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Government leadership and industry co-operation are critical to better food choices.

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More than 2,000 years ago, Hippocrates, one of the founders of modern medicine, observed that "If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health". There is an elegant simplicity in this recommendation that still holds true today.

Yet despite the volumes of health advice available to us, universal access to public health, an abundance of food and the prevalence of personal trainers and gymnasiums, Australia still faces an obesity crisis of significant and unprecedented proportion.

In just fifteen years from 1990 to 2005, the number of overweight and obese Australian adults increased by 2.8 million. A 2008 Access Economics report estimated the combined economic and health burden from obesity at $58 billion a year. For researchers like myself, it is frustrating, at best, to continue documenting and reporting the scale of such a significant problem in the face of an overwhelmingly sluggish response to the crisis.

Moreover, the solutions, while complex, are not mysterious. The National Preventative Health Taskforce went to great lengths to articulate an excellent strategy designed to tackle the problem of obesity on a number of fronts. The taskforce identified the supply and access to nutritious food as a critical component of a comprehensive preventative health strategy.

Amongst other things, it recommended initiatives designed to drive change within the food supply chain to increase the availability and demand for healthier food products, and decrease the availability and demand for unhealthy food products.

Again, it is dispiriting to know that many of the solutions to this problem have been articulated but remain to be enacted. It seems our recipe for a solution is missing a few vital ingredients; national leadership, coordination and will.

In the United States, no less than the First Lady Michelle Obama, has been campaigning for better diets and nutrition for American children.

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Elsewhere in the UK and Australia, private sector entrepreneurs like Jamie Oliver and Stephanie Alexander have used their high profiles to drive practical, grass roots initiatives.

Strangely, commercial TV has brought us some of the most popular champions of weight loss and healthy living via the contestants and trainers on the Biggest Loser. Regrettably, the evidence is that people who are spectacularly successful in the short term at shedding fat, will probably regain it before long.

We've certainly seen attempts at health advocacy and prevention across the political spectrum and yet there are still so many more opportunities for governments to show leadership and address the big picture. Take for example, levers such as regulation.

Regulation is by and large a cheap and effective mechanism for addressing obesity. From banning junk food advertising, to taxes on foods containing high sodium levels and better labelling – there have been a number of regulatory proposals on the table for some time now. Unfortunately, the response to these proposals has been slow and the appetite for change somewhat lacking as evidenced by the fact that the government will now take the best part of a year to consider a response to Neal Blewett's food labelling review.

Perhaps one of the biggest challenges that governments face in considering regulation is the might of the food manufacturers who are able to pool considerable resources to lobby for the status quo. This is troubling when you consider the tobacco experience which demonstrated that regulation and government support for change is a critical component of an integrated public health campaign.

Realistically, the only way to tackle the issue is to involve the food industry in the process rather than using regulation as an opportunity to 'demonise' private enterprise.

It's early days but we've already seen the introduction of an initiative designed to reduce salt through collaboration with the food industry. In 2010, Australian manufacturers agreed to reduce the salt content in bread and cereal which provides a good precedent for an initiative to limit sugar. The targets are modest by international standards but this is an important step in the right direction and demonstrates that changes to food formulation are feasible.

Reassuringly, most manufacturers recognise that regulation creates a level playing field so that no-one is penalised by consumer preference for reformulating their recipes.

However, regulation is just one part of a very complex solution. There is so much more that government could be doing to set guidelines, address structural problems and create an environment that encourages industry collaboration.

The way food is marketed needs to be examined. At present, the fast food industry is winning the battle through positive spin or 'happy' marketing. A lot of advertising and packaging shows pictures of people and animated characters doing 'fun' things, living 'happy' lives, contrasted with food content information in a tiny box on the bottom of the pack.

There is very little evidence to show that a high-calorie, fat laden diet results in happiness. But there is much to be learnt from this approach. At present, a lot of the messages we hear in public health campaigns focus on the negatives of poor choices. There's room for a lot more emphasis on the positive benefits of good behaviour and healthy eating.

Blewett's review of food labelling law and policy (2011) is a welcome contribution to this complex problem. Some food labelling is highly questionable and warrants closer inspection. For example, claims that sugar-laden chewy bars marketed to children are equivalent to a single serve of fruit.

