Kamal R. Mahtani

GP and Deputy Director
Centre for Evidence Based Medicine

Royal Free and University College London Medical School

Clinical epidemiology lectures….

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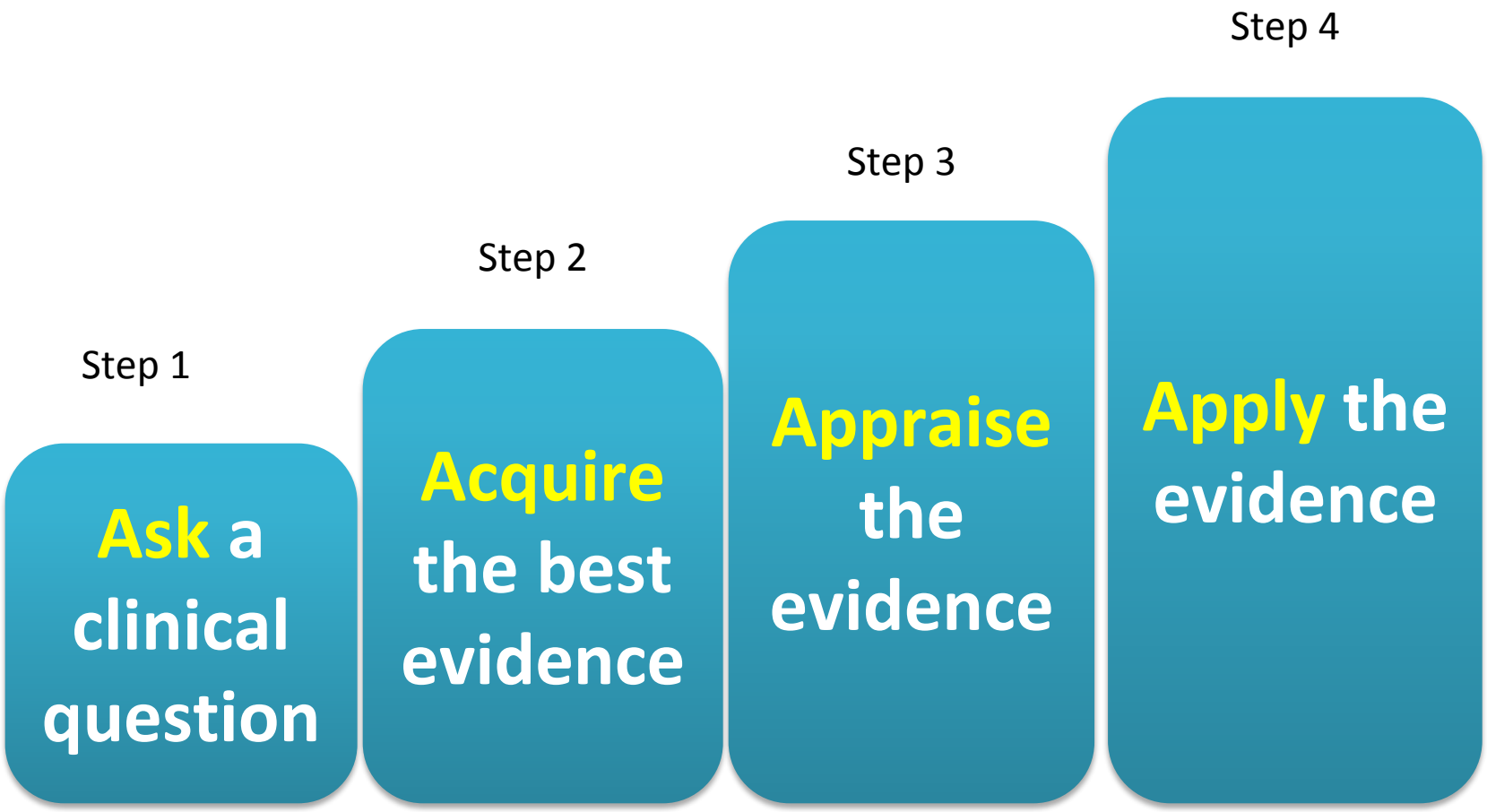
So….

Avoid EBM lectures

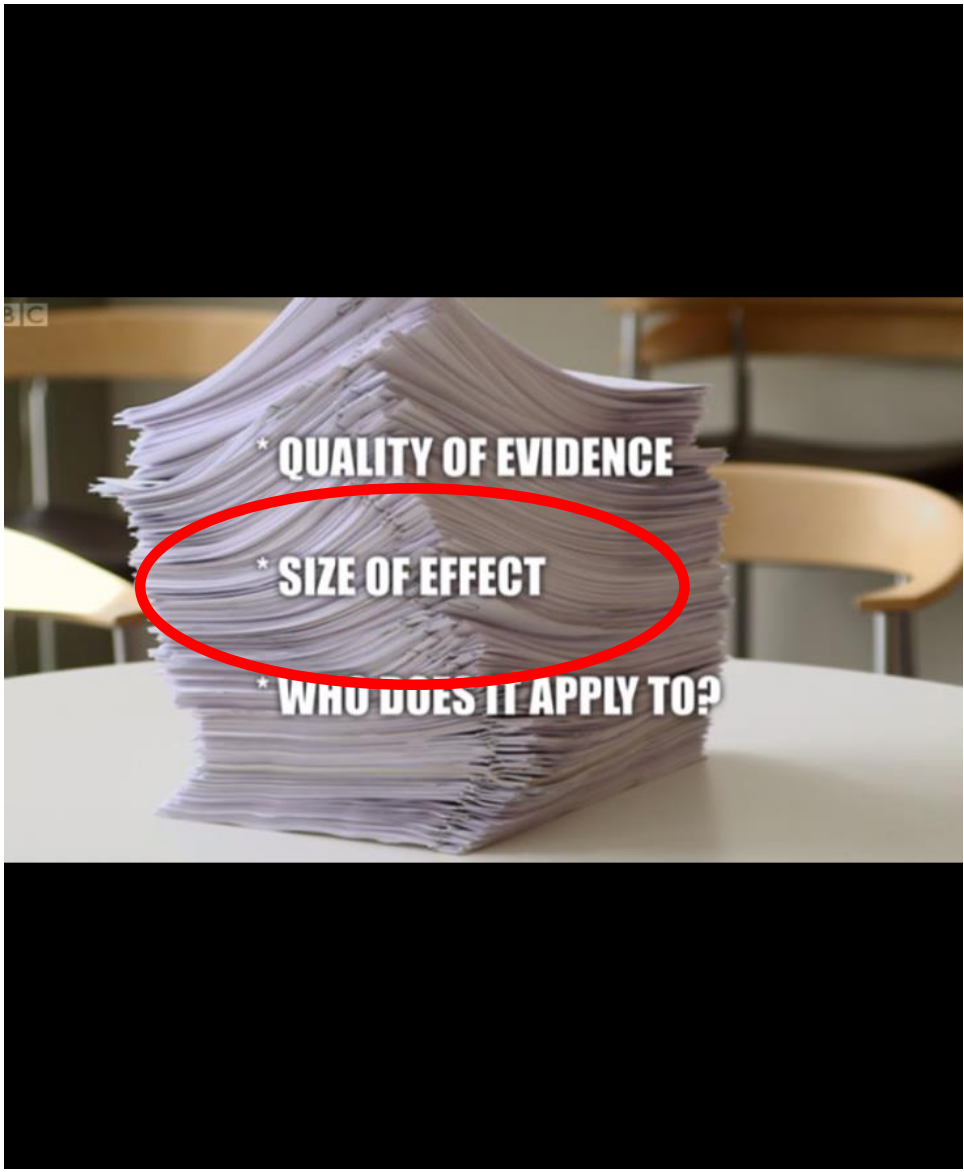
=

Meet your future partner

Practicing EBM – the 4 A's



Systematic Reviews
Randomized Controlled Trials
Cohort Studies
Case-Control Studies
Case Series, Case Reports
Editorials, Expert Opinion


* QUALITY OF EVIDENCE
* SIZE OF EFFECT
* WHO DOES IT APPLY TO?

