Obesity Culture – Leadership for a Weighty Problem

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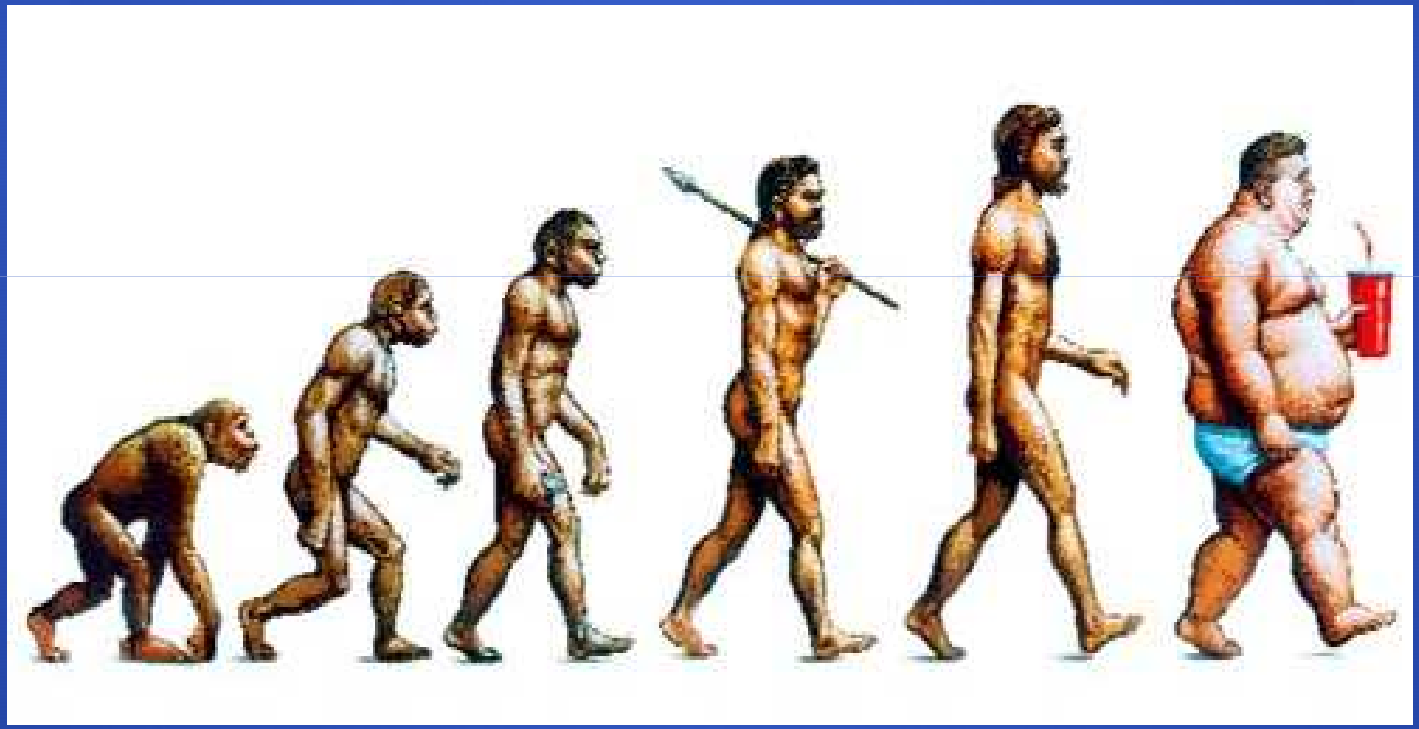
What is Obesity?

- Obesity: Body Mass Index (BMI) of 30 or higher
- Body Mass Index (BMI): A measure of an adult's weight in relation to his or her height, specifically the adult's weight in kilograms divided by the square of his or her height in meters

The evolution of fat man….



We know Obesity is a problem

- More than one-third of U.S. adults (35.7%) are obese
- No state in the US has met the nation's Healthy People 2010 goal to lower obesity prevalence to 15%
- Obesity-related conditions include heart disease, stroke, type 2 diabetes and certain types of cancer, some of the leading causes of death
- In 2008, medical costs associated with obesity were estimated at $147 billion

Asian Situation

- Obesity is on an increase in Asia due to "Westernisation" of diets
- In Singapore, 25.6% were overweight (BMI > 25) and 6.9% obese (BMI > 30)[1]
- The rate of growth of the obese group from 5.1 % in 1994 to 6.9% in 2004 with those in the 60 to 69 year age group having the highest (7.6%) rate of obesity
- Patients in Singapore have a higher body fat percentage than people in the West[2].

[1]*National Health Survey of Singapore in 2004*

[2]Deurenberg-Yap M, et al. The paradox of low body mass index and high body fat percentage in.. Int J Obes Relat Metab Disord 2000;24:1011-7

..and the Obesity Tsunami

- Childhood obesity rates in America have tripled in the last 30 years
- one in three children in America are overweight or obese
- The numbers are even higher in African American and Hispanic communities, where nearly 40% of the children are overweight or obese
- One third of all children born in 2000 or later will suffer from diabetes at some point in their lives

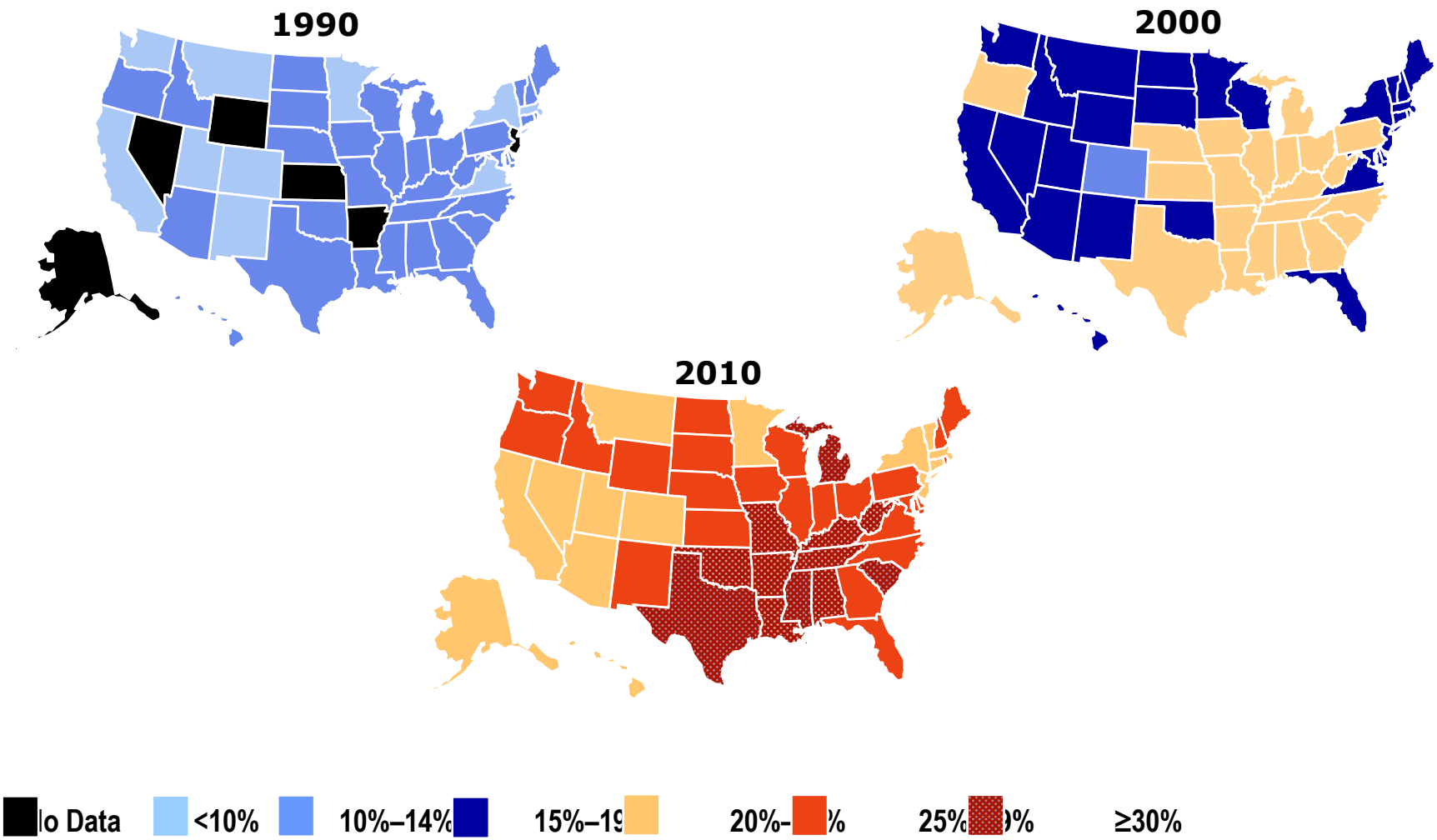
What is being done?

