National Male Health Policy Supporting Document

HEALTHY ROUTINES

The National Male Health Policy has a focus on raising awareness about preventable health problems that affect males and targeting males with the poorest health outcomes. This document discusses some of the evidence relating to preventable health issues for males. It does this by considering risk factors for ill health and behaviour and lifestyle modifications that can improve male health.*

What's in this document?

This document first looks at various **issues** to do with healthy routines for males:

- Risk factors
- Leading causes of death and burden of disease in males
- Optimal health outcomes for males, and
- Equity between groups of males

It then looks at **action** that is being taken:

- Government action – policies and initiatives, and
- Community action – working together

It concludes with:

- Personal action – what males themselves can do

Risk factors

Many of the leading causes of premature death and disease burden in males are preventable. Males are dying of diseases, such as coronary heart disease, at higher rates and earlier than females, and some groups of males are dying of these at significantly higher rates and earlier than other groups of males. Males also experience a higher rate of disease burden for some conditions such as Type 2 diabetes. Participants in the consultations emphasised the need to address the growing toll of preventable diseases, and the barriers that males face in adopting healthy routines.

Significant gains can be made through achievable changes in exposure to a limited number of well-established health risks.[1]

There is a group of modifiable, health risk factors which explained over a third of the burden of disease in males and 29 per cent of females in 2003.[2] The top seven male risk factors were tobacco smoking, high blood pressure, high body mass, high blood cholesterol, physical inactivity, alcohol consumption, and low fruit and vegetable intake. Males experienced a significantly higher burden for tobacco and alcohol than females.

The table below links the top seven risk factors with some of the leading preventable causes of death and burden of disease.[3]

In addition, the biomedical risk factors, high blood pressure and high blood cholesterol are themselves associated with lifestyle factors.[4] Saturated fat in the diet is the major lifestyle risk factor for high blood cholesterol, and the major lifestyle risk factors for high blood pressure are being overweight, high intake of saturated fat and salt, low intake of fruit and vegetables, physical inactivity, and alcohol consumption.

A higher proportion of males have high levels of risk factors for illness and higher levels of many risk factors compared with females.

* Most of the discussion refers to 'males', but on occasions the term 'men' is used to remain consistent with wording used in research papers. Wherever possible, male data is used but, when not available, data has been used for both males and females for particular population groups or issues where inferences for male health can reasonably be drawn.

Risk factors for selected diseases and conditions

	Excess body weight	Physical inactivity	Poor diet and nutrition	Alcohol misuse	Tobacco smoking	High blood pressure	High blood cholesterol
Coronary heart disease	✓	✓	✓	✓	✓	✓	✓
Lung cancer					✓		
Stroke	✓	✓	✓	✓	✓	✓	✓
Type 2 diabetes	✓	✓	✓	✓			
Colorectal cancer (colon and rectum)	✓	✓	✓	✓			

The 2007–08 National Health Survey found:[5]

- 68 per cent of males were overweight or obese compared to 55 per cent of females; 26 per cent of boys were overweight or obese (10 per cent obese) compared to 24 per cent of girls (6 per cent obese)
- 22 per cent of males were current smokers compared to 18 per cent of females; the highest rate occurred in the 25–34 age group (33 per cent of males and 22 per cent of females)
- 14 per cent of males reported risky or high-risk alcohol consumption compared to 11 per cent of females; the peak difference occurred in the 25–34 age group (17 per cent of males compared to 9 per cent of females)
- Only 5 per cent of males 15 years and over, and 8 per cent of females, met the guidelines for fruit and vegetable consumption; 7 per cent of males consumed the recommended vegetable intake (five or more serves per day) compared to 10 per cent of females, and 46 per cent of males consumed the recommended fruit intake (two or more serves per day) compared to 56 per cent of females, and
- 68 per cent of males aged 15 years and over reported doing no exercise or having low exercise levels, but even more females were likely to be sedentary or have low levels of exercise (76 per cent).

The AusDiab study, examining the natural history of diabetes, pre-diabetes, heart disease and kidney disease:[6]

- Found that 32 per cent of males and 27 per cent of females aged 25 years and over had high blood pressure or were on blood pressure medication, with prevalence increasing significantly with age, and
- Estimated that half of people 25 years and over had a blood cholesterol level of 5.5 mmo1/L or more; however, the prevalence of high cholesterol peaked for males in the 55–64 years, compared to 65–74 years for females.