MAD MEN

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Go Lucky!
I dance and skip upon my toes,
I leap and pirouette —
Since I discovered Lucky Strike,
The happy cigarette!
ENJOY YOUR CIGARETTE!...
If you're not happy with your present brand (and a 38-city survey shows that millions are not), smoke Luckies! You'll get the happy blending of perfect mildness and rich taste that fine tobacco—and only fine tobacco—can give you. Remember, Lucky Strike means fine tobacco. So get complete smoking enjoyment. Be Happy—Go Lucky today!
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For all us Irish folk,
But every day is lucky when
It's Lucky Strike you smoke!
L.S./M.F.T.-
Lucky Strike
Means Fine Tobacco
A feudin' with the neighbors used
To mean a heap of thrills.
But now we all smoke Lucky Strike —
There's peace in them thar hills!
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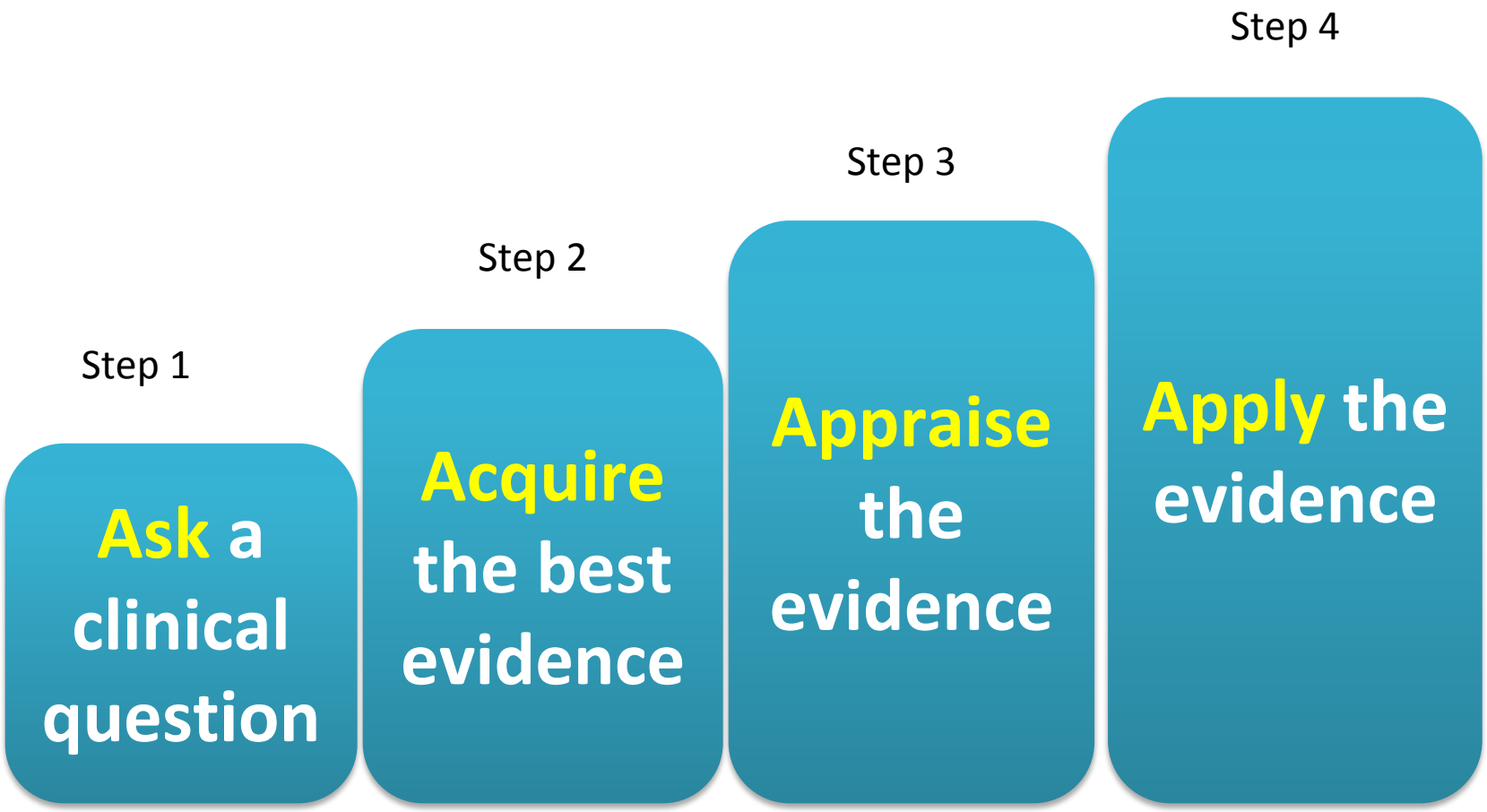
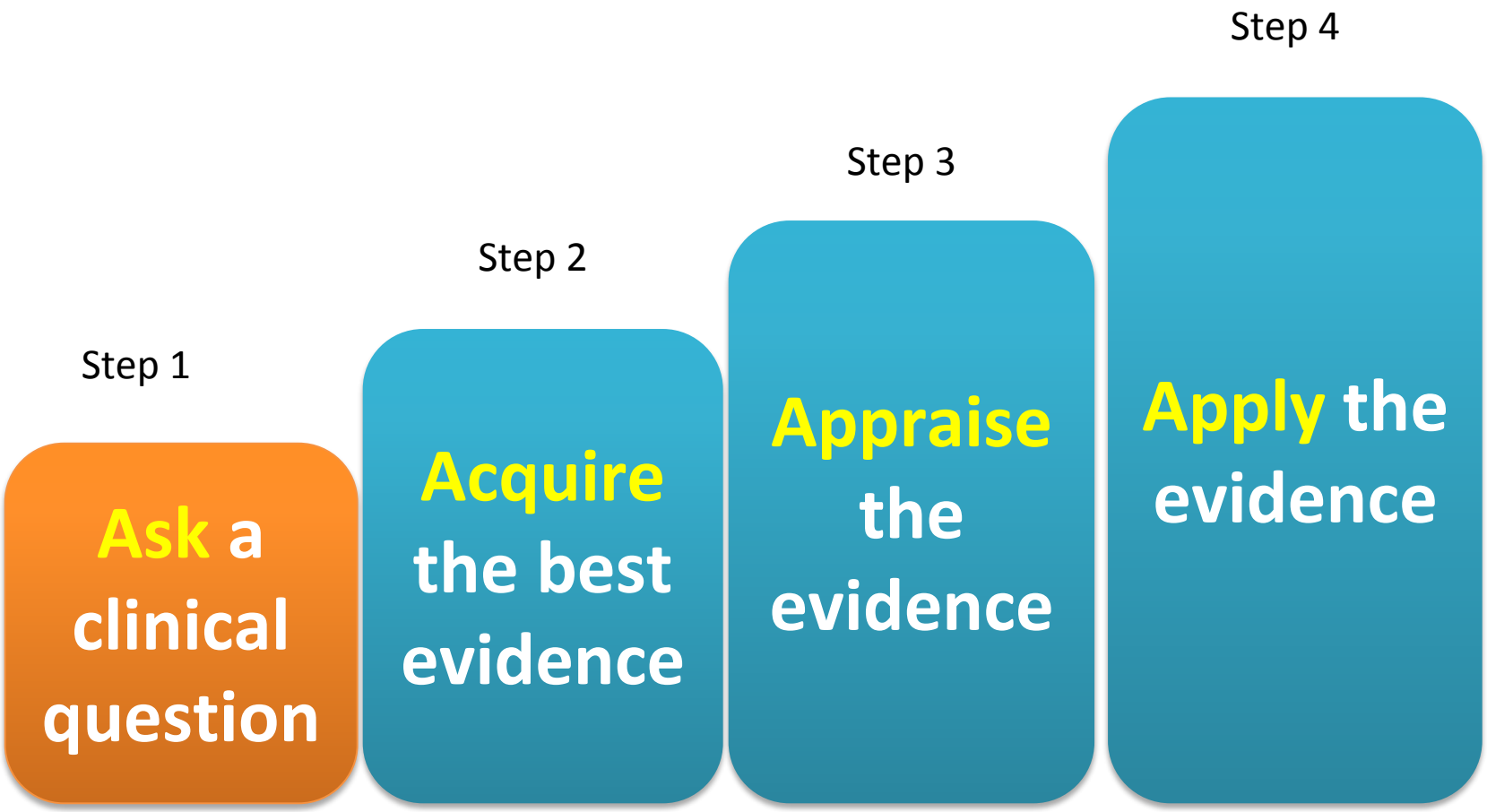
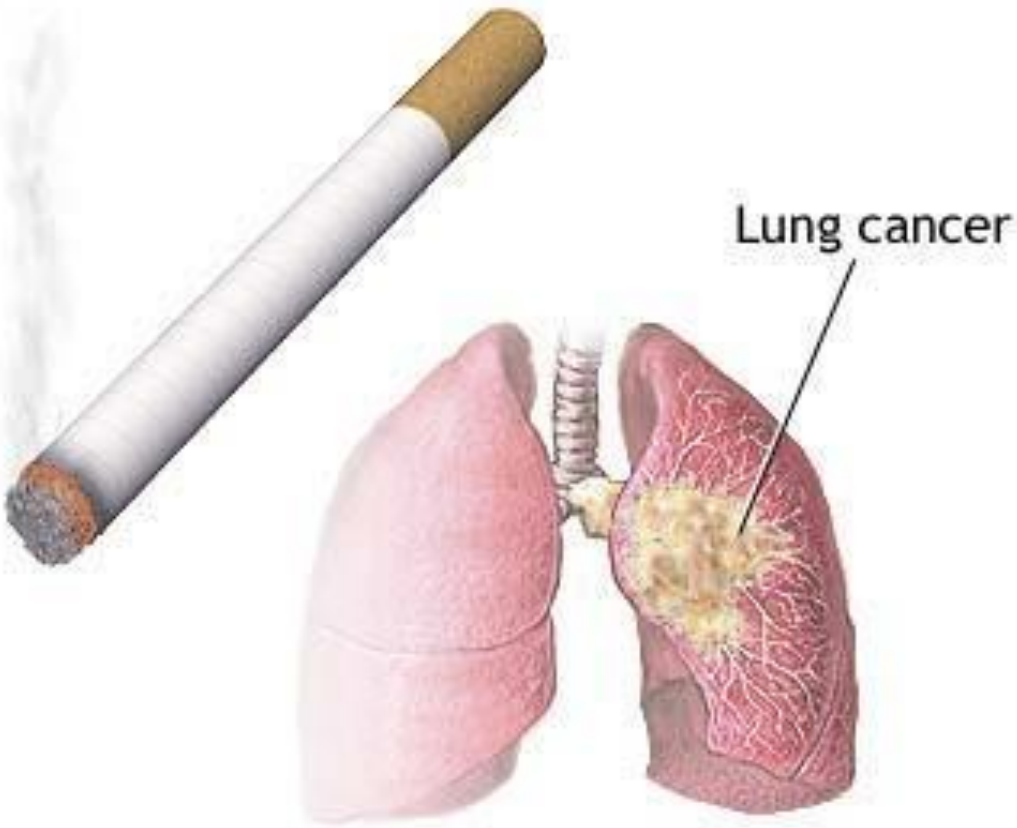
Practicing EBM – the 4 A's