- Government sponsored healthy living campaigns
- Diets and popular culture
- Healthy eating movements
- Research into obesity and its related diseases
- What are the results?

Obesity Trends* Among U.S. Adults

BRFSS, 1990, 2000, 2010

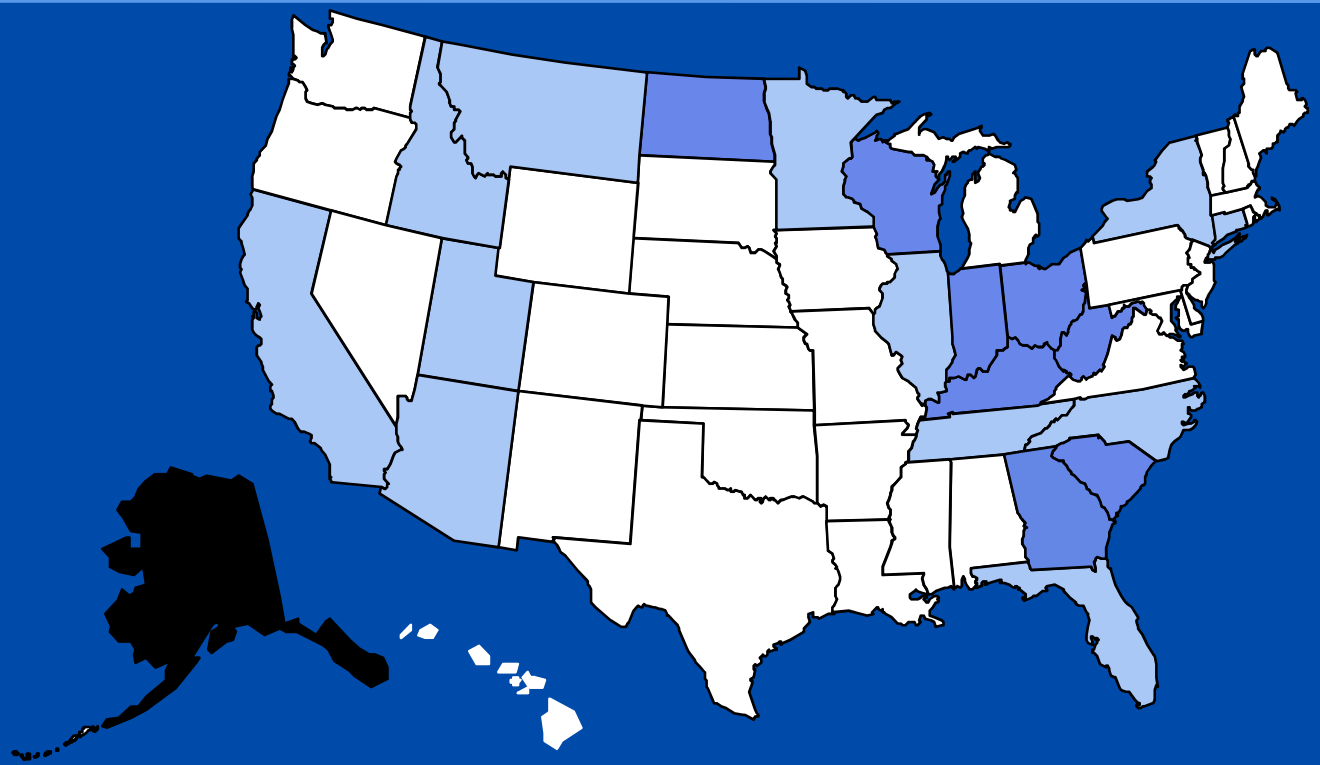
(*BMI ≥30, or about 30 lbs. overweight for 5’4” person)