Many of these risk factors are substantially higher in those who are disadvantaged, significantly contributing to their poorer health outcomes.

Compared to non-Indigenous males, Aboriginal and Torres Strait Islander males have substantially higher rates of smoking (more than double non-Indigenous males), inadequate fruit intake, sedentary behaviour, higher rates of risky or high-risk alcohol consumption, and obesity; however, they had lower rates of inadequate vegetable consumption.[7]

Data from 2004 showed that males aged 15 years and over in regional and remote areas were significantly more likely than those in major cities to be daily or current smokers, to consume alcohol at risky or high-risk levels, and to be sedentary (not exercise).[8] Males living outside major cities were also 6 per cent more likely to be overweight or obese.

Data in 2007 showed that these risk behaviours increased with remoteness.[9] Compared to males living in major cities, males in outer regional areas were 1.5 times as likely to be a daily smoker, and men in remote and very remote areas were 1.7 times as likely. Males in outer regional areas were 1.4 times as likely to report risky or high-risk alcohol consumption, and males in remote and very remote areas were 1.5 times as likely.

It has been found that males in very remote areas were significantly more likely to be overweight than males in major cities.[10] Obesity increased with remoteness, with males living in very remote areas being more than twice as likely to be obese than males in major cities.

Males from disadvantaged backgrounds are more likely to be smokers, with the rate significantly increasing with disadvantage. It has also been found that more males than females smoked in all socioeconomic groups, but that the most disadvantaged males smoked at a rate 73 per cent higher than the least disadvantaged males.[11]

The same study found that disadvantaged males were significantly more likely to be obese than the least disadvantaged males. Male obesity rates in the most disadvantaged areas were 49 per cent higher than male rates in the least disadvantaged areas. In 2004, males in the most disadvantaged socioeconomic areas were more likely to consume alcohol at risky or high-risk levels than those in the least disadvantaged socioeconomic areas (14 per cent compared to 12 per cent).[12]

Males with a disability are a diverse group with differing levels of risk factors; however, there is a well-established link between disability and socioeconomic disadvantage. An Australian Institute of Health and Welfare (AIHW) report states that 'many risk factors for chronic disease and disability are higher among disadvantaged people'.[13] Another study found that people with a disability had higher levels of smoking and obesity (particularly those from lower socioeconomic backgrounds), risky alcohol use, high blood pressure, sedentary behaviour, and inadequate fruit and vegetable intake.[14]

Similarly, males born overseas are a diverse group with differing levels of risk factors. In addition, data sources vary. For example, surveys conducted in Sydney in the 1990s found higher rates of smoking in males from culturally diverse communities, including that 55 per cent of men surveyed from the Arabic community smoked.[15] However, another source found that the rate of smoking in the Arabic community was the same as in the general community.[16]

Differences in risk factors include that Maori immigrants from New Zealand have higher rates of overweight and obesity, immigrants from Asia report higher rates of inactivity but lower levels of medium- or high-risk alcohol drinking and overweight and obesity, and immigrants from some European countries report higher levels of inactivity.[17]

Multiple risk factors

Males in general, and disadvantaged males in particular, do not merely have higher levels of risk factors but higher levels of multiple risk factors:[18]

- In 2001, 25.6 per cent of Australian males aged 18 years or over reported three risk factors, compared to 20.4 per cent of females, and males also had higher levels of four and five risk factors than females, and
- People in the most disadvantaged socioeconomic group were more likely to have three or more risk factors than people in the least disadvantaged socioeconomic group. Around 27 per cent of the most disadvantaged had three, compared to around 20 per cent of the most advantaged, and the most disadvantaged had around double the rate of four or five risk factors than the most advantaged.

As the report *Living Dangerously: Australians with Multiple Risk Factors with Cardiovascular Disease* states:

> while risk factors are independent predictors of disease – that is, the presence of each one on its own increases the risk of illness – they also have an interactive effect. The risk of illness for a person with a particular factor is increased by the presence of additional risk factors.[19]

The report shows that people with three or four risk factors were twice as likely to have had a heart attack and four times more likely to have reported angina than people with no risk factors. People with five or more risk factors were six times as likely as people with no risk factors to report having angina, three times as likely to report having a heart attack and stroke, and twice as likely for atherosclerosis. As the number of risk factors increased so did the risk of 'all cause' deaths, including cardiovascular disease deaths, and as the level of risk factor increased so did the risk of disease.