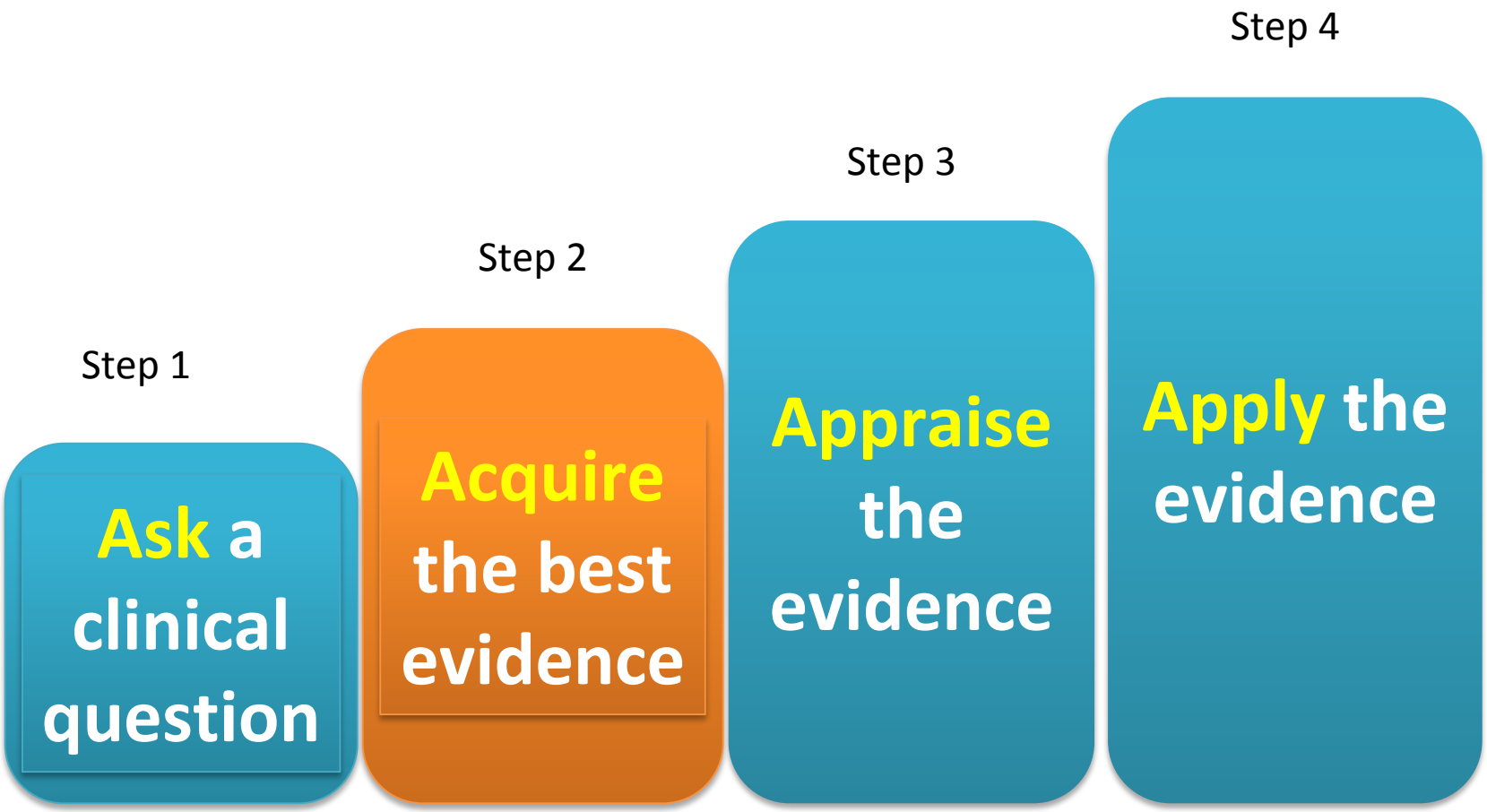
Practicing EBM – the 4 A's



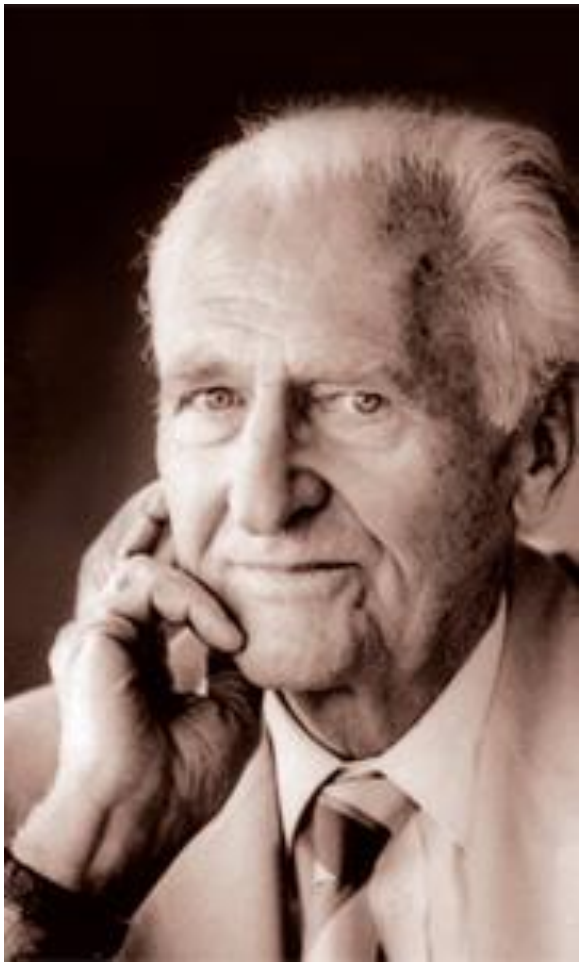
Does smoking cause lung cancer?



Practicing EBM – the 4 A's

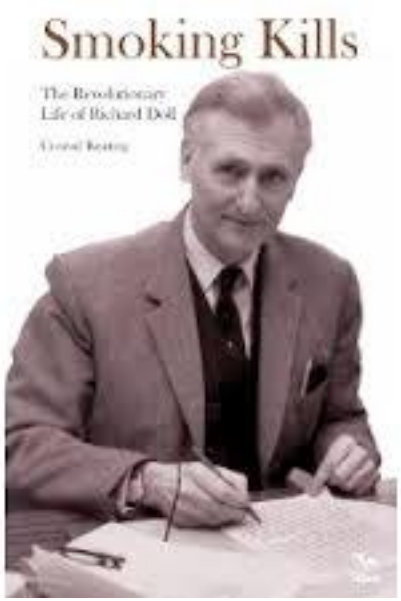


Doll and Hill 1956



- 59600 questionnaires to all on the medical register October 1951
- Few simple questions
  - Age, M/F
  - current smoker?
  - Ex smoker?
  - Non (never)-smoker?
- Followed up 4 to 20 years
- Verified cause of death on national registers and local pathology offices

Cohort studies



Cite this article as: BMJ, doi:10.1136/bmj.38142.554479.AE (published 22 June 2004)

Papers

Mortality in relation to smoking: 50 years' observations on male British doctors

Richard Doll, Richard Peto, Jillian Boreham, Isabelle Sutherland

Abstract

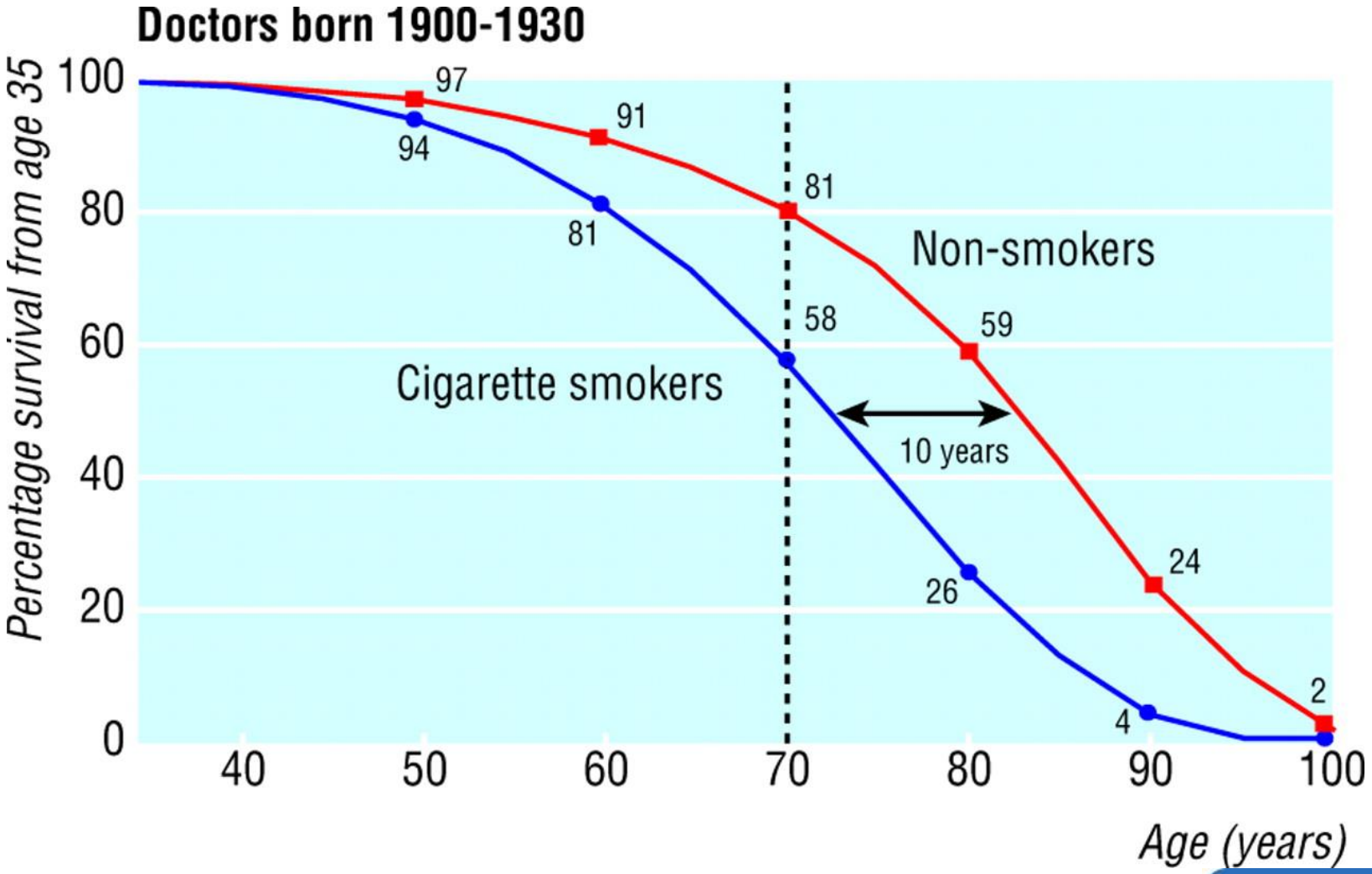
Objective To compare the hazards of cigarette smoking in men who formed their habits at different periods, and the extent of the reduction in risk when cigarette smoking is stopped at different ages.
Design Prospective study that has continued from 1951 to 2001.
Setting United Kingdom.
Participants 34 439 male British doctors. Information about their smoking habits was obtained in 1951, and periodically thereafter; cause specific mortality was monitored for 50 years.
Main outcome measures Overall mortality by smoking habit,

Kingdom (where the disease became by the 1940s a major cause of death). Throughout the first half of the 20th century the hazards of smoking had remained largely unsuspected.[1] Around the middle of the century, however, several case-control studies of lung cancer were published in Western Europe[2–6] and North America,[7–10] leading to the conclusion in 1950 that smoking was "a cause, and an important cause" of the disease.[5]

1951 prospective study

This discovery stimulated much further research into the effects of smoking (not only on lung cancer but also on many other diseases), including a UK prospective study of smoking and death

Survival from age 35 for continuing cigarette smokers and lifelong non-smokers among UK male doctors born 1900-1930, with percentages alive at each decade of age.



