

OBESITY THE DISEASE

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Who is this?



Aneurin Bevin

- Born in Tredegar
- Founder of National Health Service
- Member of Parliament

IS OBESITY A DISEASE?

- World Health Organisation – ‘Yes’
- Royal College of Physicians – ‘Yes’
- American Physician’s Association – ‘Yes’
- National Health Service – ‘No’

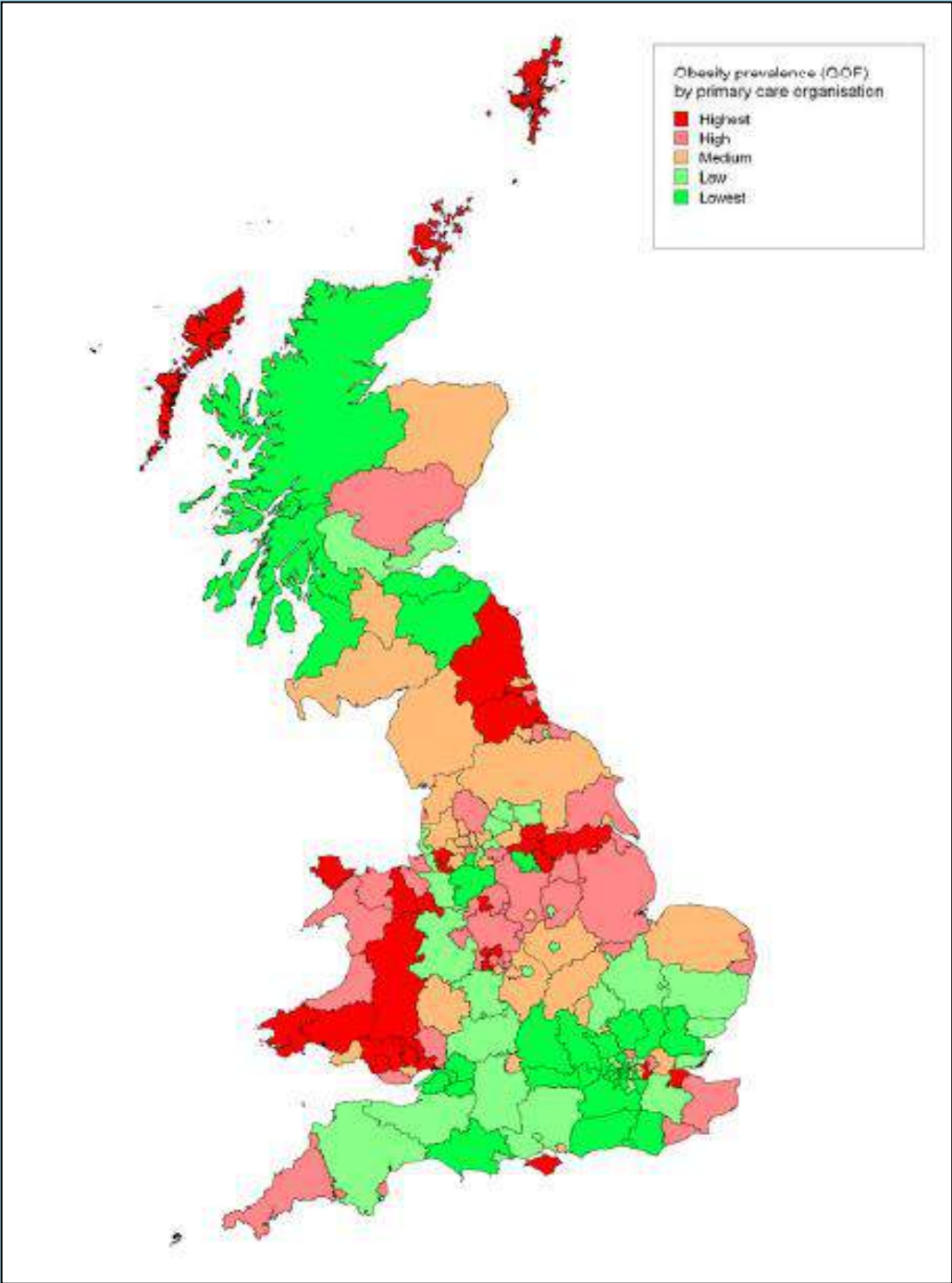
CAUSES

- Genetic
- Environmental
- Psychological/emotional
- Hormonal
- Ethnicity
- ? Inflammatory ? Viral



The Epidemic

- A global disease
- The rate in the UK highest in the world, exceeded only by USA
- The rate in Wales is highest in the UK
- The prevalence in Wales is still rising!
- Current cost on adverse consequences is £10 billion/year, predicted to be £50 billion/year in 2050!