A 30-year UK study of 19,000 middle-aged males (40–69 years) recently found that males who smoked, had high cholesterol and had high blood pressure had a life expectancy 10 years less than males without any risk factors for heart disease at the start of the study.[20] Males with these three heart disease risk factors had triple the risk of a fatal event, such as a heart attack or stroke, and double the risk of dying from any cause than men without any heart risk factors. Males with the worst 5 per cent of risk scores based on smoking, blood pressure, cholesterol, body mass index, employment status and diabetes in 1967–70, had a 15 year shorter life expectancy (from the age of 50) than men with the top 5 per cent of scores.

Absolute risk assessment[21]

According to the Heart Foundation, single risk factors (like cholesterol level) provide a poor estimate of an individual's cardiovascular disease (CVD) risk. Absolute risk is the numerical probability of a cardiovascular event occurring within a five-year period, and this provides a more accurate estimate of overall, individualised CVD risk. Comprehensive assessments, using an absolute risk approach, help GPs to tailor the intensity of treatment to those who can benefit most, by obtaining a more meaningful and individualised risk level for each patient.

The first Australian Guidelines for the assessment of absolute CVD risk are now available. These guidelines make recommendations for assessing absolute CVD risk in adults aged 45–74 (35 and above for Aboriginal or Torres Strait Islander adults). They feature sections on assessing adults:

- Without known CVD
- With diabetes or chronic kidney disease, and
- Who are overweight or obese.

These guidelines are an important step towards a single preventive approach to CVD in Australia. Clinical decisions based on absolute risk can lead to improved health outcomes by identifying people most at risk and directing the most appropriate treatments to them.

For more information visit the Heart Foundation's website – www.heartfoundation.org.au/Professional_Information/General_Practice/Pages/AbsoluteRisk.aspx

Leading causes of death and burden of disease in males

The following preventable diseases appear in the top five leading causes of death and burden of disease for Australian males in 2007.

Ischaemic (coronary) heart disease[22, 23, 24]

The leading cause of death and burden of disease for Australian males is ischaemic or coronary heart disease, which includes angina, blocked arteries of the heart, and heart attacks. It is the cause of over 17 per cent of male deaths and over 11 per cent of the burden of disease in Australian males – more than double the next leading cause of death and burden of disease. In 2007, males accounted for 53 per cent of deaths from this cause.

The death rate for coronary heart disease in males is nearly twice the female rate, and is around the same as those for women who are five years older. In the 45–64 age group, a quarter of males died from cardiovascular disease (including coronary heart disease), compared to 14 per cent of females, in 2006, and males experienced more than double the burden of disease for coronary heart disease in 2003. A 2006 study found that the largest gap in death rates occurred in the 50–54 age range, with male death rates being nearly five times higher than females.[25]

The male death rate from coronary heart disease has declined by 43 per cent and 41 per cent for females since the 1970s, due to, for example, better medication.

In 2004–05, around 2.2 per cent of males and 1.4 per cent of females had angina and 2.6 per cent of males and 1 per cent of females had a history of heart attack.[26] Risk factors for heart disease include:[27]

- Smoking (and exposure to other people's smoke)
- High blood cholesterol
- High blood pressure
- Diabetes
- Physical inactivity
- Being overweight, and
- Depression, social isolation and a lack of social support.

Lung cancer[28, 29, 30]

Lung cancer is a malignant tumour of the lungs. In 2005, lung cancer was the fourth most commonly diagnosed cancer in males, with 5738 new diagnoses. The risk of a male being diagnosed with lung cancer is 1 in 24 to age 75, and 1 in 12 to age 85. While the age-standardised rate of cancer in males is projected to grow by 1.2 cases per 100,000 males per year, the rate of lung cancer is decreasing by 1.1 cases per 100,000 males per year.

Lung cancer is the second most common cause of death in males and the most common cause of cancer death in males. In 2005, there were 4711 male deaths from lung cancer. Lung cancer accounted for a higher proportion of deaths in males than females, with 173 male deaths per 100 female deaths. The risk of a male dying from lung cancer is 1 in 35 before age 75, and 1 in 14 before age 85.

