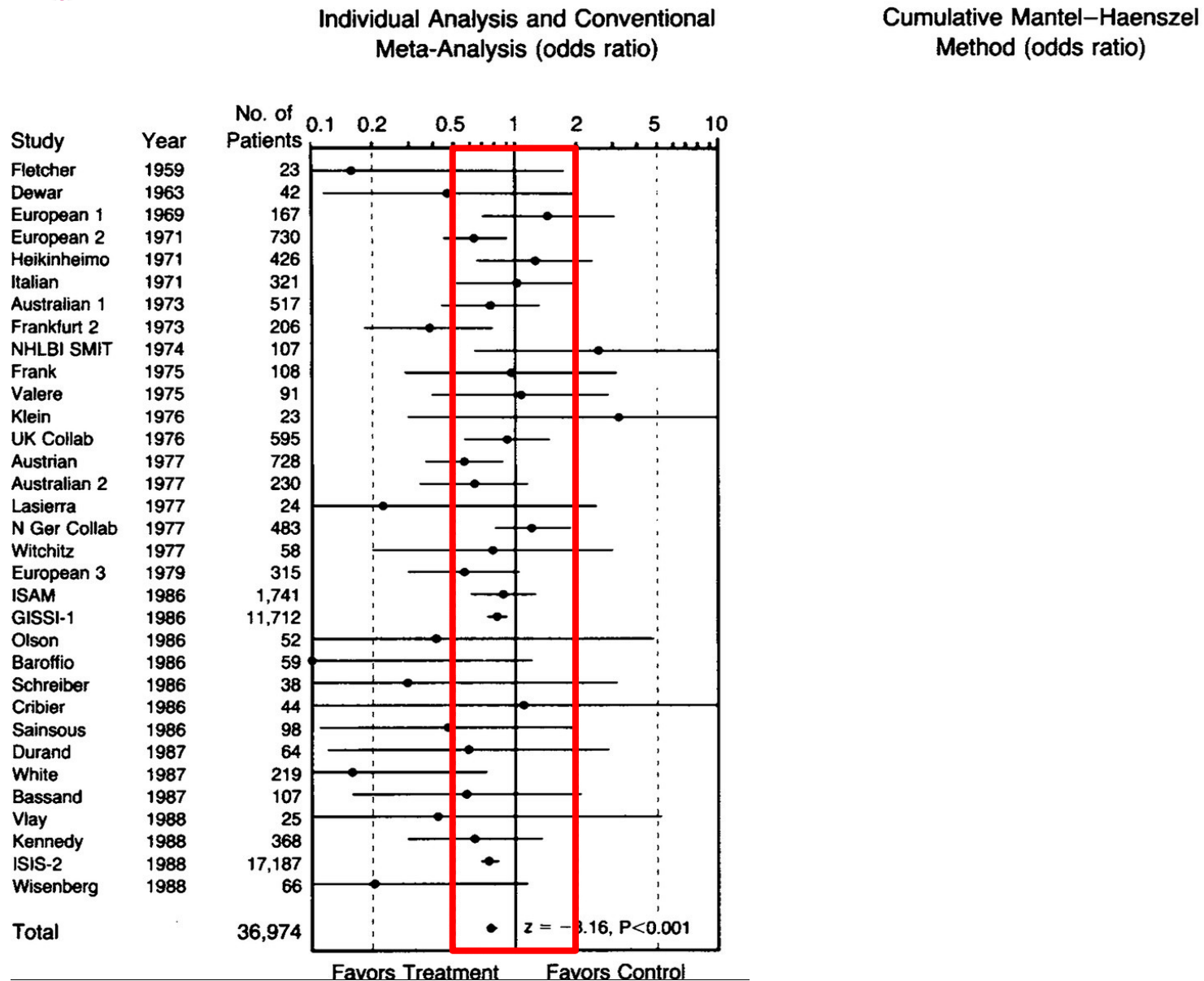
If the confidence interval crosses the line of no effect, this is equivalent to saying that we have found no statistically significant difference in the effects of the two interventions

Review: Antibiotic prophylaxis in clean and clean-contaminated ear surgery
 Comparison: 1 Antibiotics in clean and clean-contaminated ear surgery
 Outcome: 1 Effect of antibiotics on postoperative infection within three weeks after surgery

