



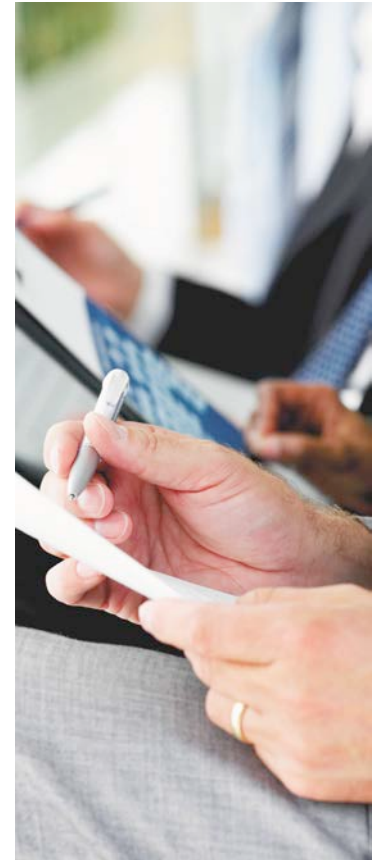
**World
Cancer
Research
Fund International**

Does the science support action?

5 February 2018

Martin Wiseman

**World Cancer Research Fund International
& University of Southampton**





Outline

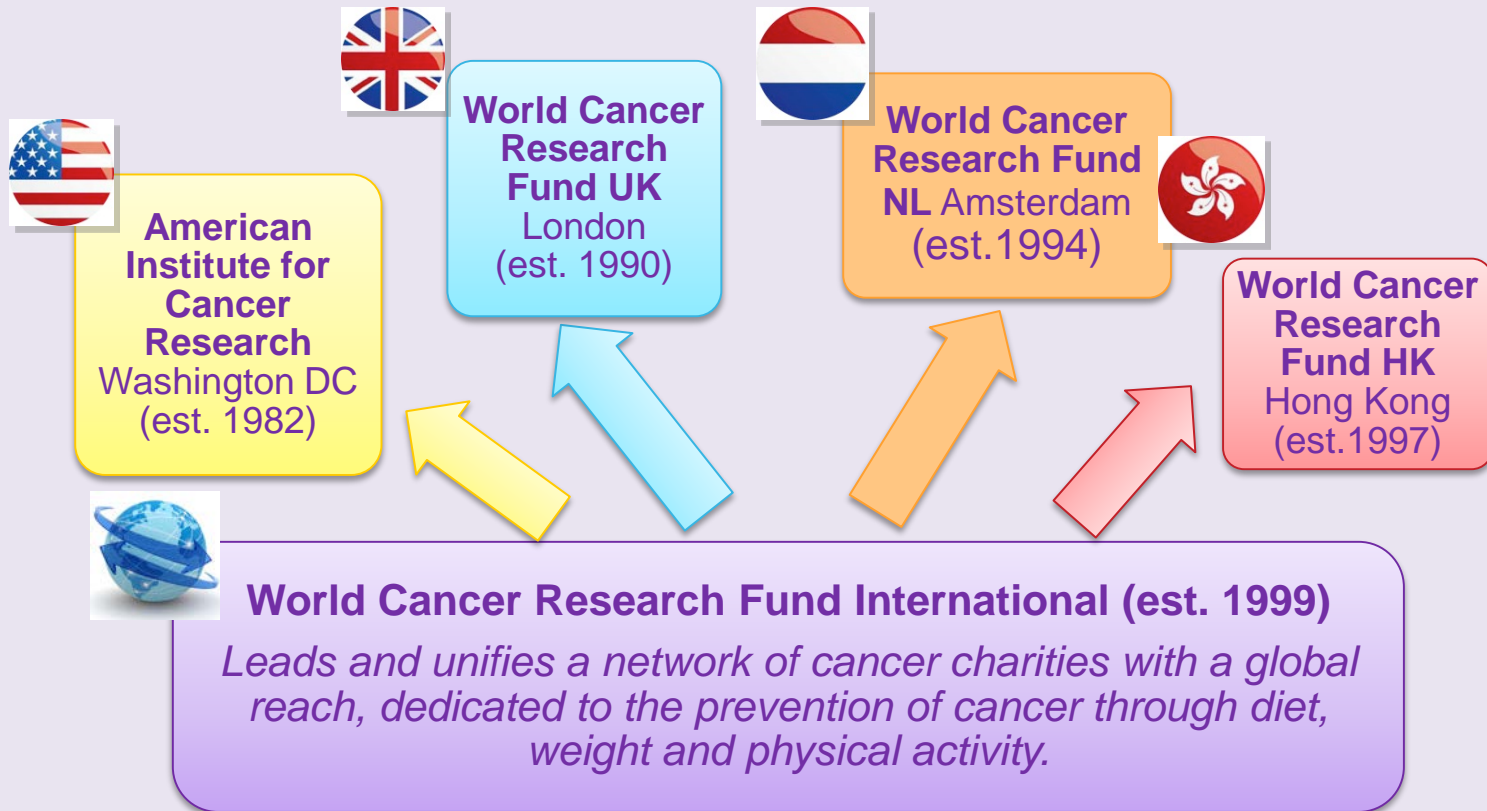
- Intro to WCRF
- What does the science tell us?
- Does it support action?
- Conclusion



Outline

- Intro to WCRF
- What does the science tell us?
- Does it support action?
- Conclusion

The World Cancer Research Fund Network



Who we are



AICR



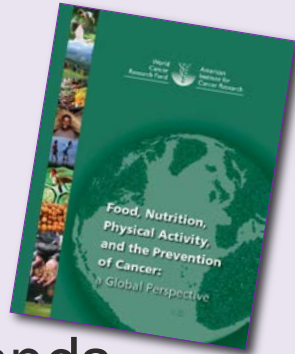
WCRF UK



WCRF Netherlands



WCRF Hong Kong



WCRF International



Analysing research on cancer
prevention and survival



What we do

Fund research on the relationship of diet, nutrition, physical activity and body weight to cancer risk

Interpret the accumulated scientific literature to derive Cancer Prevention Recommendations

Educate people through our national Health Information programmes

Advocate effective policies to help people and populations to reduce their chances of developing cancer



Outline

- Intro to WCRF
- What does the science tell us?
- Does it support action?
- Conclusion

- What sort of evidence is available?
 - Trials (randomised or non-randomised)
 - Cohorts
 - Case control
 - Ecological
 - Laboratory

Hierarchy of evidence

- **Meta-analysis of RCTs**
- **RCTs**
- **Non-randomised trials**
- **Observational**
 - Cohort
 - Case-control
 - Ecological
- **Opinion**

Hierarchy of evidence

- **RCTs**

- Good for testing discrete interventions in specific populations, over short periods
- High internal validity
- Questionable external validity

- **Observational**

- Good for identifying potential aetiological factors
- Good external validity
- Subject to bias and confounding – questionable internal validity



World
Cancer
Research
Fund International



**Sir Austin
Bradford Hill**

1897-1991





Meeting January 14 1965

President's Address

The Environment and Disease: Association or Causation?

by Sir Austin Bradford Hill CBE DSC FRCP(hon) FRS
(Professor Emeritus of Medical Statistics,
University of London)

Amongst the objects of this newly-founded Section of Occupational Medicine are firstly 'to provide a means, not readily afforded elsewhere, whereby physicians and surgeons with a special knowledge of the relationship between sickness and injury and conditions of work may discuss their problems, not only with each other, but also with colleagues in other fields, by holding joint meetings with other Sections of the Society'; and, secondly, 'to make available information about the physical, chemical and psychological hazards of occupation, and in particular about those that are rare or not easily recognized'.

At this first meeting of the Section and before, with however laudable intentions, we set about instructing our colleagues in other fields, it will be proper to consider a problem fundamental to our own. How in the first place do we detect these relationships between sickness, injury and conditions of work? How do we determine what are physical, chemical and psychological hazards of occupation, and in particular those that are rare and not easily recognized?

There are, of course, instances in which we can reasonably answer these questions from the general body of medical knowledge. A particular, and perhaps extreme, physical environment cannot fail to be harmful; a particular chemical is known to be toxic to man and therefore suspect on the factory floor. Sometimes, alternatively, we may be able to consider what *might* a particular environment do to man, and then see whether such consequences are indeed to be found. But more often than not we have no such guidance, no such means of proceeding; more often than not we are dependent upon our observation and enumeration of defined events for which we then seek antecedents. In other words we see that the event B is associated with the environmental feature A, that, to take a specific example, some form of respiratory illness is associated with a dust in the environment. In what circumstances can we pass from this

observed *association* to a verdict of *causation*? Upon what basis should we proceed to do so?

I have no wish, nor the skill, to embark upon a philosophical discussion of the meaning of 'causation'. The 'cause' of illness may be immediate and direct, it may be remote and indirect underlying the observed association. But with the aims of occupational, and almost synonymously preventive, medicine in mind the decisive question is whether the frequency of the undesirable event B will be influenced by a change in the environmental feature A. *How* such a change exerts that influence may call for a great deal of research. However, before deducing 'causation' and taking action we shall not invariably have to sit around awaiting the results of that research. The whole chain may have to be unravelled or a few links may suffice. It will depend upon circumstances.

Disregarding then any such problem in semantics we have this situation. Our observations reveal an association between two variables, perfectly clear-cut and beyond what we would care to attribute to the play of chance. What aspects of that association should we especially consider before deciding that the most likely interpretation of it is causation?

(1) *Strength*. First upon my list I would put the strength of the association. To take a very old example, by comparing the occupations of patients with scrotal cancer with the occupations of patients presenting with other diseases, Percival Pott could reach a correct conclusion because of the *enormous* increase of scrotal cancer in the chimney sweeps. 'Even as late as the second decade of the twentieth century', writes Richard Doll (1964), 'the mortality of chimney sweeps from scrotal cancer was some 200 times that of workers who were not specially exposed to tar or mineral oils and in the eighteenth century the relative difference is likely to have been much greater.'

To take a more modern and more general example upon which I have now reflected for over fifteen years, prospective inquiries into smoking have shown that the death rate from cancer of the lung in cigarette smokers is nine to ten times the rate in non-smokers and the rate in heavy cigarette smokers is twenty to thirty times

Inferring causality

- **Strength**
- **Consistency**
- **Specificity**
- **Timing**
- **Dose
Response**
- **Plausibility**
- **Coherence**
- **Experiment**
- **Analogy**

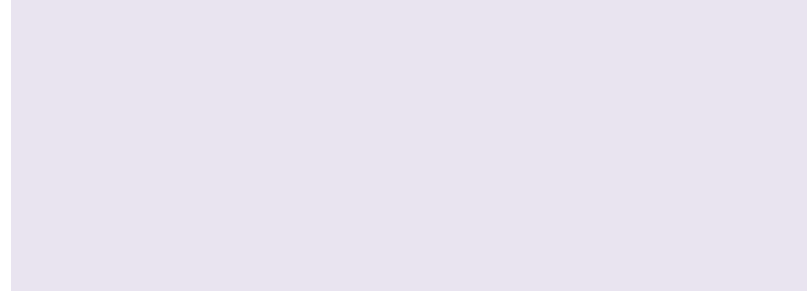
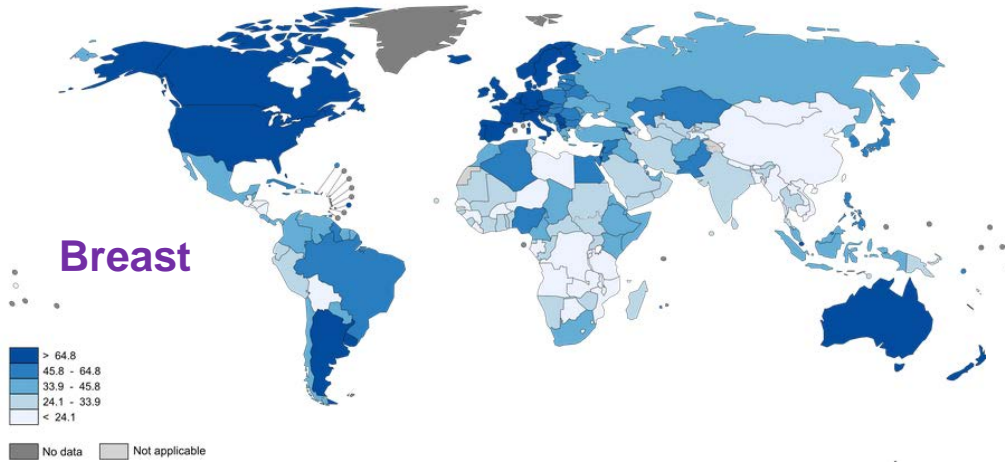
Bradford Hill