Portion size and our attitudes to value for money need to be examined. While in France recently, I spotted a billboard hoarding that promoted two new 'petite' sized products from one of the world's most famous fast food companies. In some cultures there is merit in small but tasty portions. Health promotion and advocacy needs to challenge our attitudes to serving sizes and the perception of value associated with quantity.

There's an important role here for science in helping us understand the impact of food on health, chronic disease progression and metabolic disorders. We're only just beginning to understand issues like advanced glycation, the way certain foods satiate us while others don't and how sugar substitutes can actually make us more, not less hungry.

This information could provide vital clues about the relationship between the food we consume and our health and, in-turn, provide compelling evidence to guide effective health promotion and industry regulation.

And while government leadership and industry co-operation are critical to effecting change, we need a multi-faceted approach to better eating. It is both unlikely and unrealistic to expect government to shoulder the entire burden for addressing this health crisis. Ultimately, healthy eating is everyone's responsibility.

Nevertheless, creating the right market conditions and an environment conducive to better health requires leadership and at present there is a yawning gap between what we know needs to happen and the political will to do so. Unfortunately, there aren't many votes in prevention.

Traffic light labelling gives green light to public health.

At a time when overweight and obesity are on the rise how do you work out whether a food is healthy or not? This is not really an issue with fresh fruit and vegetables, but is a challenge when it comes to packaged food. There are few rules about the words, symbols and images that can be displayed on the front of food packaging, allowing food manufacturers to confuse and in some cases mislead consumers about the nutrition content and healthiness of foods. This, no doubt, was one of the many issues challenging the panel reviewing food labelling, headed by Dr Neal Blewett.

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Australian consumers want to know about salt, fat and sugar in their foods and saturated fat levels are a key concern.[1] They should not be faced with a smokescreen of claims, symbols and images when making food choices in their supermarket aisle, at a vending machine or in a fast food outlet. Instead, they should be provided with nutrition information that is easy to understand at a glance and that can assist them to identify and compare healthy and unhealthy foods.

There are a number of common techniques used by food manufacturers to enhance the positive aspects of packaged foods and make them appear healthier than they actually are. These act to confuse consumers about the true nutrition content of foods and make it difficult for people to compare products easily. For example:

- Positive nutrients are often highlighted, such as high in protein, or 99% fat free, while other nutrients that make the product unhealthy overall are not disclosed – such as high levels of sugar.
- Percentage daily intake labels (now used by a number of food manufacturers) indicate the contribution a serve of the product makes to an average adult's daily recommended intake of certain nutrients. However these labels are confusing, difficult to interpret and may mislead consumers (particularly children) about their daily requirements.
- Ticks or other symbols are commonly used by food manufacturers to suggest that a product has been endorsed as a healthy choice when it has not.

It is important that we have a labelling system that is easy to understand, drives consumers to healthier choices and applies to all packaged products. A front of pack system using red, amber and green traffic lights to represent levels of fat, sugar and salt in products, is strongly supported by health and consumer groups. This simple system enables consumers to identify, at a glance, what is in the product and to compare this with similar products, before taking the pack off the supermarket shelf or placing a fast food order. A consequence of such a scheme may also be that food manufacturers reformulate their products to give them a more positive nutrition profile and make them healthier.

The Labelling Logic review report concluded that the evidence shows that traffic light labelling 'has been consistently found to be most effective' in helping consumers to understand the nutritional value of foods.[2] Importantly it is likely that traffic light labels would be better understood than other systems by consumers with low levels of literacy or from lower socio-economic and culturally diverse groups. Recent research has also found that traffic light labels would be cost-effective and excellent value for money as an obesity-prevention measure.[3]

The reaction of the peak body for the processed food industry, the Australian Food and Grocery Council, to the report was predictable: they rejected traffic light labelling and launched a new campaign promoting their Percent Daily Intake labelling scheme. This was despite the clear conclusion of the review that the Percent Daily Intake system is 'confusing for consumers' and 'especially problematic for consumers with low levels of literacy who cope better with pictures than numbers'. As the review panel explained, the system is extremely difficult for consumers to use in the context of their diets, as they need to keep track of, and add up, the percentage of each nutrient they consume from different products during the course of a day.

