

## Urgently needed: a framework convention for obesity control

In this issue of *The Lancet*, we publish a Series of four papers that critically examine what we know about the global obesity pandemic. The first paper summarises its drivers, the second its economic and health burden, the third the physiology behind weight control and maintenance, and the fourth concludes what science tells us about the kind of actions that are needed to change our obesogenic environment and reverse the current tsunami of risk factors for chronic diseases in future generations.

Almost no week goes by without a new headline about obesity. The latest Centers for Disease Control and Prevention figures for the US population in 2010 released in July are alarming: 12 states have obesity rates higher than 30% and no state had a rate lower than 20%. Since these figures rely on self-reported height and weight, they are likely to be underestimated. In the first paper of the Series, Boyd Swinburn and colleagues report estimates of 1.46 billion adults and 170 million children overweight or obese worldwide in 2008. If we continue without successful interventions, the projections for 2030 in the second paper of the Series estimate 65 million more obese adults in the USA and 11 million more in the UK alone with an additional 6–8.5 million people with diabetes, 5.7–7.3 million with heart disease and stroke, and 492 000–669 000 with cancer. The projected costs to treat these additional preventable diseases are an increase of \$48–66 billion per year in the USA and £1.9–2 billion per year in the UK. Health systems everywhere are already struggling to contain costs. Without prevention and control of the risk factors for obesity now, health systems will be overwhelmed to breaking point.

Yet governments' reactions so far are wholly inadequate and rely heavily on self-regulation by the food and beverage industry, and the so-called nudge approach. After all, they argue, it is up to the individual to make the right choices. Unlike tobacco, food and drink need to be consumed and the state's interference could be perceived as too intrusive. The UK Government, in particular, has made it clear that only voluntary agreements with food and beverage companies are on the agenda, and many of the public health committees are made up of large numbers of these very industry representatives. So do these voluntary agreements work? All indications so far are that they do not.

In a year-long investigation, a UK House of Lords Science and Technology Select Committee examined the evidence base for the effectiveness of nudges in the context of alcohol, food, and physical activity. In the report *Behaviour Change*, released on July 19, the conclusions are clear. While businesses and industry, with their very different aim of making as much money as possible and with an enormous and expensive apparatus of clever advertising, are very effective at nudging people to buy and consume their products, non-regulatory measures to increase consumption of healthy food in isolation are unlikely to be effective. The committee goes further and speculates that regulations might in fact create a more level playing field and increase choices for the individual.

A study published on August 1 in *Archives of Pediatrics & Adolescent Medicine* examining the effect of a voluntary agreement by the food and beverage industry on advertising during children's programmes also shows that such agreements are far from successful. There was a reduction in the proportion of advertisements for fatty, sugary, or salty products but almost all were still such adverts (86% compared with 94% before the agreement). And, more alarmingly, the overall number of adverts for fast food had increased by a third.

Our Series has many messages about the complex issue of obesity and how it is best tackled. One important premise is that the increasing weight of people worldwide is the result of a normal response by normal people to an abnormal environment. There are five messages that need to form the basis of a concerted response. One, the obesity epidemic will not be reversed without government leadership. Two, business as usual would be costly in terms of population health, health care expenses, and loss of productivity. Three, assumptions about speed and sustainability of weight loss are wrong. Four, we need to accurately monitor and evaluate both basic population weight data and intervention outcomes. Five, a systems approach is needed with multiple sectors involved.

Sadly, the forthcoming high-level UN meeting on non-communicable diseases is marred by the reluctance of some to set targets. One immensely important next step in the fight against non-communicable diseases could be the agreement on a framework convention on obesity control. Who will take the lead? ■ *The Lancet*



Mat Slocum/AP/Press-Association Images

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For more on the [UK House of Lords Science and Technology Select Committee report](#) see <http://www.publications.parliament.uk/pa/ld201012/ldselect/ldsctech/179/179.pdf>

For more on the [paper in Archives of Pediatrics & Adolescent Medicine](#) see <http://archpedi.ama-assn.org/cgi/content/full/archpediatrics.2011.131>

## Sex imbalance in China



Reuters

The Chinese political icon Mao Zedong once said “women hold up half the sky”. China is now faced with a serious threat of the sky crashing down. According to the 2010 Chinese census, the sex ratio at birth has climbed during the past three decades to an alarming 118 boys born for every 100 girls, the highest sex imbalance in the world. Without human intervention, the sex ratio at birth is projected to be between 103 and 107 boys born for every 100 girls. In China, only Tibet and Xinjiang have a balanced sex ratio for people younger than 20 years. A distorted sex ratio will result in many social problems. For instance, by 2020 an estimated 30 million Chinese men will be unable to find brides.