Lung cancer is predominantly caused by smoking, including passive smoking (inhaling other people's smoke), and is highly preventable. The risk increases with the number of cigarettes smoked per day and the number of years of smoking; however, the risk reduces as soon as a person stops smoking. If a person stops at 60 years of age, the chance of developing lung cancer at 75 is halved. Other risk factors for lung cancer include:

- Exposure to industrial substances such as asbestos (particularly for smokers), nickel, chromium compounds, arsenic, polycyclic hydrocarbons and chloromethyl ether
- Family history
- Air pollution, and
- Having another lung disease.

Stroke[31, 32]

A stroke occurs when the supply of blood to the brain is blocked by a blood clot or plaque in an artery (ischaemic stroke), or when an artery breaks and bleeds into the brain (haemorrhagic stroke).

Stroke was the third leading cause of male death (4516 deaths in 2007) and fifth leading cause of burden in males in 2003; however, these were both higher for females than males. Stroke death rates in Australia have declined by more than 60 per cent from 1970 to the early 1990s.[33]

There is no national data on the incidence (new cases) of stroke, although it is estimated that around 60,000 new and recurrent strokes will occur in Australia in 2009, and that around 80 per cent of strokes occur in the 55 years and over age group. The 2003 *Survey of Disability, Ageing and Carers* found that males were more likely to have a stroke at a younger age (60–74 years) than females.[34]

All of the seven risk factors outlined above are associated with stroke, particularly high blood pressure and high blood cholesterol. Diabetes also increases the risk of stroke.

Colorectal (bowel) cancer[35, 36]

Cancers of the colon and rectum (the main sections of the large bowel) were the seventh highest cause of male death (2221 deaths) in 2007, and in 2003 were the tenth leading cause of male burden of disease (3 per cent).

In 2005, male colorectal cancer was the second most commonly diagnosed cancer in Australian males, with 7181 cases diagnosed (12.8 per cent of male cancers); there was a 1 in 19 risk of development by the age of 75 years (1 in 28 in women) and 1 in 10 by the age of 85 years (1 in 15 in women). The risk of developing bowel cancer rises significantly from the age of 50. The incidence of colorectal cancer has been increasing for both males and females, with the increase being slightly

less for females.[37] However, there was a decline in rates from 2000 to 2003.

Around 60 per cent of people with colorectal cancer survive more than five years after diagnosis, and early detection significantly improves survival rates (up to 90 per cent). However, although males are around 58 per cent more likely to develop the disease, they are less likely to use the program to detect early signs of the disease.[38]

The Cancer Council Australia states that bowel cancer is one of the most preventable cancers. Risk factors include having a close relative with the disease, having polyps (small growths), and having an inflammatory bowel disease such as ulcerative colitis or Crohn's disease. Modifiable risks include physical inactivity, being overweight, poor diet and alcohol misuse. The Cancer Council recommends that people:[39]

- Be screened for bowel cancer every two years if over 50 years. If eligible, participate in the National Bowel Cancer Screening Program (see below)
- Get 30 to 60 minutes of moderate to vigorous intensity exercise per day
- Maintain a healthy body weight
- Eat a well-balanced diet
- Avoid processed or burnt meat. Limit red meat intake to three to four times per week
- Avoid or limit alcohol intake, and
- Quit smoking.

Type 2 diabetes [40, 41, 42]

Type 2 diabetes involves an inability to produce enough insulin or to use it effectively. At least 85 per cent of diabetes cases are estimated to be Type 2 diabetes. It occurs mostly in people aged 40 or over, with the peak in the 75 and over age group at 22 per cent. Risk significantly rises in Aboriginal and Torres Strait Islander people from age 18 years. It is becoming more common in childhood, although still at low levels.

Diabetes was the ninth leading cause of death (3 per cent) in 2007, and Type 2 diabetes was the second leading cause of male burden of disease (5 per cent) in 2003. Diabetes significantly increases the risk of cardiovascular disease, blindness, nerve damage, kidney diseases, and limb amputations. In 2004–05, of the 3394 lower limb amputations among people with diabetes, 70 per cent were male. An estimated 30 to 70 per cent of males with diabetes also experience erectile dysfunction (impotence), as outlined in the *Healthy Reproductive Behaviours* supporting document.