Dr Foster's Medical Research Report

August 2008

THE TOP 5 SLIMMEST PLACES

- Camden
- Richmond and Twickenham
- Wandsworth
- Kensington and Chelsea
- Westminster

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THE FIVE OBESITY HOTSPOTS

- Shetland
- Torfaen
- Blaenau Gwent
- Neath
- Caerphilly



OBESITY CLASS

BMI	Kg/m ²
Underweight	≤ 18.5
Normal weight	18.6 – 24.9
Overweight	25.0 – 29.9
Obesity class I	30.0 – 34.9
Obesity class II	35.0 – 39.9
Obesity class III	≥ 40

Who is this?



- Brecon-born Frances Hoggan was the first woman in Britain to receive a Doctor of Medicine degree in 1870.



CO-MORBIDITIES

- Inevitable (if obesity not treated)
- Preventable (if obesity is treated)
- BMI dependant
- Not age or gender related
- Not predictable (time and severity)

CO-MORBIDITIES continued

- **Endocrine/metabolic** - Metabolic syndrome, insulin resistance, impaired glucose tolerance, type II diabetes mellitus, dyslipidaemia, polycystic ovary syndrome
- **Cardiovascular** - Hypertension, coronary heart disease, congestive heart failure, dysrhythmias, pulmonary hypertension, ischaemic stroke, venous stasis, deep vein thrombosis, pulmonary embolus
- **Respiratory** - Abnormal pulmonary function, obstructive sleep apnoea, obesity hypoventilation syndrome
- **Gastrointestinal** - Gastroesophageal reflux disease, gallstones, pancreatitis, abdominal hernia, non alcoholic fatty liver disease, (steatosis, steatohepatitis, cirrhosis)

CO-MORBIDITIES continued

- **Musculoskeletal** - Osteoarthritis, gout, low back pain
- **Gynaecologic** - Abnormal menses, infertility
- **Genitourinary** - Urinary stress incontinence
- **Neurologic** - Idiopathic intracranial hypertension (pseudotumour cerebri)
- **Cancer** - Oesophageal, colon, gallbladder, prostate, breast, uterus, cervix
- **Psychological** - Low self esteem, depression, binge eating, anxiety, suicide
- **Social** - Loneliness, isolation, unemployment
- **Others** - Alzheimer's disease, gum disease etc

OBESITY STAGES (EOSS*)

Stage 4: End-Stage

Stage 3: End-Organ Damage

Stage 2: Established Co-morbidity

Stage 1: Preclinical Risk Factors

Stage 0: No apparent Risk Factors

The Disease

- Life-long disease
- Progressive disease
- Silent disease
- Killer disease
- Prevalence correlates with socioeconomic status, higher in deprived areas
- Affects most organs and systems

BMI related to mortality

On average, **each** 5kg/m² rise in BMI over 25 is associated with a 30% higher overall mortality rate (mainly due to vascular disease).

- At BMI 30-35 life expectancy is reduced by 2 - 4 years
- At BMI 40-45 life expectancy is reduced by 8 - 10 years
(this is comparable with the effects of smoking)

FORESIGHT REPORT 2007

- Estimated that by 2050 -
85% of the population will be overweight or obese
- 60% of men and 50% of women and 25% of children will be obese
- Increase in the incidence of -
Type II diabetes by 70%
Stroke by 30%
Coronary heart disease by 20%

Obesity in Wales

- Estimated cost to the NHS - £75 million/year
- 50,000 people with a BMI 40Kg/m² or above
- 7000 people with a BMI 50Kg/m² or above
- Highest (Aneurin Bevan H/B) – 11,200
- Lowest (Powys H/B) – 1,200

Where was this actor born?



Sir Anthony Hopkins

- **Hollywood Actor**

Stage and screen, featured in films such as:

'Silence of the Lambs', 'Zoro', 'Remains of the day'
and many many more.

- **Born in Port Talbot, Wales.**

Management of the overweight patient

- Behavioural treatment
- Dietary approaches
- Exercise
- Drug treatment
- Surgical intervention

How Obesity should be Managed?

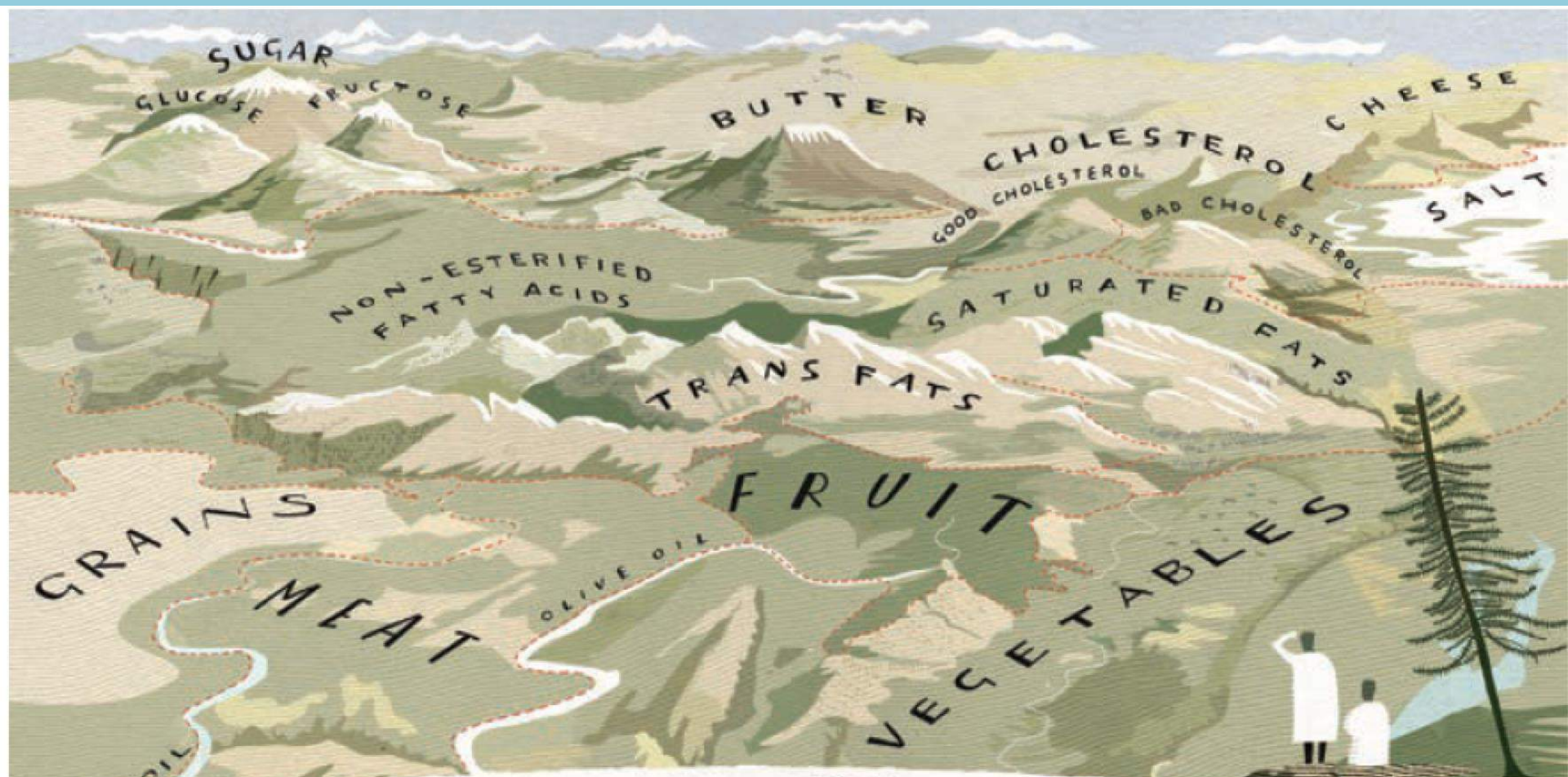
- Multi-disciplinary approach
- Bariatric team (similar to cancer care)
- Trained and experienced health professionals
- Motivational interviewing has a key role
- Coordinate strategy across ministerial departments
- Administrative and financial support

Multidisciplinary approach

- A dedicated clinic with appropriate facilities (scales, chairs, large cuff)
- A doctor with an interest in obesity
- A dietician with an interest and experience in obesity
- Access to a psychologist with an interest in eating disorders
- A sympathetic and understanding physical therapist

Are we what we eat?

- High calorie diet!
- High fat diet!
- High carbohydrate diet!
- ? All of the above!



