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PART FIVE
WHAT AILS US

Should we pay people to look after their health?

Kevin Volpp

With the Tony Abbott government expressing concern about the growing health budget and emphasising personal responsibility, perhaps it's time to consider some creative ways of curbing what Australia spends on ill health. One solution is to pay people to either get well or avoid becoming unwell in the first instance.

The United Kingdom is already doing this kind of thing with a current trial of giving mothers from disadvantaged suburbs A$340 worth of food vouchers for breastfeeding newborn babies. And from 1 January this year, employers in the United States can provide increasingly significant rewards to employees for having better health outcomes, as part of the *Affordable Care Act*.

But should people really be paid to make healthy choices? Shouldn't they be motivated to improve their health on their own anyway?

Encouraging right decisions

People don't do what's in their best interest in the long term for many reasons. When making decisions we tend to take mental

short cuts; we allow the desires and distractions of the moment get in the way of pursuing what's best.

One such "irrationality" is our tendency to focus on the immediate benefits or costs of a situation while undervaluing future consequences. Known as present bias, this is evident every time you hit the snooze button instead of going for a morning jog.

Researchers have found effective incentive programs can offset present bias by providing rewards that make it more attractive to make the healthy choice in the present.

Research conducted in US workplaces, for instance, found people who were given US$750 to quit smoking were three times more successful than those who weren't given any incentives. Even after the incentive was removed for six months, there was still a quit rate ratio of 2.6 between the incentive and control groups — 9.4% of the incentive group stayed cigarette-free versus only 3.6% of the control group.

A refined approach

Still, while research on using financial incentives to encourage healthy behaviours is promising, it isn't as straightforward as doling out cash in exchange for good behaviour.

Standard economic theory posits that the higher the reward, the bigger the impact — but this is only one ingredient to success. Behavioural economics shows that when and how you distribute incentives can determine the success of the program.

Here are a few basic principles to consider. First, small rewards can have a big impact on behaviour if they're provided frequently and soon after the healthy choice is made. We have found this to be true in the context of weight-loss programs, medication adherence, and even to quit the use of drugs such as cocaine.

Games of chance are an effective way of distributing rewards as research has found people tend to focus on the value of the reward rather than their chance of winning the prize. Many people think that a 0.0001 and a 0.0000001 chance of winning a prize are

roughly equivalent even though in reality they are vastly different probabilities.

Finally, people are more influenced by the prospect of losses than by gains. Studies show people put much greater weight on losing something than gaining something of a similar value.

In one weight-loss experiment, for instance, participants were asked to place money into a deposit account. If they didn't achieve their weight goals, the money would be forfeited, but if they were successful, the initial deposit would be doubled and theirs to keep.

Reluctant to lose their deposits, participants in the deposit group lost over three times more weight than the control group, who were simply weighed each month.

Creating good habits

Incentives are particularly effective at changing one-time behaviours, such as encouraging vaccination or attendance at health screenings. But with increasing rates of obesity and other lifestyle-related diseases, we need to focus on how incentives can be used to achieve habit formation and long-term sustained weight loss.

We know financial incentives can increase gym usage and positively impact weight, waist size and pulse rate, but how to sustain gym use after the incentive is removed? The key may be to use incentives to achieve a high frequency of attendance for long enough to create a healthy habit.

We also need to consider how we can leverage social incentives, such as peer support and recognition, together with new technologies to maximise the impact of incentive-based programs.

Innovative solutions, like paying people to encourage the right health choices, may help to reduce both the health and economic impact of Australia's growing burden of disease.

Fat nation: why so many Australians are obese and how to fix it

Phillip Baker

In 1980, just 10% of Australian adults were obese; by 2012 this figure had risen to 25%, among the highest in the world. The food industry lobby and their friends in government would have us believe this comes down to reduced personal responsibility for what we eat and how much we move.

We might, then, expect to find evidence that people are becoming less responsible. But statistics show the opposite: we are much more likely to drive more safely, drive sober, and not smoke, for example.

Yet, when it comes to food, something is different. Our changing food environment has undermined our capacity to be responsible in the first place.

Commercialisation of food

Once, not so long ago, food was scarce. As humans we were programmed to over-consume calories when food was plentiful and to store it as fat for when it was not.

So, we have to acknowledge that in our hunter-gatherer past, consuming as much food as possible was personally responsible — those who didn't would likely perish. This has been hard-wired into our DNA.

Today, our environment is fundamentally different — cheap, energy-dense foods are abundant. In this light, obesity is just the superficial and normal human response to an increasingly "obesogenic" food environment. One with deeply rooted commercial and political drivers.