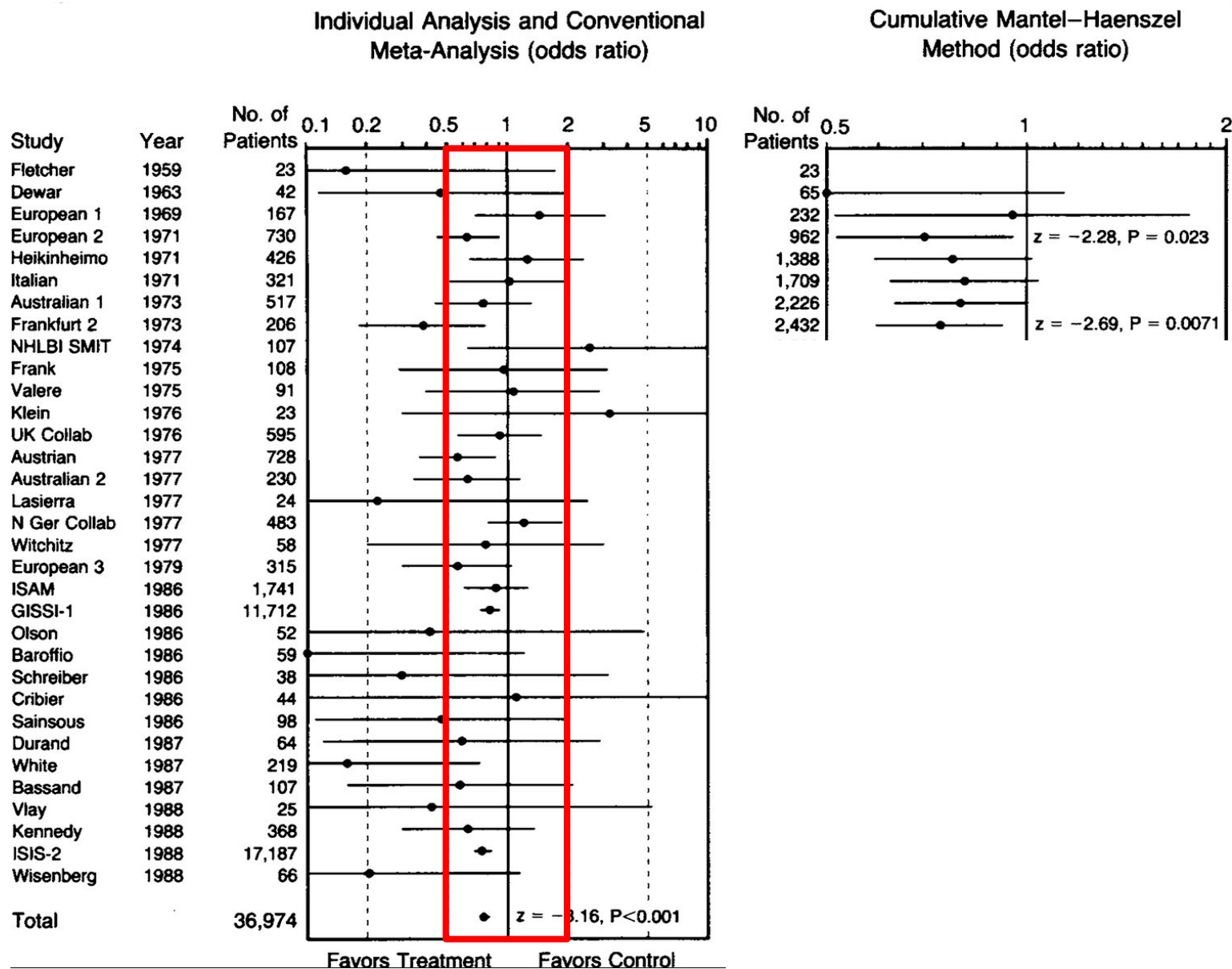




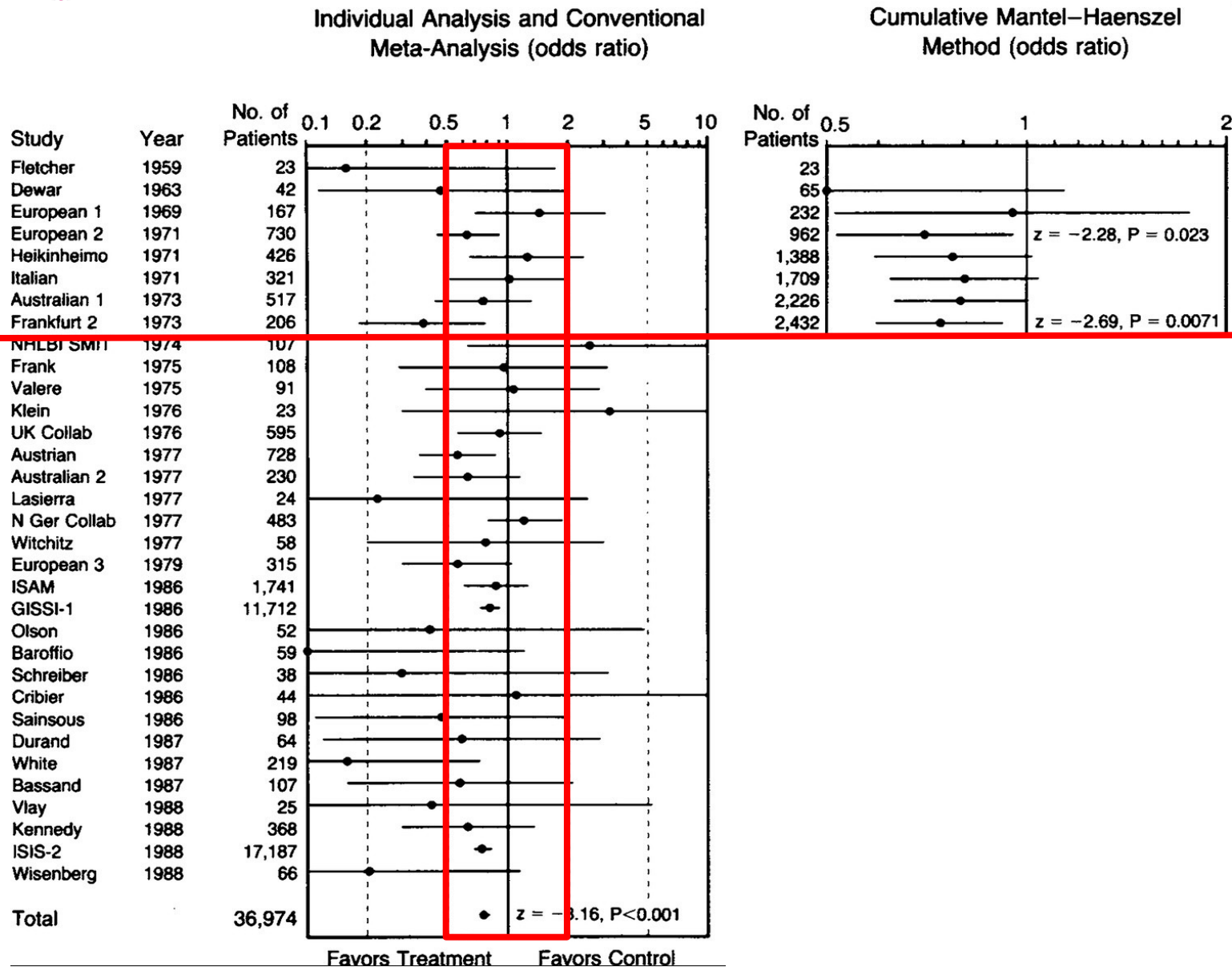
IV streptokinase for acute myocardial infarction