Doll R et al. BMJ 2004;328:1519

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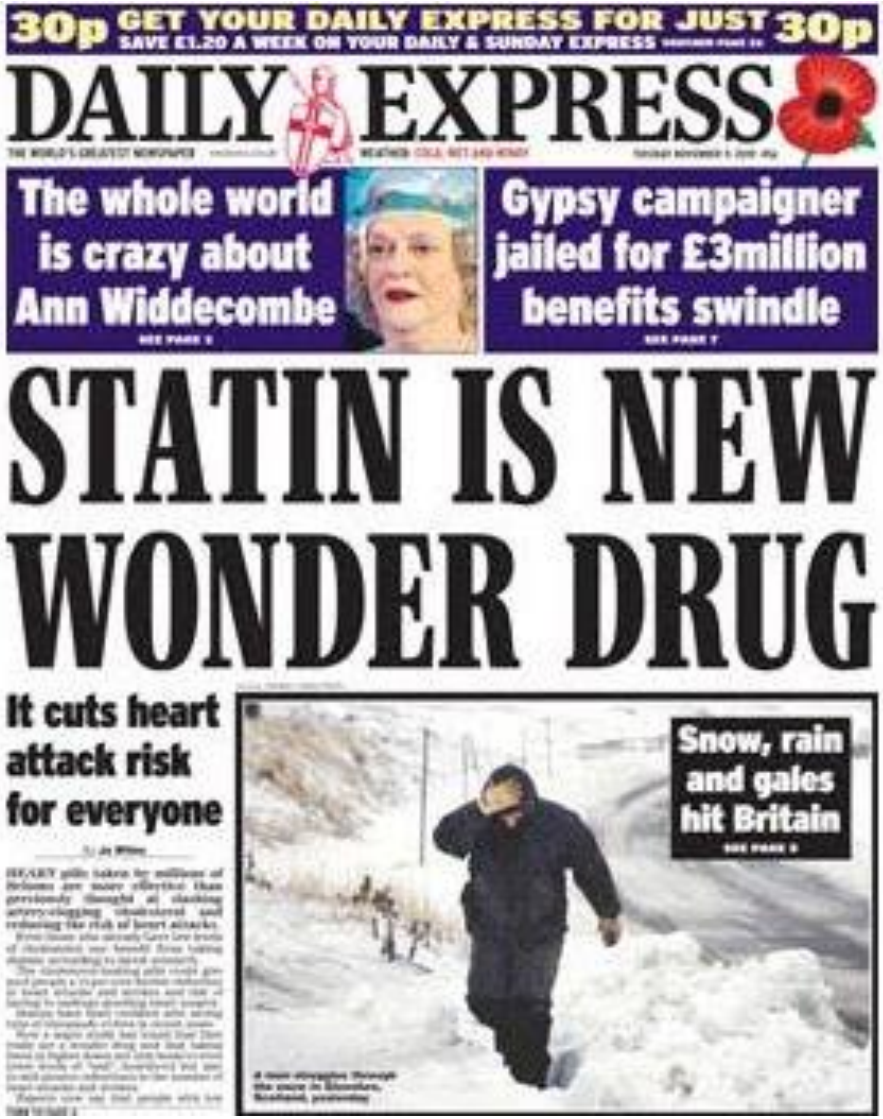

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The whole world is crazy about Ann Widdecombe

Gypsy campaigner jailed for £3million benefits swindle

STATIN IS NEW WONDER DRUG

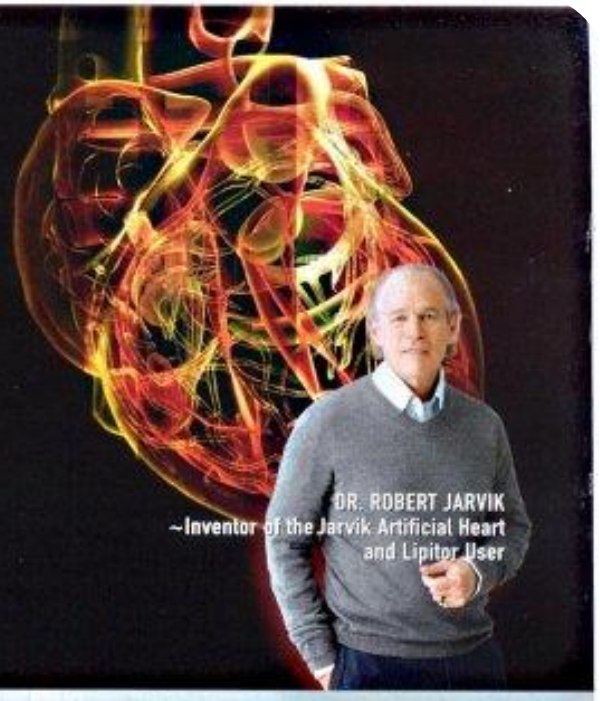
It cuts heart attack risk for everyone

Snow, rain and gales hit Britain

In patients with multiple risk factors for heart disease,

Lipitor reduces risk *of* heart attack by 36%*

If you have risk factors such as family history, high blood pressure, age, low HDL ('good' cholesterol) or smoking.



*That means in a large clinical study, 3% of patients taking a sugar pill or placebo had a heart attack compared to 2% of patients taking Lipitor.

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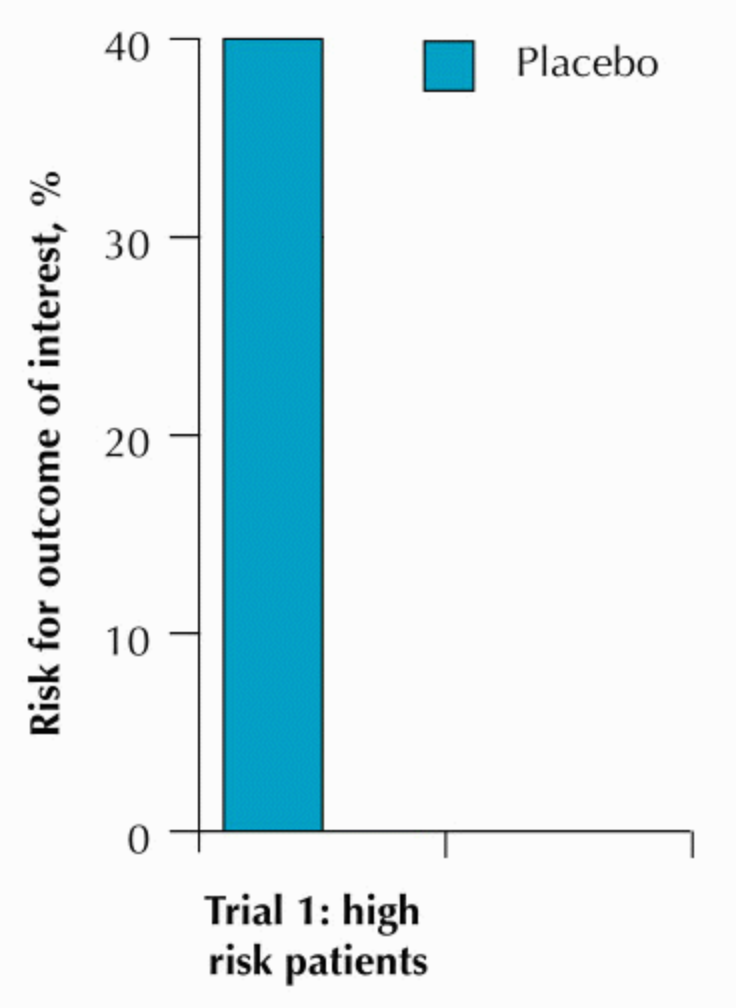
Absolute risk
V
Relative risk

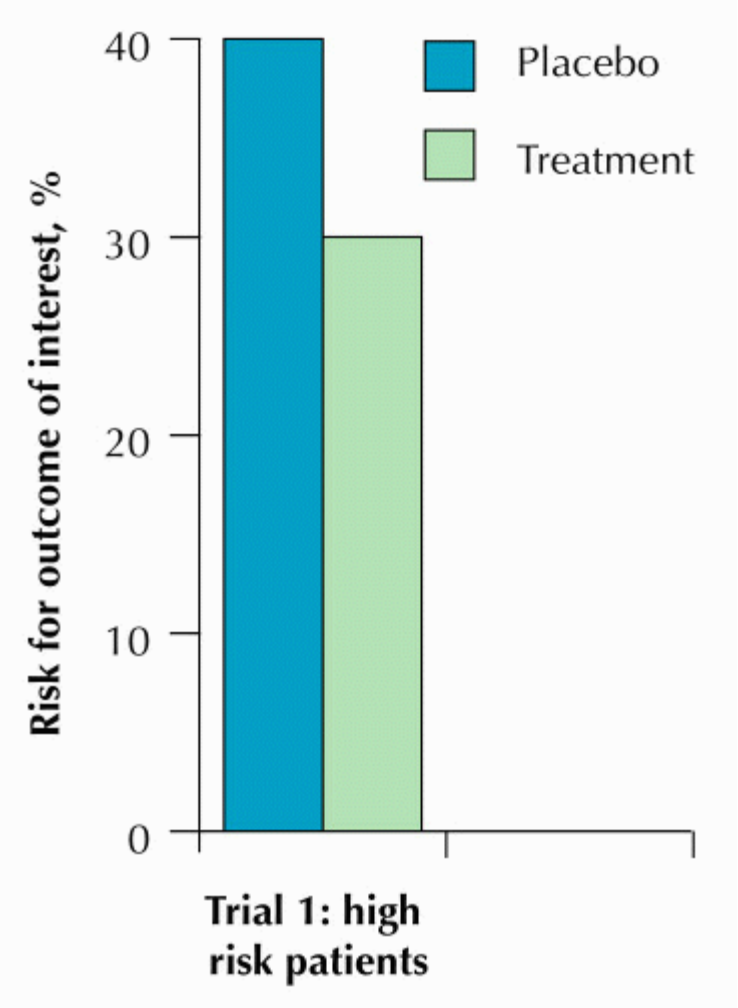
RIP

Trial 1: High Risk Patients



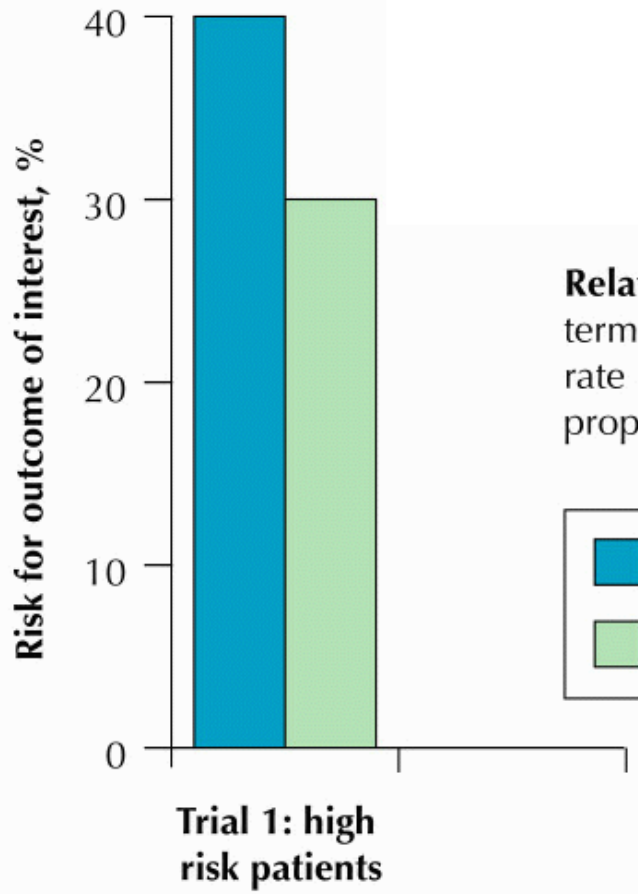
- New drug to reduce having a heart attack
- First studied in a high risk population:
  - People who have already had a heart attack
  - 40% death at 1 year among placebo

Trial 1: High Risk Patients



- New drug to reduce having a heart attack
- First studied in a high risk population:
  - People who have already had a heart attack
  - 40% death at 1 year among placebo
  - 30% mortality among treated
- How would you describe the effect of the new drug?