There is nothing more obesogenic than our commercial food supply. Today industrial agriculture produces raw food ingredients at very low cost per calorie output. With globalisation, ingredients can be sourced from wherever in the world production costs are lowest (such as Malaysian palm oil) or heavily subsidised (American sugar).

Food science has been harnessed by "Big Food" companies to produce highly palatable and durable foods rich in sugar, salt and fat. Serving sizes have grown remarkably — good for our wallets, perhaps, but not so good for our waistlines.

On the retail end, supermarkets have proliferated as the purveyors of processed foods, driving down prices through their buying power and using data-driven product promotion.

We also have less time for sourcing, preparing and eating food. And the food industry has responded with "ready-to-heat" meals, "ready-to-eat" snack foods and "fast-food" restaurants.

The McDonaldisation of our society stems not only from our biological drive to crave energy dense food, but from our need to compress the time in which we source and consume it.

Information asymmetry

The concept of information symmetry states that markets work best when both sellers and buyers have full information about the costs and benefits of their buying and selling behaviours. And when it comes to Australian processed food labels, information is stacked heavily in favour of the seller.

Food companies collect reams of information about consumers (just think of supermarket loyalty cards), allowing for targeted advertising, pricing points and product placement. Yet most Australians find existing food labels confusing. To make an "informed choice", we have to interpret not only nutrition information panels, but also an array of (sometimes misleading) health claims.

Junk food advertising is also big business in Australia: in 2009 A$402 million and $149 million was spent on advertising food and non-alcoholic beverages respectively. McDonald's alone increased its advertising spend from $6 million in 1983 to $55 million in 2005.

Why do companies advertise? Because it drives consumer behaviour in powerful ways. Especially when it comes to children and their pester power, much to the dismay of many parents.

Coming back to information asymmetry, advertising is less about communicating information than it is about conveying symbolic and social meaning — products come to be associated with fun, happiness, sex appeal and prestige rather than information about their underlying costs and benefits in terms of health.

The end result is we're trying to exercise personal responsibility in a food environment that's engineered to undermine it. Food is available everywhere at any time. It is full of sugar, fat and salt — nutrients we're hard-wired to crave. Per calorie, it has never been cheaper.

The information we have to inform our choices is heavily skewed by advertising and confusing labels. Government has done little about it. And we — as a nation — are fat.

Reducing our collective waistline

Here are some ideas — for us as citizens and for government — to turn the situation around.

1. Re-think the role of government

The conceptual cousin of the personal responsibility mantra is the "nanny-state" argument, that there is no role for government intervention that restricts the freedoms of Australian citizens. In reality, such arguments are nothing to do with regulating us as individuals. It's just Orwellian doublespeak to oppose food industry regulation.

The true role of government is not to restrict individual freedoms, it is to enable them by creating an environment —

through policy and legislation — in which we are truly free to exercise our personal responsibility.

2. Change the food environment

Without changing food environments through hard policy and legislation, it's unlikely we will make any progress tackling obesity. Successful tobacco control efforts demonstrate that a variety of intertwining measures need to be taken.

3. Tax the junk

We need to change the economics of our food supply. A tax on sugary, salty and fatty processed foods is one way forward. Following the lead of many countries overseas we could begin with a tax on sugar-sweetened beverages — relatively simple to implement, and likely to be effective.

4. Improve food labelling

We need a food labelling system that enables personal responsibility. Let's compare three options.

First is the food industry's current "daily intake guide" (which it continues to push), calculated as the percentage one product serving contributes to the daily intake of an average adult of 8,700 kilojoules.

But food manufacturers are allowed to set the serving sizes, which are often unrealistic. And because the measure isn't standardised, it's difficult to make any meaningful comparison between products.

Second is the proposed star system. It's a halfway point between what industry and public health advocates want, although its future is uncertain.

Third is the traffic light system. Research indicates that nine out of ten Australians support such a scheme. It was designed by health experts to promote an easy-to-understand message that encourages consumers to buy more food items with green lights and fewer items with amber and red lights.

Which one do you think will make it easier for consumers, especially less educated ones, to make an informed and personally responsible choice?

5. Ditch junk food advertising to kids

Over 75% of Australians support a ban on junk food advertising in children's television, and nearly 20% support a total ban. We know from tobacco control that this will be a key step in curbing obesity and evidence supports this.

6. Change the political environment

Perhaps the most potent way our food system undermines personal responsibility is when the food industry lobbies against the policies that would enable it in the first place.