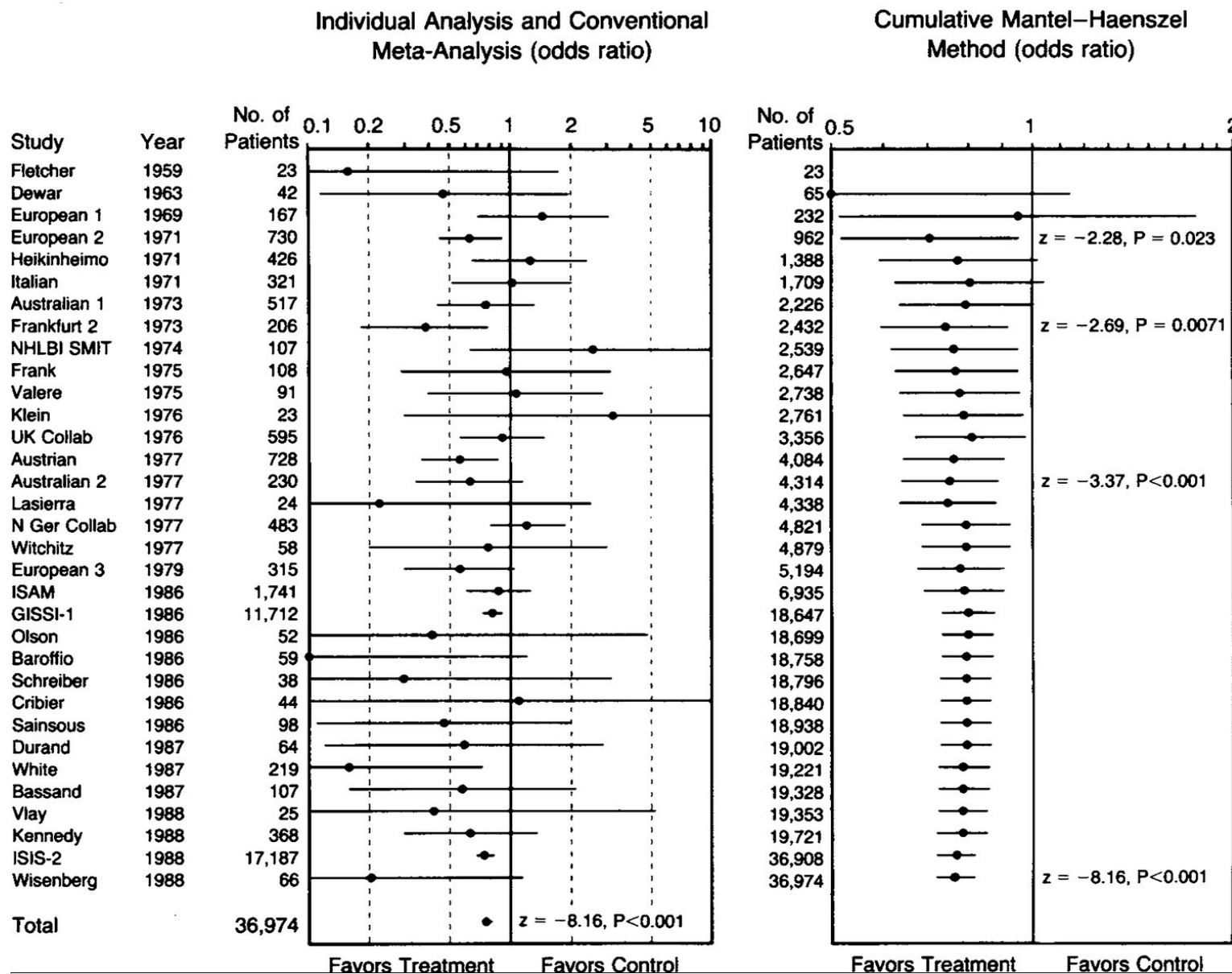
IV streptokinase for acute myocardial infarction



IV streptokinase for acute myocardial infarction



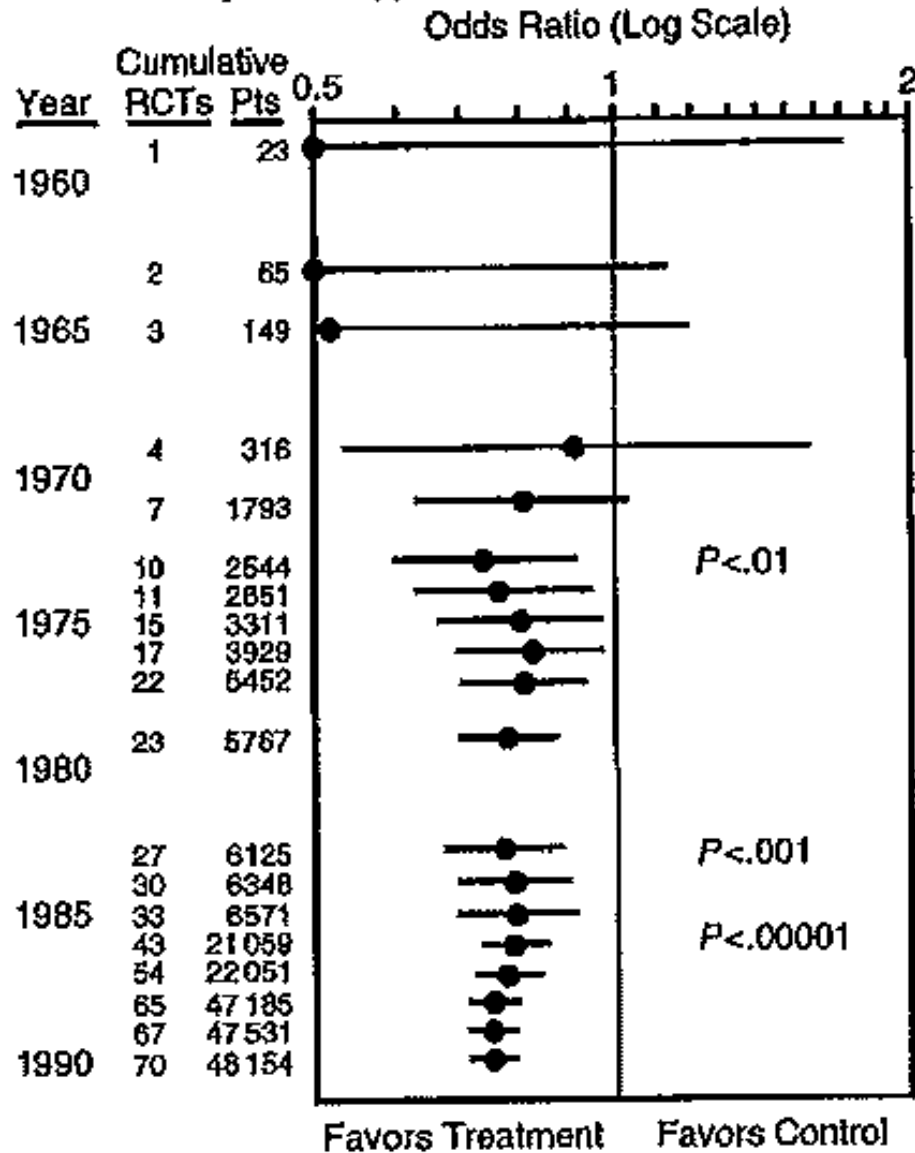
IV streptokinase for acute myocardial infarction



IV streptokinase for acute myocardial infarction

Antman E et al. A comparison of results of meta-analyses of randomized control trials and recommendations of clinical experts. JAMA 1992 268(2):240-8

A. Thrombolytic Therapy



Textbook/Review Recommendations

	Routine	Specific	Rare/Never	Experimental	Not Mentioned
					21
					5
				1	10
				1	2
				2	8
					7
					8
		1			12
M		1		8	4
M		1		7	3
M					
M	5	2		2	1
M	15	8			1
M	8	1			

Why systematic reviews?