The beginning of this disturbing trend coincided with the introduction of the one-child policy in the early 1980s, and ultrasound technology, which made reliable sex-selective abortion possible. To tackle the issue, the Chinese Government this month launched an 8-month national campaign against the non-medical use of prenatal sex determination and sex-selective abortion.

For more on China's one-child policy see [Editorial Lancet 2011; 377: 968](#)

For more on China's national campaign see [http://europe.chinadaily.com.cn/china/2011-08/17/content\\_13128878.htm](http://europe.chinadaily.com.cn/china/2011-08/17/content_13128878.htm)

Any health professional or medical institution involved in these practices will be liable to punishment including revoking of medical licences, banning of illegal clinics, and even criminal charges.

However, this campaign is not the first to address prenatal sex determination and sex-selective abortion in China. Similar national movements happened in 1986, 1989, 1993, 2002, and 2006. So why have illegal practices continued despite repeated prohibition? One reason is that the business of testing and sex-selective abortion is very lucrative. China Central Television reported that blood and ultrasound tests for prenatal sex determination cost about RMB 5500 (US\$873), and RMB 3500 (\$556), respectively. Additional underlying factors are a deeply rooted cultural preference for sons, a falling fertility rate, and the one-child policy. With the strengthening of public policy to crack down on sex-selective abortion, China should also implement more effective measures to promote gender equity and empower women in the long term. ■ [The Lancet](#)

## Addiction: a complex disorder



Corbis

Addiction is often misunderstood and stigmatised by the public and doctors alike, and, as a result, is often undertreated. This situation might stem in part from the long-running debate between addiction experts over how to explain the disorder. Some researchers favour a moral model of addiction in which the disorder is largely viewed as a behavioural problem, whereas others prefer a neurobiological explanation.

Last week, the American Society of Addiction Medicine (ASAM) released a definition of addiction that supports the latter model, which states that: “...addiction is a chronic brain disorder and not simply a behavioural problem involving too much alcohol, drugs, gambling or sex.”

Although this definition could help to destigmatise addiction, increase patients’ willingness to engage in medical treatment, reduce punitive approaches towards drug use, boost investment into addiction research, and increase access to treatment, there could be a downside to overmedicalisation of addiction. Such an approach might in fact stigmatise addiction, lead to fatalism among patients, and prevent governments from

addressing the social environments that increase the risk of addiction—eg, poverty. Some researchers have also argued that if addiction is viewed as a medical problem affecting a few people, it could reduce public health measures to control substance misuse in the wider public (eg, higher taxes and restrictions on sale and access to legal but addictive substances).

In truth, many factors—genetic, neurobiological, and social—affect addiction. The new ASAM definition also describes addiction as a primary disease (not merely the result of emotional or psychiatric problems) and a chronic disease needing treatment over a lifetime. These more useful points to emphasise about the nature of addiction should help to increase and improve treatment.

A multifaceted approach to treatment is needed that could involve not only pharmacological treatment, but also psychosocial approaches and social support to minimise risk, and motivate addicted individuals to make healthy lifestyle changes. Doctors should treat addiction as a complex disorder, and with the compassion that has been lacking in the past. ■ [The Lancet](#)

For the ASAM definition see [http://www.asam.org/pdf/Advocacy/PressReleases/20110815\\_DefofAddiction-PR.pdf](http://www.asam.org/pdf/Advocacy/PressReleases/20110815_DefofAddiction-PR.pdf)

## The future challenge of obesity

In 2007, during my time as Chief Scientific Adviser to the UK Government, the Foresight programme, which I oversaw, published a report on obesity.<sup>1</sup> One of the key findings of the report was that individuals had much less choice in the matter of their weight than they would assume, and that the present epidemic of obesity is not really down to laziness or overeating but that our biology has stepped out of kilter with society. As a result, most adults in the UK are already overweight and modern living ensures every generation is heavier than the last. This is known as passive obesity.

By 2050, 60% of men and 50% of women could be clinically obese. Without action, obesity-related diseases will cost the UK £45.5 billion per year. Research and action should therefore be undertaken to avoid what could develop into a massive problem, not just for the UK but also globally.

Science is a driver of technological innovation and a medium to influence and shape public policy—we need to ensure that the very best science helps us make the best decisions about our future health.

The *Lancet's* Obesity Series develops new scientific methods<sup>2</sup> to address the complexity of this wide-ranging environmental threat to our public health. Normal reactions to such threats are complex enough. An example is exposure to tobacco smoking, which has turned out to be resistant over decades to effective public policy despite a very thorough and precise understanding of its causes and effects. Obesity threatens to have a great impact on public health worldwide<sup>3</sup> but the mechanisms of its increase in prevalence and its consequences are far less well understood in policy terms. This lack of knowledge presents a serious challenge to public health policy.