Government needs to ensure our regulatory institutions are not conflicted. And it's now time to recognise that industry self-regulation doesn't work.

Finally, we, as citizens, can become politically active. Addressing this conflict brings into play not only the important roles of public health advocacy groups like the Obesity Policy Coalition, but also citizen's movements like the Parents' Jury, to demand action.

Unravelling why geography is Australia's biggest silent killer

Lesley Barclay

Many people think the poorer health and lower life expectancy of people living in rural or remote Australia are attributable to the under-supply of health services in those areas. But this is only one contributing factor.

Far more important is the distribution of health risk factors and how they interact with the nature of rural and remote places, which results in people dying younger. Data from the National Health Performance Authority shows life expectancy at birth ranges from 83.6 years in metro areas to 81.5 in regional hubs and 78.2 in rural places.

The picture is even grimmer when we look at avoidable deaths. From a population of 100,000, there are 115 avoidable deaths in metro areas compared to 171 in regional hubs and 244 in rural places. Clearly, there's more than one factor at play here.

Compared with those living in major cities, the people of rural and remote Australia have fewer years of completed education and lower incomes. A greater proportion of them have a disability, smoke, and drink to risky degrees. They also have poorer access to the internet and mobile phones.

And then there's access to health professionals, including doctors, which is notoriously poor in rural areas. Compared with the rate at which city people access Medicare, people in rural and remote areas are at a massive disadvantage — there's a so-called "Medicare deficit" of around $1 billion a year.

In 2012–13, for instance, there were 5.8 GP services per head funded by Medicare, compared to 5.9 in inner regional areas, 5.2 in outer regional areas, 4.1 in remote areas and 3 in very remote

areas. In country areas, there is also less access to private hospitals, even for those who are privately insured.

And apart from these well-known deficiencies in access to health services, people in rural and remote areas also have less access to health-promoting infrastructure, such as targeted smoking cessation activities, organised physical activities and the information contained in health promotion campaigns.

All in all, there's a slanting line across key health measures such as potentially avoidable death, potentially avoidable hospitalisation and life expectancy from major cities through to very remote areas. Cancer survival rates show the same pattern.

Social factors that impact health, such as income, completed years of education, disability, smoking and risky drinking, show the same gradient. All of these result in a higher incidence among the people of rural remote areas of various disadvantages relating to work, income, education and children (think of the proportion of families with young children in poverty).

If we are to address these disadvantages, we need to unpick the relationship between socioeconomic status and geography. From an equity standpoint, the important issues are why levels of employment are low, why in a particular place there are few professionals and many labourers, why internet access is low, and why are there fewer people with education above Year 11 — and what can be done about these things.

It seems safe to assume that the causes of health deficits include "rurality" — a combination of remoteness and town size, because it's obvious that town size, not just remoteness, will strongly influence variables such as income, educational attainment, work skills and housing costs.

But our current measures are so crude that Urana, a town of 800 people in the Riverina region of New South Wales, Townsville, with around 195,000 people, and Darwin, with around 130,000 people are in the same category.

Another data set collects measures socioeconomic status. Variables used to calculate this index typically include income, internet connection, the percentage of people schooled to Year 11 only, the proportion in the labour force who are unemployed, long-term health conditions or disability, and people paying less than $166 rent per week.

All of these are almost certain to be influenced by two characteristics of place: its distance from a capital city or other large centre, and the size of the town. The remoteness and the size of a particular community influences its access to schools, jobs and high-paid employment. Other issues, such as the nature of the main local industries, or economic drivers such as weather, are also influential.

We can keep doing new analyses to expand our understanding of how various factors interact to cause the clear health disadvantage in rural and remote areas. These might even suggest the causes for the difference, but they will be misleading without a solid understanding of underlying variables.

While the role of income and education on health status are universal and universally accepted, it's too early to dismiss place — especially "rurality" — as a determinant of health status.

It seems likely that place is a primary determining factor in the worse health of rural and remote Australians, with socioeconomic status being an intermediary. In other words, low income might be the toxin, with place being what allows it to harm people.

We know socioeconomic status is a major determinant of health, but understanding how the characteristics of a particular place impact health is critically important if we are to understand how to improve health and longevity in rural and remote Australia.

Gordon Gregory and Andrew Phillips from the National Rural Health Alliance contributed to this article.

Listen up hypochondriacs, how do you want to be remembered?

Peter McEvoy

We all worry about our health from time to time, at least to some degree, but some people worry excessively about catastrophic consequences of seemingly benign symptoms. They're known as hypochondriacs.