Obesity Trends Among U.S. Adults

1985

US Behavioral and Risk Factor Survey

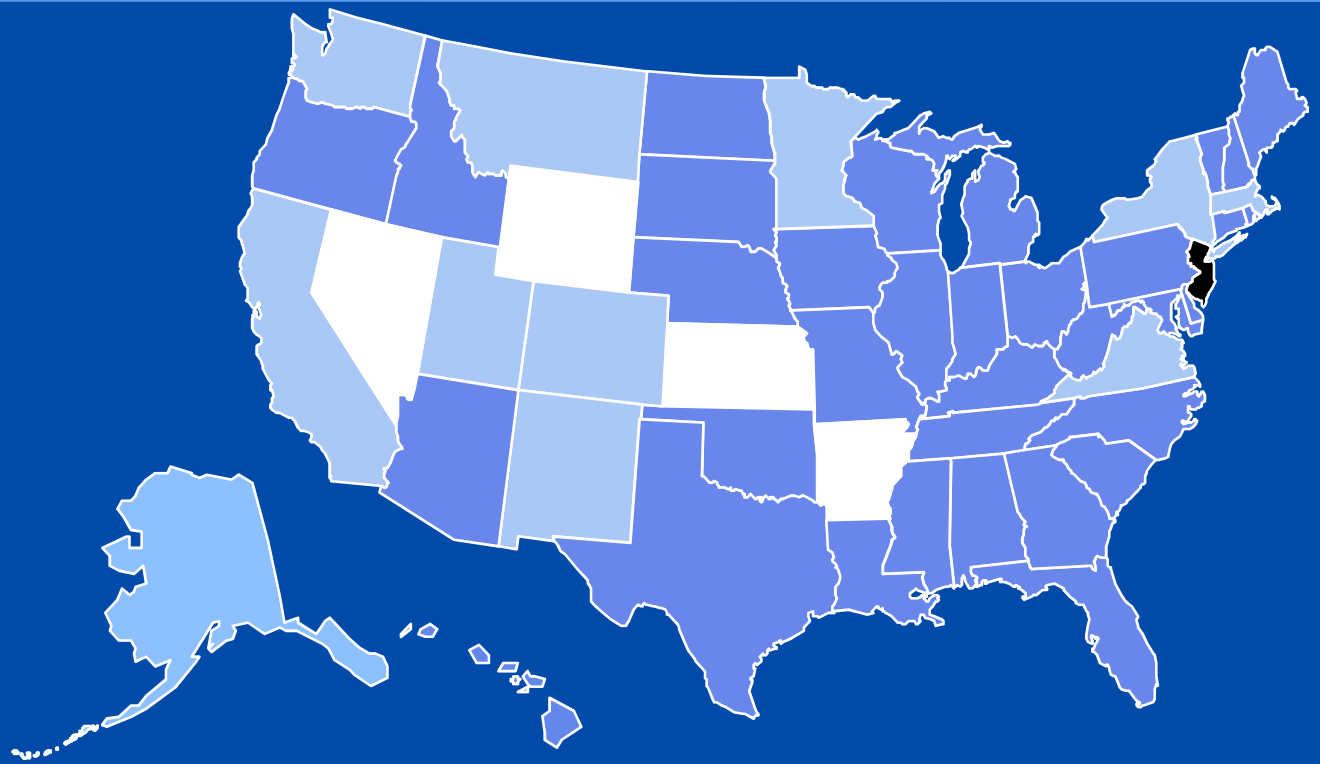


No Data | <10% | 10%–14% | 15%–19% | 20%–24% | 25%–29% | ≥30%

Obesity Trends Among U.S. Adults

1990

US Behavioral and Risk Factor Survey



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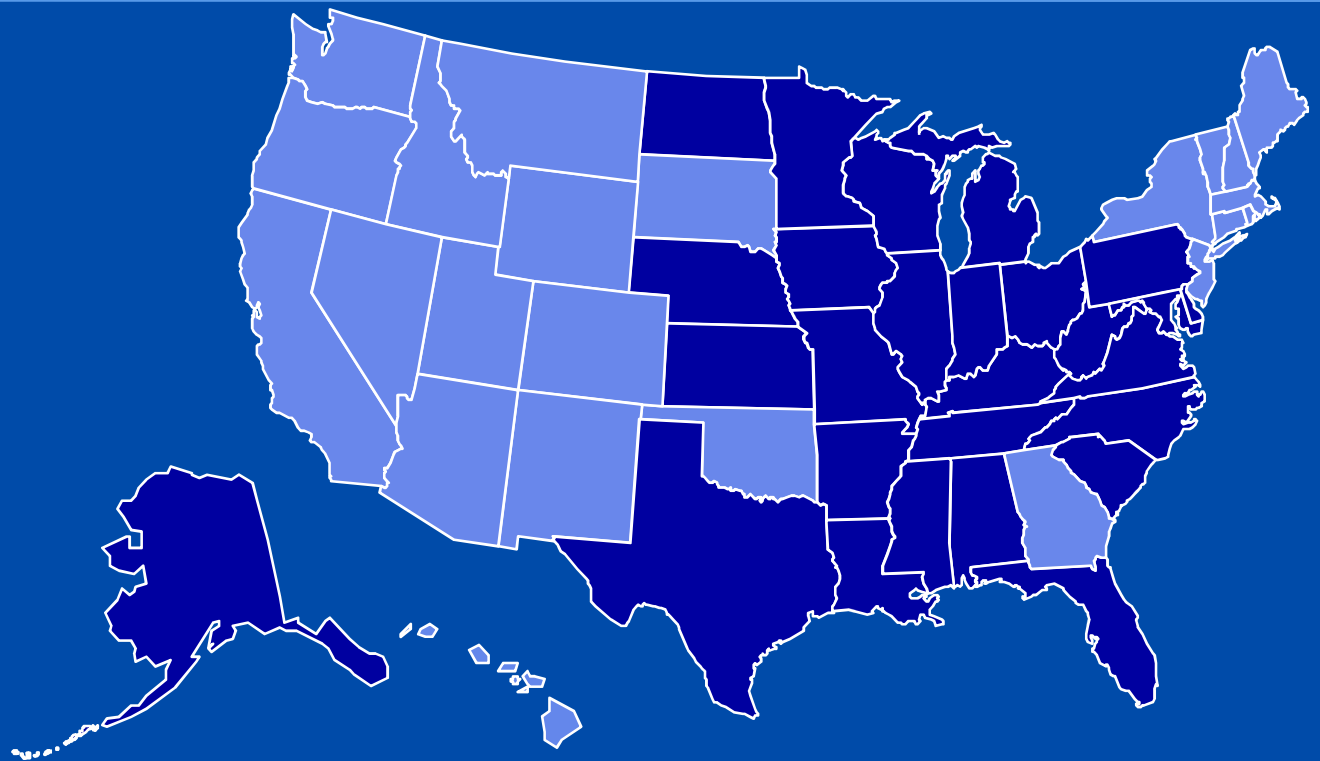
Obesity Trends Among U.S. Adults

1995

US Behavioral and Risk Factor Survey



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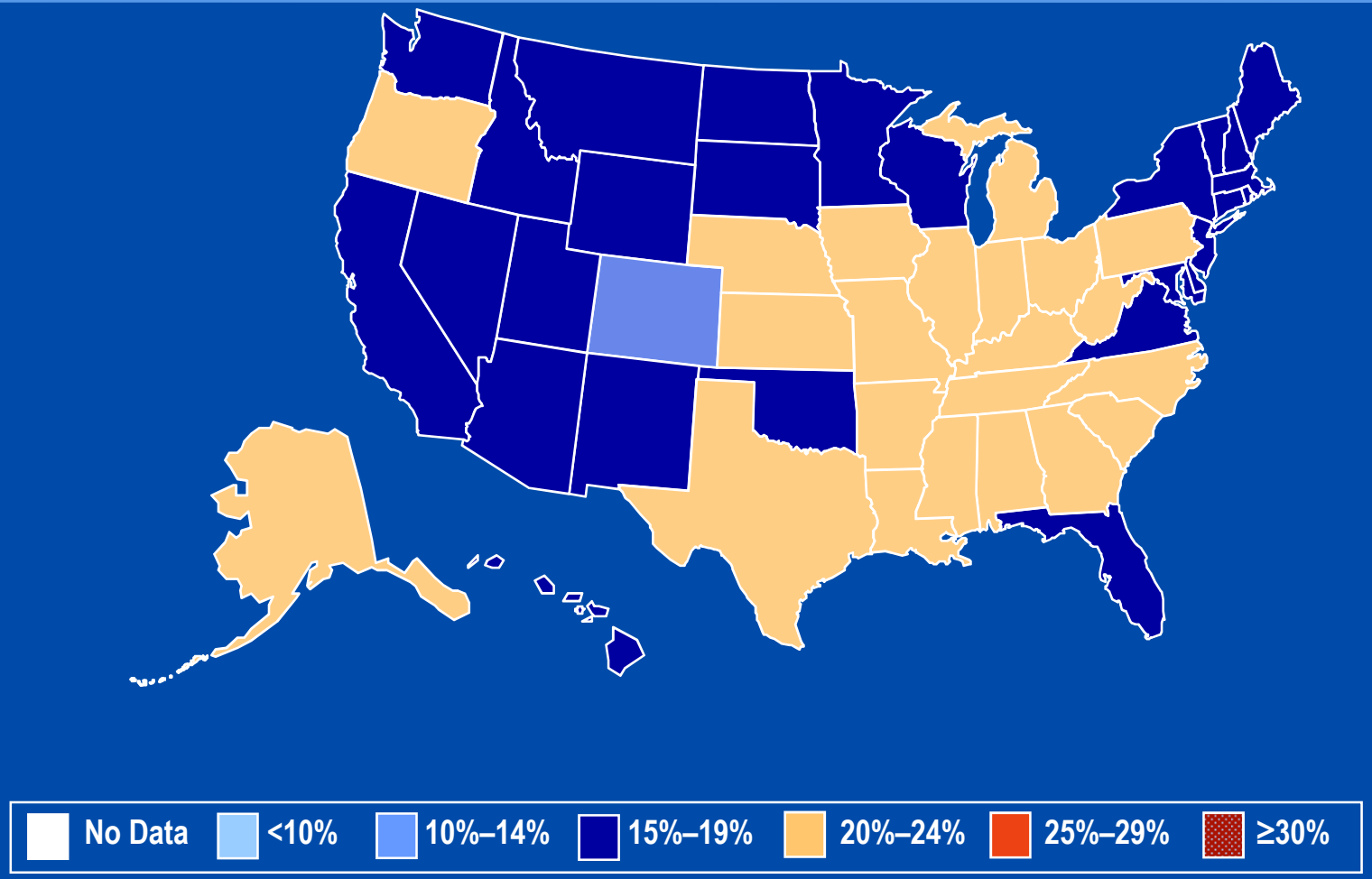
Obesity Trends Among U.S. Adults