Prevalence estimates of Type 2 diabetes range from around 3 to 7 per cent of the Australian population, with males having around a 1 per cent higher prevalence than females. The lower estimate was based on 2004–05 self-reported data, whereas the higher estimate was based on the 1999–2001 AusDiab study using blood glucose measurement. The self-reported prevalence of diagnosed Type 2 diabetes has substantially increased from nearly 2 per cent of the population in 1995 to nearly 3 per cent in 2004–05.

A high proportion of Type 2 diabetes is undiagnosed. The AusDiab study found that half of the people who had diabetes were unaware of it.

Type 2 diabetes is highly preventable, but one of the main risk factors, overweight and obesity, is on the rise. Other key risks include physical inactivity, poor diet and alcohol misuse. Reducing these risk factors also helps to reduce diabetes associated complications. For example, being overweight or obese increases the risk of diabetes complications such as coronary heart disease and stroke.

Optimal health outcomes for males

A key way to achieve gender equity in health outcomes between males and females is to raise male awareness of risk factors and preventable diseases and conditions, and of the benefits of seeking help in relation to these disease and conditions.

There are considerable gaps in male health awareness, or health literacy, around risk factors, age-related disease risk, and symptoms of chronic disease, which are important prerequisites for making change.

Awareness of the association between risk factors and diseases

Males need to know that there is a connection between risk behaviour and the development of disease. Males also need to be able to broadly assess their own risk level, for example, whether they are normal weight or overweight. Unfortunately, research has shown that there is a lack of awareness around these issues. For example:

- It has been found that the male participants in one study had a low level of knowledge of the risk factors for Type 2 diabetes, and a low level of awareness about the benefits of physical activity in preventing not only diabetes but also heart disease and cancer.[43] Very few of the male participants were aware of the association between body weight and Type 2 diabetes. Their awareness of the connection between lifestyle and disease was 'superficial and not always sufficiently understood to take action'
- The Zurich Heart Foundation Heart Health Index (Australia, 2009) found that males are more likely to think they meet healthy weight guidelines even though they are overweight or obese.[44] Twenty-two per cent of obese males believed that they met the guidelines compared to 12 per cent of obese females, and 59 per cent of overweight males believed they met the guidelines compared to 53 per cent of overweight females

- Males may also not be aware that central obesity (carrying excess weight in the stomach), which is more common in males than females, is a high risk for heart disease
- Males are becoming more overweight at earlier ages than females, and may not be aware that there is a significant jump in male obesity in the twenties. The Zurich Heart Foundation Heart Health Index found that obesity in males jumped from 3 per cent in the 18–19 age group to 22 per cent of males aged 20–29
- Males may also not be aware of the impact of key transition points such as getting married or cohabiting, or 'retiring' from sport and exercise in the twenties and early thirties, often due to family and work commitments. Both are associated with weight gain and reduced physical activity, which put males at higher risk of disease
- A UK survey found that 42 per cent of males reported that being overweight 'would not bother them at all', compared to 27 per cent of females. This was considered to 'reflect gendered differences in the cultural acceptability of high body mass, in which men are less pressurised to meet a thin ideal',[45] and
- Males may not be aware that the 'traditional' male diet, which is high in red meat and processed meat and low in fibre, puts them at higher risk of disease.

Awareness of the consequences of disease

Again there is a lack of awareness in this area. For example, Type 2 diabetes has a range of very serious consequences, outlined above, yet one study found that male knowledge of diabetes was low and that very few of the male participants in the study were aware of the association between Type 2 diabetes and heart disease.[46]

Awareness of the benefits of taking action

Males need to be aware of the benefits of even small changes in their behaviour. However, the Zurich Heart Foundation Heart Health Index found that:[47]

- People who were 60 years and over were significantly less likely to report that they could reduce their risk of heart disease if they changed their behaviour and only 23 per cent of men aged 60 years and over had made a change in behaviour to reduce their risk of heart disease in the past six months, and
- One in five obese people were unaware that simple lifestyle changes, such as not smoking, enjoying healthy eating and moderate physical activity, could reduce their risk of heart disease.

Awareness of disease symptoms

A lack of knowledge and awareness of symptoms, and a reluctance to have preventive health checks, mean that early intervention opportunities that could prevent the serious, even life-threatening, consequences of these diseases, are missed:

- Research indicates that men are less likely than women to recognise the range of symptoms of a heart attack other than chest pain.[48] This problem is compounded if there is a lack of awareness that heart disease is experienced by men around 10 to 15 years earlier than women.[49] Males may not recognise, and therefore ignore, the symptoms of angina or heart attack in their forties or fifties, if they believe they are too young to be experiencing heart disease, and
- The Zurich Heart Foundation Heart Health Index found that people who had their blood pressure or blood cholesterol checked were significantly more likely to have changed their behaviour to reduce their risk of heart disease than those who had not.

Help-seeking

One study has noted that there are particular barriers that males may experience in help seeking behaviour:[50]

- There is reluctance and embarrassment to go to the doctor, particularly for minor ailments, 'seeing this as contrary to their perceived cultural expectations of men putting up with and not complaining about pain (i.e. not being seen as 'a wuss')', and preventive health checks. For example, studies have found that males may ignore and delay seeking help for symptoms as serious as chest pain and are less likely to realise that they need emergency treatment.[51] Also, Heart Foundation research found that some men were reluctant to call for help, with 49 per cent stating that they 'wanted to be sure it is a heart attack', and another 31 per cent saying that they would feel 'embarrassed' if they were found to not be having a heart attack. Moreover, delays in seeking help have a significant impact on the outcome of a heart attack. More than 50 per cent of deaths due to heart attack occur before reaching hospital, with about 25 per cent of those who have a heart attack dying within an hour of their first ever symptom, and research indicates that males die during a heart attack before getting to hospital at higher rates than females[52, 53]
- There is dissatisfaction with previous visits to the doctor, where advice was provided that contradicted other advice, or was not provided with specific directions for lifestyle changes. The authors note that 'it is essential that GPs be aware that males would appreciate concrete lifestyle behaviour advice, rather than simply being told to lose weight or eat more healthily', and
- There are difficulties involved with attending a doctor during work hours, which meant getting time off work and having to factor in travel and waiting time, and with living a long distance from a health service.

Factors leading to action[54, 55]

It has been found that age and health scares were significant factors in taking action. Turning 40 or 50 years was a major catalyst for action. At 40 years males were more concerned with fitness and putting on weight (appearance). At 50 years they were more concerned about their mortality, often associated with the death of family, friends or colleagues.

Health scares and serious illness also act as a major catalyst for change. It has been found that the male 'participants who had not experienced serious illness or witnessed serious illness in others were more likely to take health for granted or regard it as a matter of low priority', compared to those who had. The serious illness or death of a high-profile person is also a known motivator.

Other factors which research has identified as leading to males taking action to improve their health, reduce their risk taking and visit their doctor include marriage and having children, as outlined in the *Social Determinants* supporting document.[56]

Males (particularly younger males) are considered hard to motivate outside these factors and hard to reach with preventive health initiatives. Males may ignore these initiatives or may not translate the key messages into behavioural change.

It is important to tailor prevention initiatives to the needs of males and to listen to males when designing, implementing and evaluating initiatives. Participants in the Policy consultation emphasised the following points about effective prevention initiatives for males:

- Initiatives need to emphasise that good health is about enjoyment, getting the most out of life and enjoying the things that matter
- Lectures and 'preaching' about lifestyle are not welcome
- Males like the easiness of routines, and healthy behaviour needs to be portrayed as routine
- One consultation participant stated, 'Make it simple, make it quick, make it cheap, make it easy'. Healthy behaviour needs to be simple, inexpensive, quick, convenient and easy; for example, if healthy food is more expensive, takes a while to prepare, is inconvenient, a hassle – then males may be unlikely to choose that over fast, cheap, 'value for money' food
- Initiatives need to emphasise that it is okay to take things step by step and that small changes can add up to big health differences. It is also okay to fail – just leave that behind and keep going
- Healthy behaviour needs to be normalised so it is not considered to be a 'healthy choice'. Some males do not want to make decisions on the basis of whether something is healthy, for example, on the basis of a food label. Peer group pressure is powerful – males can be ridiculed for making health choices and normalisation would help with this. The importance of the use of the popular media was also mentioned. Australian shows like *Neighbours* are including exercise and going to the gym as a normal part of characters' lives, and this was considered effective in leading males to do the same
- Initiatives need to use males with credibility, to whom males can relate:
  - For males with a trade, suggestions included the foreman of a worksite or people who had been involved in 'real' jobs and now have some profile.
  - Aboriginal and Torres Strait Islander males particularly emphasised the need for males from everyday backgrounds to be role models, rather than just 'footy stars'
- Initiatives need to use males who have experienced the consequences of unhealthy behaviour. The realities of unhealthy behaviour need to be highlighted, such as the number of males who have limb amputations or erectile dysfunction as a result of diabetes, or that smoking causes erectile dysfunction, and
- Using males to talk about the benefits of giving up smoking or changing a lifestyle behaviour could also be useful, for example, the realities of how males feel when giving up smoking and what they may need to do to get through.

The 45–49 Year Old Health Check

The Medicare Benefits Schedule provides for a health check for men and women between the ages of 45 and 49 (inclusive). A health check at this stage of life can assist patients to make the necessary lifestyle changes to prevent or delay the onset of chronic disease.

Lifestyle modification

Information and a will to change can be insufficient to support the introduction and maintenance of positive health routines. Apart from knowledge, other motivators include social influence and self-efficacy (the belief in one's capabilities to achieve a goal or outcome).[57] Behavioural changes are needed, along with appropriate strategies to overcome challenges.[58] Factors associated with successful adoption of healthy lifestyles include regular contact with a support clinician;[59, 60, 61] change-management techniques such as self-monitoring, feedback, reinforcement and problem-solving; and social and environmental support.[62, 63, 64]

It has been noted that lifestyle modification trials have included more female than male participants, and it has been suggested that more emphasis should be put on identifying the barriers to male participation.[65]

Nevertheless, the feasibility of lifestyle modification for males has been confirmed,[66] and the rewards for improvements in lifestyle include a reduction in the risk factors for major illnesses, particularly diabetes and cardiovascular disease, and prevention and delayed onset of illness.[67, 68, 69]

Equity between groups of males

As has been outlined, certain groups of males have higher numbers of risk factors, often in combination, and worse health outcomes than other Australian males. There is substantial evidence that higher risk exposures among particular groups are related to their social and economic circumstances, which can provide significant barriers to healthy behaviours. As the WHO report *Closing the Gap in a Generation* states, the social determinants of health 'are responsible for a major part of health inequities between and within countries'.[70]

Barriers that some groups of males face in accessing health care services and prevention initiatives have been raised in consultations for the Policy and in the *Access to Health Services* supporting document. Examples of how these factors act as barriers to the adoption of healthy routines were provided by participants in the consultations, such as:

- The cost of healthy food, for example fruit and vegetables
- The unavailability or even higher cost of fresh food in rural and particularly remote areas of Australia, and
- Built environments in disadvantaged areas that do not encourage physical activity – for example, lack of open spaces, footpaths and recreational facilities.

In addition, research has found that males living in rural and remote areas consider that it is beneficial for males to be physically big, and some males from some cultures, such as Pacific Islanders, consider that being physically big is a sign of status and wealth.[71]

However, the risk factors outlined above only explain part of the social gradient in health. As already discussed, adverse circumstances, mental health, a sense of power and control over life, and a sense of inclusion and participation in society, all contribute to differential health outcomes.

Hope, or lack of it, is a factor in this equation. In *The Importance of the Community as an Empowered Partner for Health and Well-being*, the author, Syme, states that, where groups of people have 'no hope for the future, what difference would it make if they smoked or used drugs or missed school or engaged in violent behaviour'.[72] He notes the failure of preventive health initiatives to engage the most disadvantaged people, and outlines some of his innovative work to address the lack of hope and marginalisation of disadvantaged people.

In addition, he emphasises the importance of working with the community as an empowered partner. For example, his team has developed Wellness Guides for people who are marginalised, with an emphasis on pictures, personal stories, and advice on community resources. The guides are developed in close partnership with the targeted communities; for example, older people, lone mothers, people with mental illness, people with disabilities, and children have provided substantial input and much of the writing for the guides. The guides have been evaluated and found to be a success.

Government action – policies and initiatives

Preventive Heath

In November 2008 the Australian Government made an $872 million investment in preventative health which includes funding for programs to be rolled out in schools, workplaces and local communities to support Australians to lead healthier lifestyles and reduce their risk of chronic disease. These programs will focus on reducing lifestyle risk factors such as smoking and obesity and increasing physical activity and healthy eating. This investment includes the establishment of the Australian National Preventative Health Agency, to advise all governments on the evidence base for future investment and action in prevention.