This is the sort of process hypochondriacs go through: what's that? A benign lump or malignant bump on your face, breast or rump? Adrenaline rush, heart pumping, sweating, and light-headedness follow, confirming the gravity of the terminal self-diagnosis.

Thoughts racing and images of a foreshortened future, orphaned children, and opportunities missed. Overwhelming distress. Must plan the epitaph — see, I told you I was sick!

Our future and physical health are inherently uncertain. But people with hypochondriasis (or, since the latest edition of the *Diagnostic and Statistical Manual of Mental Disorders*, somatic symptom disorder) immediately resolve any uncertainty about novel physical sensations and symptoms on the side of catastrophe.

Seeking symptoms

The body is constantly in a state of flux. The heart pumps, blood flows, muscles twitch, lungs inflate, and bowels contract. Strange symptoms come and go. And most pass without conscious awareness as we focus on daily tasks.

But try this. Hold your hand upwards, so that your palm and fingertips face the sky. Focus all your attention on the tips of your fingers and wait … and wait … until you notice some sensations.

Tingling, temperature changes, or just an awareness of the sensations on your skin.

Here's an even simpler task. As you read this, shift your attention on to the sensations of the ground or chair pushing up against your body. Chances are you were unaware of all these sensations just moments ago.

Attention, you see, is the microscope of the mind. It can filter in or out any of your internal or external experiences.

Now imagine becoming hypervigilant to all the physical changes naturally occurring in your body. Try it. Just focus on all the sensations in your body for a minute. Amazing, isn't it? Itchy toes, tense jaw, mild headache, numbness, and so on. All the normal workings of a healthy body.

People with somatic symptom disorder are experts at searching for and noticing normal bodily changes. They're also experts at interpreting these in potentially catastrophic ways — fatigue is leukemia; a lump on the arm is cancer.

The number one enemy of someone with the disorder is Dr Google ("cyberchondria"). Indeed, the only thing more catastrophically creative than a hypochondriac's mind is Google's 2.42 million webpages on the causes of cancer. Every possible symptom can be linked to every possible diagnosis, by at least one disreputable source or another.

The hypochondriac is searching not for information, but for confirmation of their imminent demise. If they're unlucky they might come across contradictory information or additional ailments they hadn't yet considered.

Their intense worry and anxiety feel intolerable and must be neutralised. Seeking out a sympathetic doctor or other source of reassurance, or avoiding the health section of the newspaper all provide temporary relief until the next physical symptom is perceived.

Moving forward from health anxiety

So, what are some things that keep hypochondriacs worrying?

Belief: worrying will help me catch something early

No, it won't. Worrying will just keep you miserable until you're old enough to find out how you will shuffle off this mortal coil (unless, of course, your demise is a blissfully brief surprise). Worry itself will not get you any closer to predicting, preventing, or planning for your death.

Belief: I can get certainty about my health

Nope, can't get that either. No amount of checking, doctor visits, Googling, reassurance-seeking will guarantee with 100% certainty that you're well. I can, however, guarantee that the unrelenting pursuit of certainty will make you miserable.

So, how can you manage health anxiety? First, develop some healthy guidelines for monitoring your health and stick to them.

Based on your past experience, how long do benign symptoms typically last? One day, two days, one week? Decide how long you will wait before seeking any form of certainty or reassurance (from the internet, friends, family, or medical practitioners) the next time you notice a symptom, especially ones you've worried about in the past.

Once this time expires (no pun intended), make a decision about whether you need to get the symptom checked or whether you can wait another little while before doing so. Follow guidelines from reputable sources about the recommended frequency of body checking.

And, be willing to sit with uncertainty about your health. None of us ever have certainty about our health. I could have a brain tumour as I write these words. I am willing to accept this possibility and shift my attention onto the next paragraph.

Think about it this way: if I offered you a $2 million insurance policy for your house, even if I promised to build you a gold-

plated replacement if it were destroyed, you would likely consider it far too expensive.

So, how much are you willing to pay to prevent any possibility of illness? Are you willing to give up your capacity to work, time you would otherwise spend with friends and family, and ultimately your happiness? This is a very high price to pay.

Spend energy on things you truly value, rather than wasting it on a false insurance policy. Learn to accept uncertainty about your health. Revel in not knowing when or how the end will come. Focus instead on the time between now and then.

Ultimately, what you have to decide is which epitaph you would prefer when your inevitable end arrives: "lived decades in misery and fear of death", or "didn't see that coming but my life was far richer for it."

