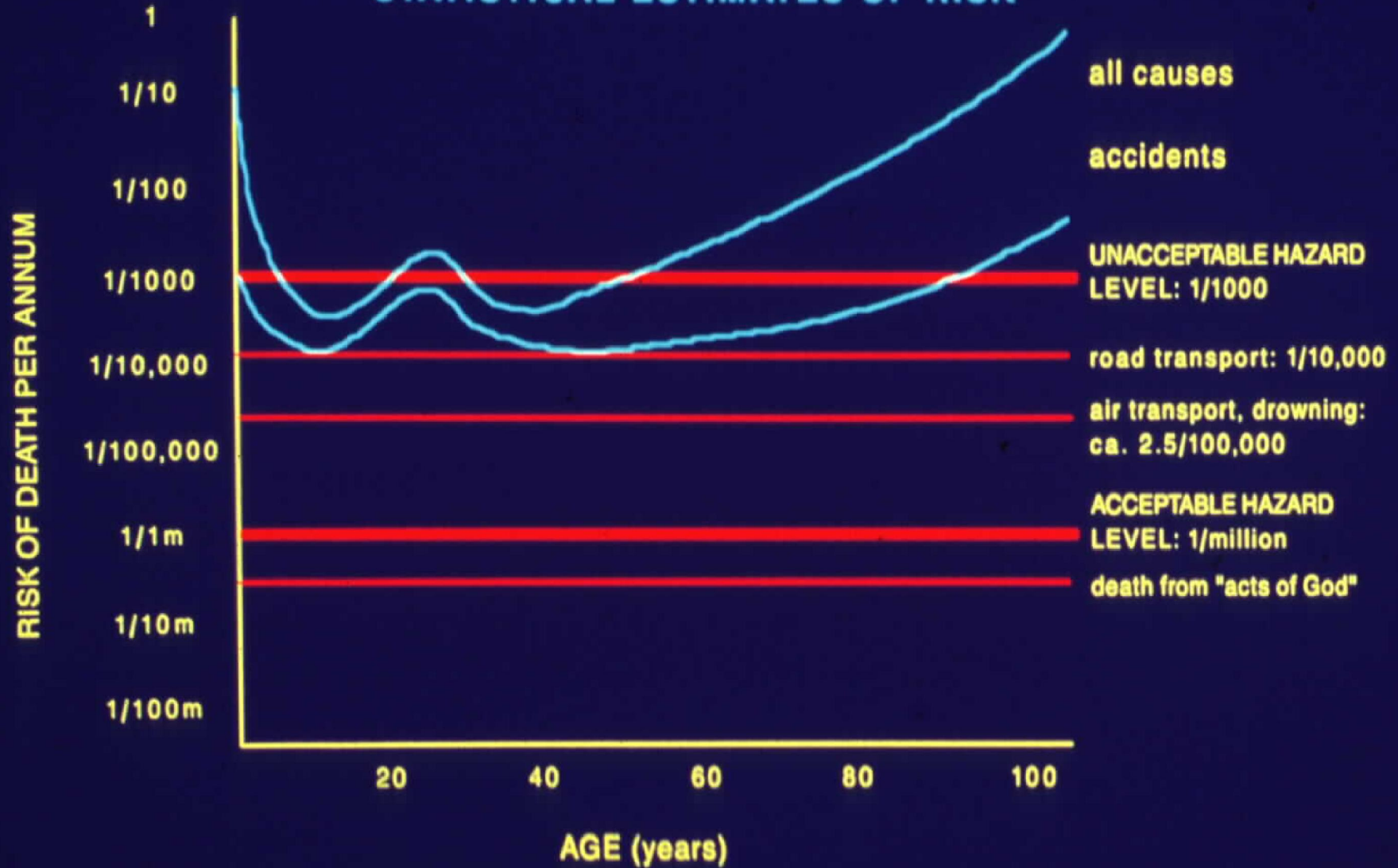


# Changes in death rate with time (Unichort)

	<b>M</b>	<b>F</b>
• 0-1	266	359
• 5-9	1883	3141
• 10-14	641	1415
• 20-24	478	1261
• 25-29	472	1150
• 30-34	398	790
• 35-39	282	505
• 40-44	198	302
• 60-64	24	38

# STATISTICAL ESTIMATES OF RISK



# Sense of Smell

Odour perception (*vs.* 5 years)

82% at 20yrs

38% at 60 yrs

28% at 80 yrs

# Framing

*New York Times (2004)* “Aspirin is seen as preventing breast cancer” - reduced by 20%

*20/1000* between 55 and 64 will develop b.c. in 5 years.

20% reduction from aspirin = 16/1000

No aspirin *2% affected vs 1.6% affected*

# Framing

Women who do not take aspirin have a 98% chance of remaining free of breast cancer in the next five years; for women who do not the figure changes to 98.4%

**Vitamins E and C in the prevention of cardiovascular disease in men: the Physicians' Health Study II randomized controlled trial.**

**Sesso H D** et al. JAMA. 2008 Nov  
12;300(18):2123-33.

In this large, long-term trial of male physicians, neither vitamin E nor vitamin C supplementation reduced the risk of major cardiovascular events. These data provide no support for the use of these supplements for the prevention of cardiovascular disease in middle-aged and older men.

## Vitamin E in the primary prevention of cardiovascular disease and cancer: the Women's Health Study.

Lee IM et al JAMA. 2005 Jul 6;294(1):56-65.

600 IU of vitamin E every other day provided no overall benefit for major cardiovascular events or cancer and did not affect total mortality. These data do not support recommending vitamin E supplementation for cardiovascular disease or cancer prevention among healthy women

## Vitamins E and C in the prevention of prostate and total cancer in men: the Physicians' Health Study II randomized controlled trial.