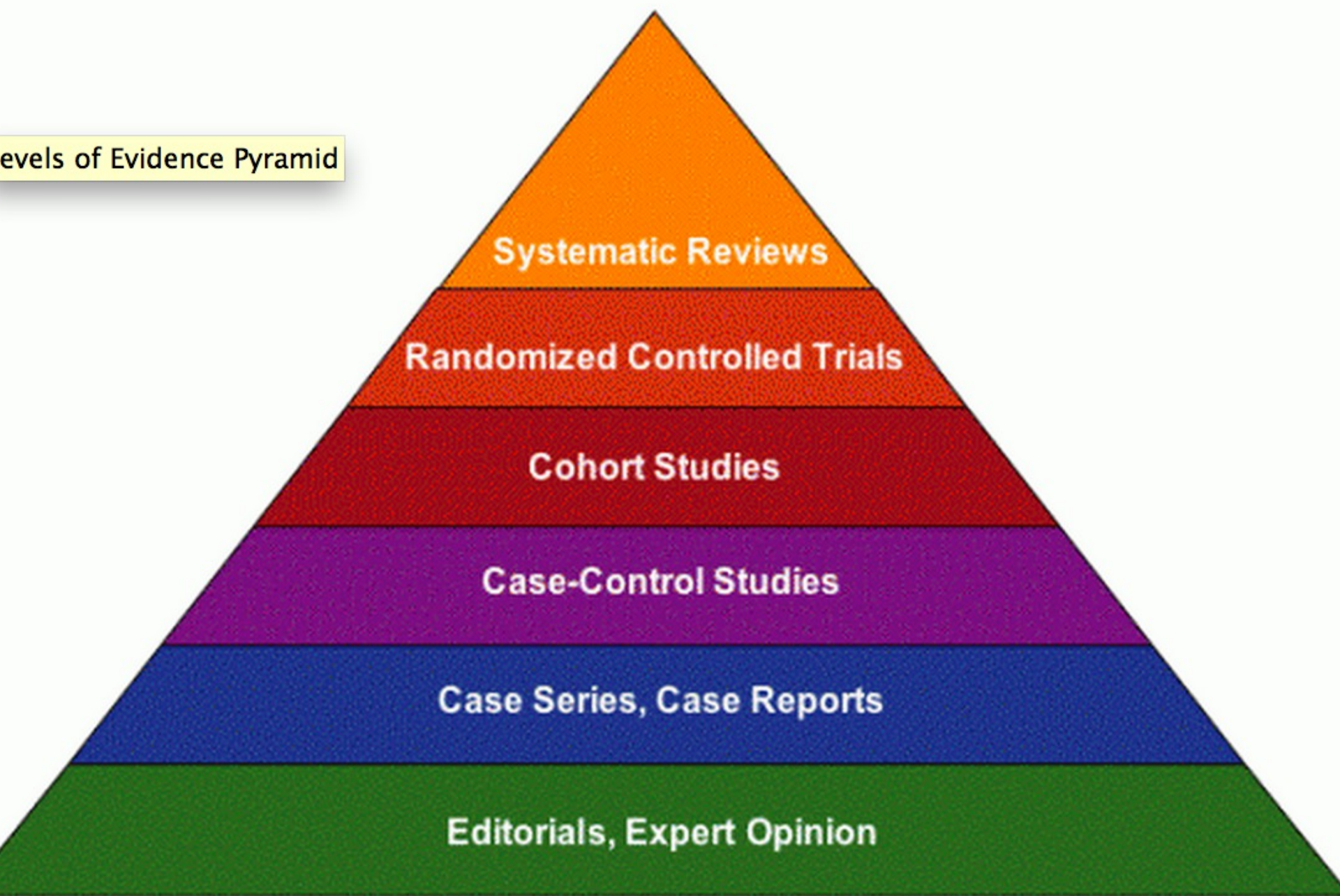


Current best evidence:

Up-to-date systematic reviews of
RCTs



Levels of Evidence Pyramid





About Cochrane

Trusted evidence.
Informed decisions.
Better health.

Cochrane Library



The screenshot shows the Cochrane Library homepage. At the top left is the Cochrane Library logo with the tagline "Trusted evidence. Informed decisions. Better health." To the right is a search bar with the placeholder text "Search title, abstract, keyword" and buttons for "Browse" and "Advanced Search". Below the search bar is a purple navigation bar with links for "Cochrane Reviews", "Trials", "More Resources", "About", and "Help".

The main content area features several featured articles and reviews:

- Whole-body cryotherapy**: Preventing and treating muscle soreness after exercise. Includes a photo of a person in a cryotherapy chamber. [Read the review](#)
- Portion and package sizing**: Includes a photo of food portions. [Read the review](#)
- Cochrane Colloquium 2015**: Includes a photo of a city at night. [Find out more](#)

Below these are tabs for "Highlighted Reviews", "Editorials", and "Special Collections".