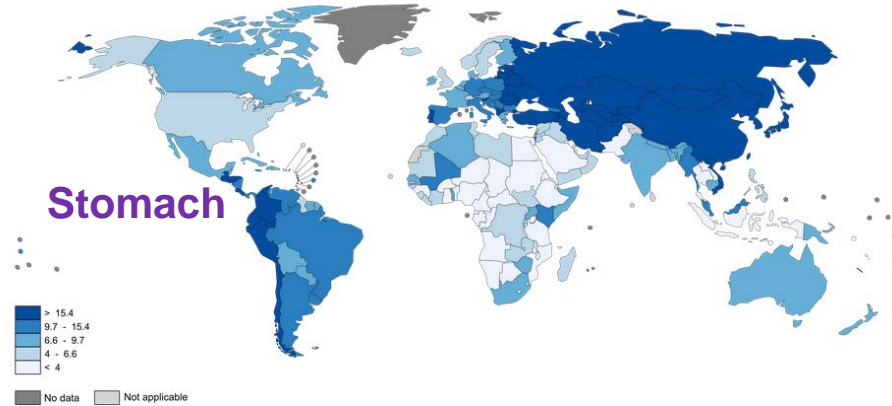
World
Cancer
Research
Fund International

Global variation in cancer incidence

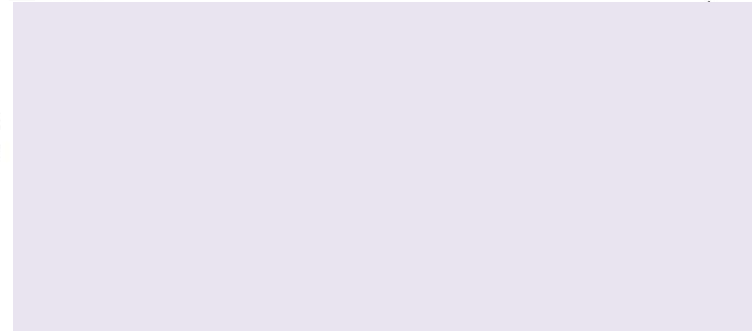
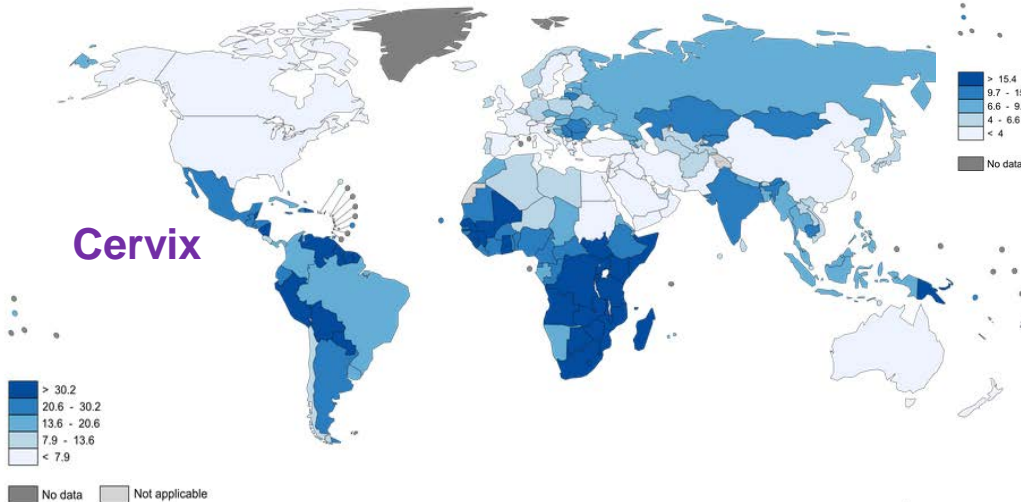
Breast



Stomach

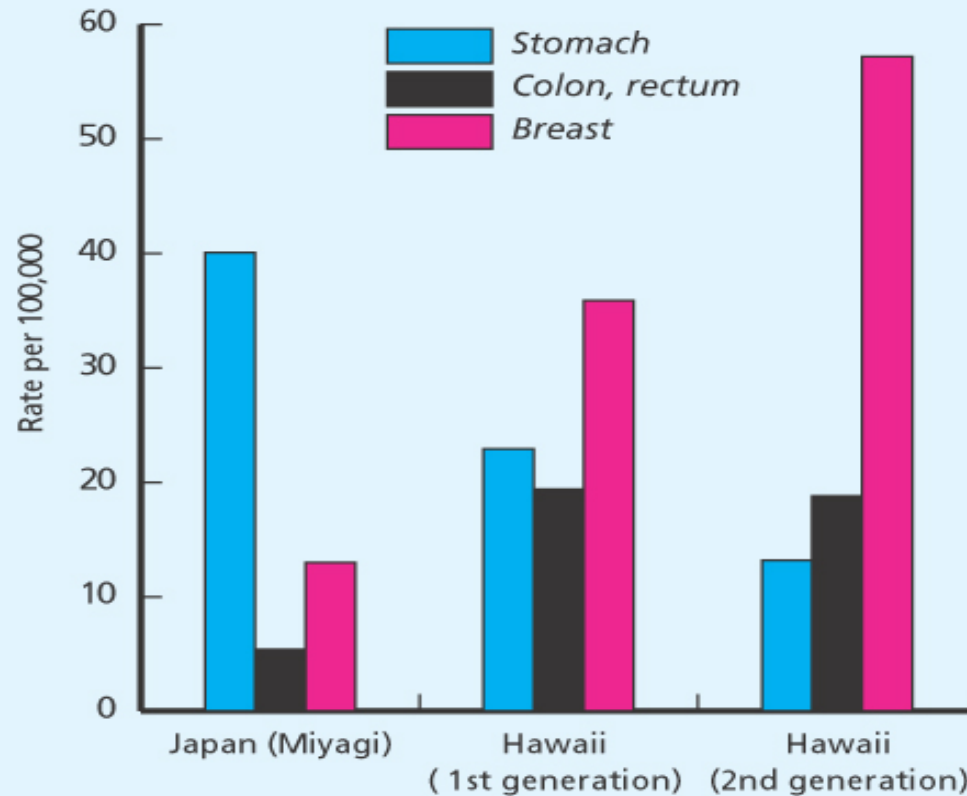


Cervix



Migration data

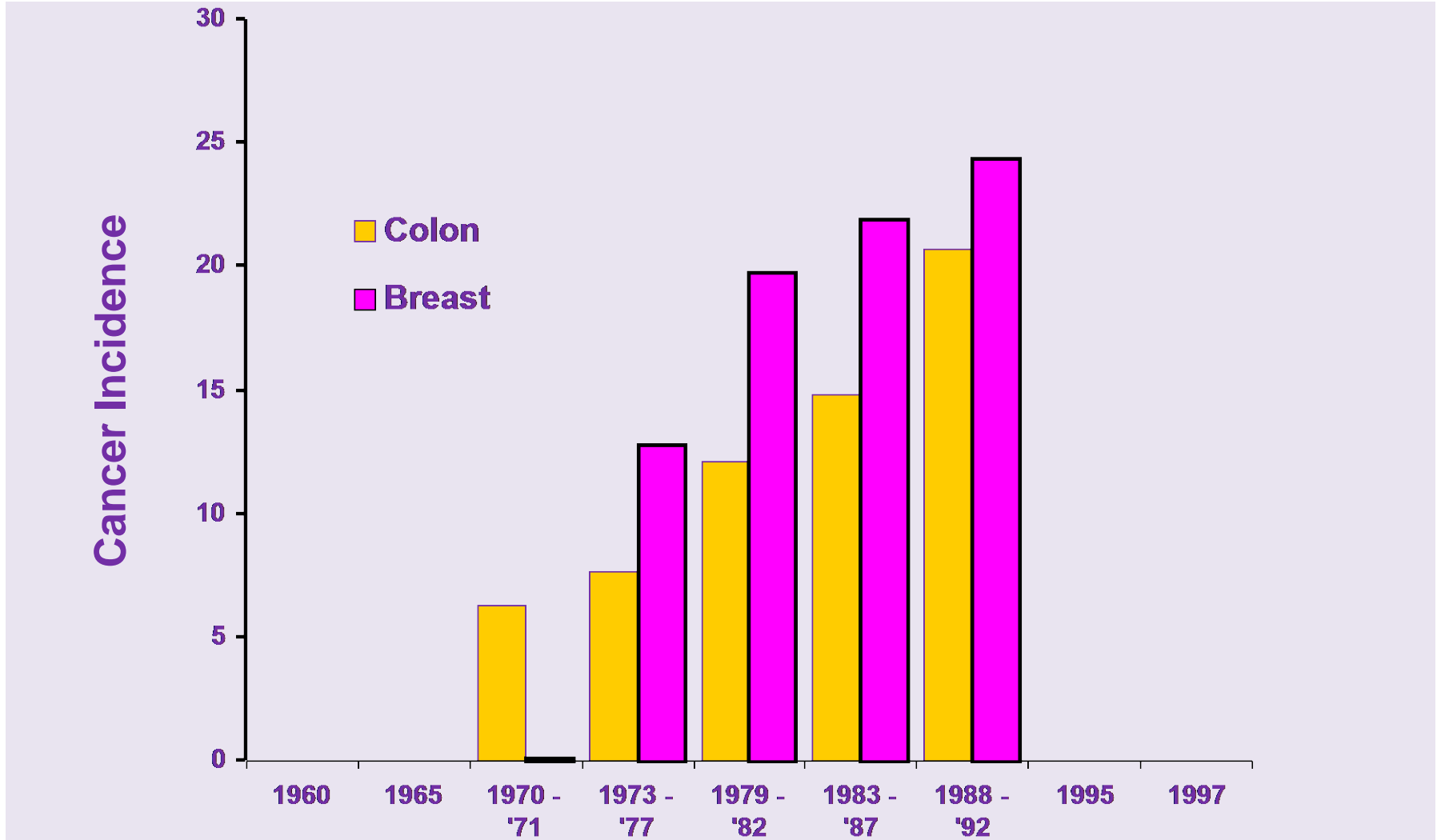
Figure 1.2.20 Cancer incidence for selected cancers in Japanese women by generation in Hawaii and Japan, 1968–1977



Age-adjusted to the World Standard Population
(From Kolonel et al, 1980)