[Gaziano JM](#), et al. JAMA. 2009 Jan 7;301:52-62.

In this large, long-term trial of male physicians, neither vitamin E nor C supplementation reduced the risk of prostate or total cancer. These data provide no support for the use of these supplements for the prevention of cancer in middle-aged and older men.

## Effects of long-term vitamin E supplementation on cardiovascular events and cancer: a randomized controlled trial.

Lonn. E et al. JAMA. 2005 293(11):1338-47.

In patients with vascular disease or diabetes mellitus, long-term vitamin E supplementation does not prevent cancer or major cardiovascular events and may increase the risk for heart failure.

# A. BRADFORD-HILL, 1965

- Strength of association
- Consistency
- Specificity
- Dose Response Relationship
- Plausibility
- Temporality
- Coherence
- Analogy
- Experimental evidence

# The Appendix

Comparative anatomy and phylogenetic distribution of the mammalian caecal appendix.

Smith HF et al (2009) J Evol. Biol. 22; 1984-1999

Functions as a “safe-house” for symbiotic gut organisms - preserves normal flora during gut infections.

## Mortality Rates Among Trichlorophenol Workers With Exposure to 2,3,7,8-tetrachlorodibenzo-p-dioxin.

Collins JJ et al, 2009. *Am. J Epidemiol.* 170:501–506.

1615 exposed workers, 1942-2003

All cancers at or below normal rates

NHL slightly (but non-significantly) raised

Tenuous link to soft tissue sarcoma - length of exposure

# Non Hodgkin Lymphoma

Household exposure to pesticides and risk of childhood malignancies: The ESCALE Study

Rudant J. et al (2007). Environ Health Perspectives 12;1787-93

Non-Hodgkin lymphoma OR 1.7

# RR:OR

## The ESCALE Study

1060 haematological malignancies

Increased risk of NHL (OR 1.8, CI. 1.3.-2.6)  
mainly Burkitt lymphoma

Mixed-cell Hodgkin lymphoma OR 4.1 (CI 1.4-  
11.8)

# RR:OR

Domestic and Farm-animal exposures and Risk of Non-Hodgkin lymphoma in the San Francisco Bay Area.

Tranah GJ et al (2008) *Cancer Epidemiology Biomarkers & Prevention*. 17;2382-2387

Pet owners had a reduced rate of NHL and diffuse large-cell lymphoma [OR 0.71 for NHL; OR 0.60 for DLCL].

# RR (OR)

Tranah GJ et al (2008)

1591 cases - 2515 controls

Ever having owned dogs or cats reduced risk of all NHL and DLCL

Cattle for more than 5 years - increased risk NHL

Cattle and pigs increased NHL and DLCL

# OR (RR)

Canadian male farm residents, pesticide safety handling practices, exposure to animals and non-Hodgins lymphoma.

Mc Duffie HH et al Am J Ind Med (2002) supp2, 54-61

Higher risk - More than 13 head of swine, raising bison, elk or ostriches

\*\*(Lower risk if they had had measles)

# Non Hodgkin Lymphoma

A heterogeneous collection - not an entity

ORIGINS - from the observation that HD was sensitive to radiation

Lukes and Collins - separate HL from NHL

Rappaport classification 1956, 1966

WHO “ 1982

REAL Revised European/American 1994

Lymphoma Classification

# Non-Hodgkin Lymphoma

2001 WHO “abolished” the HL/NHL distinction.

43 lymphomas - **properly described**

Mantle cell lymphoma - small cell, B -cell lymphoma (t11,14)

Breakpoint, chromosome 11 at Cyclin 1 gene.

MALT - small cell, B- cell lymphoma associated with *helicobacter pylori* infection.

# Reason and NHL

Khuder et al. (1998)

Reviewed 36 epidemiology studies investigating farming and NHL

Excess of NHL (RR 1.1 , Ci 1.03 -1.19)

Not in female farmers and only males living in the USA

# Reason and NHL

Boffetta and De Vocht (2007) 50  
papers

Small excess confirmed

Alexander et al (2007)

Review of 650 NHL papers focused on  
potential risk factors “no consistent  
associations with pesticides as a  
general category”

# NHL

Canadian male farm residents, pesticide safety handling practices, exposure to animals and non-Hodgins lymphoma.

Mc Duffie HH et al. Am J Ind Med (2002)  
supp2, 54-61

“multidisciplinary studies of NHL should include a comprehensive review of exposure to animals in sufficient detail to assess etiological mechanisms to explain putative associations between farm animals and NHL”

# Epidemiology

“The purpose of epidemiology is not to prove cause/effect relationships but to acquire knowledge about the determinants and distributions of disease. *This broad definition is useful but does not always represent the use to information from epidemiological studies is put*”.

Weed (2002).

# Calculating disease risk

Multiply relative risk by the average  
population disease risk

ie.  $RR\ 1.5 \times 1\% = 1.5\%$

**BUT**

How is the population disease risk determined?

# A. BRADFORD-HILL, 1965

- Strength of association
- Consistency
- Specificity
- Dose Response Relationship
- Plausibility
- Temporality
- Coherence
- Analogy
- Experimental evidence

# Questions

**Brewer GD, (2009). Book review "Science and Decisions". Science 325; 1075-1076**

1. Whats' the problem?
2. For which group is something a problem?
3. Who is making the decision?

# Questions

4. Why do a risk analysis if we already know what to do?
5. So what! (the attraction of spurious rigour)