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Another recommendation that will cut through the marketing spin is that health and nutrition claims only be allowed on products that are classified as healthy using established nutrition criteria. If adopted this will ensure that popular products such as high sugar cereals will not be allowed to tout themselves as high in protein or calcium, removing an influential marketing tool that is widely used to market foods for children.

Over the next year, while Australian governments consider the recommendations and develop their responses, the processed food industry will continue to fight hard to stop a simple and effective traffic light system. In Europe, the food industry reportedly spent over €1 billion in lobbying to oppose the introduction of traffic light labelling on the front of packs in the European Union.[4] Let's hope that the commercial influence of the food industry and their lobbyists will be resisted by Australian politicians and that the interests of the public's health will be front and centre when they consider the review panel's recommendations.

References:

1. Morley B. Unpublished. Obesity Prevention Policy Initiatives: Public Acceptability 2010. Centre for Behavioural Research in Cancer, Cancer Council Victoria, Melbourne, Australia.
2. Commonwealth of Australia. Labelling Logic – Review of food labelling law and policy. Department of Health and Ageing. Canberra 2011.
3. Sacks G, Veerman JL, Moodie M, Swinburn B. 'Traffic-light' nutrition labelling and 'junk food' tax: a modelled comparison of cost-effectiveness for obesity prevention. International Journal of Obesity (2010) 1-9.
4. Corporate Europe Observatory. A red light for consumer information – the food industry's €1 billion campaign to block traffic lights on food. http://www.corporateeurope.org/lobbycracy/content/2010/06/red-light-consumer-information Accessed February 4, 2011.

Mounting an argument for regulation of AGEs is not going to be an easy task.

Nearly every day, each and every one of us will consume food products that contain Advanced Glycation End products (AGEs). Yet few people have ever heard of these chemical by-products which affect almost every cell and molecule in the body and contribute to the ageing process, as well as having a role in diabetes complications such as kidney disease.

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Advanced glycation is a biochemical process brought on by an excess of sugar – we see it in the browning of fruit and the process is also apparent in the ageing of collagen, resulting in the gradual formation of wrinkles and lines on our skin as we grow older. Advanced Glycation End products are also commonly consumed in western diets since they are made by modern processing techniques to give food taste, texture and properties such as longer shelf life.

There are essentially two ways in which the body accumulates an excess of AGEs. People with diabetes or pre-diabetes, experience a build up of AGEs due to an excess in blood sugars circulating through the body. Glycation is a major problem in diabetes and has the capacity to do significant damage to the organs of a diabetic person over several decades.

Essentially, AGEs speed up the ageing process, and can lead to a 'caramelisation' of major organs such as the kidneys. Kidney disease is an important risk factor for heart attack. It is estimated that as many as 70 per cent of people with diabetes die from heart attack or stroke.

But for most of us, we are exposed to AGEs through the food we consume. Foods that are processed, and contain high levels of sugar and fat, foods that are grilled and baked are known to contain excessive levels of AGEs. Typical examples include cola drinks, coffee, toasted breakfast cereal, commercially baked products and crispy, fried food such as chicken nuggets.

The processes involved in cold storage also produce AGEs so that food sold as 'fresh' which has been refrigerated for six months can actually be quite high in AGEs. As well as having a deleterious effect on organ function, AGEs are also known to reduce the amount of essential amino acids contained in food. This in-turn inhibits the body's ability to absorb the nutrient content of what we eat.

The study of AGEs, their effect on the human body and contribution to the development of chronic disease is a relatively new field. AGEs first emerged in the 1980s in context of the study of ageing and it was not until the nineties that we started to understand the implications for people with diabetes. However, in this short time, there has been several important scientific studies into AGEs that compel us to re-think our approach to food.

I am personally buoyed by the momentum we are seeing in this field with the establishment of two key scientific groupings (COST & IMARS) focussed on bringing together researchers from across the globe to discuss their research and develop a better understanding of how AGE's impact human health.