Cancer Incidence in Japan*

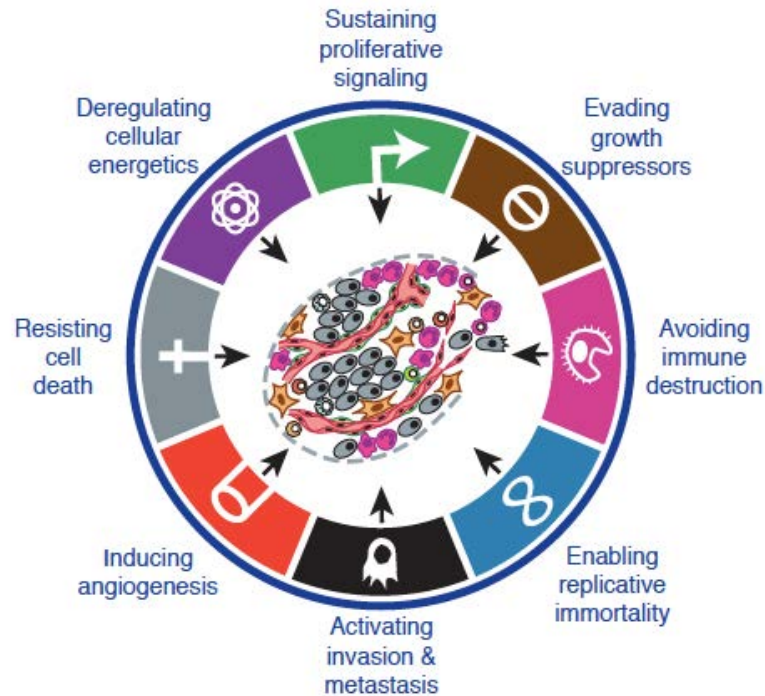


* Per 100,000, world population standard

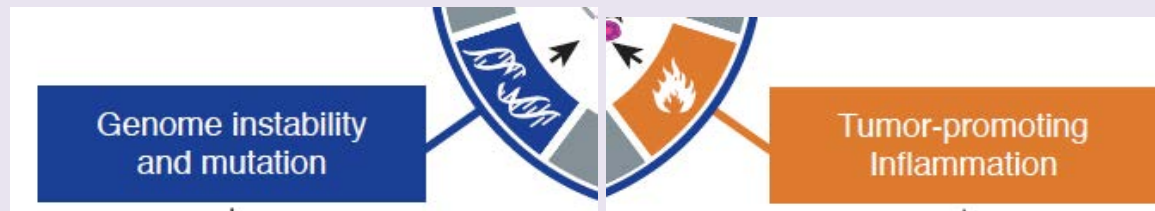
Hallmarks of cancer



World
Cancer
Research
Fund International



Two enabling characteristics for acquiring hallmarks



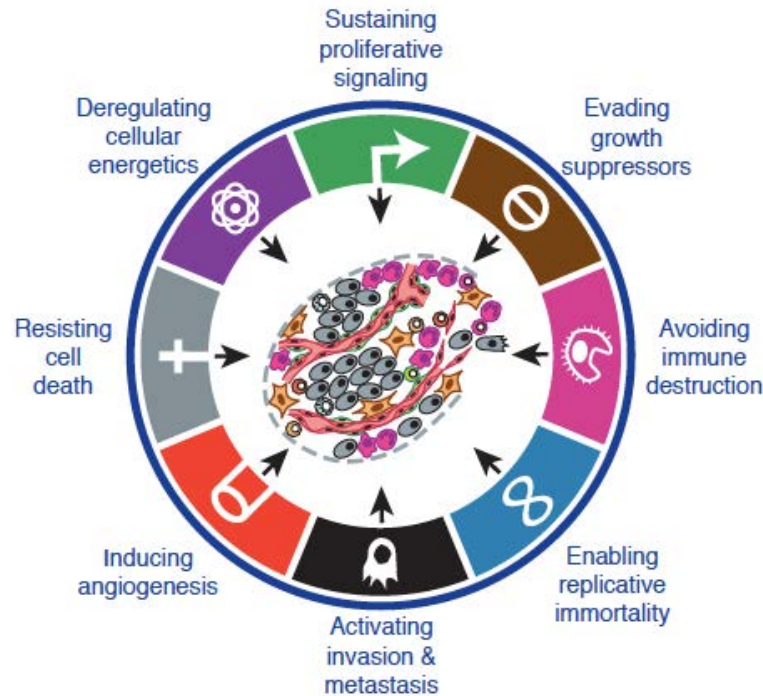
Hallmarks of cancer

Metabolism

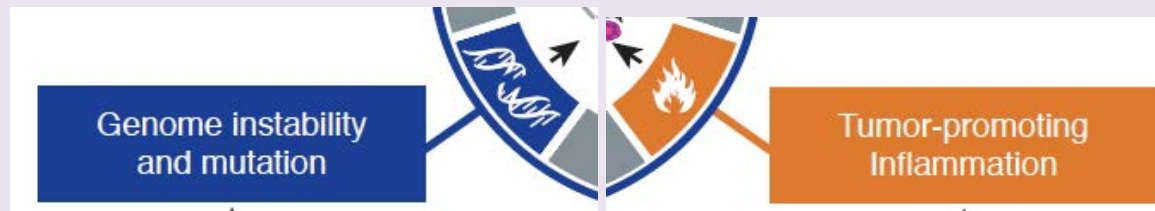
Cell growth and survival

Invasion and metastasis

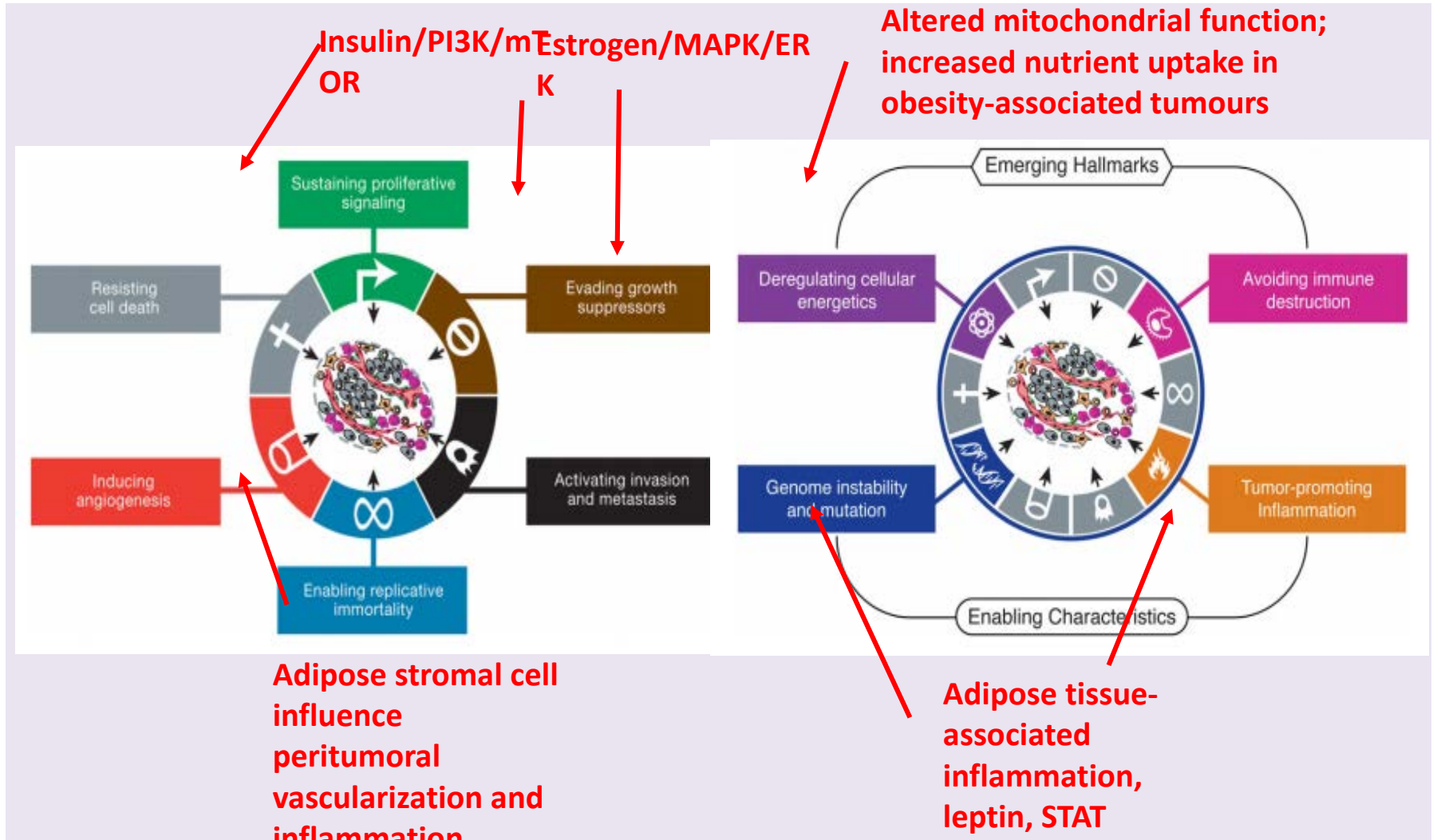
Angiogenesis



Two enabling characteristics for acquiring hallmarks



Obesity, Physical Activity and Hallmarks of Cancer

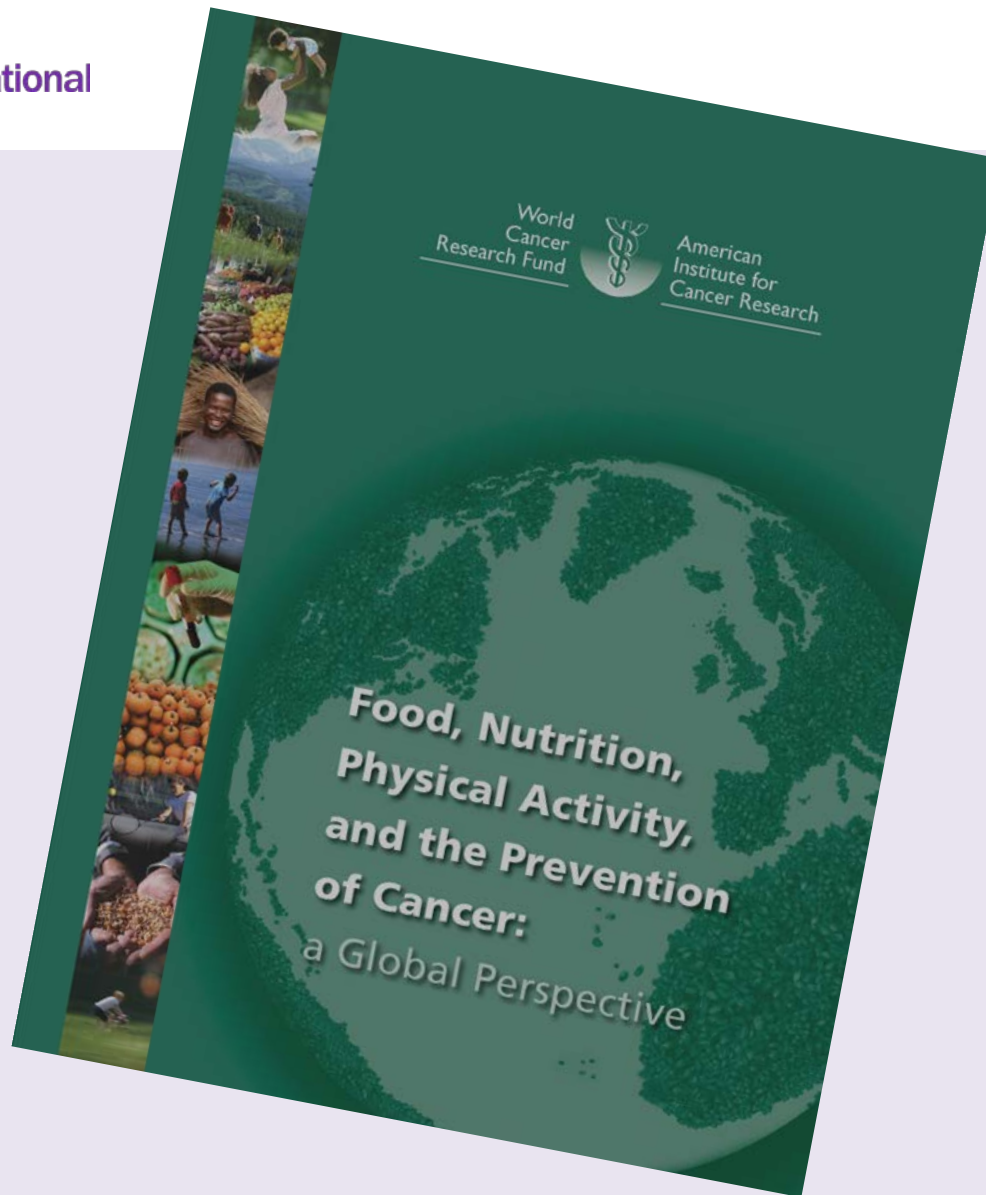




World
Cancer
Research
Fund International



Analysing research on cancer
prevention and survival





SUMMARY OF STRONG EVIDENCE ON DIET, NUTRITION, PHYSICAL ACTIVITY AND PREVENTION OF CANCER

	MOUTH, PHARYNX, LARYNX (2007)	NASOPHARYNX (2007)	ESOPHAGUS (2007)	LUNG (2007)	STOMACH (2007)	PANCREAS (2012)	GALLBLADDER (2015)	LIVER (2015)	COLORECTUM (2011)	BREAST PREMENOPAUSE (2010)	BREAST POSTMENOPAUSE (2010)	OVARY (2014)	ENDOMETRIUM (2013)	PROSTATE (2014)	KIDNEY (2015)	SKIN (2007)
Foods containing dietary fibre									Convincing decreased risk							
Aflatoxins								Convincing increased risk								
Non-starchy vegetables¹	Probable decreased risk		Probable decreased risk		Probable decreased risk											
Allium vegetables					Probable decreased risk											
Garlic									Probable decreased risk							
Fruits²	Probable decreased risk		Probable decreased risk	Probable decreased risk	Probable decreased risk											
Red meat									Convincing increased risk							
Processed meat									Convincing increased risk							
Cantonese-style salted fish		Probable increased risk														
Diets high in calcium³									Probable decreased risk							
Salt, salted and salty foods					Probable increased risk											
Glycaemic load												Probable increased risk				
Arsenic in drinking water				Convincing increased risk												Probable increased risk
Maté			Probable increased risk													
Alcoholic drinks⁴	Convincing increased risk	Convincing increased risk	Convincing increased risk					Convincing increased risk	Probable increased risk	Convincing increased risk	Convincing increased risk				Probable increased risk	Probable decreased risk
Coffee						Substantial effect on risk unlikely		Probable decreased risk				Probable decreased risk				
Beta-carotene⁵				Convincing increased risk										Substantial effect on risk unlikely		Substantial effect on risk unlikely
Physical activity⁶									Convincing decreased risk		Probable decreased risk		Probable decreased risk			
Body fatness⁷			Convincing increased risk			Convincing increased risk	Probable increased risk	Convincing increased risk	Convincing increased risk	Probable decreased risk	Convincing increased risk	Probable increased risk	Convincing increased risk	Convincing increased risk	Convincing increased risk	Convincing increased risk