The Foresight report was an innovative methodological break with public health tradition by explicitly linking from the start policy options with epidemiology, physiological science, and modelling. It also set the stage for the developments described in the *Lancet* Series. In essence, the obesity systems map from Foresight served to illustrate that a reductive approach along a small group of causal pathways would not be sufficient. It is hoped that combining the role of modelling at all levels of the growing obesity prevalence process can help us to understand better the nature of

the phenomenon and how to respond effectively to its threats. This Series is part of this process, the results of collaboration over 4 years between groups from several countries with the same objectives.

The aspects analysed and discussed in the Obesity Series are a description of the trajectory of the global pandemic of overweight and obesity,<sup>4</sup> the estimation of future trends from the past and their health consequences,<sup>5</sup> the physiological response to energy imbalance,<sup>6</sup> and finally the assessment of the cost effectiveness of diverse interventions.<sup>7</sup> These are the essential ingredients of all public health policy. To pursue the tobacco analogy, they have all been core to a process that has been followed up for nearly a century.

This Series provides contemporary reviews of present understanding of the causes, consequences, and possible solutions for an overweight and obese world. First, Boyd Swinburn and colleagues<sup>4</sup> draw our attention to the fact that nowhere has the obesity epidemic been reversed by public health means, unlike the tobacco and cardiovascular disease epidemics. The reasons for this failure are grounded in changes in global food supply systems towards the end of the past century, and in concomitant environmental changes requiring less energy expenditure. This followed a trend towards a decrease in activity accompanied by declines in food energy supply. As soon as the supply changed, largely for commercial reasons, a tipping point was reached, forcing weight upwards.

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Second, Claire Wang and colleagues<sup>5</sup> take forward the work of Foresight to predict body-mass index (BMI) among the population of the USA and UK for the next several decades, with a microsimulation to estimate the health consequences—for various scenarios describing the future. The health consequences are clear qualitatively, but these methods put estimates on the actual extent of attributable effect on disease in the future, and on life expectancy. Although the predicted health service costs to 2020 are large, a 1% reduction in predicted BMI prevalence in the USA could prevent 2.4 million cases of type 2 diabetes, for example.

Third, Kevin Hall and colleagues<sup>6</sup> investigate a validated dynamic mathematical model of human metabolism to predict individual weight change after changes in energy balance. The authors show that previous methodologies greatly overestimate expectations for weight loss. Moreover, the model is able to predict the lag times associated with interventions as well as how much more energy is needed to maintain the present high average weights.

Finally, Steven Gortmaker and colleagues<sup>7</sup> summarise the range of requirements, based on the previous analyses, to deal effectively with the obesity epidemic, recognising that sustained prevention efforts have hardly begun. The conclusions are unambiguous. We need collaborative societal changes in many aspects

of our environment to avoid the morbid consequences of overweight and obesity. This change will require global political leadership across public policy, considerably broader than that of health policy, and far better monitoring.

I hope that this work will play a significant role in the upcoming UN High-level Meeting on Non-communicable Diseases in New York, USA, in September, 2011, and in further national and international policy programmes.

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I declare that I have no conflicts of interest.

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## Reversing the tide of obesity

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The accompanying four papers in *The Lancet*<sup>1–4</sup> address several crucial areas relevant to the impact and future course of the obesity epidemic. In the past 30 years, obesity has increased in most countries and regions of the world.<sup>5</sup> Boyd Swinburn and colleagues<sup>1</sup> emphasise that obesity control will require policy interventions to improve the environments that promote poor dietary intake and physical inactivity rather than individually focused interventions, and that the necessary policy changes are fraught with political challenges not associated with clinical interventions that focus on individuals.

Claire Wang and colleagues<sup>2</sup> model the effect of increasing rates of obesity on the incidence and costs of type 2 diabetes, cardiovascular disease and stroke, arthritis, and several types of cancer in the USA and UK. If US trends based on historical data for 1988–2008

continue, the prevalence of obesity in US adults will increase from its present level of about 32% to about 50% by 2030, with increased costs of up to US\$66 billion per year for treatment of obesity-associated diseases. If the UK trends for 1993–2008 continue, the prevalence of obesity will rise from 26% to 35–48% by 2030, depending on the sex considered, and the costs will increase by £2 billion per year. In both countries, the rate of increase in the prevalence of obesity has slowed in the past decade. Nonetheless, even when the more recent trends are taken into account, annual US and UK costs are still projected to increase by \$48 billion and £1.9 billion, respectively, by 2030. As the authors show, even a modest 1% reduction in body-mass index (BMI) would substantially reduce the number of obesity-related diseases and their costs.

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