2000

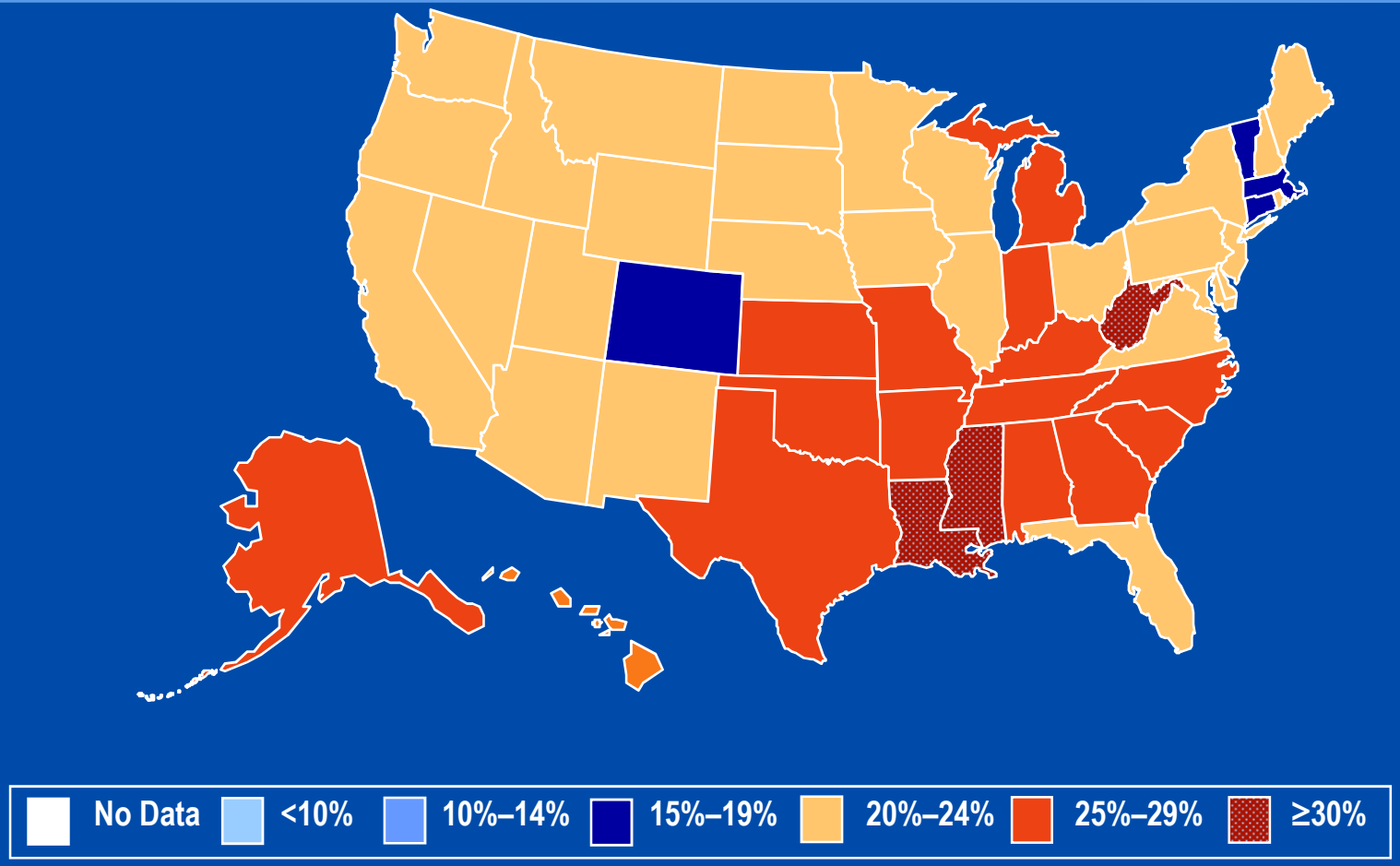
US Behavioral and Risk Factor Survey



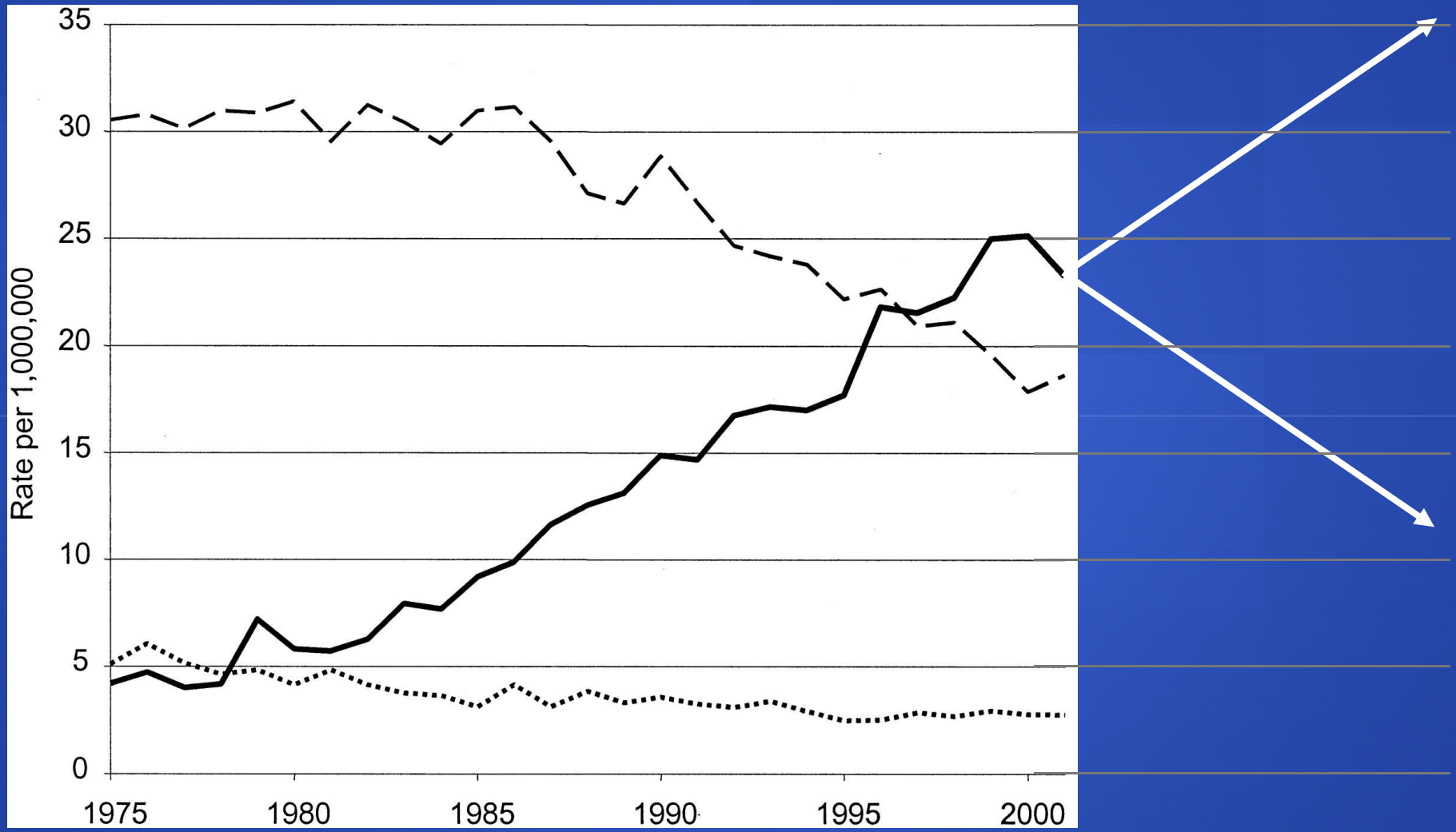
Obesity Trends Among U.S. Adults

2005

US Behavioral and Risk Factor Survey



What will happen next?