Adult attained height⁸						Probable increased risk			Convincing increased risk	Probable increased risk	Convincing increased risk	Convincing increased risk	Convincing increased risk	Convincing increased risk	Convincing increased risk	
Greater birth weight										Probable increased risk						
Lactation										Convincing decreased risk	Convincing decreased risk					



- **ADIPOSIITY**
 - BREAST (PM), COLORECTUM, ENDOMETRIUM, OESOPHAGUS, PANCREAS, GALLBLADDER, KIDNEY, OVARY, PROSTATE (ADVANCED), LIVER
- **PHYSICAL (IN)ACTIVITY**
 - COLON, BREAST, ENDOMETRIUM
- **MEAT – RED AND PROCESSED**
 - COLON, RECTUM, STOMACH (non-cardia)
- **ALCOHOL**
 - MPL, BREAST, COLORECTUM, LIVER, OESOPHAGUS
- **PLANT FOODS (F&V, PULSES, WHOLEGRAINS)**
 - MPL, OESOPHAGUS, STOMACH, COLORECTUM (DF), LUNG
- **BREASTFEEDING**
 - BREAST (MOTHER), OBESITY (CHILD)



NUTRITION AND CANCERS

- **Causal factors**
 - Some dietary components (alcohol, processed meat, carcinogens)
 - Unhealthy body composition (too fat, too thin)
 - Physical inactivity, sedentariness
- **Protective factors**
 - Healthy body composition
 - Physical activity
 - Healthy dietary pattern (eg Mediterranean, others)



The Panel emphasises the importance of not smoking and of avoiding exposure to tobacco smoke

RECOMMENDATIONS

BODY FATNESS

Be as lean as possible within the normal range of body weight

PHYSICAL ACTIVITY

Be physically active as part of everyday life

FOODS AND DRINKS THAT PROMOTE WEIGHT GAIN

Limit consumption of energy-dense foods
Avoid sugary drinks

PLANT FOODS

Eat mostly foods of plant origin

ANIMAL FOODS

Limit intake of red meat and avoid processed meat

ALCOHOLIC DRINKS

Limit alcoholic drinks

PRESERVATION, PROCESSING, PREPARATION

Limit consumption of salt
Avoid mouldy cereals (grains) or pulses (legumes)

DIETARY SUPPLEMENTS

Aim to meet nutritional needs through diet alone

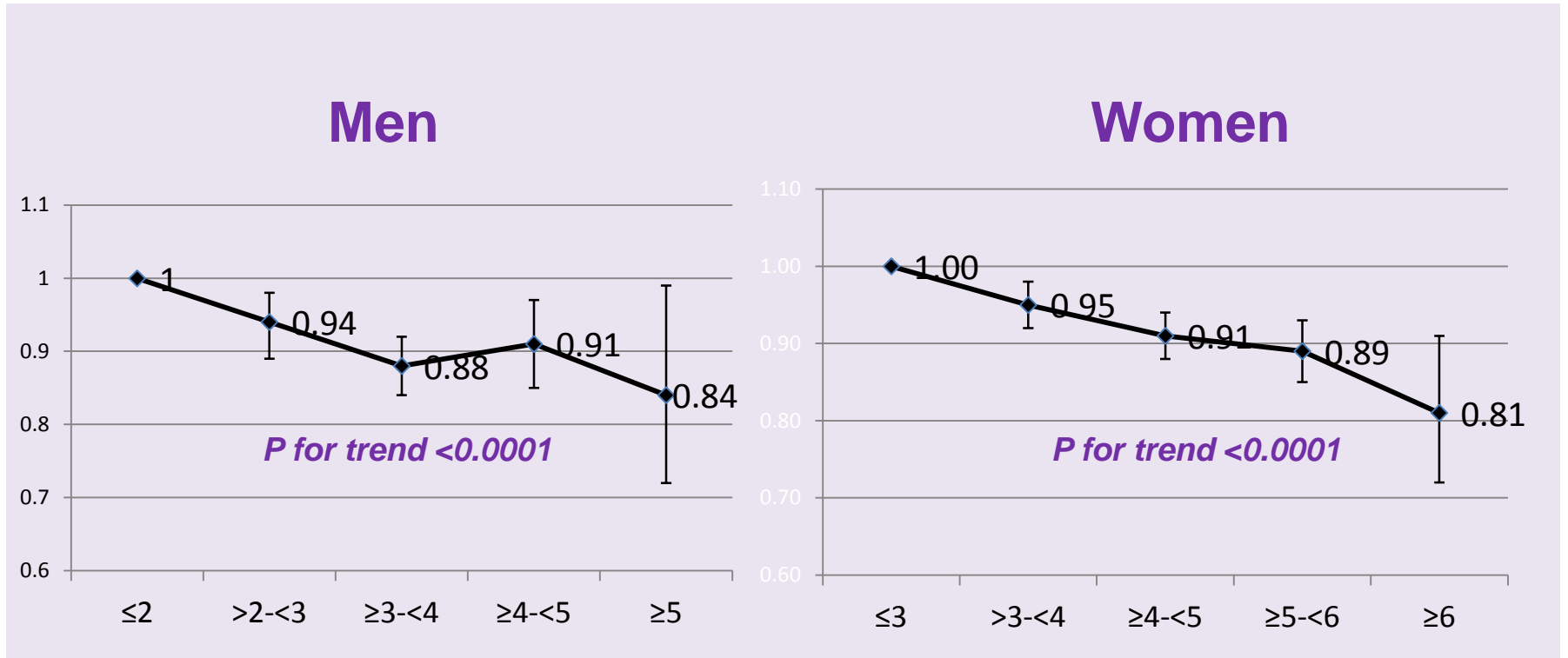
BREASTFEEDING

Mothers to breastfeed; children to be breastfed

CANCER SURVIVORS

Follow the recommendations for cancer prevention

Association between the WCRF/AICR score and total cancer risk

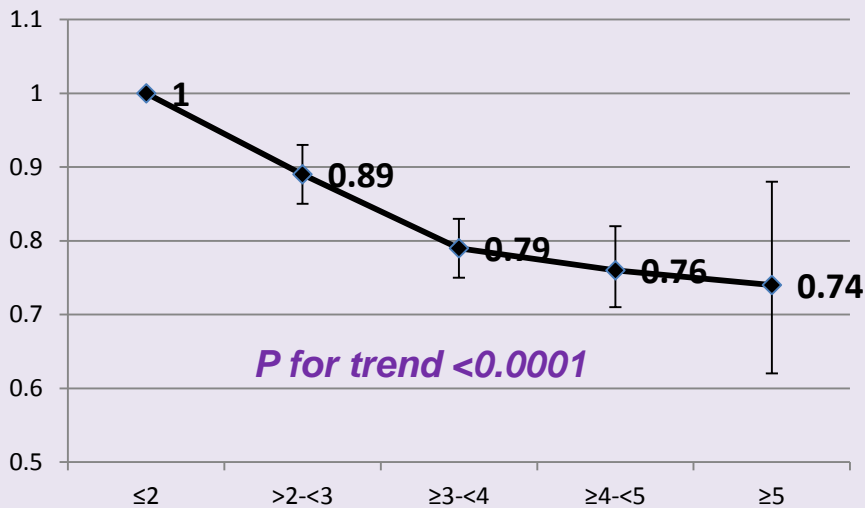


Cox regression model stratified by centre and age, and adjusted by energy intake, level of school, smoking status, presence of chronic diseases at baseline, ever use of contraceptive pills, ever use of HRT, age at first menarche, age at first pregnancy, and menopausal status

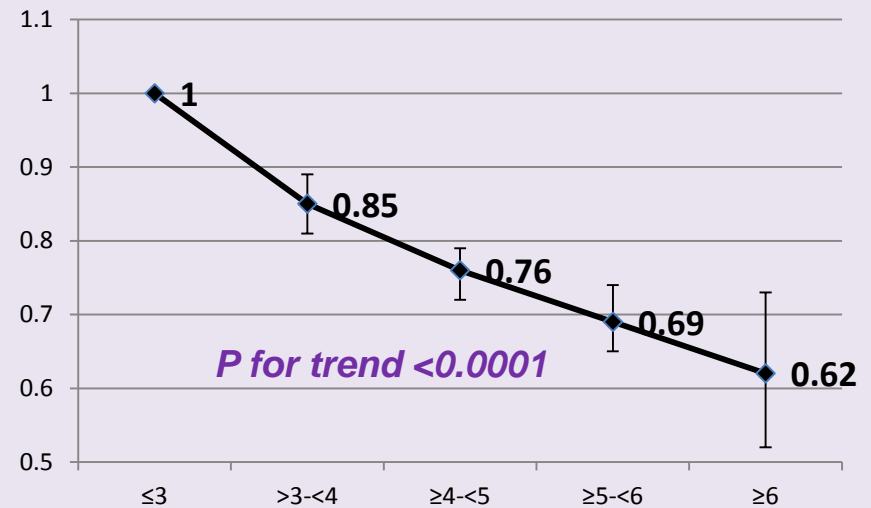
Romaguera D et al, AJCN 2012

Association between the WCRF/AICR score and total mortality

Men



Women



Cox regression model stratified by centre and age, and adjusted by level of school, smoking status, smoke intensity, and menopausal status