Under "Highlighted Reviews", the following items are listed:

- Consultation liaison in primary care for people with mental disorders**
Donna Gillies, Penny Buyck, Alexandra G Parker, Sarah E Hetrick
18 September 2015
- Whole-body cryotherapy (extreme cold air exposure) for preventing and treating muscle soreness after exercise in adults**
Joseph T Costello, Philip RA Baker, Geoffrey M Minett, Francois Bleuzen, Ian B Stewart, Chris Bleakley
18 September 2015
- Immunomodulators and immunosuppressants for relapsing-remitting multiple sclerosis: a network meta-analysis**
Irene Tramacers, Cinzia Del Giovane, Georgia Salanti, Roberto D'Amico, Graziella Filippini
18 September 2015
- Portion, package or tableware size for changing selection and consumption of food, alcohol and tobacco**
Gareth J Hollands, Ian Shemilt, Theresa M Marteau, Susan A Jebb, Hannah B Lewis, Yinghui Wei, Julian PT Higgins, David Oglvie
14 September 2015

At the bottom right, there is a "comment" button on a keyboard image with the text: "Tell us what you think. We welcome your comments on Cochrane Reviews." and a "submit a comment" link.

laudiaTotiri/gettyimages



Can a Mediterranean-style diet prevent cardiovascular disease?

Read the Review



Diagnosing tuberculosis

Read the Special Collection



Resources for flooding and poor water sanitation

Read the Special Collection

Highlighted Reviews

Editorials

Special Collections

Support during pregnancy for women at increased risk of low birthweight babies

Christine E East, Mary A Biro, Suzanne Fredericks, Rosalind Lau

1 April 2019

Lifestyle changes in women with polycystic ovary syndrome

Siew S Lim, Samantha K Hutchison, Emer Van Ryswyk, Robert J Norman, Helena J Teede, Lisa J Moran

28 March 2019

Benzodiazepines versus placebo for panic disorder in adults

Johanna Breilmann, Francesca Girlanda, Giuseppe Guaiana, Corrado Barbui, Andrea Cipriani, Mariasole Castellazzi, Irene Bighelli, Simon JC Davies, Toshi A Furukawa, Markus Koesters



Cochrane Interactive Learning

Learn how to conduct Cochrane Reviews with Cochrane Interactive Learning

Our ENT content

133 Reviews

55 Protocols

Suites of reviews on common topics:

- Chronic rhinosinusitis
- CSOM
- Tinnitus





EVIDENCE FOR EVERYDAY NURSING




Oral cryotherapy: preventing mouth soreness and ulcers in people having cancer treatments

BY SARAH CHAPMAN // JANUARY 15, 2016 // 0 COMMENTS [TWITTER](#) [SHARE](#)

POPULAR TAGS

- cancer
- Cochrane Airways Group
- Cochrane Heart Group
- Cochrane PaPaS
- Cochrane Pregnancy and Childbirth Group
- Cochrane Wounds Group
- communication
- diet
- engagement
- Evidently Advent
- exercise
- nursing
- pain
- prevention
- psychological therapies
- respiratory health
- smoking
- social media

SEARCH

Search ... 

EMAIL NEWSLETTER

Email address:

Your email address




Evidently Cochrane

Sharing health evidence you can trust



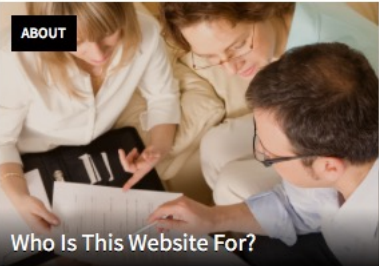
Supported by

FEATURED NOW COMMUNICATION & ENGAGEMENT

My Treatment, My Choice: What Do I Need To Know?

ABOUT



Who Is This Website For?

ABOUT



How Do We Write These Blogs?

ABOUT



What Are Cochrane Reviews?


ABOUT



About The Cochrane Collaboration And The UK Cochrane Centre

LATEST ARTICLES

COMMUNICATION & ENGAGEMENT




Survey: Evidently Cochrane – are we reaching you?

MUSCULOSKELETAL



Cryotherapy: it's cool, but is it evidence-based?
Rugby players and celebrities swear by it

COMMUNICATION & ENGAGEMENT



My treatment, my choice: what do I need to know?

NEWSLETTER

Email address:

Sign up

TWITTER

RT @mgmturphy123: @flowpower66 @campaignforleo @midwivesirl @UKCochraneCentr @WeMidwives @SagefemmeSB @JennytheM @HSElive

Evidently Cochrane

Sharing health evidence you can trust



Supported by



CATEGORY ARCHIVES: CANCER

NEWSLETTER



Unprovoked venous thromboembolism: should we be looking for cancer?

Retired GP Lynda Ware looks at new evidence on whether unprovoked venous thromboembolism warrants cancer screening

MARCH 24, 2015



Treating children with cancer: looking to the future

As more children are surviving cancer, we need research into kinder treatments

JANUARY 23, 2015



Can sentinel node assessment help women with vulval cancer avoid unnecessary surgery?



Breast cancer: your treatment, your choice

Email address:

Your email address

Sign up

TWITTER

Preventing mouth ulcers in people having chemo: Evidently #Cochrane blog <https://t.co/Hpg8LCKY54> #WorldCancerDay @amandaneylon @Oh_henry about 7 minutes ago from Hootsuite

Reply Retweet Favorite

It's #WorldCancerDay. Catch up with our Evidently #Cochrane blogs on #cancer evidence & experience <https://t.co/DPwscA1sKg> @amandaneylon about 12 minutes ago from Hootsuite

Reply Retweet Favorite

Follow @ukcochraneentr 13.6K followers

RECENT COMMENTS

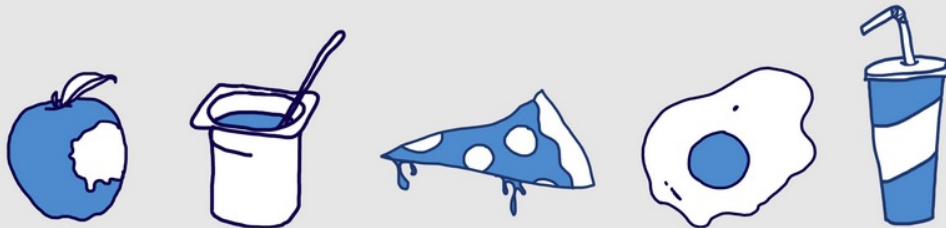
Wendy Thompson on **New Lancet Breastfeeding Series is a call to action**

Tina Foster on **Learning to love our hearing aids. The good, the bad, the ugly and the evidence**

Paul on **New Lancet Breastfeeding Series**

Don't go large! Portion size infographic

NEW COCHRANE EVIDENCE SHOWS WE ALL CONSUME TOO MUCH...