The NEW ENGLAND JOURNAL of MEDICINE

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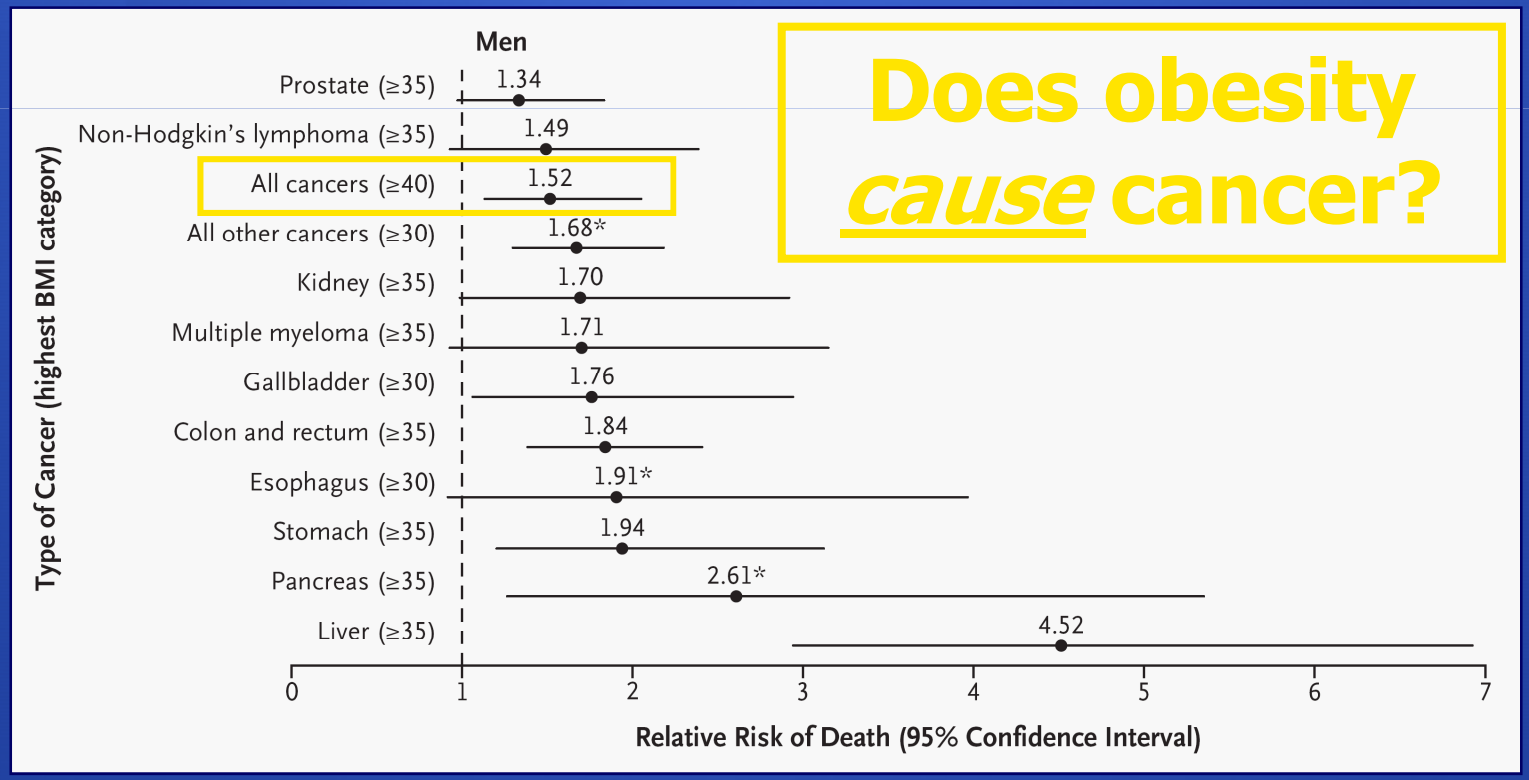
Overweight, Obesity, and Mortality from Cancer in a Prospectively Studied Cohort of U.S. Adults

Eugenia E. Calle, Ph.D., Carmen Rodriguez, M.D., M.P.H., Kimberly Walker-Thurmond, B.A., and Michael J. Thun, M.D.

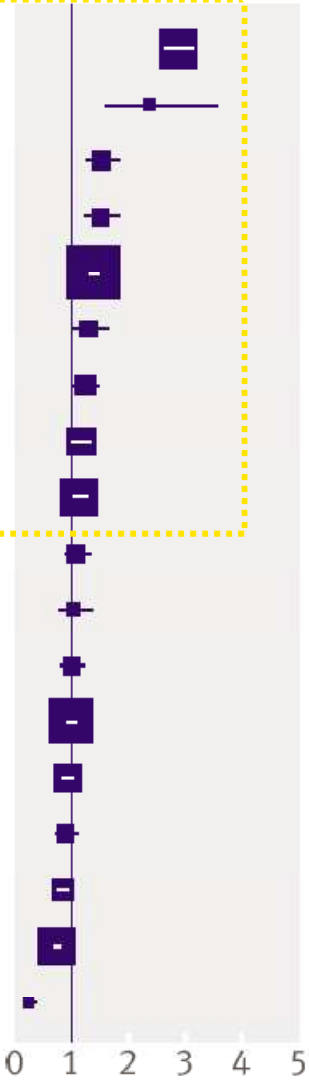


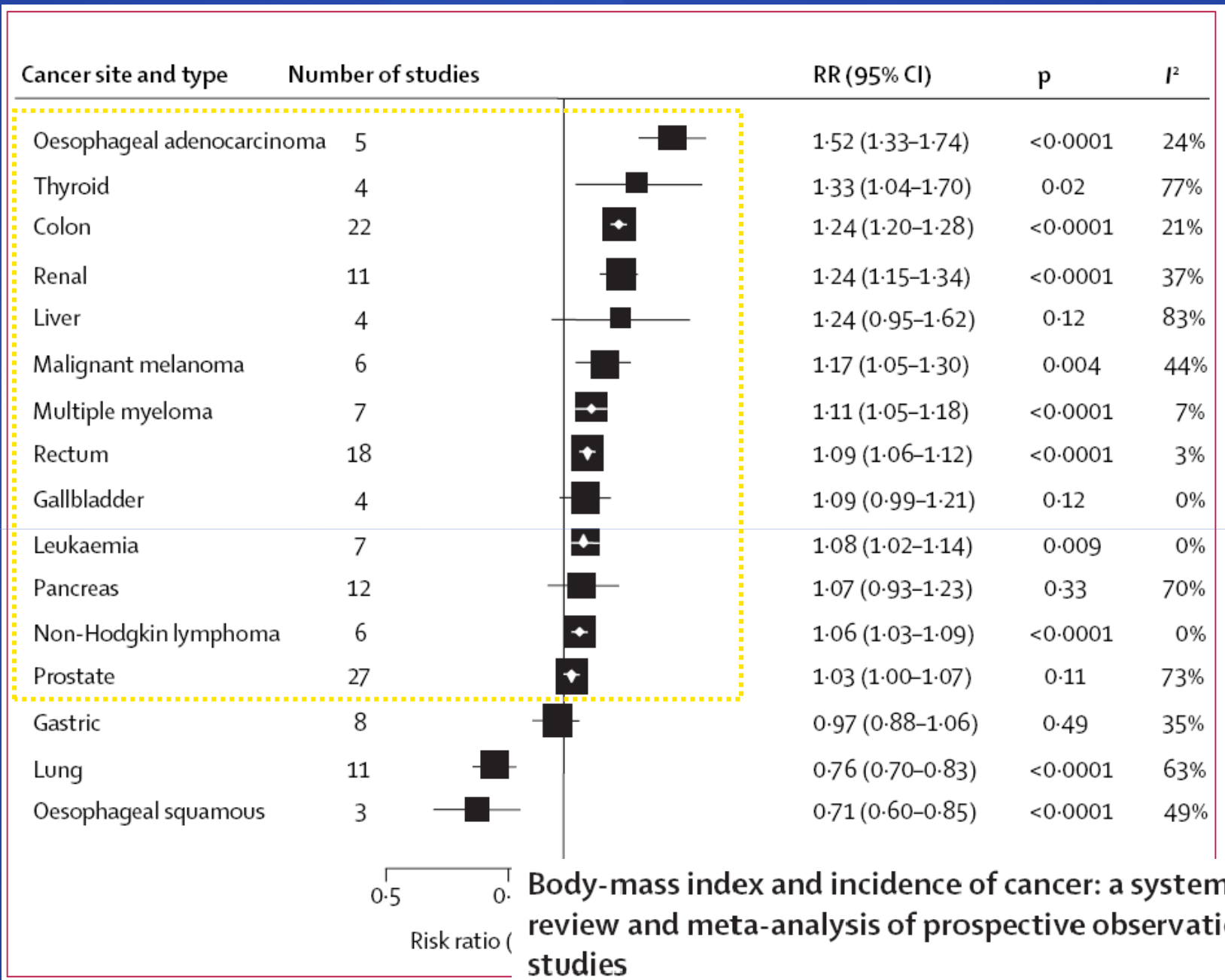
Does obesity *cause* cancer?