Trial 1: High Risk Patients



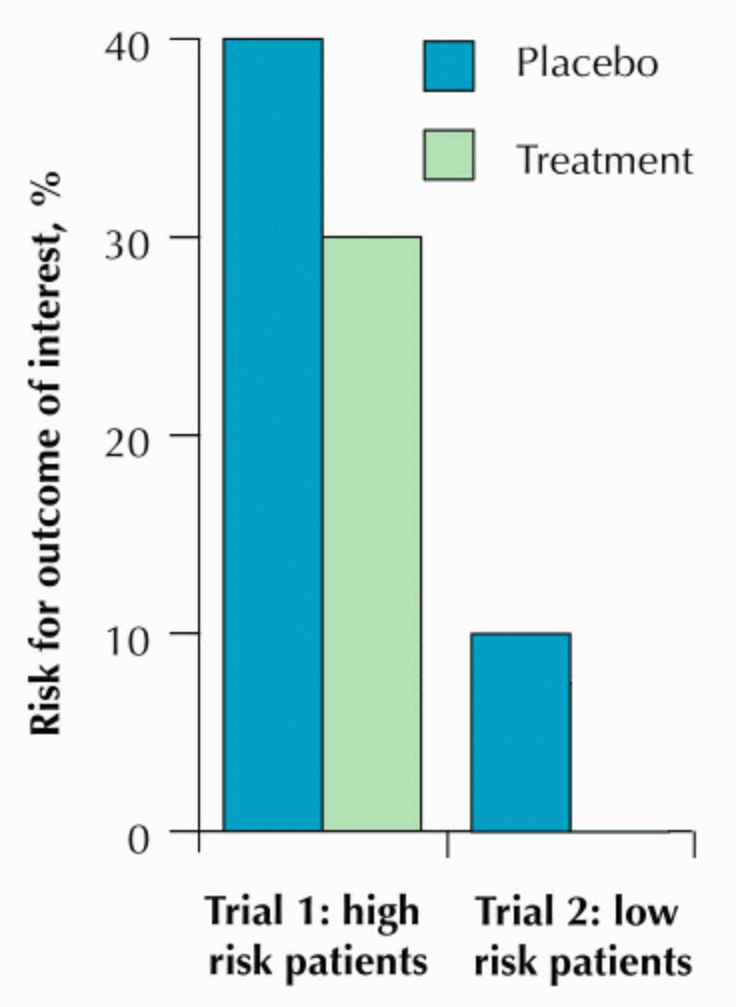
Relative risk reduction is the difference between the event rates in relative terms. Here, the event rate in the treatment group is 25% less than the event rate in the control group (i.e., the 10% absolute difference expressed as a proportion of the control rate reduction is 10/40 or 25% less.)

Placebo

Treatment

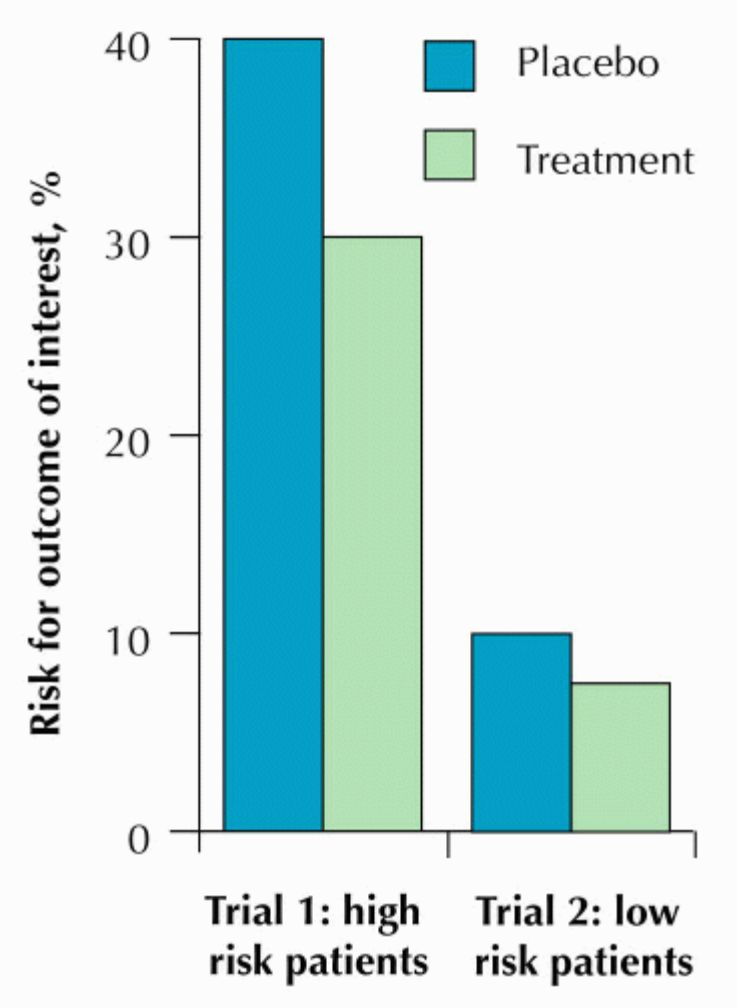
RIP

Trial 2: Low Risk Patients



- New drug to reduce having a heart attack
- Later studied in a lower risk population:
  - 10% death at 1 year with placebo

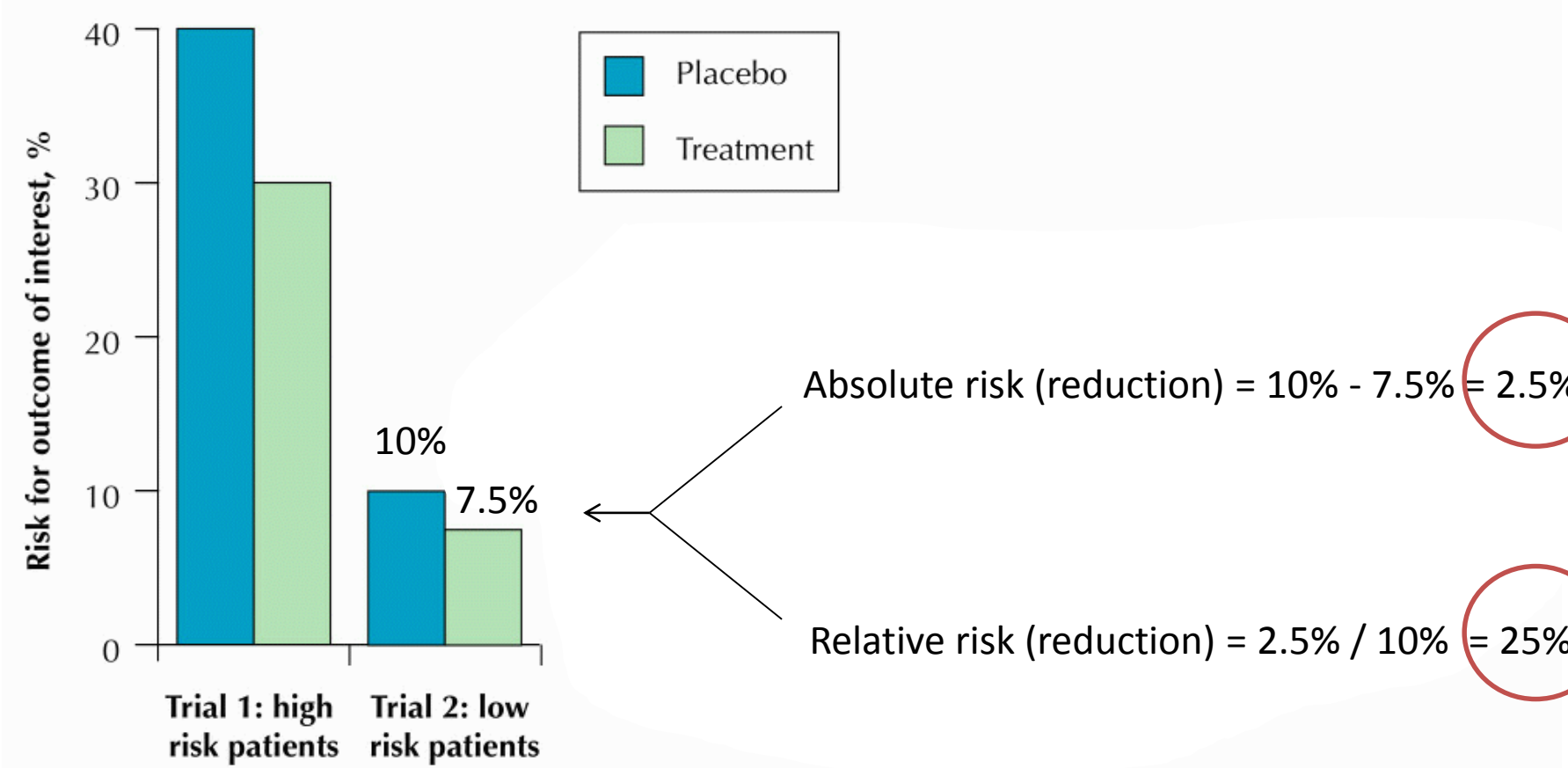
Trial 2: Low Risk Patients



- New drug to reduce having a heart attack
- Later studied in a lower risk population:
  - 10% death at 1 year with placebo
  - 7.5% death among treated
- How would you describe the effect of the new drug?