...food & non-alcoholic drink when offered bigger portions, bigger packaging or bigger tableware rather than smaller sizes, regardless of other factors such as gender, BMI or self-control.

evidentlycochrane.net/portion-size

Trusted evidence. Informed decisions. Better health.



NEW COCHRANE EVIDENCE SHOWS WE ALL CONSUME TOO MUCH...



...food & non-alcoholic drink when offered bigger portions, bigger packaging or bigger tableware rather than smaller sizes, regardless of other factors such as gender, BMI or self-control.



This may seem obvious but until now we haven't had evidence to show it and there has been a tendency to portray personal factors as the main reason people overeat.



Offering smaller sizes across the whole diet has the potential to reduce the average daily energy intake by 12-16% in the UK (22-29% in the US) but large reductions in portion size would be needed to achieve this.

It's unclear whether reducing portions at the smaller end of the size range can be as effective as at the larger end.



Go to this link to read the full Cochrane Review: bit.ly/1L5pPW



Blogshots

Evidently Cochrane

Sharing health evidence you can trust

Supported by



No evidence that whole-body cryotherapy is a safe or effective treatment for muscle soreness after exercise



New Cochrane review. 4 randomized controlled trials, 64 adults. Whole-body cryotherapy compared with rest or no treatment and with far-infrared therapy



Very low quality evidence (GRADE)



Find out more in this Evidently Cochrane blog:
<http://bit.ly/1RfPJt0>

evidentlycochrane.org | [@ukcochranecentr](https://twitter.com/ukcochranecentr) | [#cochranevidence](https://twitter.com/cochranevidence) [#blogshot](https://twitter.com/blogshot) [#cryotherapy](https://twitter.com/cryotherapy) [#musculoskeletal](https://twitter.com/musculoskeletal) [#exercise](https://twitter.com/exercise)

Cryotherapy: does it work and is it safe?



Engagement programme

- Evidently Cochrane
- Evidence for Everyday Nursing
- Evidence for Everyday Midwifery
- Students 4 Best Evidence



Evidence for Everyday Nursing

Evidence for Everyday Nursing



No evidence to support routinely replacing peripheral venous catheters (PVCs)



Updated Cochrane review. 7 randomized controlled trials, 4895 patients. Routine replacement of PVCs compared with replacement when clinically indicated

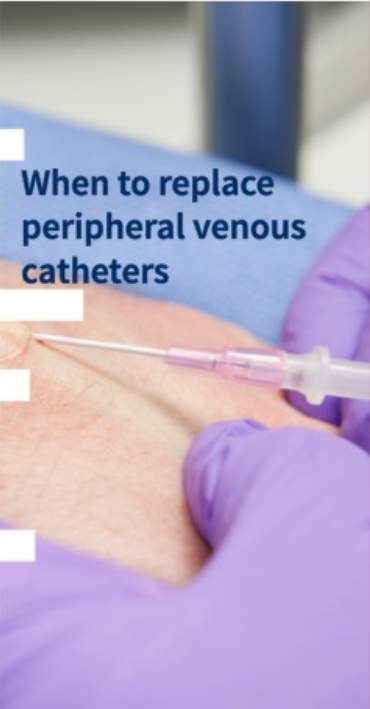


Mostly high quality evidence (GRADE). Further research is unlikely to change the results



Find out more in this blog: <http://bit.ly/1WEprSe>

evidentlycochrane.org | [@ukcochranecentr](https://twitter.com/ukcochranecentr) | [#EEENursing](https://twitter.com/EEENursing)



**When to replace
peripheral venous
catheters**

Evidence for Everyday Midwifery

Evidence for Everyday Midwifery



Not enough evidence on fetal movement counting for assessing fetal wellbeing to guide practice. Reviewers call for high quality research. **EVIDENCE GAP**



Cochrane review. 5 randomized controlled trials, 71,458 women



Mostly low quality evidence (GRADE). Further research is likely to change the results




Find out more: <http://bit.ly/1XShI5x>

evidentlycochrane.org | [@ukcochranecentr](https://twitter.com/ukcochranecentr) | [#EEMidwifery](https://twitter.com/#EEMidwifery)




Fetal
movement
counting

Students 4 Best Evidence



A network for students interested in evidence-based healthcare


Home | Start Here! | Categories | Register | Contact | Log In



Cochrane student survey: evidence-based curriculum & learning material

Cochrane is carrying out some research into the teaching and learning of evidence-based practice in a range of settings, and in particular whether there are barriers to the effective learning about EBP among medical students, junior clinicians, or others. Your answers to this set of questions will help us understand possible future development for use Cochrane in teaching and learning.


[Share](#) 1 [Tweet](#) 2




Patients in research: delivering person-centric care

Patients, carers and members of the public offer a unique perspective in health and social care research, adding to the expertise of the research team. Improving healthcare services will only be possible by involving the people accessing those services.

[Share](#) 5 [Tweet](#) 28







Migraine, go away!

Migraines are a burden to those who suffer from them; they can reduce one's quality of life, decrease one's ability to function, and even impair one's performance. The goal of this Cochrane Review was to see if SSRIs and SNRIs were effective in the prevention of migraines.

[Share](#) 2 [Tweet](#) 4





Follow S4BE

[Twitter](#) [Facebook](#) [Google+](#) [YouTube](#)

Search Site

Subscribe to our newsletter

Why should you get involved?

Students 4 Best... [Share](#)

What is Students 4 Best Evidence?

S4BE is a growing network of students from around the world interested in learning more about evidence-based health care.

- Reviewing evidence-based resources
- Writing tutorials explaining evidence-based concepts
- Blogging about the latest evidence

... *S4BE.org*





About Cochrane

Trusted evidence.
Informed decisions.
Better health.

EBM in day-to-day practice

Explaining to patients &
the public



Sharing uncertainty



Well informed uncertainties about the effects of treatments

How should clinicians and patients respond?

Uncertainties about the effects of treatments are inevitable. Whatever the basis for judgments about the likely effects of treatments in individual patients, there is no escape from the reality that every such judgment initiates a clinical trial in which there can be no certainty that an individual patient will benefit. Sometimes the judgment will draw on the patient's past experience of the treatment, more usually on the clinician's experience of treating other patients. Increasingly, clinicians and patients are

response to uncertainty can be substantial: gradual and important improvements in the prognosis of children with leukaemia, for example, seem likely to reflect an expectation among paediatric oncologists that decisions about treatment should be taken within the context of controlled trials, so that uncertainties can be addressed and reduced.

