An introduction to Evidence-Based Medicine (EBM)

Lynda Ware
Senior Fellow in General Practice
Cochrane UK
Evidence-Based Medicine

Two chocolate bars a day can *slash* the risk of heart disease and stroke really?
Does bacon cause cancer?
Evidence-based Medicine (EBM)

• What is it?

• Why is it important?

• Where can we find it? … and some examples of where we might not!
What is Evidence-Based Medicine (EBM)?

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

Why is EBM important?
The common cold
What can help relieve or prevent a cold?

- Vitamin C
- Vitamin D
- Garlic
- Echinacea
- Nasal steroids
- Nasal decongestants used alone
- Antibiotics
- Honey
- Antihistamines
- Oral antihistamine / decongestant / analgesic combinations
- Non steroidal anti-inflammatory drugs (NSAIDs)
- Vaccines (to prevent colds)
- Steam inhalation
- Paracetamol
What can help prevent or relieve a cold?

- Vitamin C
- Vitamin D
- Garlic
- Echinacea
- Nasal steroids
- Antihistamines
- Oral antihistamine / decongestant / analgesic combinations
- Nasal decongestants used alone
- Antibiotics
- Honey
- Non steroidal anti-inflammatory drugs (NSAIDs)
- Vaccines (to prevent colds)
- Steam inhalation
- Paracetamol
Vitamin D supplementation to prevent acute respiratory tract infections

*BMJ 2017*
Dr Benjamin Spock and cot death
Thalidomide Tragedy

‘Boy born with affected limbs’, by Unknown Author is licensed under CC BY-ND

‘Child affected by Thalidomide’, by Unknown Author is licensed under CC BY-SA
Does a treatment work? Is it safe?
HPV vaccination
Is the HPV vaccine effective and safe in preventing cervical cancer?

**Population** – adolescent girls and women aged 15 to 26 years

**Intervention** – HPV vaccines (at least one dose of bivalent or quadrivalent vaccines)

**Comparison** – Placebo vaccine

**Outcomes** – 1) CIN2 and above (cervical precancer); 2) cervical cancer; 3) adverse effects (minor and severe); 4) incidence of HPV infection

**Time** - follow-up ongoing
There is high-certainty evidence that HPV vaccines protect against cervical precancer in young women, particularly those vaccinated aged 15 to 26, and that they do not increase the risk of serious adverse events.

Cochrane Review; 26 studies with 73,428 girls and women, most aged under 26. Two types of HPV vaccine were compared with a dummy vaccine and their safety and effectiveness at protecting against cervical precancer and HPV 16/18 infection assessed. Women were followed up for up to 8 years; longer follow-up is needed to monitor the impact on cervical cancer.
HPV vaccine 'offers chance' of wiping out cervical cancer in rich countries

Study shows vaccine has greatly reduced infections among girls and young women

⚠️ The human papilloma virus can cause cervical cancer. Vaccination has only been available for 10 years.
Photograph: BSIP/UIG/Getty Images
Can we believe everything we read?
Does bacon cause cancer?
Processed meat:

‘Processed meat was classified as carcinogenic to humans (Group 1), based on sufficient evidence in humans that the consumption of processed meat causes colorectal cancer.’

An analysis of data from 10 studies estimated that every 50 gram portion of processed meat eaten daily increases the risk of colorectal cancer by about 20%.
IARC CARCINOGENIC CLASSIFICATION GROUPS

GROUP 1
Causes cancer

GROUP 2A
Probably causes cancer

GROUP 2B
Possibly causes cancer

GROUP 3
Not classifiable as a cause of cancer

GROUP 4
Probably not a cause of cancer

Processed meats have been given Group 1 classification
Includes Salami, Bacon, Sausages and hot dogs

Red meats have been given Group 2A classification
Pork, Beef, Lamb

(Does not include chicken or fish)

These categories represent how likely something is to cause cancer in humans, not how many cancers it causes.
Bacon, burgers and sausages are a cancer risk, say world health chiefs: Processed meats added to list of substances most likely to cause disease alongside cigarettes and asbestos

- Fresh red meat is also due to join WHO 'encyclopaedia of carcinogens'
- Rulings will send shock waves through farming and fast food industries
- Could lead to new dietary guidelines and warning labels on bacon packs
Banger out of order: Sausages and bacon top cancer list

Processed meats damned by World Health Organization

BY TOM GOODENOUGH | 26th October 2015, 5:57 pm

EATING just one-and-a-half sausages or two rashers of bacon a day could increase your risk of cancer by up to 18 per cent, world health experts warned yesterday.
'If people can avoid it, they should': Now cancer expert warns Britons to cut out processed meat altogether amid fears bacon and sausages are as dangerous as cigarettes

- Britons should try to avoid bacon, sausages and other cured meats
- They are as big a cancer threat as cigarettes, experts have warned
- A major announcement by the WHO on Monday is expected to declare that
- Just four portions a week increases the risk of bowel cancer by 40%

By SOPHIE BORLAND and FIONA MACRAE FOR THE DAILY MAIL
PUBLISHED: 01:23, 24 October 2015 | UPDATED: 09:10, 24 October 2015
Processed meats pose same cancer risk as smoking and asbestos, reports say

WHO expected to highlight dangers of bacon, sausages, ham and burgers – and even fresh red meat is to be listed as unhealthy
What is the evidence behind the claim?

- What kind of studies provided the data (e.g. RCTs? observational studies?)
- Who were the participants?
- Might there be any harms in removing processed meat from our diet?
- How do the risks compare? (e.g. between eating processed meat and smoking)
- Are we given information about our personal risk?
How do the risks compare?
34,000 deaths per year worldwide attributable to processed meat

1,000,000 deaths per year worldwide attributable to smoking

THE NUMBER OF CANCERS PER YEAR IN THE UK THAT COULD BE PREVENTED IF...

NO-ONE SMOKED

= 1,000 PEOPLE

64,500 FEWER CASES

NO-ONE ATE ANY PROCESSED OR RED MEAT

8,800 FEWER CASES

Source: cruk.org/cancerstats
What is the risk to me?
An analysis of data from 10 studies estimated that every 50 gram portion of processed meat eaten daily increases the risk of colorectal cancer by about 20%
Out of 100 people who do not eat processed meat daily…

…5 are expected to get bowel cancer

(= 5%)
Out of 100 people who eat processed meat daily…

… 6 are expected to get bowel cancer

(= 6%)
Two chocolate bars a day can SLASH the risk of heart disease and stroke

New research suggests either milk OR dark chocolate can lead to a 25% lower risk of heart disease and 22% lower risk of stroke but it’s not all good news for chocoholics.

Scientist-approved: Professor Phyo Myint said chocolate has beneficial components.
Where can we find reliable, evidence-based health information?
Useful evidence-based links

- Cochrane
  - cochranelibrary.com
  - evidentlycochrane.net
  - students4bestevidence.net
- patient.co.uk
- nice.org.uk
- askforevidence.org
- iHealthFacts
- senseaboutscience.org
- healthtalk.org
- nhs.uk
- NHS Choices

Interesting reading

- Testing Treatments
  Hazel Thornton, Imogen Evans, Iain Chalmers
- I think you’ll find it’s a bit more complicated than that
  Ben Goldacre

Get Involved

- Cochrane Crowd
  http://crowd.cochrane.org/
Thank you

Find out more at:
