

## Cardiovascular consequences of obesity: how will the UK cope?

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<b>Abbreviations</b>	BMI, body mass index; CHD, coronary heart disease; CVD, cardiovascular disease; NHS, National Health Service; NICE, National Institute for Health and Clinical Excellence; RCP, Royal College of Physicians; T2DM, type-2 diabetes mellitus
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### Introduction

“The UK has the second highest prevalence of obesity in the world, and something needs to be done about it.” These words were uttered by Sir Richard Thompson (President of the Royal College of Physicians [RCP]) in an introduction to a recent RCP working party report, *Action on obesity: comprehensive care for all* [1]. A key recommendation of the working party is that the healthcare system of the UK must adapt to the demands of an increasingly obese nation. Exactly how obese has the UK become? Using a definition of obesity based on the body mass index (BMI) (with levels of risk set by the National Institute for Health and Clinical Excellence [NICE], Table 1), data from the 2012 *Health Survey for England* show that, in 2010, 26% of men and women were obese, and that 42% of men and 32% of women were overweight. It is estimated that, by 2050, the majority of Britain’s population will be so categorised [2,3]. Perhaps of more concern is the observation that, in 2010, around 3-in-10 boys and girls (aged 2–15 years) were classified as overweight or obese (31% and 29%, respectively), which is very similar to the 2009 findings (31% for boys and 28% for girls).

Obesity has negative impacts in childhood as well as in the long term. In later life, affected children may experience adverse outcomes. These include: breathing difficulties; increased risk of fractures; hypertension; early markers of cardiovascular disease

(CVD); insulin resistance (leading to type-2 diabetes mellitus [T2DM]); and psychological effects. The link between T2DM and obesity is evident particularly in children. In general, obese people are 80-times more likely to develop T2DM, and ≥75% of patients with DM die of cardiovascular causes, often prematurely [5]. Indeed, “overwhelming evidence supports the importance of obesity in the pathogenesis and progression of cardiovascular disease” [6].

Diseases of the heart (coronary heart disease, CHD) and circulatory system are the main cause of death in the UK, and accounted for 180,000 deaths in 2010 [7]. This represents just under 1-in-5 deaths in males and 1-in-10 in females. The incidence of CHD has declined by almost two-thirds among men in the UK over the last 25 years. More than half of this decline can be accounted for by favourable trends in the control of risk factors (e.g., reductions in blood pressure and smoking). It is disappointing, however, that this decline is being curbed by the increasing prevalence of overweight and obesity within the population, as shown in a 20-year follow-up of British men and women in the Whitehall II Study [8].

There is abundant evidence that the prevalence of CVD is highest in the lowest socioeconomic groups in the UK [7]. Similarly, there is an obvious north–south divide, whereby the prevalence of CHD death is highest for men and women in Scotland and lowest in England.

This north–south divide is also apparent for obesity trends within the UK. For example, northern England has a higher prevalence of obesity than southern England [2]. Obesity has been stated to “stem from an energy imbalance derived from a complex interplay of behavioural, genetic, environmental, and social factors” [9]. Hence, to confront the social determinants of health, we must widen our perspective to intervene at many

**Table 1.** Risk categories using the body mass index (BMI) set by the National Institute of Health and Clinical Excellence.

BMI classification	Waist circumference			
	Male	Low <94 cm	High 94–102 cm	Very high >102 cm
	Female	<80 cm	80–88 cm	>88 cm
Normal weight		No increased risk	No increased risk	Increased risk
Overweight (25 to less than 30 kg/m <sup>2</sup> )		No increased risk	Increased risk	High risk
Obesity (30 to less than 35 kg/m <sup>2</sup> )		Increased risk	High risk	Very high risk

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levels and, using cross-sectional ‘multi-pronged’ approaches, create social and physical environments that promote good health for all.

## Approaches to intervention

In the UK, the costs of dealing with the adverse consequences of obesity have been estimated to be £5 billion *per annum*, a figure that will double by 2050 [1]. The RCP Working Party have suggested that, despite the strain put on the National Health Service (NHS) by obesity, the delivery of healthcare to patients with an established obesity problem is ‘extremely patchy’. For example, there are large variations in the way obesity is treated across the UK, with the incidence of gastric banding procedures carried out in hospital ranging from 0.4 per 100,000 in some primary care trusts to 41.3 per 100,000 in others, constituting a 93-fold variation [10].

The RCP report criticises the fact that there are few ‘joined-up’ services for people who are overweight [1]. The RCP working party make several key recommendations, including the designation of a “strong but politically independent” person in a government role to coordinate the work of departments that could have an impact on obesity, and drive a coordinated strategy to counter obesity. Other recommendations include:

- Appointment of a lead physician for obesity at every hospital trust. He/she will interact with commissioning groups, provide a source of patient information, and be a hospital–community link.
- A patient charter should be developed for those with obesity problems.
- A specialist group of bariatric nurses be set up in collaboration with the Royal College of Nursing.
- Improve weight-management resources for healthcare workers with obesity problems.

In effect, the report provides a blueprint for action and underlines how obesity and nutrition are represented inadequately in the medical undergraduate curriculum, a deficit which should be rectified.

The recently set-up Health and Wellbeing Boards (<http://healthandcare.dh.gov.uk/hwb-guide/>) could establish a forum in which key leaders from the health and care system work together to improve the health and wellbeing of their local population and reduce health inequalities. These boards may eventually play an important part in improving provision of care for individuals with weight disorders. Each top-tier and unitary authority will

have its own Health and Wellbeing Board. Board members will collaborate to understand the needs of their local community, agree priorities, and encourage commissioners to work in a more organised manner. As a result, patients and the general public should experience more integrated services from the NHS and local councils in the future.

Other strategies *via* the Department of Health that may assist in educating consumers on better nutrition include front of pack-consistent nutrition labelling that clearly displays how much fat, saturated fat, salt and sugar as well as how many calories food products contain. This proposed system will use colour coding, and act as a guide to healthy options and help control calorie intake. The new labelling is expected to be in use by summer 2013.

Perhaps one of the greatest challenges to improve public health will be to manipulate conditions whereby energy input = energy output. As one recent review stated, “sitting is the new smoking” and that a sedentary lifestyle will cause disability [11]. A regimen of moderate exercise will add life to years as well as years to life, and act as an antidote to incurring weight-related diseases. Exercise programmes (recreational and otherwise) should be encouraged among individuals of all ages.

## Conclusions

The prevalence of obesity is increasing and is associated with premature CVD and other diseases. We need to increase investment in obesity research and better educate healthcare professionals in the provision of care for individuals with overweight or obesity issues. The RCP report along with many other ongoing programmes provides an ideal template for the implementation of strategies towards the treatment and prevention of obesity, and aims towards ‘comprehensive care for all’ [1].

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