

# **An introduction to Evidence-Based Medicine (EBM)**



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UK

# Evidence-Based Medicine

**Two chocolate bars a day  
can *slash* the risk of heart  
disease and stroke**

**really?**



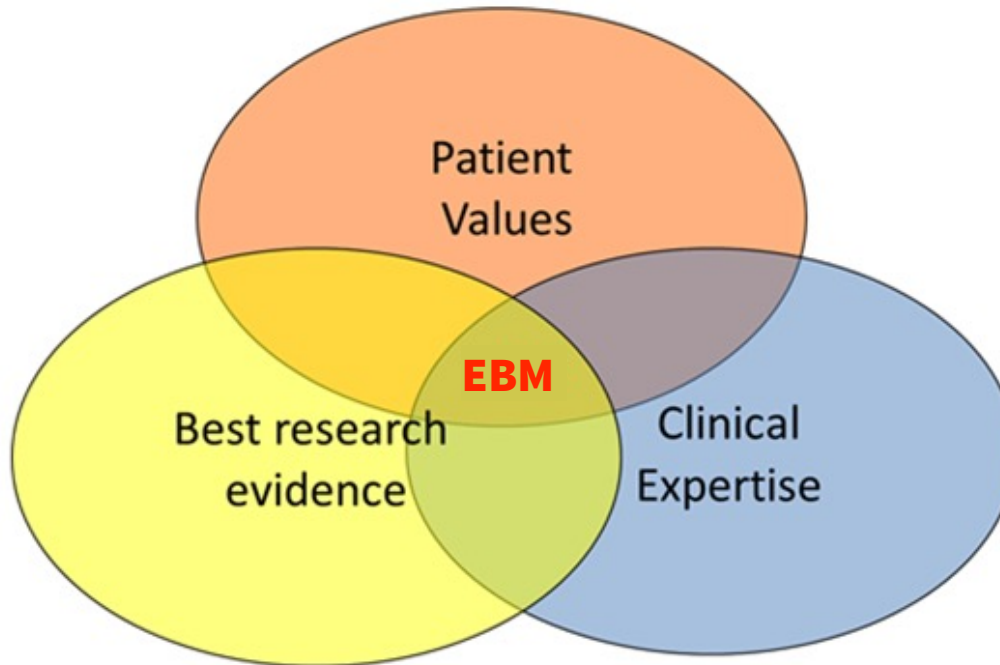


**Does bacon cause cancer?**

# 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)?



*Sackett D et al (2000): Evidence-Based Medicine. Churchill Livingstone*

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



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# **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

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[Cochrane Database of Systematic Reviews](#)

## **Vitamin C for preventing and treating the common cold**

Cochrane Systematic Review - Intervention | Version published: 31 January 2013 [see what's new](#)

[Cochrane Database of Systematic Reviews](#)

## **Echinacea for preventing and treating the common cold**

Cochrane Systematic Review - Intervention | Version published: 20 February 2014 [see what's new](#)

[Cochrane Database of Systematic Reviews](#)

## **Oral antihistamine-decongestant-analgesic combinations for the common cold**

Cochrane Systematic Review - Intervention | Version published: 15 February 2012 [see what's new](#)

[Cochrane Database of Systematic Reviews](#)

## **Antihistamines for the common cold**

Cochrane Systematic Review - Intervention | Version published: 29 November 2015

[Cochrane Database of Systematic Reviews](#)

## **Honey for acute cough in children**

Cochrane Systematic Review - Intervention | Version published: 10 April 2018 [see what's new](#)

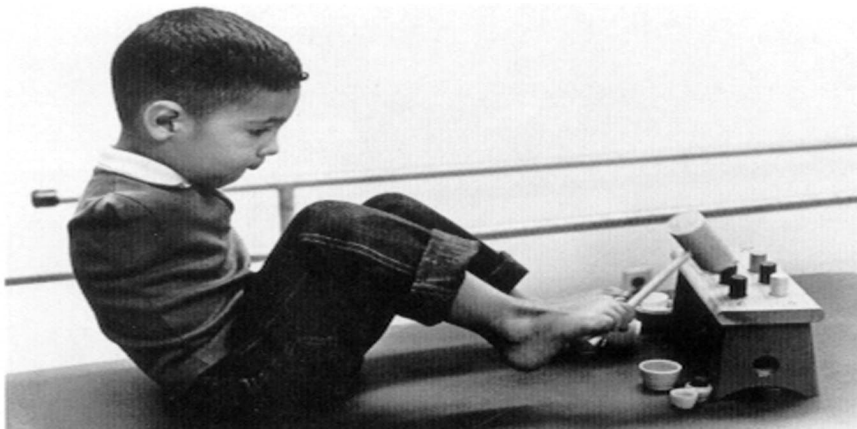
## **Vitamin D supplementation to prevent acute respiratory tract infections**

*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](#)



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**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 vaccination to prevent cervical cancer



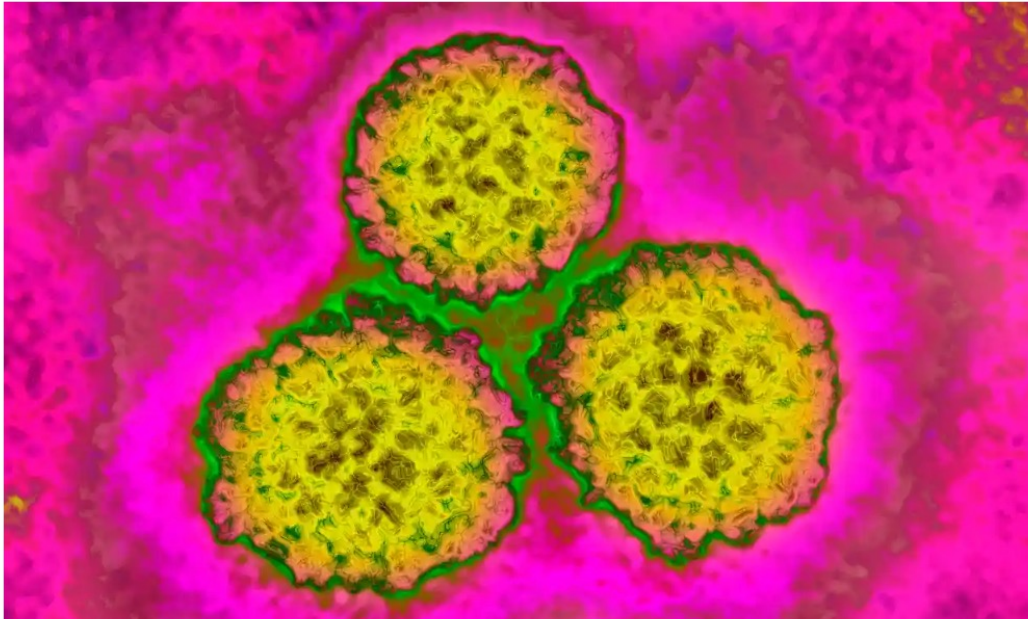


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UK edition ▾  
**The  
Guardian**