Strategies for dealing with uncertainty need to be considered and debated more explicitly. For example, what does the "quality in health care" movement

“A pre-requisite for constructive debate about uncertainties about the effects of treatments is a greater willingness...to admit and discuss them, combined with humility to acknowledge that good intentions alone have not protected patients from the unintended harmful effects of treatments”



Will the patients & the public understand?



UNDERSTANDING HEALTH STATISTICS



KNOW YOUR CHANCES

HOW TO SEE
THROUGH THE HYPE IN
MEDICAL NEWS, ADS,
AND PUBLIC SERVICE
ANNOUNCEMENTS



Steven Woloshin, MD, MS, Lisa M. Schwartz, MD, MS,
and H. Gilbert Welch, MD, MPH



Cochrane
ENT

A person taking Drug A has a 1% chance of having an allergic reaction. If 1,000 people take Drug A, how many would you expect to have an allergic reaction?



Cochrane
ENT

A person taking Drug A has a 1% chance of having an allergic reaction. If 1,000 people take Drug A, how many would you expect to have an allergic reaction?

A person taking Drug B has a 1 in 1,000 chance of having an allergic reaction. What percentage of people taking Drug B will have an allergic reaction?



Cochrane
ENT

A person taking Drug A has a 1% chance of having an allergic reaction. If 1,000 people take Drug A, how many would you expect to have an allergic reaction?

A person taking Drug B has a 1 in 1,000 chance of having an allergic reaction. What percentage of people taking Drug B will have an allergic reaction?

Imagine that I flip a coin 1,000 times. What is your best guess about how many times the coin would come up heads in 1,000 flips?

	US Adults ages 35-70 n=450	Postgrad. degree n=62	US Adults ages 26-69 n=1009	German adults ages 25-69 n=1001
% Correct answers				
Convert 1% to 10 in 1,000	70			
Convert 1 in 1,000 to 0.1%	25			
Heads in 1,000 coin flips	76			



	US Adults ages 35-70 n=450	Postgrad. degree n=62	US Adults ages 26-69 n=1009	German adults ages 25-69 n=1001
% Correct answers				
Convert 1% to 10 in 1,000	70	82		
Convert 1 in 1,000 to 0.1%	25	27		
Heads in 1,000 coin flips	76	86		

	US Adults ages 35-70 n=450	Postgrad. degree n=62	US Adults ages 26-69 n=1009	German adults ages 25-69 n=1001
% Correct answers				
Convert 1% to 10 in 1,000	70	82	58	68
Convert 1 in 1,000 to 0.1%	25	27	24	46
Heads in 1,000 coin flips	76	86	73	73

Physicians

% Correct answers

Convert 1% to 10 in 1,000	✓	All three correct		
Convert 1 in 1,000 to 0.1%	✓			
Heads in 1,000 coin flips	✓			

Physicians

% Correct answers

Convert 1% to 10 in 1,000	✓	All three correct		
Convert 1 in 1,000 to 0.1%	✓	?		
Heads in 1,000 coin flips	✓			

Physicians

% Correct answers

Convert 1% to 10 in 1,000	✓	All three correct		
Convert 1 in 1,000 to 0.1%	✓	72%		
Heads in 1,000 coin flips	✓			

Patients and physicians need to
get better at explaining and
understanding uncertainty





Lessons to be learnt

- “Evidence-based” is easy to say – less easy to do
- A conscientious, explicit & judicious process focused on using the current best evidence
- A culture of seeking to generate better evidence



Lessons to be learnt 2

- What sort of study is “best” or “good enough?”
- Does it work?



Lessons to be learnt 2

- What sort of study is “best” or “good enough?”
- Does it work?
- Does it do more good than harm?





martin.burton@cochrane.nhs.uk





Cochrane
ENT

Trusted evidence.
Informed decisions.
Better health.





Cochrane
ENT

Chronic Rhinosinusitis: prioritising a suite of systematic reviews



Trusted evidence.
Informed decisions.
Better health.

Introduction

- How we used to prioritise
- The need to be more focused
- Funder's request
- Cochrane ENT's response
 - Which are the most important reviews?
 - New reviews
 - Up-dated reviews
 - How big is the task?
- The offer: a scoping documents produced in 2 months
 - A prioritised list of reviews
 - A “cut-off”



The scoping process 1

Clinical need for the review of evidence

- Epidemiology and burden of disease [UK focused; for funders]

Description of interventions



Pharmacological interventions commonly used include:

- Intranasal corticosteroids (INCS)
- Systemic steroids
- Antibiotics

Types of surgery include:

- Endoscopic sinus surgery; including balloon sinuplasty and surgery of differing extent
- Open approaches to the sinuses (rarely used)

Other interventions used (or misused):

- Nasal irrigations, including
 - high- and low-volume irrigations,
 - differing solutions (such as saline or buffered saline), differing strength of solutions and
 - irrigations with additives such as surfactants or xylitol
- Antifungals, either topical or systemic
- Local decongestants



The scoping process 1

Clinical need for the review of evidence

- Epidemiology and burden of disease [UK focused; for funders]
- Clinical practice
 - Description of interventions
 - How they might work
- Clinical issues and variation in practice
 - European Position Paper on Rhinosinusitis and Nasal Polyps (EPOS) 2012
 - Variation in antibiotic usage
 - Variation in surgery: when to operate and what to do?
- Where is the evidence now?
- Which areas require up-to-date evidence synthesis?

The scoping process 1

Current evidence

- New searches
- Clinical guidelines
- Health technology assessment reports
- 10 existing Cochrane reviews:
 - 5 pharmacological: 2 CRS with polyps, 2 without & 1 anti-fungals
 - 2 surgery
 - 2 different surgical techniques
 - 1 saline

The scoping process 1

Current evidence

Largest body of evidence: **topical steroids**

Over 260 new abstracts to screen for new RCTs in this area

Oral steroids: 433 new abstracts

Antibiotics: 546 new abstracts

Saline irrigation: 540 new abstracts

leukotriene antagonists:	381
anti-IL-5:	624
anti-IgE:	471
local decongestants	
antihistamines	
capsaicin:	59



The scoping process 1

Current evidence

Surgery

HTA review 2003 - need for high quality studies on FESS

2014 Cochrane reviews – urgent need for further studies



The scoping process 1

Which areas most require an up-to-date evidence synthesis?