The Dietary Great Game

*More Casualties than
the Great Clash of
Empires*

Properties of macronutrients

Properties		Fat	Protein	Carbohydrate	Alcohol
Kcal/g (kj/g)		9 (38)	4 (17)	4 (17)	7 (29)
Energy density	High	Low	Low		High
Thermic effect (as % of energy content)	2-3%	25-30%	6-8%		15-20%
Storage capacity	High	None	Low		None
Autoregulation		Poor	Good	Good	Poor
Ability to suppress hunger	Low	High	Medium		Negative (stimulant)

Exercise



1992 Allied Dunbar National Fitness Survey*

- 35% undertake less than four 20 minutes of moderate activity/previous month
- 20% walked continuously for 2 miles/month
- <10% cycled

10,000 steps a day programme*

Energy use for various activities

- Sitting 100 kcal/hr
- Standing 140 kcal/hr
- Housework 180 kcal/hr
- Gardening 220 kcal/hr
- Brisk walking (4 mph) 330 kcal/hr
- Squash 600 kcal/hr
- Jogging (6 mph) 750 kcal/hr

Exercise, current recommendation?

Very confusing

Duration 15-60 minutes

Intensity 45-90%

Frequencies 3-6 times a week

The reason for the confusion...

- Desired outcome
- Reasons for weight loss (weight loss, maintenance, health benefits)
- Compliance of population, (some better than none)

Total daily energy expenditure (EE) interaction of...

BMR (50-70%)

Thermogenesis (10%)

Physical activity (20-50%)

Adding exercise to a low fat diet increases BMR from 0.26kcal/kg to 2.65kcal/kg* this effect continued as long as regular exercise is **maintained**.

*Svendsen et al. Int J Obes Relat Metab Disord. 1994

Energy for skeletal muscle activity is gained from:

- Oxidation of free fatty acids
- Utilization of glycogen and triglyceride stores
- Metabolism of glucose

Body composition or BMI?

- In normal subject fat makes up 15% of male and 20% of female body mass.
- Visceral obesity causes more ill health
- Fat reduction can occur without subsequent BMI reduction (preservation or increase in lean mass)

- Waist circumference may be more suitable than BMI in measuring weight loss while exercise is combined with diet
- Preservation of lean mass prevents the plateau effect seen in calorie restricted diets
- When lean mass is lost, **regain** is more likely*

*Rippe et al. J Am Diet Ass. 1998

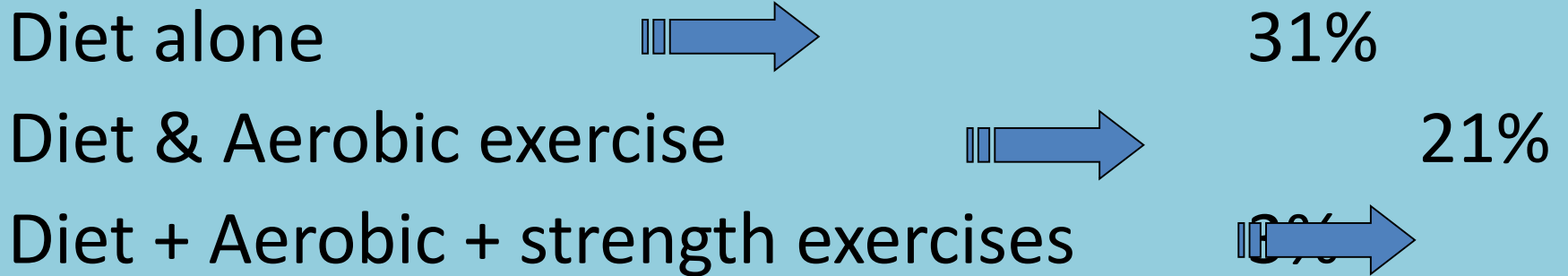
Type of Exercise

- Aerobic exercise:
continuous rhythmic movement of larger muscle groups, includes walking, jogging, cycling, dancing, swimming etc
 - best recommended for weight loss
 - Easily adaptable for intensity, duration and frequency
 - Requires no specialist equipment

- Resistant exercise:
 - these are strength training exercises which lead to increased muscle mass
 - Increase exercise endurance as well as EE
 - May also increase BMR due to high metabolic rate of muscle

Similar weight loss

Percentage of lean mass loss:



*Bouchard et al. Int J Obes. 1990

How much is enough?

Moderate intensity rhythmic aerobic exercise using large muscle groups: 5 days per week

- > 420 minutes per week for clinically significant weight loss
- > 300 minutes per week to prevent weight regain
- > 180 minutes per week to enhance insulin sensitivity

WHO IS THIS PERSON?



**THE FITTEST AND THE HEALTHIEST
PERSON ON EARTH**

Barriers to Exercise

- Reluctance to exercise
- Time constraints
- Poor facilities, (poor income)
- Embarrassment
- Low self-efficacy (disability, poor fitness, low self confidence).

DIOLCH YN FAWR!