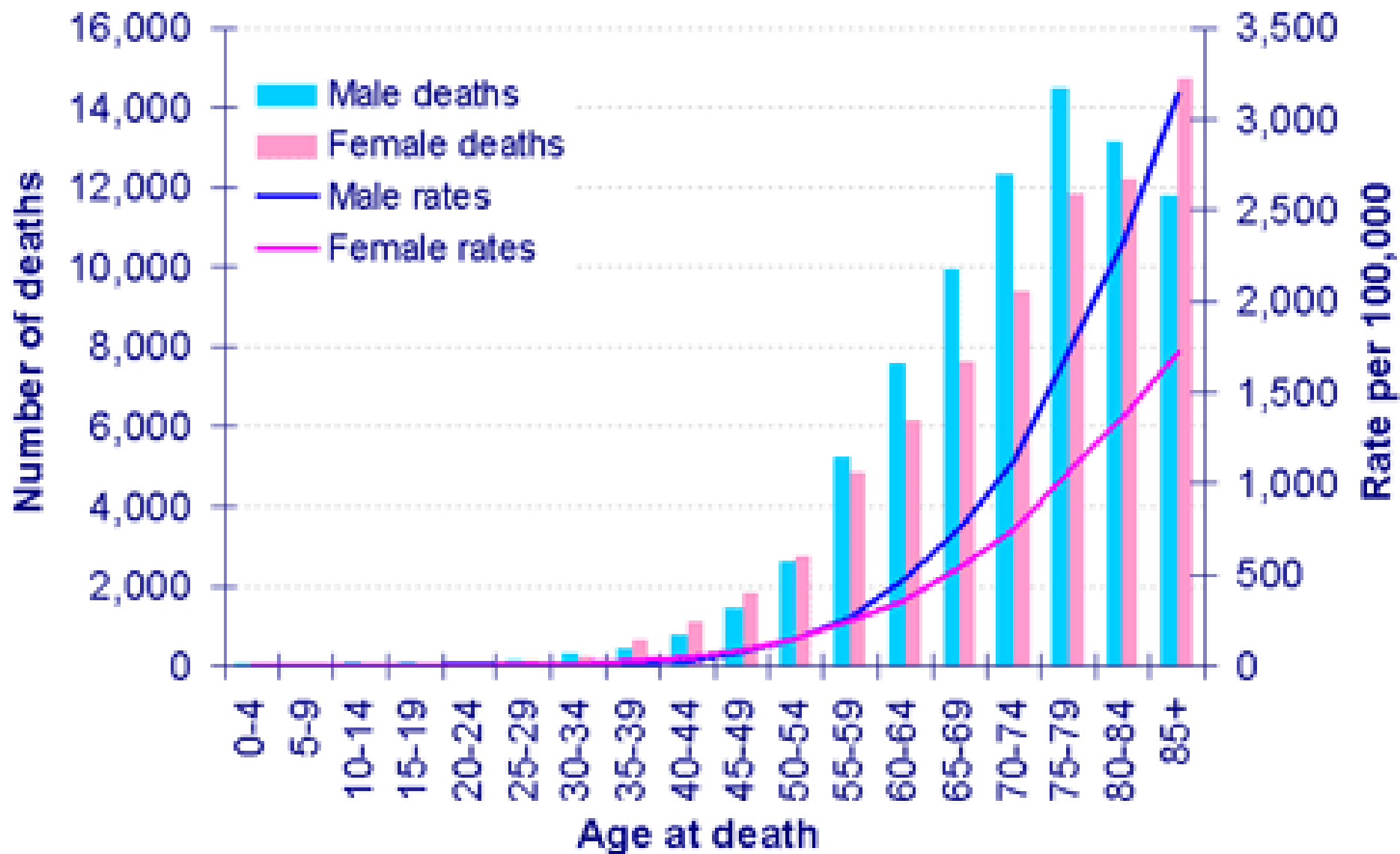
Vergnaud AC et al, AJCN 2013

WCRF and ACS recommendations and cancer – systematic review

- Ten large prospective studies; 12 publications
- Strong and consistent evidence
- Greater adherence to score associated with lower overall cancer incidence and mortality
- Both men and women
- Also breast, colorectal, endometrium

Kohler LN et al, CEBP 2016, 25, 1-11

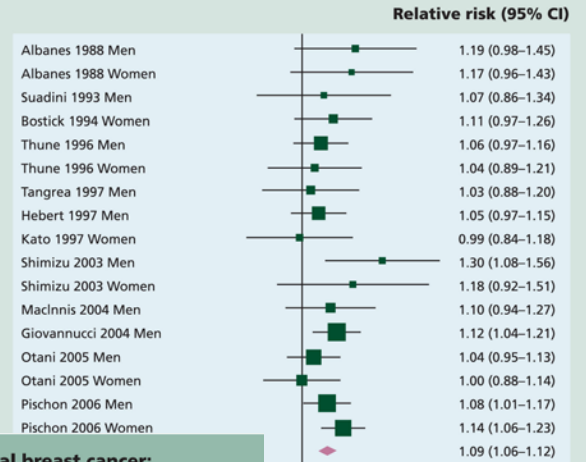
Number of deaths and age-specific mortality rates, all malignant neoplasms, by sex, UK, 2006



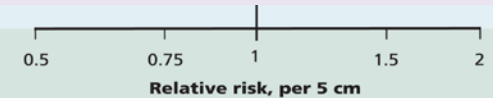
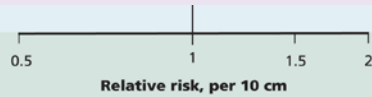
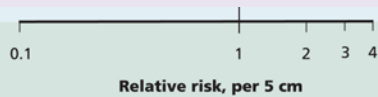
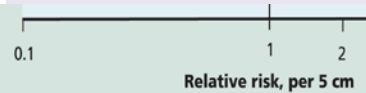
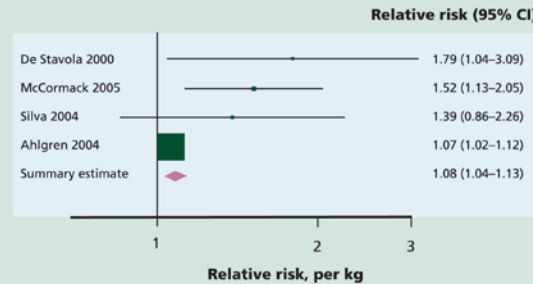


IMPACT OF OFFSPRING SIZE AND GROWTH ON CANCER RISK - 2007

Height and colorectal cancer; cohort studies



Birth weight and premenopausal breast cancer; cohort studies



Height and cancer

CUP 2015

Every 5 cm increment in height increases risk of cancers of:

- Kidney -10%
- Breast (pre-menopausal) - 9%
- Breast (post-menopausal) -11%
- Ovary - 8%
- Pancreas - 7%
- Colorectum - 5%
- Prostate – 4%



Significant shifts in emphasis 1997-2007-CUP

- Adiposity and activity vs foods and drinks
- Lifecourse (height)
 - Overall nutritional/metabolic state (susceptibility)
- Foods vs nutrients
- Plant foods vs fruit and veg
- Whole diets vs individual foods
 - Markers of a pattern of diet and other behaviours (activity, smoking etc)



Outline

- Intro to WCRF
- What does the science tell us?
- Does it support action?
- Conclusion

The science and art of preventing disease, prolonging life and promoting health through organised efforts of society

Acheson Committee of Inquiry into the Future Development of the Public Health Function and Community Medicine, 1988.



World
Cancer
Research
Fund Intern





All scientific work is incomplete – whether it be observational or experimental. All scientific work is liable to be upset or modified by advancing knowledge. That does not confer upon us a freedom to ignore the knowledge we already have, or to postpone the action that it appears to demand at a given time.

Certainty (proof) is unattainable – degrees of uncertainty

Evidence accrues and conclusions may change

Is the evidence strong enough to take action?

Reasons for uncertainty

- Measurement error
 - Diet, activity, anthropometry (cf adiposity); cancer subtypes
 - Random error, systematic bias
- Study design
 - RCT vs cohort
 - Mechanistic
- Confounding
 - Smoking
 - Nutrient vs food
 - Multiple collinearity eg PA
- Exposure homogeneity
- Small effect size



I have no wish, nor the skill, to embark upon a philosophical discussion of the meaning of 'causation'. The 'cause' of illness may be immediate and direct, it may be remote and indirect underlying the observed association. But with the aims of occupational, and almost synonymously preventive, medicine in mind the decisive question is whether the frequency of the undesirable event B will be influenced by a change in the environmental feature A. *How* such a change exerts that influence may call for a great deal of research. However, before deducing 'causation' and taking action we shall not invariably have to sit around awaiting the results of that research. The whole chain may have to be unravelled or a few links may suffice. It will depend upon circumstances.

Greater levels of intervention

Eliminate choice: regulate to eliminate choice entirely.

Restrict choice: regulate to restrict the options available to people.

Guide choice through disincentives: use financial or other disincentives to influence people to not pursue certain activities.

Guide choice through incentives: use financial and other incentives to guide people to pursue certain activities.

Guide choice through changing the default: make 'healthier' choices the default option people,

Enable choice: enable people to change their behaviours.

Provide information: inform and educate people.

Do nothing or simply monitor the current situation.

Interventions - issues

- Strength of evidence
- Impact of intervention
- Side effects of intervention
- Cost
- Public and political acceptability

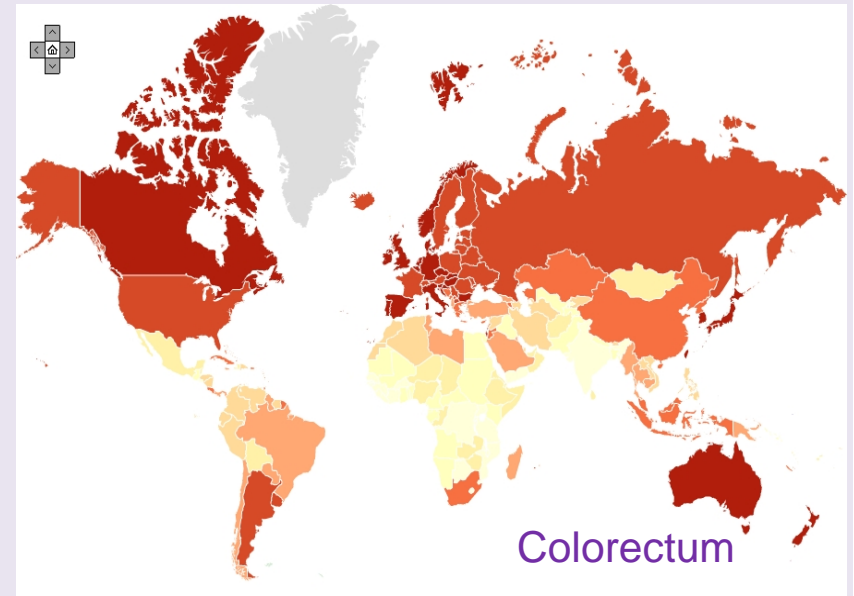
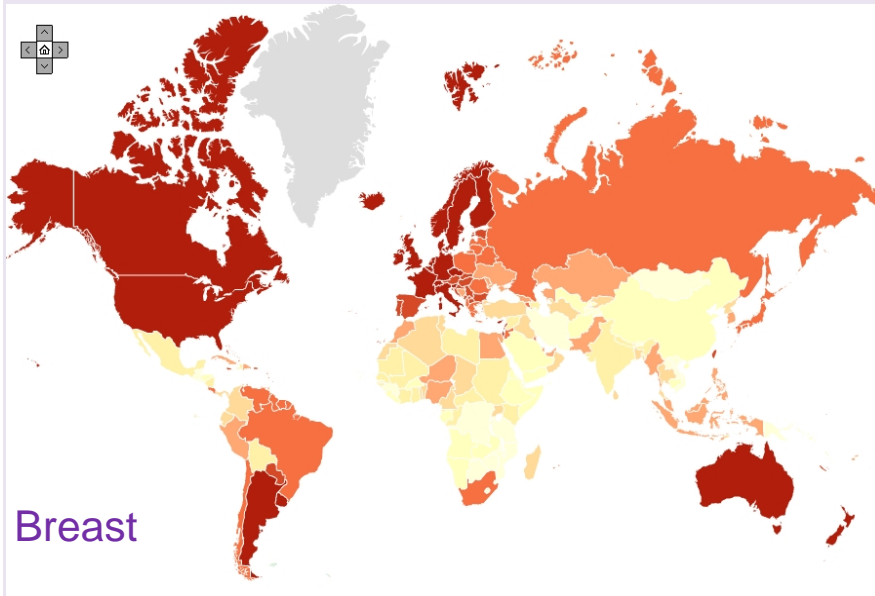
SUMMARY OF STRONG EVIDENCE ON DIET, NUTRITION, PHYSICAL ACTIVITY AND PREVENTION OF CANCER