BMJ

Cancer incidence and mortality in relation to body mass index in the Million Women Study: cohort study

Cancer site or type	No of cases	Relative risk (95% CI) per 10 unit increase in BMI
Endometrium	2657	2.89 (2.62 to 3.18)
Adenocarcinoma of oesophagus	150	2.38 (1.59 to 3.56)
Kidney	723	1.53 (1.27 to 1.84)
Leukaemia	635	1.50 (1.23 to 1.83)
Breast (postmenopausal)*	5629	1.40 (1.31 to 1.49)
Multiple myeloma	491	1.31 (1.04 to 1.65)
Pancreas	795	1.24 (1.03 to 1.48)
Non-Hodgkin's lymphoma	1509	1.17 (1.03 to 1.34)
Ovary	2406	1.14 (1.03 to 1.27)
Bladder	615	1.09 (0.89 to 1.34)
Cervix	330	1.04 (0.79 to 1.38)
Brain	571	1.01 (0.81 to 1.26)
Colorectum	4008	1.00 (0.92 to 1.08)
Malignant melanoma	1635	0.94 (0.82 to 1.07)
Stomach	521	0.90 (0.72 to 1.13)
Breast (premenopausal)	1179	0.86 (0.73 to 1.00)
Lung	3171	0.74 (0.67 to 0.82)
Squamous cell carcinoma of oesophagus	263	0.26 (0.18 to 0.38)



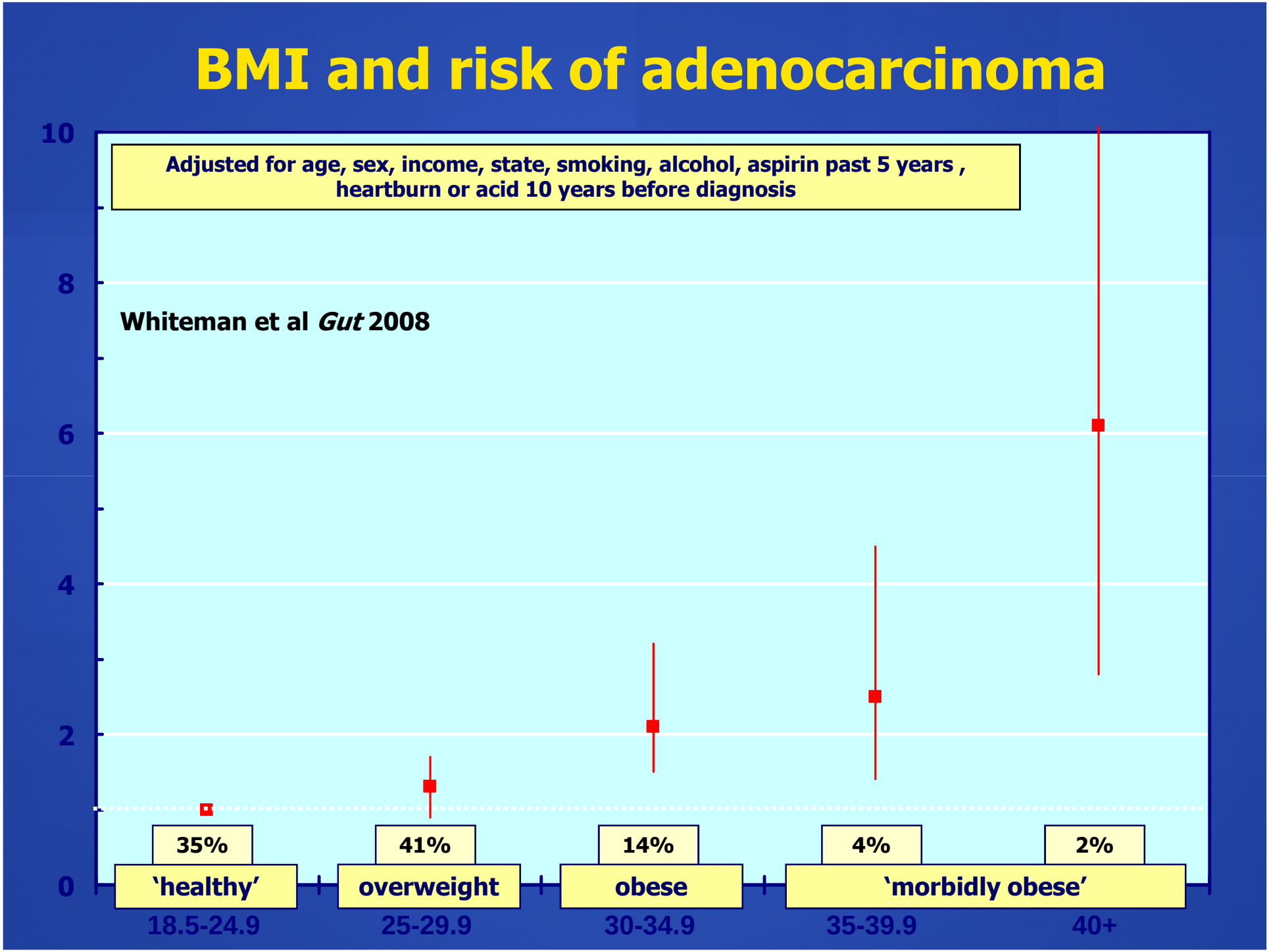


Body-mass index and incidence of cancer: a systematic review and meta-analysis of prospective observational studies

Figure 3: Summary risk estimates by cancer sit

Andrew G Renehan, Margaret Tyson, Matthias Egger, Richard F Heller, Marcel Zwahlen

BMI and risk of adenocarcinoma



Leadership in the Fight Against Obesity

- Obesity is a psycho-social issue, not purely a medical problem
- Although the psychological issues in obesity may be medical, there are also cultural factors which predispose those who are prone to obesity to become obese
- The cultural issues arise from the lack of understanding of the dangers of obesity and how to lead a healthy lifestyle
- Bariatric surgery is the only reliable long term "cure" for obesity

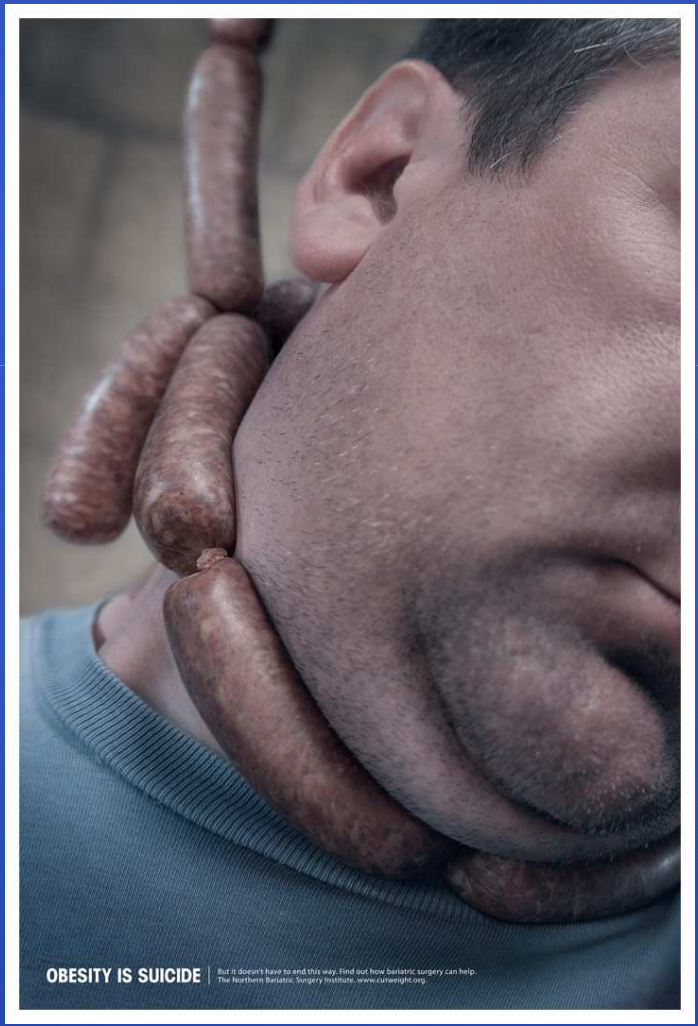
Is Smoking Cool?