Vitamin supplements for kids: what are we really treating?

Suzie Ferrie

Australian parents spend A$40 million each year on vitamin supplements for their children. It's a big number; much smaller is the number of children who actually need them.

In 2009, a large American research survey found that, in industrialised countries, the children most likely to be given vitamin supplements were the ones least likely to need them.

Supplement use reflected parental anxiety about kids' eating habits rather than any real nutritional deficit.

Why worry?

But where does this anxiety come from? Can we blame manufacturers' marketing strategies? It's quite tempting, given the increase

in provocative products such as vitamin jubes, which contain quite small doses of vitamins and up to 50% sugar. Note that this doesn't need to be stated on the label if the product is a "therapeutic good" (such as a vitamin jube).

It seems processed food companies have successfully convinced a lot of people that they don't have time to cook real food, and supplement companies capitalise on this by piquing anxiety about the nutritional fallout.

A vitamin supplement might provide reassurance for parents in the short term, but the real issues for kids' health in Australia are the longer-term ones about the food and activity behaviours they learn. These become habits — the habits of healthy eating and enjoying regular vigorous physical activity, or dietary short cuts and sedentary behaviour.

Consider the long-term behaviours children are learning when we encourage them to pop a pill or a jelly lolly, instead of eating well. Clearly, confectionery with vitamins in it fails in more than one way!

No need for pain

Healthy eating doesn't have to be time-consuming or complicated, and it doesn't have to involve force-feeding anyone brussels sprouts if they don't like them.

You can meet the vitamin needs of a primary-school child with simple meals such as an egg-and-lettuce sandwich with an apple; a bowl of cereal with milk and sliced banana; baked beans on toast; or a chop with potato, carrots and peas and a tub of yoghurt.

Key behaviours that really make a difference to nutrition are avoiding snack foods in favour of fruit, vegetables or dairy food, sticking to just water or milk for drinks, and keeping fast foods and confectionery as occasional treats.

Nuggets, fries and a soft drink aren't a meal, and adding a vitamin lolly to the lot doesn't change that. And because nutrients work together as a team, they're best consumed as food where the

whole team is assembled, rather than in supplement products that have handpicked individual players.

Hidden problems

Apart from being a bit pointless in most cases, vitamin supplements can be risky, particularly if people think more means better. This is less likely to occur with vitamin lollies, unless the child consumes the whole bottle, as the dosage in these products is usually low.

But other products could easily go over recommended limits. The daily requirement for vitamin C, for example, is only 35 milligrams, while most supplements, even those targeted at children, start at 100 milligrams.

The water-soluble vitamins (B group, C and folate) aren't stored in the body, and excess is excreted in the urine, but long-term large doses can cause problems if they're suddenly stopped.

The fat-soluble vitamins (A, D, E and K) can be toxic in excess as the body isn't able to get rid of them easily. Symptoms of toxicity aren't trivial — for vitamin A they include headache from increased brain pressure, muscle pain, blurred vision and loss of bone strength.

Most vitamin products don't have sufficient warning about these risks as their labelling and advertising is poorly regulated.

The real issue

Supplements for children are definitely cheaper than anxiety drugs for their parents, but there is a real problem with Australian kids' nutrition, and it's increasing.

This one is about excess rather than a deficit: the 2007 Australian National Children's Nutrition and Physical Activity Survey found children were generally meeting recommended levels of intake for the kinds of vitamins found in supplements, but exceeding recommendations for salt, sugar and saturated fat.

More Australian children are overweight and obese than ever before — over one in five, in fact. If they're missing anything, it's

physical activity. Most already exceed the daily recommended limit of two hours' screen time.

I'm not advocating a ban on vitamin supplements for kids: there are lots of children with chronic diseases, intestinal failure, or autism-related food issues, who genuinely rely on micronutrient supplementation in order to maintain good health.

But until we have a delicious chewy product that somehow boosts the daily exercise quota, supplements should be off the shopping list for all other children.

Profits, death and disease: big tobacco's business model

Rob Moodie

Lung cancer, a leg amputation, or gasping for air as a result of emphysema are not fun ways of ending one's life. All are common outcomes of smoking, and if current global patterns of smoking continue — 50% of young men and 10% of young women becoming smokers — one billion people are estimated to die this century. And they will be mainly from low- and middle-income countries.

In Australia it is perhaps hard to fathom that three out every five men smoked in the 1950s, yet levels like this are the norm in countries such as Indonesia, China, Russia and Egypt.