Ref: http://www.cche.net/usersguides/ebm_tips.asp

Trial 2: Low Risk Patients



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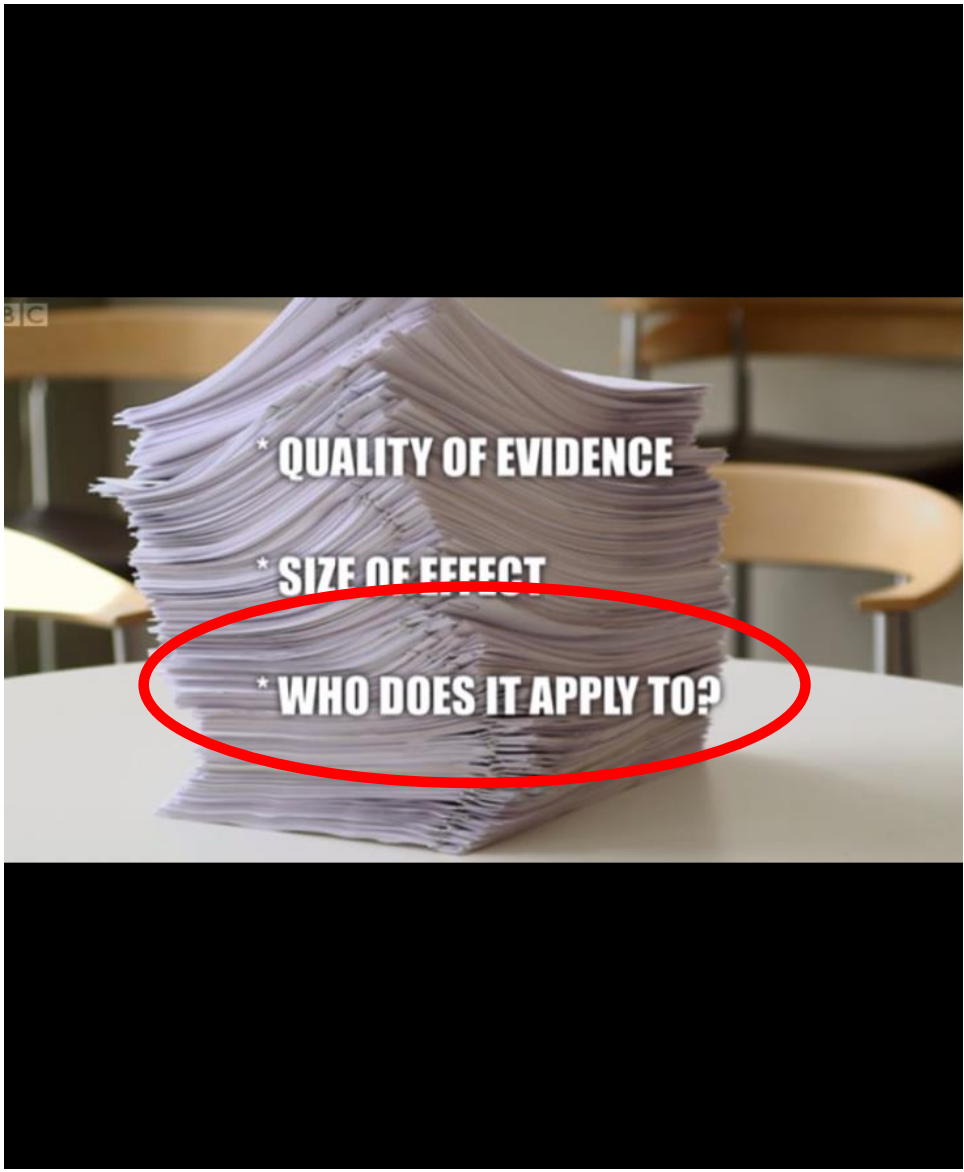

* QUALITY OF EVIDENCE
* SIZE OF EFFECT
* WHO DOES IT APPLY TO?

Risks
Benefits

Number needed to treat

&

Number needed to harm

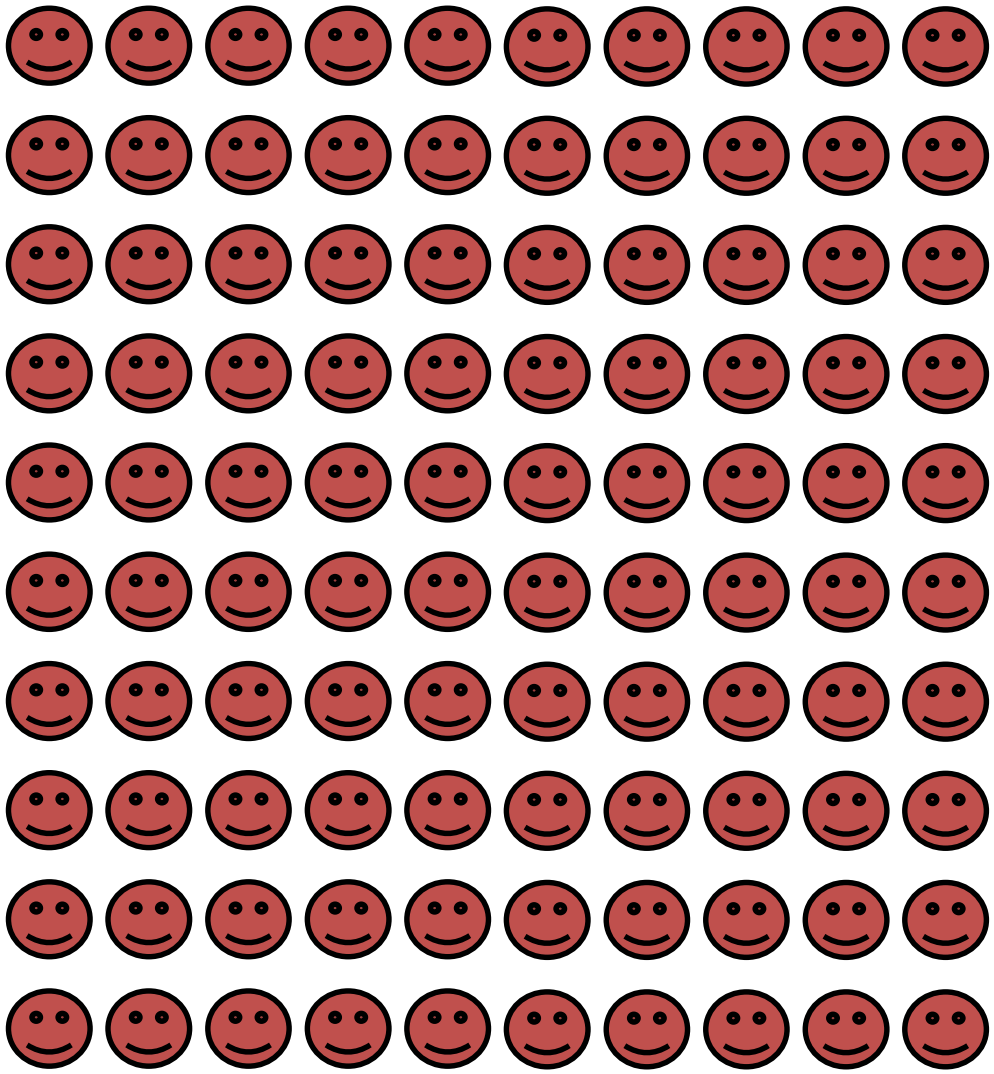
Number needed to treat

- the number of patients you need to treat to prevent one additional bad outcome (death, stroke, etc.).

Number needed to harm

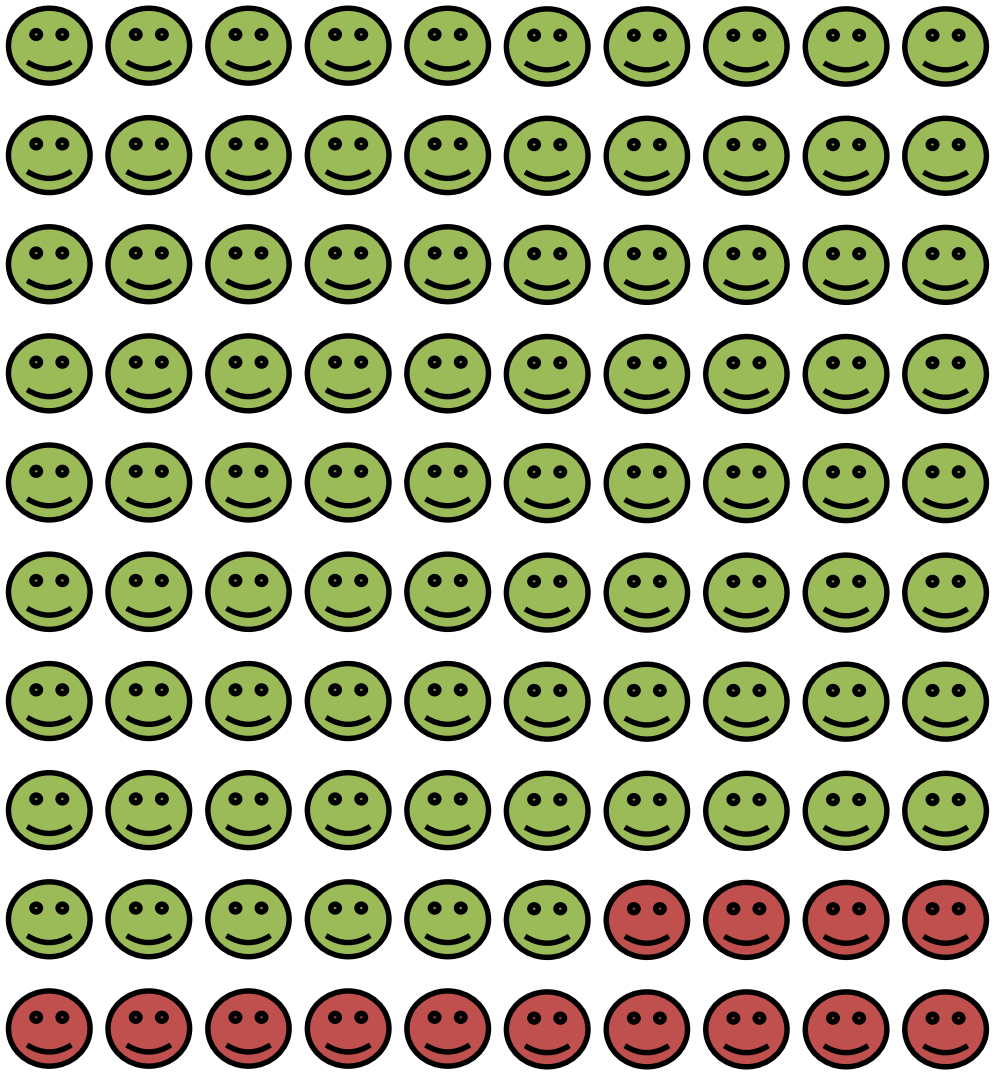
- The number of patients that need to be exposed to a risk factor (e.g a treatment) to cause harm in one patient who would not otherwise have been harmed

Antibiotics for pain in an ear infection?



http://www.nntonline.net/visualrx/examples/

Antibiotics for pain in an ear infection?