## 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?**

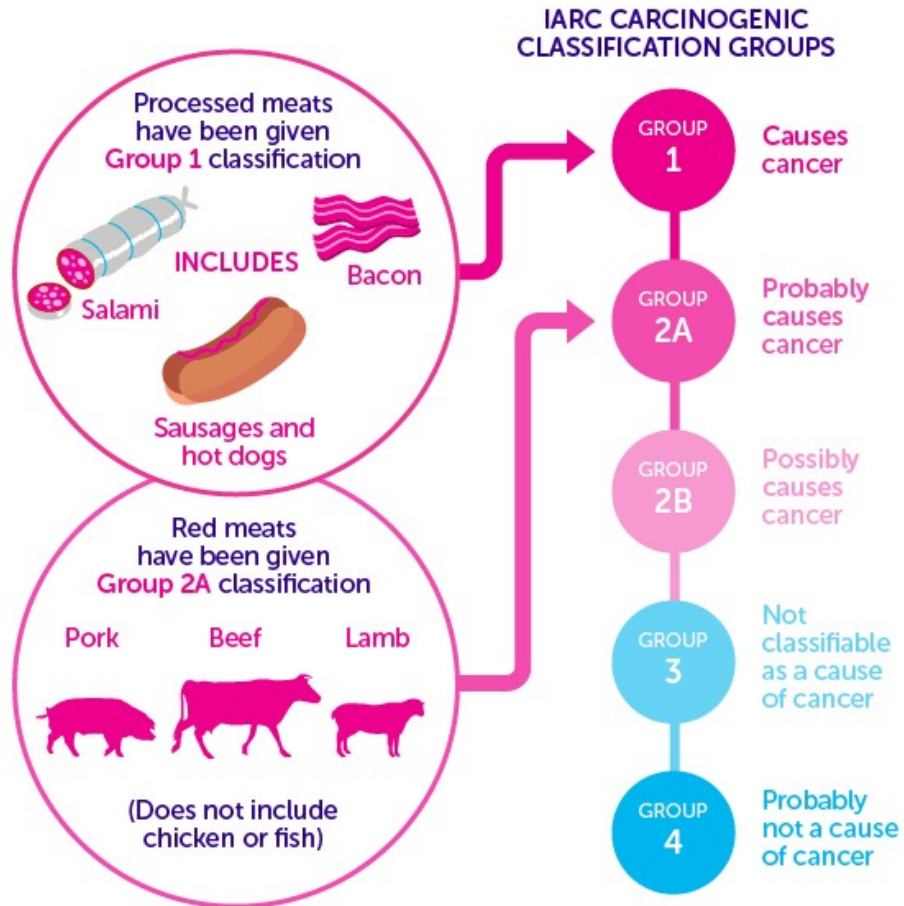


**World Health  
Organization**

## **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%.**



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



COMMENT  
NOW

**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%

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By [SOPHIE BORLAND](#) and [FIONA MACRAE FOR THE DAILY MAIL](#)

**PUBLISHED:** 01:23, 24 October 2015 | **UPDATED:** 09:10, 24 October 2015

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## 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...



 = 1,000 PEOPLE

NO-ONE ATE  
ANY PROCESSED  
OR RED MEAT



Source: [cruk.org/cancerstats](http://cruk.org/cancerstats)