There is one, and only one, major driver of this global epidemic — the tobacco industry. The industry is dominated by six big firms: China National Tobacco Corporation, Philip Morris International, British American Tobacco, Japan Tobacco International, Imperial Tobacco and the Altria Group/Philip Morris USA.

These companies are not shrinking away. In fact, they have rapidly shifted their attention to the developing world by implanting themselves firmly in local economies, where they can operate with little regulation or controls. Tobacco retail sales have had an average annual growth of 2% in low- and middle-income countries compared to 0.1% in high income countries in the 12 years to 2009.

Take Philip Morris International in Indonesia, where 40% of 13- to 15-year-old boys smoke. It bought local company Sampoerna and is positioning Indonesia as the centre of the Marlboro brand production to cater for demands in the Asia-Pacific region. As Sampoerna President Director Paul Janelle said last year:

> We have invested more than $390 million in Karawang since 2006 […] PMID and Sampoerna are committed to long-term business in Indonesia.

China has a major problem with 300 million people smoking; 75% of its adults do not have a comprehensive understanding of the health hazards of smoking. The tobacco industry is a government-owned monopoly, and the ministry that oversees the tobacco monopoly also controls key aspects of tobacco control policy, including prices and warning labels. It is hard to imagine a greater conflict of interest.

Tobacco is one of the great commercial successes of our time. They have a very simple model that needs little innovation or R&D — simply because the product sells itself through addiction. Their aim is to get young people to take it up, so they will continue for life and can then ensure their children smoke (children of smokers are twice as likely to smoke as non-smokers). The fact that half of their clients will die, on average, 12 years prematurely is of no concern to them.

They have built the perfect model of intergenerational addiction and early death. Their stocks, yields and margins are, unlike their products, very healthy. It is estimated that A$8.5 billion of Australia's super funds are invested in tobacco companies, with

very few Australians aware they might be supporting the tobacco industry. So, despite the fact that the tobacco industry ranks the lowest in the reputation index, they still manage to generate enormous profits.

As they have done in countries such as Australia and the United States, tobacco companies in the developing world use intimidatory, highly unethical tactics to pursue their sales. They bias research findings, co-opt policy makers and health professionals, they donate to and lobby politicians and public officials to oppose public regulation, and try to influence voters to oppose public health regulation.

In Africa tobacco companies are threatening to sue countries claiming their laws violate international legal obligations. It is worth recalling that these countries have virtually no capacity to defend themselves in court and the transnational companies have far bigger bank reserves than the countries themselves.

The world has responded with the establishment of the World Health Organization's Framework Convention of Tobacco Control in 2005. It was developed in response to the globalisation of the tobacco epidemic, and does represent a major advance for tobacco control.

But the majority of countries are yet to implement the policies that work (taxation, advertising bans, smoke-free environments, health warnings and media campaigns). This is because many national governments, the international development community, and philanthropic groups (with the admirable exception of Bloomberg and the Gates foundations) have simply not woken up to the huge preventable death and disability toll related to tobacco.

According to the Institute for Health Metrics and Evaluation, health funding for tobacco control totalled US$68 million in 2011, less than 1/100th the amount spent on HIV/AIDS, and of course a tiny amount compared to the US$1.7 trillion spent on arms in the same year.

The fact that the tobacco industry can continue to get away with causing such devastating levels of premature death and illness is because they have become "part of the furniture" in so many countries. It is only over the last few decades that smoking has become much less normal or "cool" in wealthier countries.

But the battle continues, and this has been clearly shown by the recent front page story in *The Australian* claiming that plain packaging has failed. Fuelled by data from the tobacco industry only, the obvious reason for such a banner headline was so that it could be reproduced by the Murdoch press in the UK and Europe where the Irish, UK and French governments have made it clear they want to pursue plain packaging.

It is no coincidence that Rupert Murdoch was on the board of Phillip Morris for 12 years, and in turn News Corporation have had a succession of Phillip Morris executives on their board (Hamish Maxwell, Geoffrey Bible and Peter Barnes). Phillip Morris' own documents show how they used their "clout" with the media such as News Corporation — even to the point of funding columnists to attack the science of tobacco control on FoxNews.com.

Ask any executive in a tobacco company if they'd like their children to smoke and you can be sure of the answer — it will be a resounding no! Because they've understood the science of tobacco and they know it is addictive and it kills prematurely. But they are still happy to cajole, convince, and promote their deadly products to billions across the globe. To me that simply stinks.