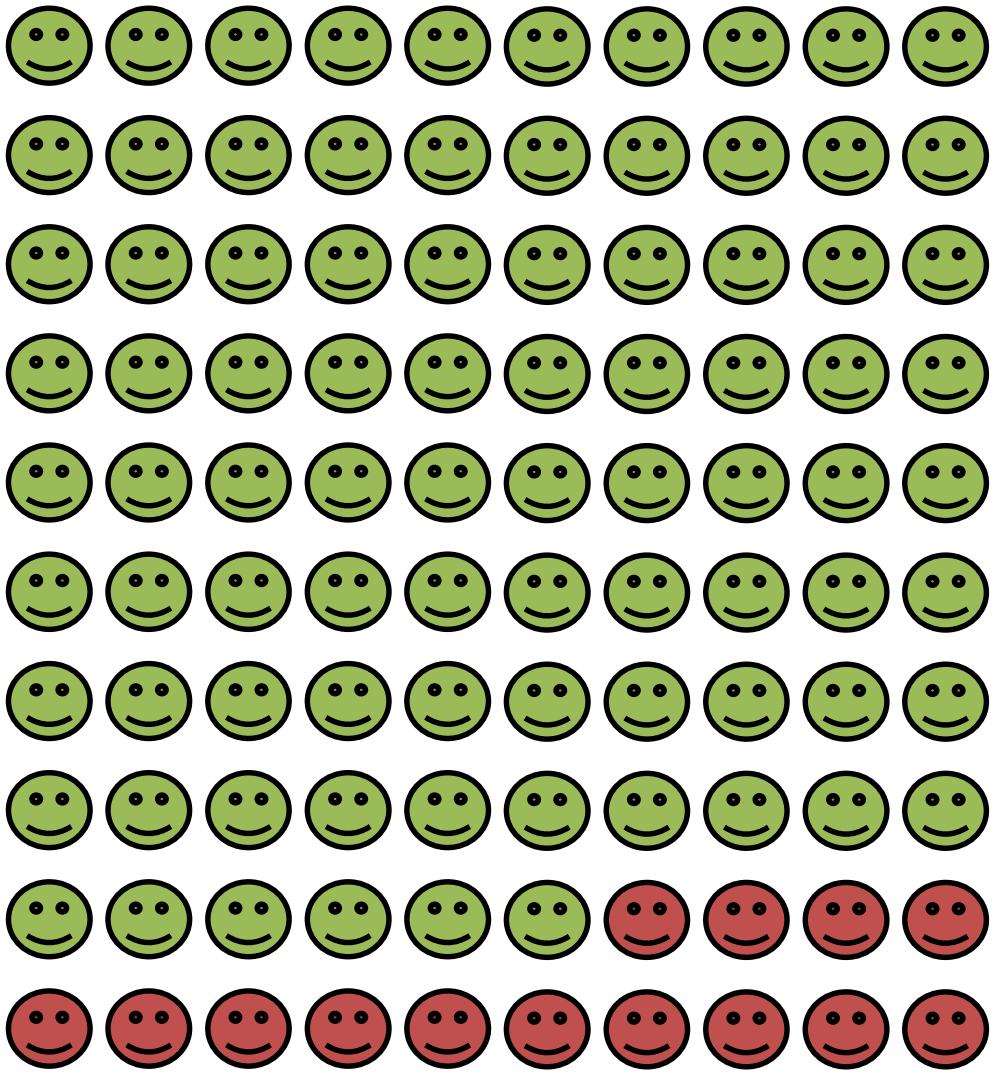


No antibiotics

Pain free by day 2 to 7 = **86**

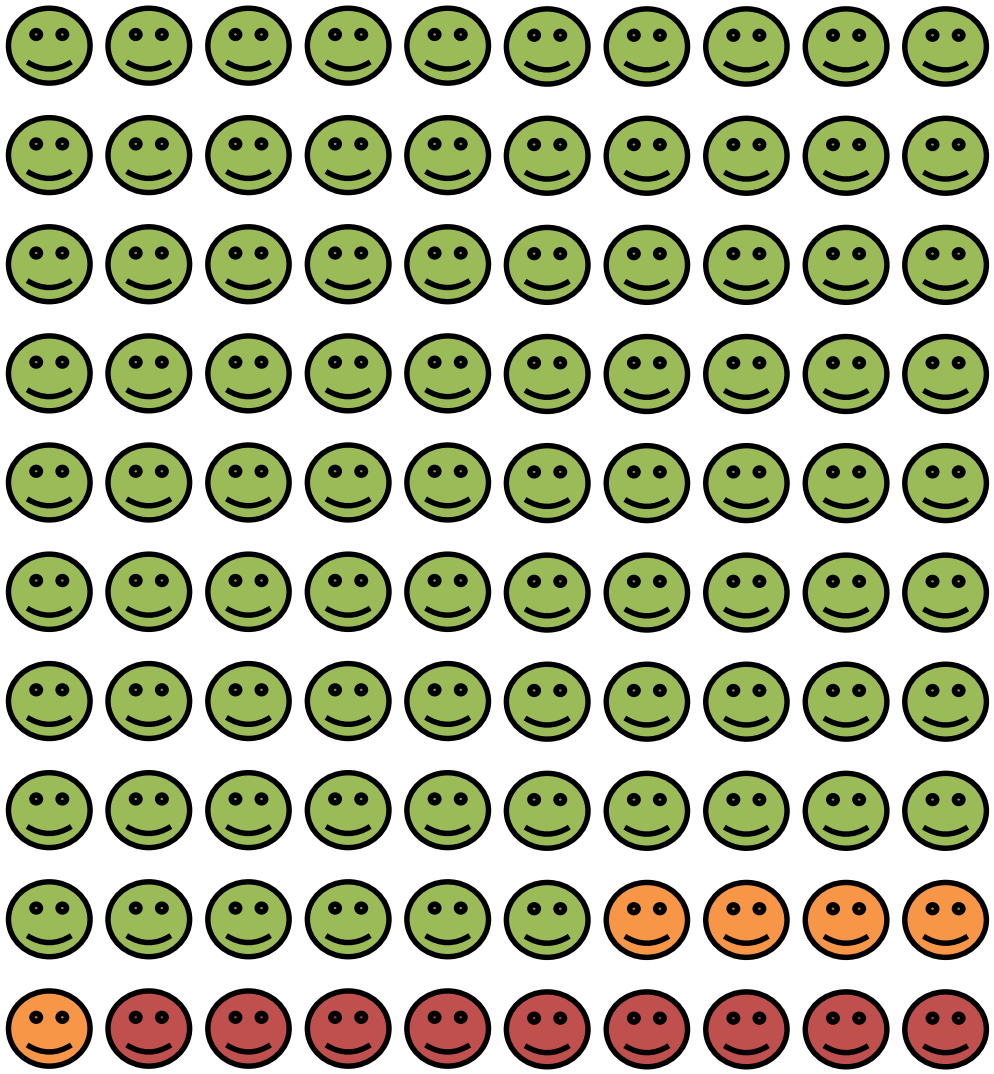
Still in pain = **14**

Antibiotics for pain in an ear infection?



Antibiotics

Antibiotics for pain in an ear infection?