	MOUTH, PHARYNX, LARYNX (2007)	NASOPHARYNX (2007)	ESOPHAGUS (2007)	LUNG (2007)	STOMACH (2007)	PANCREAS (2012)	GALLBLADDER (2015)	LIVER (2015)	COLORECTUM (2011)	BREAST PREMENOPAUSE (2010)	BREAST POSTMENOPAUSE (2010)	OVARY (2014)	ENDOMETRIUM (2013)	PROSTATE (2014)	KIDNEY (2015)	SKIN (2007)
Foods containing dietary fibre									Convincing decreased risk							
Aflatoxins								Convincing increased risk								
Non-starchy vegetables¹	Probable decreased risk		Probable decreased risk		Probable decreased risk											
Allium vegetables					Probable decreased risk											
Garlic									Probable decreased risk							
Fruits²	Probable decreased risk		Probable decreased risk	Probable decreased risk	Probable decreased risk											
Red meat									Convincing increased risk							
Processed meat									Convincing increased risk							
Cantonese-style salted fish		Probable increased risk														
Diets high in calcium³									Probable decreased risk							
Salt, salted and salty foods					Probable increased risk											
Glycaemic load												Probable increased risk				
Arsenic in drinking water				Convincing increased risk												Probable increased risk
Maté			Probable increased risk													
Alcoholic drinks⁴	Convincing increased risk	Convincing increased risk	Convincing increased risk					Convincing increased risk	Probable increased risk	Convincing increased risk	Convincing increased risk				Probable increased risk	Probable decreased risk
Coffee						Substantial effect on risk unlikely		Probable decreased risk					Probable decreased risk			
Beta-carotene⁵				Convincing increased risk										Substantial effect on risk unlikely		Substantial effect on risk unlikely
Physical activity⁶									Convincing decreased risk		Probable decreased risk		Probable decreased risk			
Body fatness⁷			Convincing increased risk			Convincing increased risk	Probable increased risk	Convincing increased risk	Convincing increased risk	Probable decreased risk	Convincing increased risk	Probable increased risk	Convincing increased risk	Convincing increased risk	Convincing increased risk	Convincing increased risk
Adult attained height⁸						Probable increased risk			Convincing increased risk	Probable increased risk	Convincing increased risk	Convincing increased risk	Convincing increased risk	Convincing increased risk	Convincing increased risk	
Greater birth weight										Probable increased risk						
Lactation										Convincing decreased risk	Convincing decreased risk					



World
Cancer
Research
Fund International

Global variation in cancer incidence

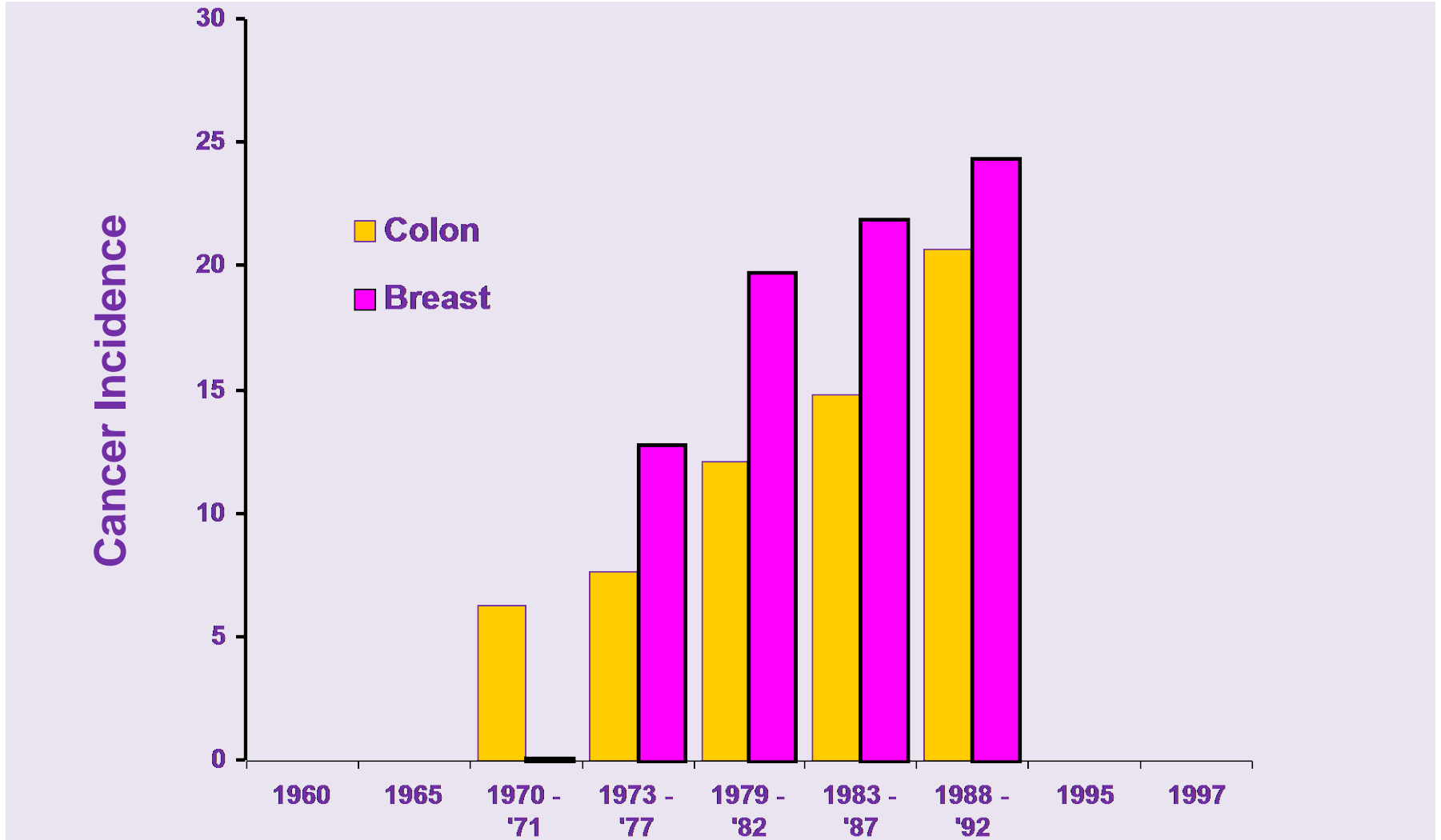


Globocan, WHO





Cancer Incidence in Japan*



* Per 100,000, world population standard

Bottom Line

The key messages are robust

- Be active, and don't be sedentary – and keep it up as long as possible
- Eat enough but not too much – don't get too thin or fat
- Eat food not pills
- Mostly from plants, emphasise wholegrains and pulses
- Avoid highly processed energy dense foods and sugar sweetened beverages (and alcohol, processed meat and salty foods)
- Grow appropriately from conception to adulthood
- Get your mother to be well nourished before getting pregnant. And to breastfeed you.

Bottom Line

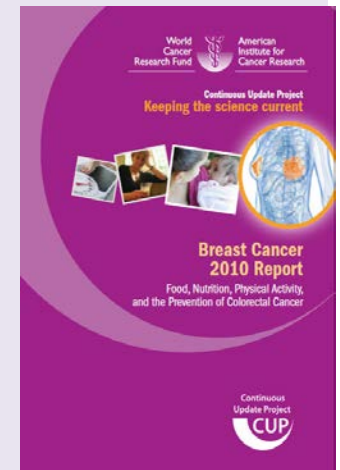
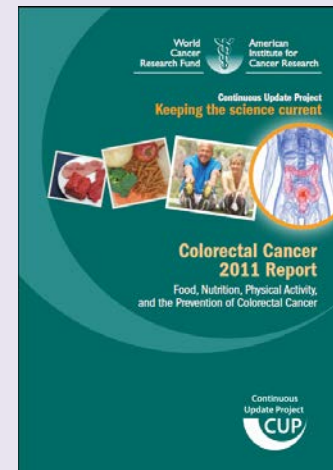
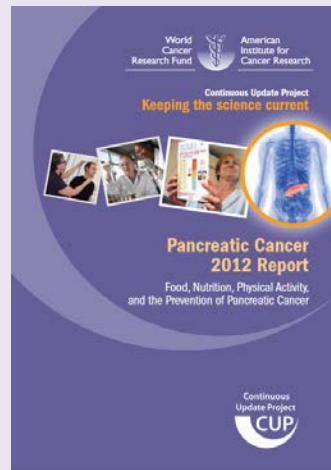
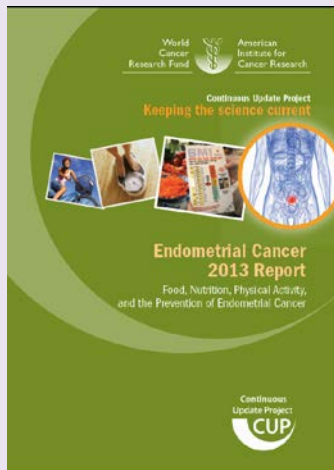
If you already have a diagnosis of cancer, the evidence on nutrition and outcome is not strong, but the best advice is to follow (as far as possible) the recommendations for cancer prevention

Conclusions

The evidence is good enough to justify action

- Evidence for nutrition and cancer
- Evidence for effective interventions

Action needs leadership from government and health professionals



http://www.wcrf.org/cancer_research/cup/key_findings/index.php

Watch this space....

2018 update is coming...



http://www.wcrf.org/cancer_research/cup/key_findings/index.php

Watch this space....

2018 update is coming...



May 2018

http://www.wcrf.org/cancer_research/cup/key_findings/index.php



World
Cancer
Research
Fund International

Thank you!