Six foods that increase or decrease your risk of cancer

Tim Crowe

If you believe cancer is a disease that strikes from nowhere with little in your control to prevent it, you'd be mistaken on both counts. Most cases of cancer are considered preventable by positive nutrition and lifestyle choices.

Six new nutrition cancer prevention guidelines published today in the *Journal of the American College of Nutrition* reinforce some sound advice, but also include a surprise or two.

Cancer is a big killer of Australians, and is responsible for 30% of all deaths each year. The "big five" in order of incidence are prostate, bowel, breast, melanoma and lung cancer. Our love of the sun and smoking mostly explain the last two, but it is food, exercise and other lifestyle choices that explain much of a person's risk of cancer.

So what do these six new cancer prevention recommendations tell us? And how much notice should we take?

1. Eat plenty of fruits and vegetables

Unfortunately, there is no "cancer prevention superfood"; it is a combination of food variety that gives the greatest benefit.

Why are fruit and vegetables so good? Take your pick from any and all of the following: antioxidants, fibre, phytochemicals and weight control.

One group of vegetables you may care to give a closer look at during your weekly shop, are the dark leafy greens. These include broccoli, spinach, leaf lettuce and kale — foods that are true nutrient powerhouses.

2. Limit or avoid alcohol

When it comes to alcohol, forget about justifying drinking because it is good for your heart. Alcohol is strongly linked to cancer of the mouth, oesophagus, breast, colon and liver: the more you drink, the greater the risk.

Alcohol, through conversion to acetaldehyde, can directly damage cellular DNA. It can also damage the liver, increase the solubility of other cancer-causing chemicals, increase the level of estrogen, and decrease the levels of some beneficial nutrients such as folate.

Risk, though, needs to be balanced with lifestyle and enjoyment. There are many other positive things you can do to reduce cancer risk without giving up your favourite drink altogether.

3+4. Avoid red and processed meat

The advice on avoiding processed meat is well supported by evidence. This agrees with the biggest voice in the cancer prevention business, the World Cancer Research Fund (WCRF) which rates the link between red meat and colorectal cancer as "convincing" — the highest level of evidence possible.

Meat lovers can take some solace though. The WCRF recommends keeping consumption of red meat to under 500 grams of cooked meat per week. Fish and chicken are good alternatives if the thought of missing a daily steak is too much for you.

Following on from the advice on limiting red meat, is a recommendation to avoid overcooking meat; especially from grilling and frying. When meat, chicken and fish is overcooked at high temperatures for a long time, natural reactions in the food can produce heterocyclic amines (HCAs). HCAs are considered potent causes of breast, lung, colon, stomach and prostate cancer — at least in animal models.

5. Women: eat soy foods to reduce your risk of breast cancer

This is a surprising recommendation, more so that when groups such as the WCRF have looked at the evidence, it barely made it to the "limited" level of evidence.

Soy contains a class of phytochemicals called isoflavones which have chemical structures similar to estrogen. These isoflavones are thought to partly inhibit a woman's own natural estrogen in stimulating cell growth. That's the theory at least.

Soy foods are a staple of vegetarian diets and the recommendation advises choosing natural soy foods such as edamame, tempeh or tofu and to steer clear of protein concentrates often found in supplements.

Women who are being treated for estrogen-receptor-positive breast cancer should avoid soy supplements because they contain high concentrations of isoflavones.

6. Men: limit or avoid dairy products to reduce your risk of prostate cancer

This certainly stands out as the most controversial recommendation and the one that could grab the headlines.

This recommendation is a good example of needing to balance risk when it comes to lifestyle choices in preventing cancer. While there is some limited evidence that dairy products can raise a man's risk of prostate cancer, there is also a higher level of evidence (which the WCRF classifies as "probable") that milk and calcium can lower the risk of colorectal cancer.

A diet high in calcium can lead to a decrease in vitamin D production. Vitamin D is an important regulator of cell growth and proliferation so less of it may lead to prostate cancer cells growing unchecked.

In the colon, though, it's a different matter. Calcium can bind to potentially carcinogenic compounds in the intestine, making them insoluble and easily excreted. Calcium can also directly influence cell development, slowing down proliferation.

What's a guy to do? If you enjoy dairy foods, there is no need to avoid them. If you have a family history of prostate cancer, you may want to have a bit less. If colon cancer runs in your family, a bit more could help.

Other ways to reduce your cancer risk

While not part of the nutrition recommendations, physical activity is now recognised as a potent "cancer-preventing" habit. Estimates link regular physical activity to a 20–40% lower risk of colon and breast cancer.