Now


The average smoker needs over five thousand
Get unhooked. Call 0800 169 0 169 or

Obese People are Funny

Now?


OBESITY IS SUICIDE
But it doesn't have to end this way. Find out how bariatric surgery can help.
The Northern Bariatric Surgery Institute. www.cutweight.org

Culture Shift

- More needs to be done to drive home the message that obesity is dangerous
- Being conscious of calories and keeping fit need to be promoted
- Hard to tell people who are obese to seek help as it might "hurt their feelings" but acceptable to tell people to stop smoking
- Actively and positively encourage obese persons to consider bariatric surgery

Psychology

- Although depression and its medical treatments are known to cause weight gain, the vast majority of obese person were not diagnosed with depression as a cause of obesity
- Some evidence to suggest that certain people are more prone to obesity than others –emotional deprivation, emotional eating, etc
- Bariatric surgery re-sets the satiety signals to the brain, short-circuiting the emotional urges to eat

Social

- Social perception that obese people are lazy, poorly motivated and have themselves to 'blame' for their obesity
- But obesity is multifactorial – genetics, psychology, gender, social class, alcohol, smoking, prescribed drugs (e.g some antidepressants, insulin, diabetic drugs)
- All obese persons should be referred to established weight management programs to address these issues and the need for medications and/or surgery

Weight Management Programs

- Widely available in major hospitals internationally
- Consists of physicians, counselors, psychologists, psychiatrists, dieticians, nurses, plastic and bariatric surgeons
- Holistic approach to weight loss
- Requires regular follow ups and commitment to lose weight

Medical therapies

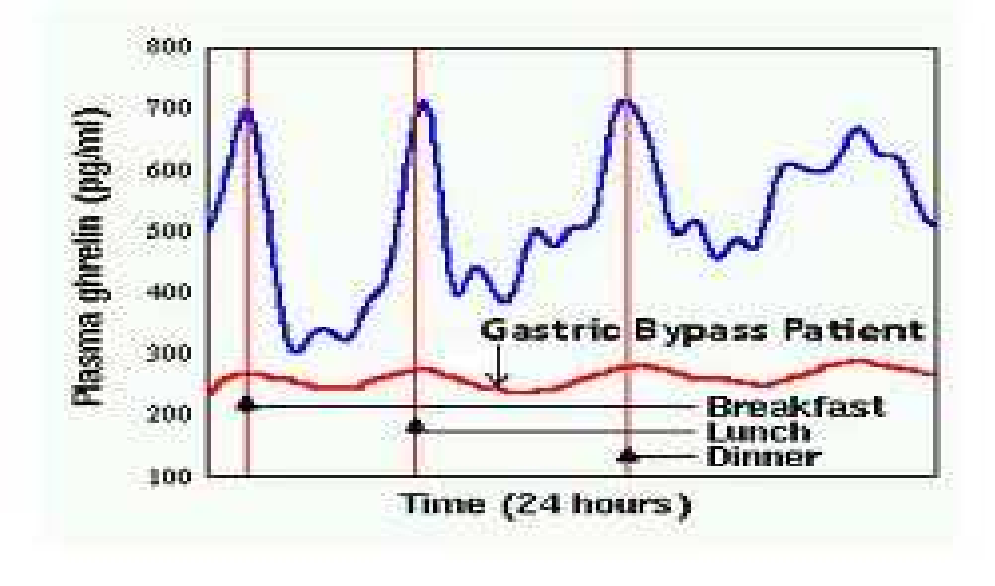
- Dieting and exercise are popular recommendations for fat people to lose weight
- However, it might not be enough for those who are obese
- Good evidence to show that diabetic drugs may actually lead to weight gain
- Crash diets may lead to weight loss in the short term but patients eventually put back the weight due to hormonal factors

Leptin

- Leptin is a hormone which is secreted by adipocytes (fat cells) and acts on the hypothalamus
- It is released when the lipid content in the cells are high, it acts on the hypothalamus to reduce hunger and increase energy expenditure
- Dieting decreases leptin hence reducing metabolism and stimulates appetite

Ghrelin

- Secreted by the stomach and acts on the hypothalamus to simulate appetite
- Peaks before meals and decreases after meals



Cummings et al. Diabetes 50:1714, 2001

Bariatric Surgery

- Bariatric surgery is weight loss is achieved by reducing the size of the stomach and/or the absorptive capacity of the intestines with
  - An implated medical device (gastric banding)
  - Removal of a portion of the stomach (sleeve gastrectomy)
  - By resecting and re-routing the small intestines through a small stomach pouch (gastric bypass surgery)