# What is the risk to me?





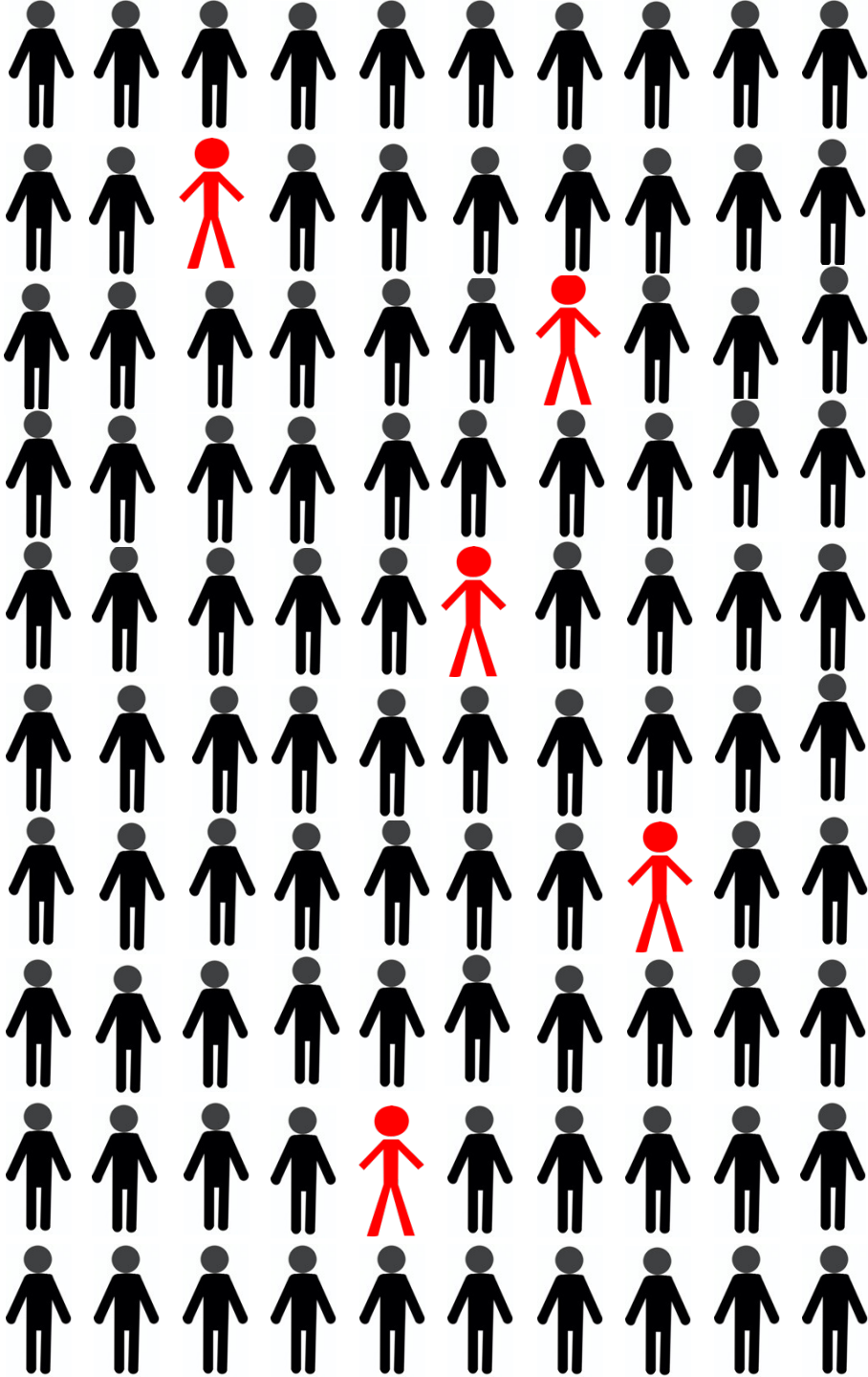
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**An analysis of data from 10 studies estimated that every 50 gram portion of processed meat eaten daily increases the risk of colorectal cancer by about 20%**



**Out of 100 people who  
do not eat processed  
meat daily...**

**... 5 are expected to get  
bowel cancer  
(= 5%)**







M · News · Technology & Science · Chocolate

# Two chocolate bars a day can SLASH the risk of heart disease and stroke

23:00, 15 JUNE 2015 | UPDATED 09:27, 16 JUNE 2015 | BY ANDREW GREGORY

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

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SUPERMOON

'Supermoon' lunar eclipse will take place on September 28 - but it won't mean the end of the world



SPACE

Astronomers confirm two supermassive black holes will collide with a force powerful enough to disturb 'the fabric of space-time'



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**Where can we find reliable, evidence-based health information?**



## Useful evidence-based links

- Cochrane
  - [cochranelibrary.com](http://cochranelibrary.com)
  - [evidentlycochrane.net](http://evidentlycochrane.net)
  - [students4bestevidence.net](http://students4bestevidence.net)
- [patient.co.uk](http://patient.co.uk)
- [nice.org.uk](http://nice.org.uk)
- [askforevidence.org](http://askforevidence.org)
- [iHealthFacts](http://iHealthFacts)
- [senseaboutscience.org](http://senseaboutscience.org)
- [healthtalk.org](http://healthtalk.org)
- [nhs.uk](http://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:

<http://bit.ly/CochraneUK-Schools-Talks>

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