How much physical activity is enough? All physical activity is beneficial, but for cancer prevention up to one hour of moderate activity or 30 minutes of vigorous activity daily gives the greatest benefit.

Carrying too much weight, especially around the middle, is a known cancer risk, especially for breast and colon cancer risk. Men should aim for a waist circumference below 94 cm. For women it's below 80 cm.

Cancer prevention guidelines reflect the current state of scientific evidence, and change over time as evidence changes. The core of the guidelines though have changed little and can be summed up in single sentence. Eat mostly plant foods close to their natural state, keep active, drink responsibly, stay safe in the sun, and don't smoke.

For some people, a complete lifestyle overhaul can be a difficult thing to manage in one go. Instead, focus on one change at a time, like building more activity into your day, and then following this up with eating five different types of vegetables and two of fruits each day, with the emphasis on colour as your best guide to variety.

Prevention guidelines shouldn't be seen as a prescription for restricting your life, but a series of small changes to how you eat and live now that will build the framework for a long, healthy and cancer-free life.

Higher, faster … cleaner? Doping and the Winter Olympics

Jason Mazanov

A quick look at Wikipedia shows that Winter Olympians test positive for doping at a far lower rate than their Summer Olympic counterparts. The past two Summer Olympics (London and Beijing) saw 34 drug scandals (19 and 15 respectively) compared to one each from Turin and Vancouver. Why?

The simple answer is that Winter Olympians are "cleaner", but it seems naive to believe that Winter Olympic sport is somehow less vulnerable to doping, especially with claims a new, undetectable drug may be doing the rounds at Sochi. So what is going on?

There is very little evidence that informs why this might be the case. However, there are two obvious answers worth exploring. The first is that Winter Olympians use fewer prohibited substances. The second is that Winter Olympians are better at doping. Let's start with the more charitable option.

1. Winter Olympians use fewer prohibited substances

Given the admission from former president of the World Anti-Doping Agency (WADA) John Fahey that drug testing will never stop doping, it clearly has nothing to do with the deterrent value of testing.

Winter Olympic sports could simply be less vulnerable to doping. The myth that technical sports are less vulnerable persists because it is perceived that drugs tend to have little or no impact on performance.

I have not seen any data on this, but if there is doping among ballet dancers then doping is possible in figure skating. Weight control can be a big issue that sees increased use of stimulants.

Substances that enhance performance in Winter Olympic events may be systematically left off the WADA Prohibited List.

Norway and Canada do rather better at the Winter Olympics than the Summer Olympics by investing heavily in the science of winter sports. As a consequence, perhaps athletes have no need to turn to doping.

The Winter Games have less economic value than the Summer Olympics. This can be seen in broadcast rights and the support Australian Winter Olympians get relative to Summer Olympians. There may be less incentive to dope because Winter Olympic medals have (depending on who you ask) less value.

Culturally, Winter Olympic sports may normalise refusing substance use. It seems naive, but is a plausible explanation. Equally, the relatively smaller Winter Olympic community (35% the size of the Summer Olympics) could make it harder to hide doping.

2. Winter Olympians are better at doping

The less charitable and potentially cynical answer is that Winter Olympians are simply better at doping — or at least at beating the tests.

In saying this, I assume Winter Olympians are treated the same in terms of testing as Summer Olympians. Given WADA's failure to achieve consistent anti-doping policy and practice across sports and countries, this is a weak assumption, but leaves the door open to the idea that Winter Olympians are tested less rigorously than their summer counterparts (even with the hard line pronounced by the International Olympic Committee's medical director Richard Budgett).

Despite the rhetoric, beating the tests is apparently pretty easy to do.

The positive test rate for out-of-competition drug tests (the 6.00 am knock on the door) can be less than 0.36% and officially 1.2% in competition (such as after winning a medal).

In theory, out-of-competition testing should have a higher detection rate because athletes are unprepared, whereas in-competition testing should be lower because athletes are well prepared knowing they face certain drug tests.

Winter Olympians may be more willing to be innovative and take more risk with their substance use. Cross country skiers pioneered autologous blood doping and erythropoietin (EPO) use among endurance athletes.

Where does this leave doping at the Winter Olympics?

The above exploration leads to two uncomfortable questions for those with stewardship of anti-doping.

First, if the Winter Olympics are less vulnerable to doping, why is the IOC yet to find out the reasons so they can be replicated at the Summer Olympics?

Second, if Winter Olympians are better at doping, is anti-doping failing at a flagship Olympic event?