There is much more to be done. The food and grocery industry has a key role to play in helping consumers identify and limit the amount of harmful chemicals they ingest through modified foods. Better labelling of processed foods is just the beginning. Consumers should be able to go into a supermarket and put together a fresh meal with ease.

In the UK, large supermarket chains such as Tesco and Marks and Spencer have been responding to calls for healthier choices by retailing products such as pre-washed and cut vegetables and fruit. They seem to be able to offer packaged 'convenience' food with a short shelf life that is fresh and low in preservatives. And consumers have responded very positively. Pre-cut, bite-sized celery and carrot sticks, quartered apples and diced vegetables are anathema to Australian grocers who maintain a high entry barrier for new products coming onto the market – especially those which threaten to take market share from house labels.

Manufacturers also have a responsibility to monitor and limit the amount of dangerous chemical by-products in their offerings. Regrettably, it seems regulation is the surest way to do this because it creates a level playing field, ensuring that a manufacturer isn't penalised by poor sales performance if they modify their products in a way that reduces the flavour, making them less attractive than saltier, more processed rivals.

Mounting an argument for regulation of AGEs is not going to be an easy task. In the first instance, we need to be able to provide irrefutable evidence about the existence of AGEs and the danger they pose to good health. The best way to do this is through large-scale, evidence-based scientific trials, similar to the ones the pharmaceutical industry sponsor when they want to solicit support for bringing a new drug to market.

At present, it is difficult to get funding for trials of more than 200 people and more often than not, nutritional studies in Australia average a dismal 30-40 participants. Contrast that with the power of the pharmaceutical industry who are able to gather evidence on cohorts of five to ten thousand people with ease. It seems unlikely that the Australian government would be willing to take on the might of the manufacturing industry based on the evidence gathered from 50 people.

Two changes would assist with the push for regulation. First, we need investment in large-scale studies into the impact of modified foods and their potential contribution to chronic disease. Second, regulating authorities could meet scientists half-way by reconsidering the scale and weight of what is acceptable as an evidence base. In other words, we need a shift in thinking that enables smaller studies to be seen as scientifically significant.

The task is difficult but not insurmountable. Last year, the German parliament rejected a bill that would see better labelling of AGE laden foods. But to their credit, the German institute for consumer protection and food safety (BVL) has identified six product categories associated with acrylamide risk. Acrylamide is a possible carcinogen which forms when starch-rich foods are fried or baked. It's a close cousin of the AGEs. The BVL has announced a concerted approach to reducing acrylamide, in consultation with the food industry. The categories are: French fries; other fried potato products; pastries; Swedish style breads; coffee powder; and breakfast cereals.

But while the evidence is still emerging and in the absence of a global campaign, backed by a well funded lobby group, there are certain steps we can take at an individual level to guard against the hazards of AGEs.

We can start by being more mindful of what we consume. As a general rule, it's fairly safe to assume that any food that has been modified or processed and not in its original raw form probably contains some trace of AGEs. It follows also that the greater the level of modification, the higher the concentration of AGEs. If food has a label, chances are, a chemist was involved in its manufacture.

So while it's important that we improve label simplicity and provide more detail about processed foods, at the end of the day, they're still processed and high in salt, sugar, and yes, AGEs.

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The best food is always 'fresh' and ideally, in-season. There are very good physiological reasons why certain foods are available at particular times of the year. For example, it's no accident that nature ripens oranges in winter – just when we need vitamin C to guard against colds.

For the average consumer, trying to navigate the choices in a supermarket is a mine field. There is so much more that manufacturers, retailers and government can do to help them emerge with a basket of nutritious ingredients that won't compromise their health. Declaring and minimising the amount of AGEs in the basket would be a very good start.

Australia must address its cultural relationship with food in order to tackle the obesity epidemic.

Unfortunately, Australia's cultural relationship with food is more synonymous with that of the United States where food is relatively cheap, processed products are seen as convenient in a time-poor society, and the emphasis is on quantity over quality. This is counter to the traditional French way of life, for example, which favors buying a small amount of a high-quality product and celebrating the entire meal experience from the selection of fresh produce and careful preparation of the food, through to the dining experience.