Intranasal corticosteroids: commonly used

Oral steroids: widely used

Saline irrigation: widely adopted, “does no harm”

Antibiotics: often prescribed

Anti-fungals: regularly prescribed

Decongestants: often bought “over the counter”



The scoping process 2

Proposed scope of the reviews

Setting

Population

Interventions

Comparators

Outcomes

“PICO again”



The scoping process 2

Proposed scope of the reviews

Population

Patients with CRS with or without nasal polyps

Excluding:

- Allergic fungal rhinosinusitis/eosinophilic fungal/mucinous rhinosinusitis (except for the review(s) on antifungals)
- Aspirin-exacerbated respiratory disease (aka Samter's triad)
- Cystic fibrosis
- Peri-operative patients

The scoping process 2

Proposed scope of the reviews

Interventions – a prioritised list

Topical steroids

Oral steroids

Antibiotics (both topical and oral)

Saline irrigation

Antifungals

Local decongestants

Nasal (saline) irrigation

Anti-IL-5

Anti-leukotrienes

Anti-IgE

Capsaicin

Antihistamines



The scoping process 2

Proposed scope of the reviews

Outcomes 1

- **Disease severity**, as measured by patient-reported symptom score (such as the Chronic Sinusitis Survey (CSS), Lund-Mackay scale, visual analogue scales).
- **Health-related quality of life, using disease-specific health-related quality of life scores**, such as the Sino-Nasal Outcome Test-22 (SNOT-22), Rhinosinusitis Outcome Measures-31 (RSOM-31) and SNOT-20.
- **Health-related quality of life, using generic quality of life scores**, such as the SF-36, EQ-5D and other well-validated instruments.

The scoping process 2

Proposed scope of the reviews

Outcomes 2

- Recurrence of symptoms
- Endoscopic appearances
- **Complications** or **adverse effects** from treatment; for example: epistaxis, infection, orbital complications, intracranial complications
- Objective physiological measures: nasal peak flow, nasal volume, nasal cross-sectional area, nasal nitric oxide (nNO), ciliary function (including saccharine clearance time)
- Olfactory tests

The scoping process 3

Proposed scope of the reviews

Review Questions





†

(Tentative) Review short name ¹	Pair	Population ²	Intervention ³	Comparison
1. INCS	1.	CRS	INCS	Placebo/no intervention
2. Relative effectiveness of INCS	2.	CRS	INCS type A	INCS type B
	3.	CRS	INCS delivery method A	INCS delivery method B
	4.	CRS	High-dose INCS	Low-dose INCS
3. Oral steroids (short course)	5.	CRS	Oral steroids	Placebo/no intervention
	6.	CRS	Oral steroids	Other pharmacological treatments ⁴
4. Oral steroids (short course) as an add-on therapy	7.	CRS, currently using INCS	Oral steroids + INCS	INCS + placebo/no intervention
	8.	CRS currently using INCS plus antibiotics	Oral steroid + INCS + antibiotics	INCS + antibiotics + placebo/no intervention
5. Antibiotics (systemic and topical)	9.	CRS	Antibiotics	Placebo
	10.	CRS	Antibiotics A	Antibiotics B
	11.	CRS, currently using INCS	Antibiotics + INCS	Placebo + INCS
	12.	CRS, currently using INCS	Antibiotics + oral steroids + INCS	Oral steroids + INCS



6. Saline irrigation	13.	CRS	Saline irrigation	Placebo
	14.	CRS	Saline irrigation A	Other types or volume of nasal irrigation
	15.	CRS, on standard therapy	Saline irrigation + standard therapy ⁵	Placebo + standard therapy
7. Antifungals (systemic and topical)	16.	CRS ⁶	Antifungals	Placebo
	17.	CRS	Antifungal A	Antifungal B
8. Local decongestants	18.	CRS	Local decongestants	Placebo
	19.	CRS	Local decongestants + standard therapy	Placebo/no intervention + standard therapy
9. Anti-IL-5	20.	CRS ⁷	IL-5	Placebo
	21.	CRS	IL-5 + standard therapy	Standard therapy
10. Leukotriene antagonists	22.	CRS	Leukotriene antagonists	Placebo
	23.	CRS	Leukotriene antagonists + standard therapy	Standard therapy
11. Anti-IgE monoclonal antibodies	24.	CRS	Anti Ig E	Placebo
	25.	CRS	Anti IgE + standard therapy	Standard therapy
12. Capsaicin	26.	CRS	Capsaicin	Placebo
	27.	CRS	Capsaicin + standard therapy	Standard therapy
13. Antihistamines	28.	CRS	Antihistamines	Placebo
	29.	CRS	Antihistamines	Standard therapy

The scoping process 4

Review methods

Searches

Study design: key issues:

- Randomisation by side of nose?
- Length of follow-up (specified 3 months minimum)

Analysis and pooling

- Subgroups of with/without nasal polyps
- Pre-determined time-points for analyses



What we learnt 1

Understanding the clinical context

Helpful to have clear definitions of different phenotypes (EPOS 2012)

Collaborating with clinicians and research groups to identify key issues, target audiences and outcomes

Engagement of primary and secondary care physicians.....and patients

1. Primary care physicians treat majority of patients with only history and limited examination information
2. Prioritisation of medical over surgical interventions
3. Used results of two research prioritisation exercises to inform choice of outcomes; GENERATE and OMIPP

What we learnt 2

Mapping the existing evidence

Original separation of two major phenotypes

Identified need to use core set of outcomes across all reviews

Searching the current research evidence

Identifying the need for systematic reviews

Helping assess the scale of the task

Review of literature around outcomes

Identifying the priority areas for reviews

Prioritisation by clinical importance with patient input



What we learnt 3

Defining the research questions for individual reviews

Deciding of specific reviews required specific outcomes

3 main outcomes (one being most common or important adverse effect)

Identifying time and budget restraints for completing the work

Added value of the scoping process

- Prioritized list of reviews in an important clinical area
- “Horizon scanning” element useful in identifying “emerging technologies”
- Identification and resolution of some methodological issues at early stage

The resulting reviews

- Intranasal steroids *versus* placebo
- Different types of intranasal steroids
- Short course of oral steroids
- Short course of oral steroids as an adjunct to other therapy
- Antibiotics: systemic and topical
- Saline irrigation