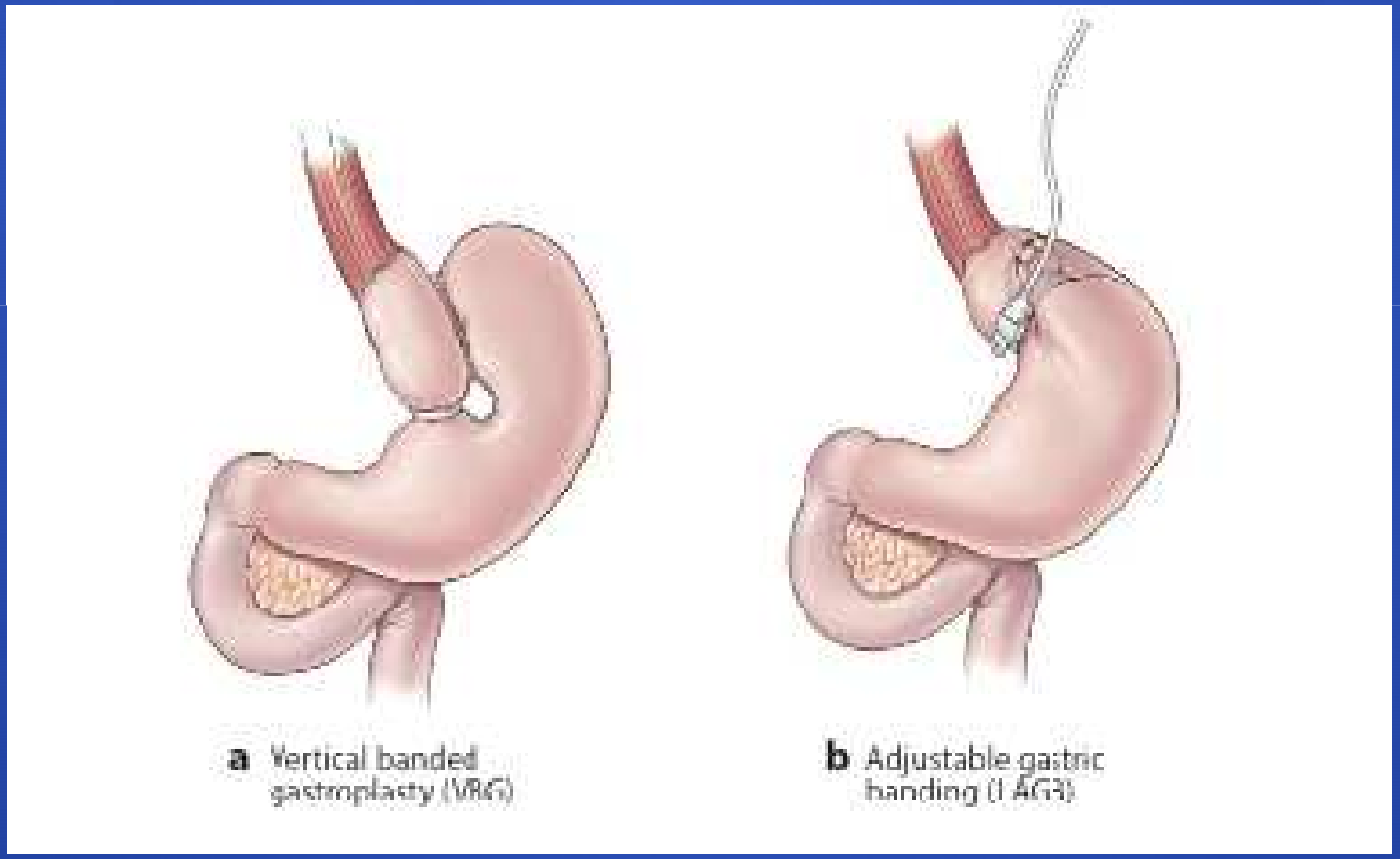
Bariatric Surgery

- It is the only therapy that provides effective long term weight loss and reversal of obesity related diseases such as diabetes, hypertension and high cholesterol
- Also treats other associated diseases such as obstructive sleep apnoea, osteoarthritis, gallstone disease and decreases risk of stroke and heart attack
- Sustained weight loss and diabetes resolution is possible without medications

How Does it Work?

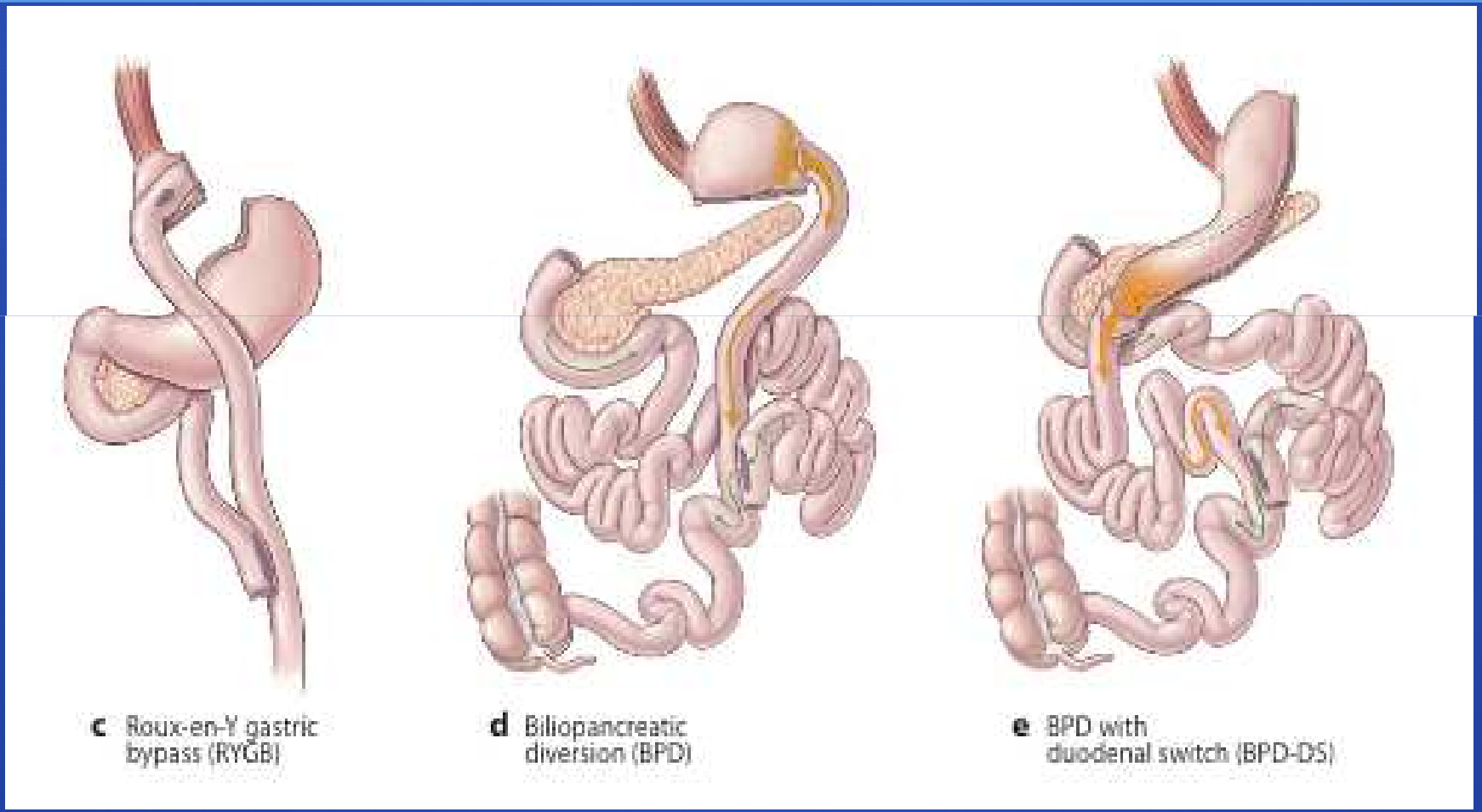
- Restrictive – decreases the stomach volume so patients cannot eat as much and feels full faster
- Malabsorptive – decreases absorptive surface so what is eaten does not get effectively absorbed
- Alters gut hormones in a way that decreases appetite, improves diabetes and increases metabolism
- Re-sets the body's energy balance and metabolism by unknown hormonal mechanisms

Gastric Banding



Adapted from Rubino et al. Annu. Rev. Med. 2010.

Bypass and Sleeve Gastrectomy



Adapted from Rubino et al. Annu. Rev. Med. 2010.

Risks

- General risks of surgery – bleeding, infection, general anasethesia
- Leak at the joints of the intestine, hernias
- Gallstone and possible kidney stone disease due to rapid weight loss
- Symptoms of nausea, vomiting and retching when eating initially
- Mortality 0.2% (international figures)
- For bypass patients:
  - Long term malnutrition (vitamin deficiencies) if patients do not take multivitamins – anaemia, numbness in limbs, clotting disorders
  - Osteoporosis due to low calcium (requires supplementation)

Risk: Benefits

- Diabetes – lifelong medications for established diabetics, risk of heart attack, stroke, kidney failure, amputations, blindness, etc
- Hypertension – stroke, heart attack, kidney failure, heart failure, peripheral vascular disease
- Hyperlipidaemia – lifelong medications, coronary artery disease, peripheral vascular disease
- Obstructive sleep apnoea – daytime somnolence, poor attention, poor cognition, increase risk of strokes and heart disease
- Osteoarthritis – pain and swelling in knees and lower limbs, poor mobility
- Deep vein thrombosis - clots in legs which can migrate to the lung and cause pulmonary infarcts and death
- Gallstone disease – infected gallbladder, cholangitis, etc
- Increased risk of cancer – various types

Post Bariatric Surgery

- Small meals, early satiety
- Symptoms of nausea and vomiting
- Weight loss related complications – gallstones, excess skin, hernias
- Lifelong multivitamins
- Regular follow up

Action Plan?

- Governments need to recognize that obesity is a public health threat, not just another disease
- More accurate and positive publicity needed to change the social perception of obesity as a variation of the norm
- More research to elucidate the mechanisms of weight loss surgery and provide better cures
- More regulation and research into improving safety of bariatric surgery internationally