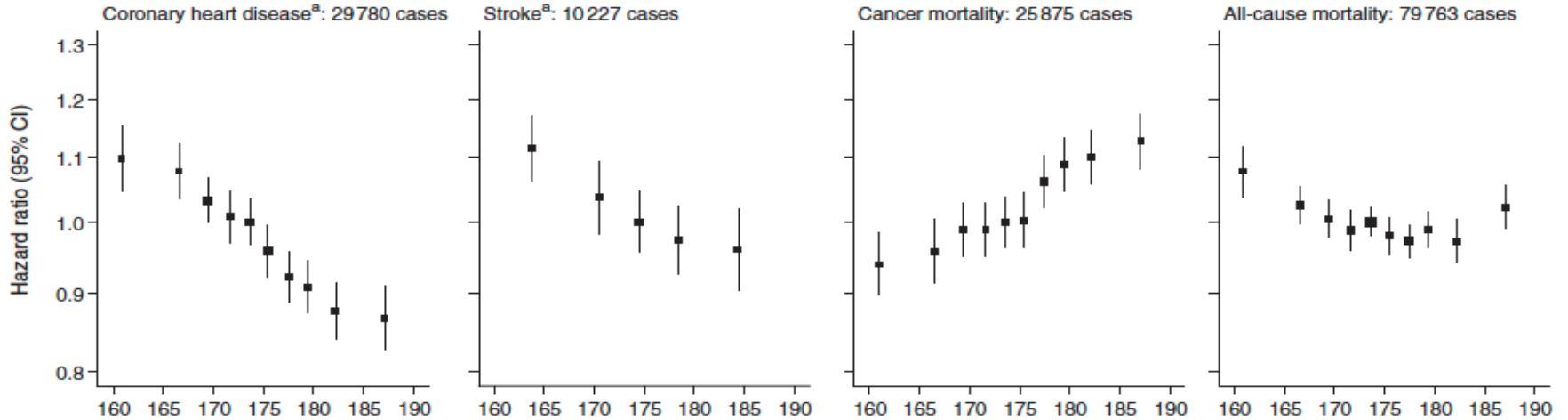


World
Cancer
Research
Fund International

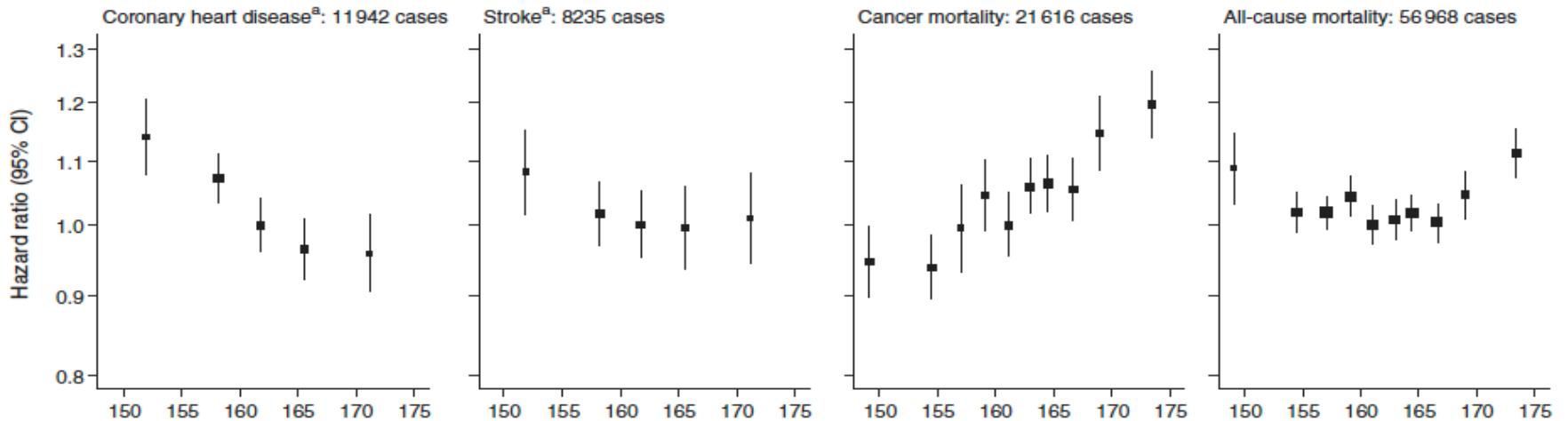


Height and risk of CVD and cancer

MALES:



FEMALES:



CVD

Mean height (cm)

Cancer

Cancer & Nutrition NIHR infrastructure collaboration

Improving cancer prevention and care.
For patients. For clinicians. For researchers

Aim:

To help facilitate translational research in cancer and nutrition which will generate the evidence to improve cancer prevention and care

Objectives:

To bring coherence to existing activities by

- creating a framework for future research
- establishing better networks between cancer and nutrition stakeholders



National Institute for
Health Research

Cancer and Nutrition NIHR infrastructure collaboration

Improving cancer prevention and care.
For patients. For Clinicians. For researchers.



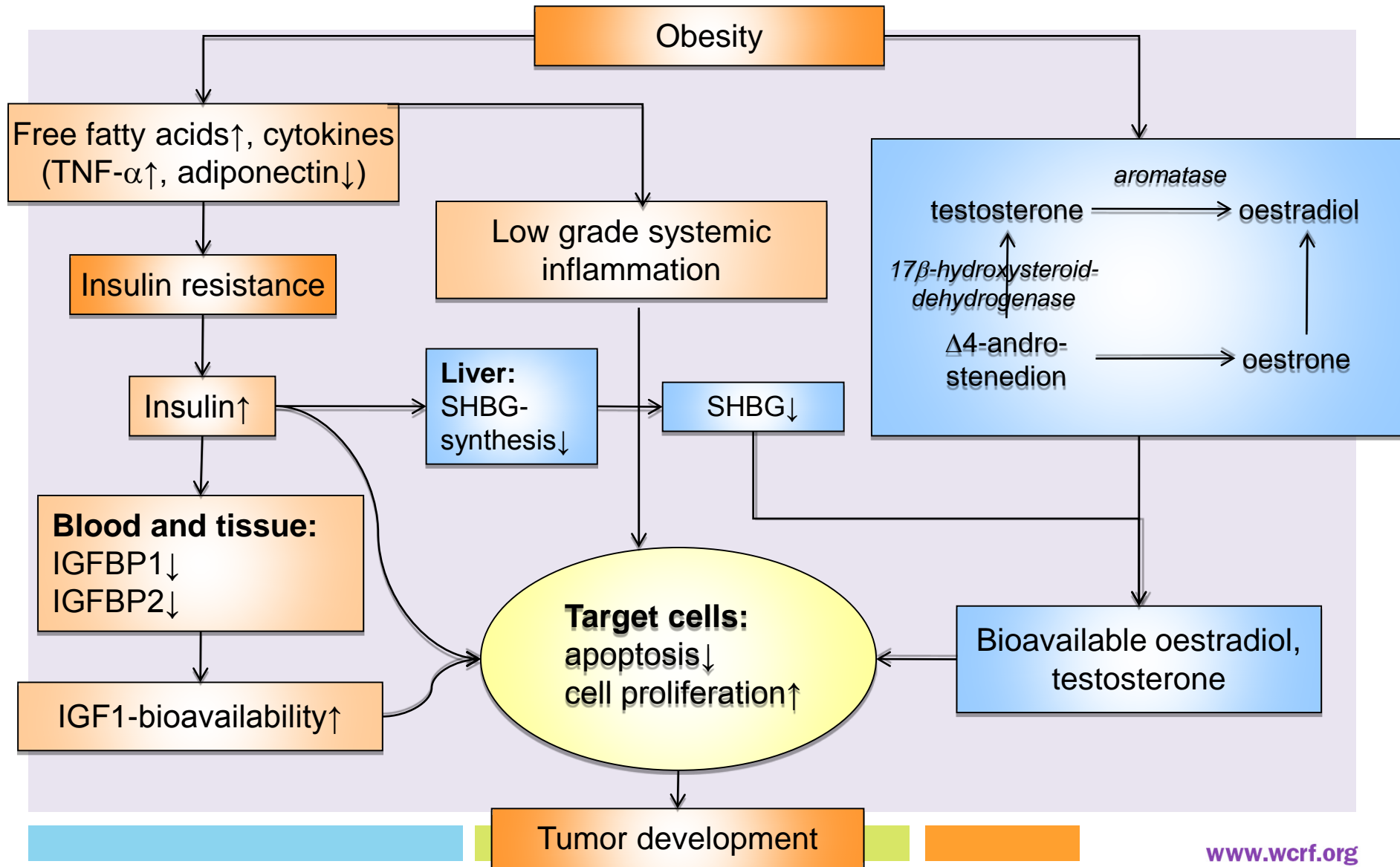
Full Report of Phase One July 2015

**Estimates of
cancer
preventability by
appropriate diet,
nutrition,
physical activity
and body fatness**

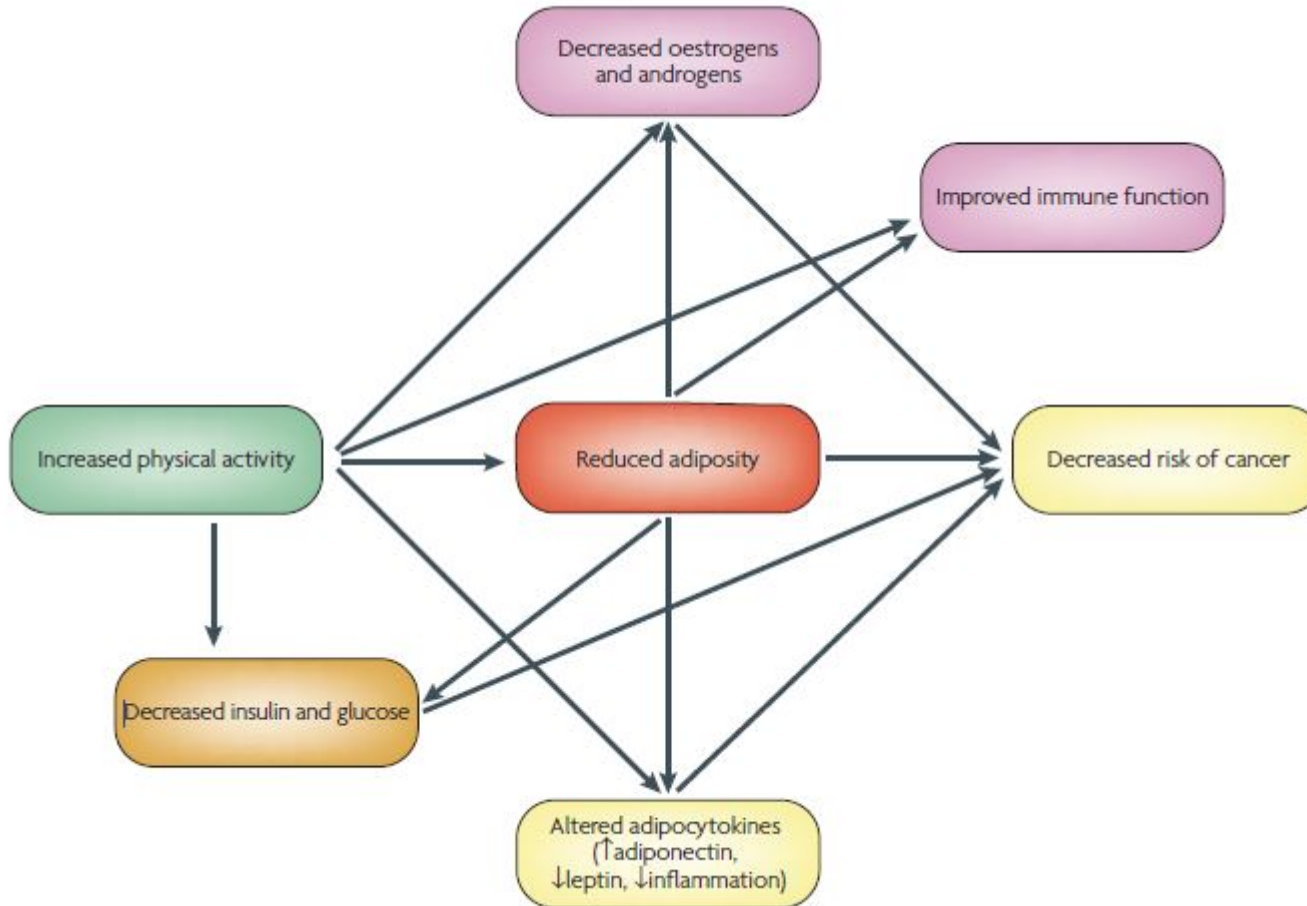
	USA	UK	BRAZIL	CHINA
Mouth, pharynx, larynx	63	67	63	44
Oesophagus	63	71	50	33
Lung	36	33	36	38
Stomach	47	45	41	33
Pancreas	19	15	11	8
Gallbladder	21	16	10	6
Liver	30	24	13	7
Colorectum	50	47	41	22
Breast	33	38	22	11
Ovary	5	4	3	1
Endometrium	59	44	37	21
Prostate (advanced)	11	9	5	4
Kidney	24	19	13	8
Total for these cancers	31	32	25	24
Total for all cancers	21	24	18	20

Cancer	Exposure	2007	New
Colorectum	Dietary fibre	Prob ↓	Convincing ↓
Endometrium	Coffee	-	Prob ↓
	Glycaemic load	-	Prob ↑
Liver	Body fatness	LS ↑	Convincing ↑
	Coffee	-	Prob ↓
Kidney	Height	LNC	Prob ↑
	Alcohol	Effect unlikely	Prob ↑
Bladder	Arsenic	LS ↑	Prob ↑
Ovary	Body fatness	LNC	Prob ↑
Pancreas	Folate	Prob ↓	LNC
Prostate	Body fatness	LNC	Prob ↑ (adv)
	Height	LNC	Prob ↑
Oesophagus	Fruit/veg/ β carotene/vit C	Prob ↓	LS↓/LNC
Stomach	Body fatness	LNC	Prob ↑ (cardia)
	Alcohol	LNC	Prob ↑
	Processed meat	LNC	Prob ↑ (non-cardia)
	Fruit/veg	Prob ↓	LNC/LS ↓