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If one takes a broad and liberal approach to food, it doesn't matter that some of the products celebrated by the French – such as cheese and bread – are high in fat and carbohydrates, not to mention sometimes very expensive. What is important is that the French tend to buy less, eat less, take the time to really enjoy their food and have lower self-reported rates of obesity (11.2 per cent compared with Australia's 21.4 per cent 2007/2008[1]). While the Japanese, who have a very reverential attitude towards food, had a measured obesity rate of 3.4 per cent in 2008 – which has increased from a rate of below two per cent in 1989.[2] There is also ample scientific evidence to show that people can reduce their food intake and still remain satisfied.

What is of particular interest is that behaviour around food is as much about the total meal experience as opposed to focussing solely on calories or value for money. Not surprisingly, researchers who have studied different food cultures around the world have found that food culture does have an impact on the health of its citizens.

A student who recently carried out an observational study in Adelaide of people eating in fast food outlets found that typically people consumed their food very quickly (for example, in less than ten minutes) and that some people purchased snacks on the way home from work that had enough calories to constitute a whole meal but the evening meal was still consumed as per usual.

Over the years, many diet books have also touted the slimming benefits of eating a particular ethnic cuisine. The Mediterranean diet regularly receives accolades for keeping people healthy. The same for the Japanese diet. And of course, the French diet is also held in high regard, even with its emphasis on cheese, bread, meat and wine.

At first glance, these diets may appear to have nothing in common. Yet there is a common 'theme' among these diets. These diets tend to lack highly-processed food. With researchers now able to draw direct links between heavily processed, salty, high-calorie food and growing rates of obesity in particular countries.

But the emphasis on heavily-processed foods alone is not enough to explain the differences. The attitudes and 'rules' relevant to different culinary cultures also go some way to explaining burgeoning obesity rates in different countries. In some cultures, it is not considered acceptable to eat in the car, snack constantly between meals or eat alone.

The emphasis on French and Italian cuisine, for example, is around planned meals with family and friends. The preparation and communal experience is just as important as the food itself. So culturally acceptable is it to take time out to prepare and eat a meal in these countries that even the business hours are structured around these important daily events.

Part of the problem in Australia, it seems, is that the nation's culinary cultural identity is hard to pinpoint. Even the website for Australia's Department of Foreign Affairs and Trade declares that "historically, there has never been a cuisine typically regarded as Australian". It is perhaps, a very telling point, because it raises the question about Australia's cultural roots when it comes to food, a relationship that has been dominated by the commercial sector rather than being rooted in history, custom and tradition. Australia produces plenty of high-quality vegetables, fruits and grains, meat, poultry, seafood and dairy products but such products don't dominate the national conscience like some other countries, where the adulation and attention given to prized national produce is akin to a national sport.

A national food strategy that aims to re-define the nation's relationship with food and straddles all the intertwining elements of the Australian lifestyle including work and leisure time, is needed to start building a healthy, sustainable relationship with food that Australians can be proud of. But long-term cultural change requires enormous effort and collaboration from all sectors of society. Cultural studies demonstrate that eating pleasurably is just as important as eating healthily so developing programs and fostering initiatives that embrace the links between food, enjoyment and pleasure is critical in laying the building blocks for a healthier Australia.

Professor Peter Clifton is co-author of the popular CSIRO Total Wellbeing Diet books.

References:

1. OECD Health Data 2010, Directorate for Employment, Labour and Social Affairs, http://www.oecd.org/document/16/0,2340,en_2649_34631_2085200_1_1_1_1,00.html
2. As above

A return to basics is necessary when it comes to healthy eating messages.

Confusion still abounds when it comes to what people should be eating, how much and, perhaps more importantly, how people can introduce and sustain basic dietary changes to improve their overall health.

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It might seen unconscionable to some that in today's society people don't know what constitutes a healthy meal and how to cook one but to be fair, there is an exhaustive amount of information about food and nutrition that exists in Australian communities that is often not scientifically-based. This observation does not seek to diminish individual responsibility but build on the premise that an increasing number of people are distracted and burdened about exactly who and what to listen to. And internationally, it is a similar story.