Antibiotics

Pain free by day 2 to 7 = **91**

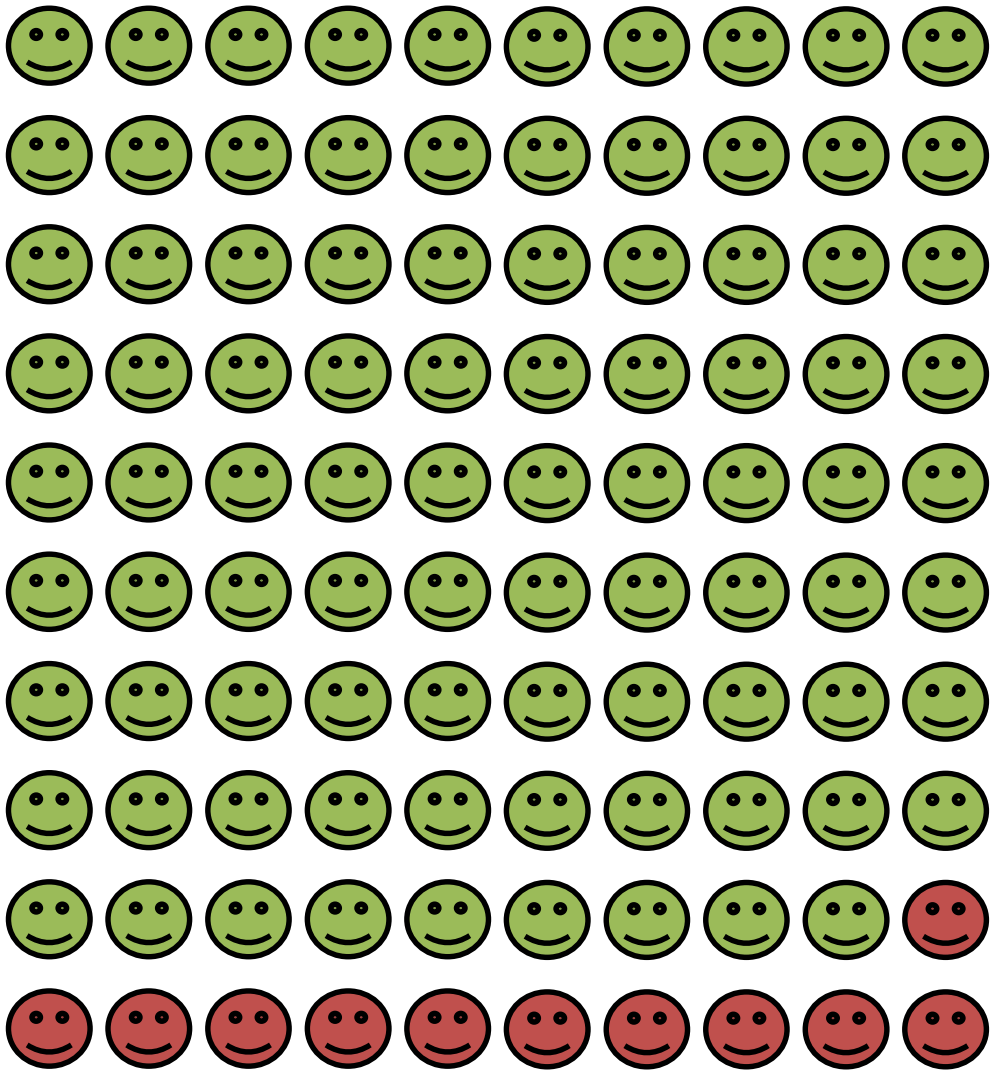
Still in pain = **9**

5 extra children free from pain
100 children treated

NNT = 20

Risks
Benefits

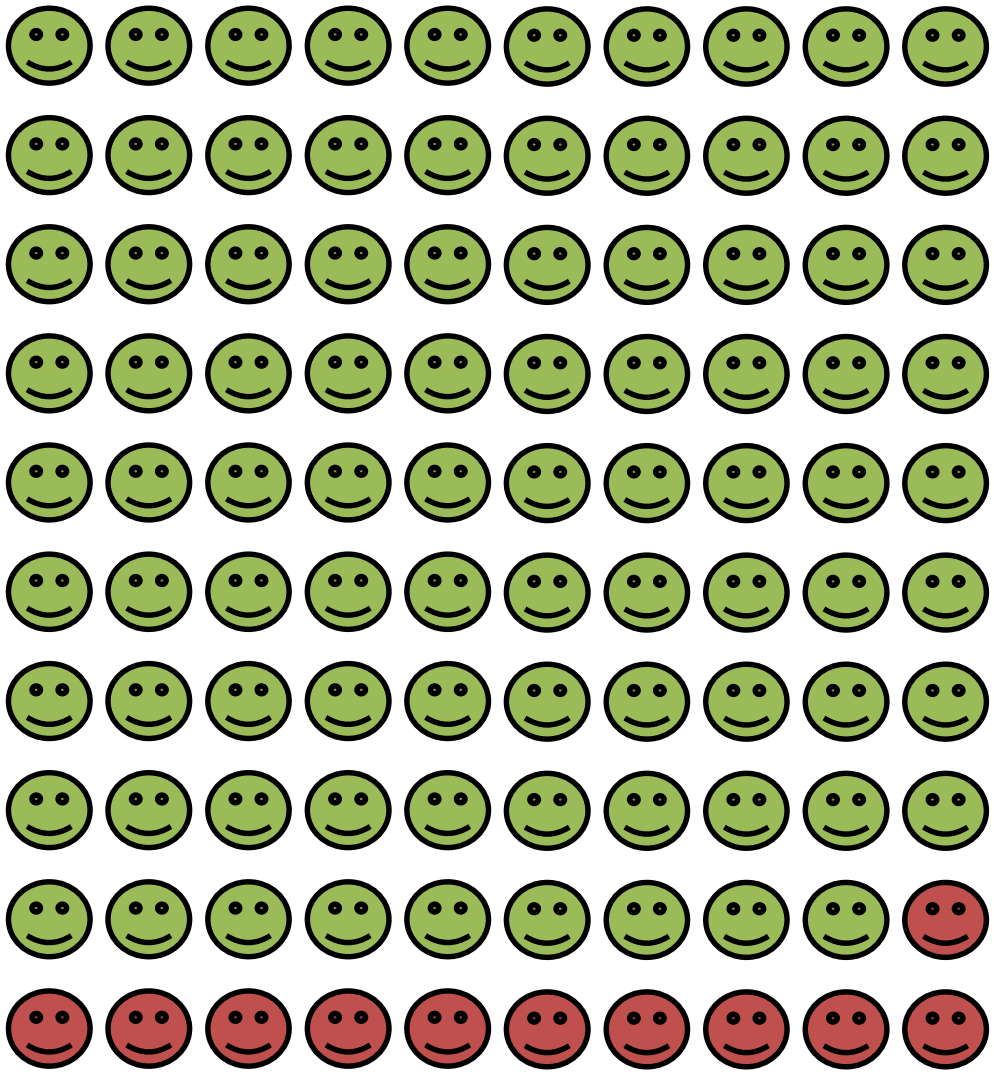
Antibiotics for pain in an ear infection?



No antibiotics

diarrhoea, vomiting or a rash
= 11

Antibiotics for pain in an ear infection?



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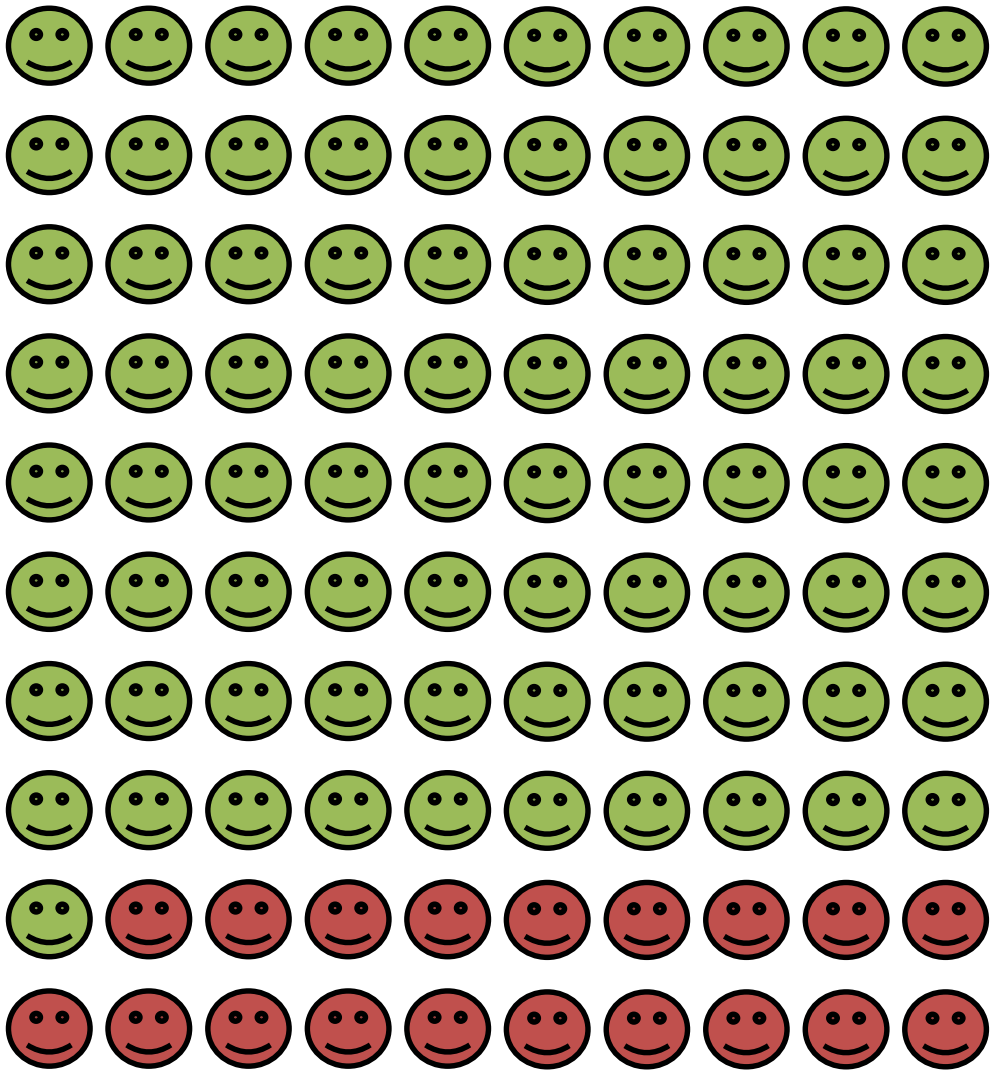


Antibiotics

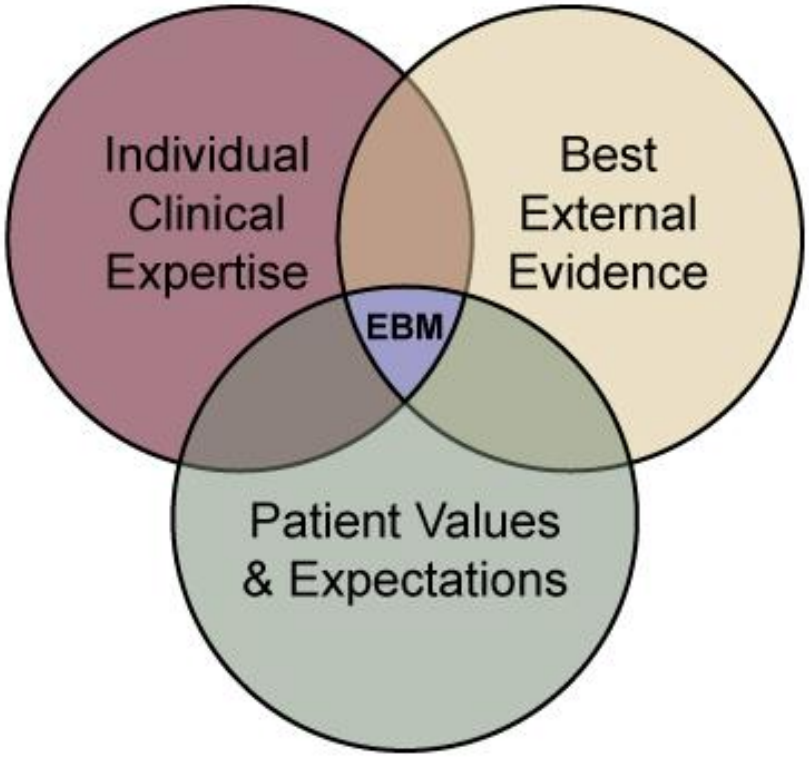
diarrhoea, vomiting or a rash
= 11

+ another = 8

8 extra children
diarrhoea, vomiting or a rash

100 children treated

NNH = 13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STATINS SLASH CANCER RISK

Wonder pill cuts chance of getting disease by 40% says new study

By Jo Willey Health Com

POWERFUL statins [illegible] day by millions of people to slash the risk of heart disease and stroke are also a potent cancer buster, new research has found.

A daily dose of the cholesterol-lowering tablets has now been shown to dramatically cut the chance of developing deadly liver cancer.

The superpills – costing as little as 40p a day – are a cheap and effective drug taken by at least eight million Britons to cut their levels of artery-clogging cholesterol and protect them against heart attacks, heart disease and strokes.

Scientists have found that taking statins on a regular basis reduces the chance of developing a tumour by more than 40 per cent compared to those not on the pills.

The discovery is the latest evidence to hail the benefits of the tablets in tackling cancer and could now play a major role in slashing the death toll from the disease.

Experts are already calling for all people over the age of 50 to be routinely prescribed statins to ward off a host of chronic and potentially

TURN TO PAGE 4

EXCLUSIVE

ESTHER SURVIVES SAVILE SCANDAL THANKS TO THE DAILY EXPRESS

SEE PAGE 13

Who does this apply to?

Absolute or relative measure?

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Boyzone star Ronan Keating splits from wife after 12 years

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Shares hit in panic over euro

SEE PAGE SEVEN

STATINS CAN BE RISK TO HEALTH

But drug is still a life saver

HEART drugs used by millions of patients can cause cataracts, liver damage and kidney failure, according to new research.

Lianne Smith, inset, with hardened artist yesterday