Obesity and Cancer – Potential Mechanisms



Mechanisms linking physical activity and cancer



McTiernan 2008

DIET, NUTRITION, PHYSICAL ACTIVITY AND BREAST CANCER SURVIVAL (BY TIMEFRAME)

	Timing of exposure assessment	BEFORE DIAGNOSIS				LESS THAN 12 MONTHS AFTER DIAGNOSIS				12 MONTHS OR MORE AFTER DIAGNOSIS			
		DECREASES RISK		INCREASES RISK		DECREASES RISK		INCREASES RISK		DECREASES RISK		INCREASES RISK	
		Exposure	Outcome	Exposure	Outcome	Exposure	Outcome	Exposure	Outcome	Exposure	Outcome	Exposure	Outcome
STRONG EVIDENCE	Convincing												
	Probable												
LIMITED EVIDENCE	Limited-suggestive	Physical activity	All mortality BC mortality	Body fatness	All mortality BC mortality ² 2nd BC			Body fatness	All mortality BC mortality ² 2nd BC	Physical activity	All mortality	Body fatness	All mortality
		Foods containing fibre	All mortality	Total fat	All mortality					Foods containing fibre	All mortality		
				Saturated fatty acids	All mortality					Foods containing soy	All mortality		
	Limited-no conclusion¹	Fruits, vegetables, foods containing folate, foods containing soy, carbohydrate, glycaemic index, glycaemic load, protein, dietary supplements, alcoholic drinks, dietary patterns, underweight, body fatness (premenopause), adult attained height, energy intake				Foods containing fibre, carbohydrate, protein, total fat, saturated fatty acids, alcoholic drinks, physical activity, underweight, body fatness (premenopause), adult attained height, energy intake				Fruits, vegetables, foods containing fibre, foods containing folate, foods containing soy, carbohydrate, glycaemic index, glycaemic load, protein, total fat, saturated fatty acids, alcoholic drinks, dietary patterns, physical activity, body fatness, underweight, height, energy intake			
STRONG EVIDENCE	Substantial effect on risk unlikely												

All mortality, All cause mortality; BC mortality, breast cancer mortality; 2nd BC, Second primary breast cancer

STRONG: Evidence strong enough to support a judgement of a convincing or probable causal relationship and generally justify making recommendations

LIMITED: Evidence that is too limited to justify making specific recommendations

1 Includes various exposure-outcome combinations where evidence was available but too limited to draw conclusions. For more details of the outcomes related to the exposures listed here, see the full Breast Cancer Survivors SLR

2 Postmenopause only

DIET, NUTRITION, PHYSICAL ACTIVITY AND BREAST CANCER SURVIVAL (BY OUTCOME)

Outcome	ALL CAUSE MORTALITY		BREAST CANCER MORTALITY		SECOND PRIMARY BREAST CANCER	
	DECREASED RISK	INCREASED RISK	DECREASED RISK	INCREASED RISK	DECREASED RISK	INCREASED RISK
	Exposure Timeframe	Exposure Timeframe	Exposure Timeframe	Exposure Timeframe	Exposure Timeframe	Exposure Timeframe
STRONG EVIDENCE	Convincing					
	Limited-suggestive	Physical activity Before diagnosis >12 months after diagnosis	Body fatness Before diagnosis <12 months after diagnosis >12 months after diagnosis	Physical activity Before diagnosis	Body fatness ¹ Before diagnosis <12 months after diagnosis	
LIMITED EVIDENCE		Foods containing fibre Before diagnosis >12 months after diagnosis	Total fat Before diagnosis			Body fatness Before diagnosis <12 months after diagnosis
		Foods containing soy >12 months after diagnosis	Saturated fatty acids Before diagnosis			
STRONG EVIDENCE	Substantial effect on risk unlikely					

STRONG: Evidence strong enough to support a judgement of a convincing or probable causal relationship and generally justify making recommendations
LIMITED: Evidence that is too limited to justify making specific recommendations

¹ Post menopause only

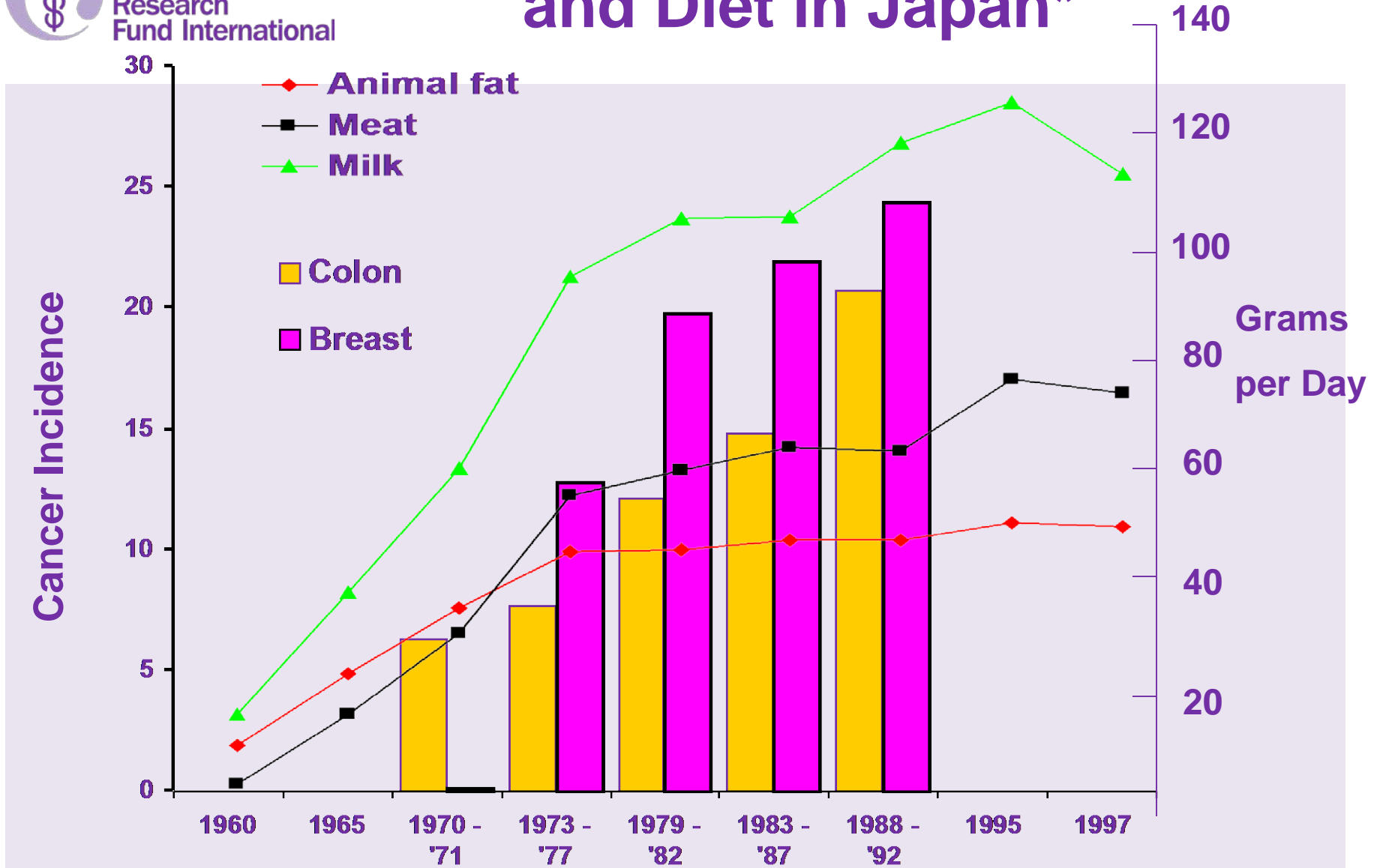
Summary of Breast Cancer Survivors Report

- Although there were significant associations between some exposures and outcomes, incomplete adjustment for potential confounders restricted the ability to ascribe causality
- CUP Panel concluded that evidence is limited



World
Cancer
Research
Fund International

Trends in Cancer Incidence and Diet in Japan*

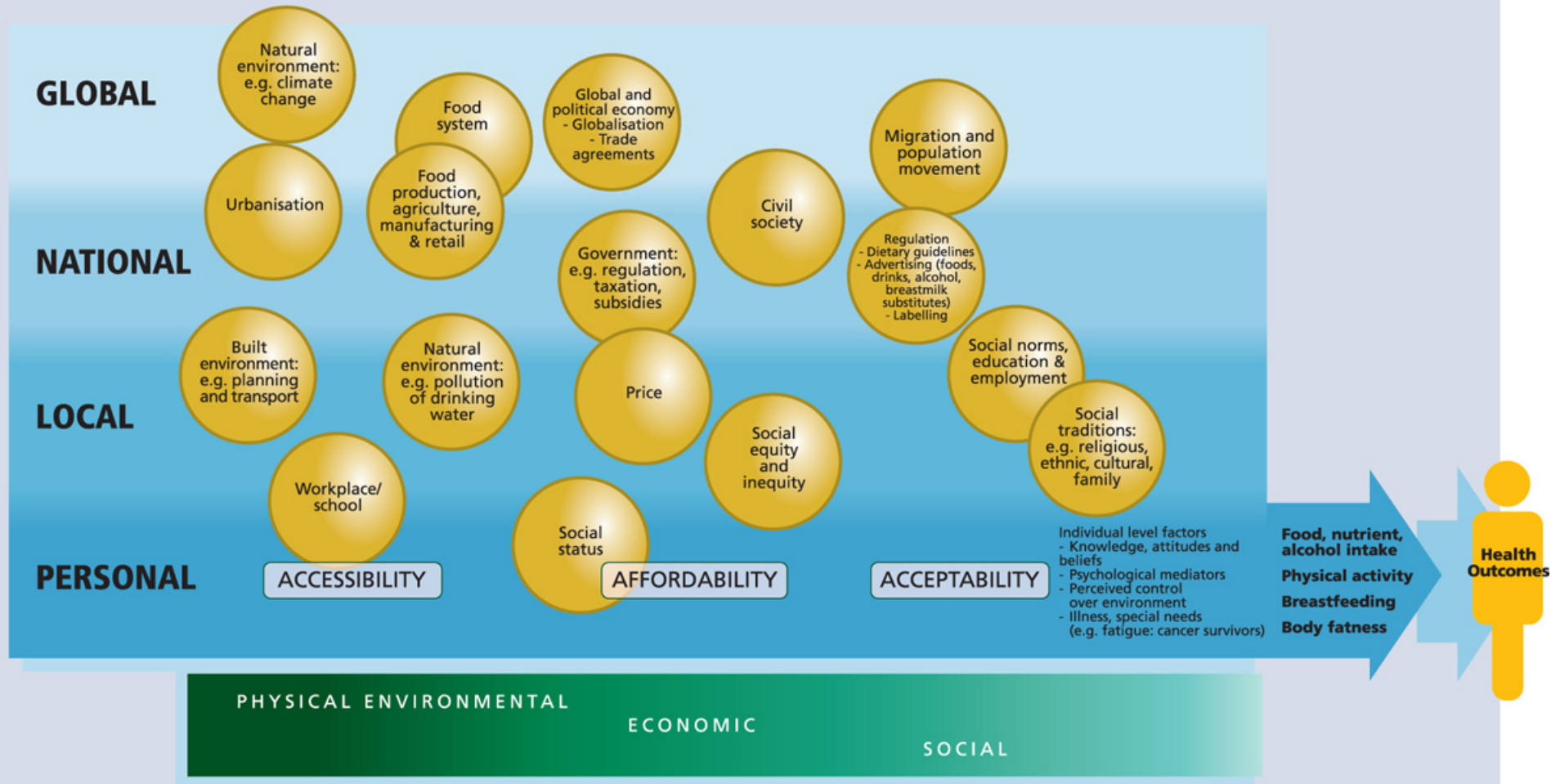


* Per 100,000, world population standard





Factors that affect the risk of cancer: a conceptual framework



Behaviour

- **People behave like those around them**
 - **social norms**
- **Asking people to behave very differently from their social norm only has limited or unsustained effect**
- **Personal choice determines individual variation around the social norm**
 - **small effect**
- **External factors determine social norms**
 - **big effect**