In a qualitative report[1] conducted in the United Kingdom in 2007 to investigate people's knowledge of fats in food, researchers found that general awareness of fats was low and many consumers were not able to identify the main sources of saturated fat in their diet. The report concluded that it should not be assumed that consumers were clear about how to achieve a healthier lifestyle and wanted more help from government and health professionals to do this, including their GP.

While a US survey of nutrition trends published in the *Journal of the American Dietetic Association* found that public information about nutrition had placed a priority on reducing dietary fats which had fostered consumer obsession with, and confusion about, dietary fat and contributed to misperceptions about healthy eating.[2]

For the average person, it isn't necessarily helpful to have an understanding of the glycaemic index of foods, to be able to debate the nuances of well-known diets such as the Atkins Diet or to be able to calculate triglyceride and high-density lipoprotein cholesterol values in order to make healthy food choices.

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More sage and simple advice would be for individuals and families to do a daily stock-take of what they cook, how they cook it and how they might make better choices. These are the types of discussions that GPs regularly have with their patients and it is often in these environments that common misconceptions about health and food emerge.

In a sophisticated society such as ours, it is unfortunate to think that misinformation combined with a lack of understanding about food and health and how to make dietary changes could be contributing factors to people unwittingly developing chronic diseases such as type 2 diabetes.

This is devastating on many fronts and not least because for some of these people, disease may have been prevented or, at the very least, the onset delayed if basic messages about food and health had been understood and implemented.

The clinical evidence to support lifestyle modification in delaying the onset or prevention of chronic disease such as type 2 diabetes is compelling. A well-known and often-quoted study is the Diabetes Prevention Program, published in the *New England Journal of Medicine*[3], which found that diet and exercise can prevent or delay the onset of type 2 diabetes in people with impaired glucose tolerance or pre-diabetes.

By eating less fat and fewer calories and exercising for a specified amount of time each week, 800 of the more than 3200 participants in this study allocated to exercise and diet intervention aimed to lose seven per cent of their body weight and maintain that loss. The striking results showed that people in the interventional group reduced their risk of developing diabetes by 58 per cent. Not surprisingly, this study has provided an international benchmark for lifestyle interventions in diabetes prevention.

What is equally salient about this study is that the intervention was reasonably simple and cost-effective, and involved equipping the study participants with basic training and education in diet, exercise and behaviour modification.

Keeping it simple is the key. When a discussion with a patient deviates down the diet route, more often than not the individual is struggling with a range of complex information about what nutritional components make up a healthy meal. For these people, a simple decision to cut serving sizes, for example, may be more beneficial. Strategies to highlight the potentially harmful effects of eating out which is usually associated with high fat intake could also be targeted – particularly around high-risk times such as festive and holiday seasons, with fat a key factor in disease.

It is acknowledged that the promotion of simple messages in a society dominated by advertising is not without its challenges. The report into obesity prepared by the National Preventative Health Taskforce acknowledges that "healthy eating campaigns will need to compete and achieve cut-through in an environment dominated by food advertising"[4]. But international examples demonstrate that simple and cost-effective campaigns are possible. The taskforce cites the example of French schemes to tackle obesity which have included advisories displayed on advertisements for fast foods telling people to eat at least five fruits and vegetables a day.

And nor can one be so naïve as to think that awareness is the sole factor in shaping and changing dietary behaviour.

But at the risk of being unsophisticated and overly-idealistic, basic messages – backed by a nationally-co-ordinated education strategy – could be one step in the right direction toward building healthier communities by empowering people to make better choices when it comes to food and their health.

References:

1. "Consumer Qualitative Research on Fats", 2007, Prepared on behalf of The Food Standards Agency, http://www.food.gov.uk/multimedia/pdfs/satfats0705.pdf, viewed on January 10, 2010.
2. Schwartz, N and Borra, S, "What do consumers really think about dietary fat?", *J Am Diet Assoc.* 1997;97(suppl):S73-S75, http://www.adajournal.org/article/S0002-8223(97)00735-9/abstract, viewed on January 18, 2010.
3. Knowler, WC, Barrett-Conner E, Fowler SE, Hamman RF, Lachlin JM, Walker EA, Nathan DM: Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl Med* 346: 393-403, 2002.
4. Obesity in Australia: a need for urgent action (Technical Report No 1), National Preventative Health Taskforce, 2009.

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