The Government's commitment to prevention, both primary and secondary, is highlighted by its announcement that it will invest $436 million to transform the way that patients with chronic disease are treated – beginning with the nearly one million patients who suffer from diabetes. The Government is also considering a report from the National Preventative Health Taskforce on further actions in regard to tobacco, alcohol and obesity.

In April 2010 the Australian Government announced a comprehensive package targeting smoking and its harmful effects, including an increase in the tobacco excise of 25 per cent. The Government's anti-smoking action includes:

- The first increase in tobacco excise (above inflation) in more than a decade, an increase of 25 per cent.
- Cracking down on one of the last frontiers for tobacco advertising – in a world first, cigarettes will have to be sold in plain packaging.
- Restricting Australian internet advertising of tobacco products.
- Injecting an extra $27.8 million into anti-smoking campaigns.

Smoking kills over 15,000 Australians every year, and is the largest preventable cause of disease and premature death in Australia. The social costs of smoking (including health costs) are estimated at $31.5 billion each year. Annually, over 750,000 hospital bed days are attributable to tobacco related diseases.

National Partnership Agreement on Preventive Health

In 2008, COAG agreed to the National Partnership, which aims to address the rising prevalence of lifestyle related chronic diseases by:

- Laying the foundations for healthy behaviours in the daily lives of Australians through social marketing efforts and the national roll-out of programs supporting healthy lifestyles, and
- Supporting these programs and the subsequent evolution of policy with the enabling infrastructure for evidence-based policy design and coordinated implementation.

The measures funded through the National Partnership include provisions for the particular needs of socioeconomically disadvantaged Australians:

Social marketing

Two social marketing initiatives will involve total funding of $120 million from 2009 - 10 to 2012 - 13:

- *MeasureUp* – This $59 million initiative provides supplementary funding for the Measure Up program to extend its duration by three years and expand its reach to high-risk groups. Activities under the campaign aim to raise awareness of healthy lifestyle choices, focusing on the importance of physical activity and nutrition, as well as the link between lifestyle behaviours and the risk of some chronic disease. The Australian Government will manage and coordinate a national integrated program of social marketing activity ($41 million), while the states and territories will deliver a program of activities at the local level that reinforce and extend the national campaign messages ($18 million), and
- *Tobacco* – This $61 million initiative provides funding for national level social marketing activities focusing on smoking in order to lay the foundations for healthy behaviours in the daily lives of Australians and address the rising prevalence of smoking related chronic diseases. The Australian Government will administer these funds in consultation with the states and territories, and the states and territories have committed to fund local level activities to support the national activities.

Healthy Communities

This initiative, involving funding of $72 million from 2009 - 10 to 2012 - 13, will support a targeted, progressive roll-out of community-based healthy lifestyle programs which will facilitate increased access by disadvantaged groups and those not in the workforce to physical activity, healthy eating and healthy weight activities. The Australian Government will administer funding to local government organisations and provide a national quality assurance framework, the accreditation/registration of programs and service providers, and a web based information portal.

Healthy Children

State and territory governments will implement a range of interventions for children from birth to 16 years of age to increase physical activity and improve nutrition through childcare centres, preschools, schools and within families. Programs are likely to vary across jurisdictions, and may include intensive programs to support at-risk children and their families in achieving healthy weight and healthy eating and exercise programs in children's settings. The interventions will involve funding of $325.5 million from 2011 - 12 to 2014 - 15.

Closing the Gap

On 29 November 2008, COAG leaders agreed to the $1.6 billion National Partnership Agreement (NPA) on Closing the Gap in Indigenous Health Outcomes to specifically address the first of the targets of COAG's Closing the Gap initiative – to close the gap in life expectancy gap within a generation. The Australian Government will contribute $805.5 million to address three priority areas of the NPA.

One element of the NPA is the Tackling Smoking measure, with funding of $100.6 million over four years. Tackling Smoking seeks to reduce smoking rates in Indigenous communities and the financial burden of chronic disease associated with smoking. The measure will fund the development of a comprehensive and culturally appropriate approach to tobacco cessation across Australia and will provide:

- Targeted social marketing and locally designed tobacco campaigns to reduce smoking rates in Indigenous communities
- Sponsorship of community events
- The development of comprehensive and culturally appropriate quit smoking services
- An appropriately trained Indigenous tobacco control workforce to work with local communities
- Enhancement of culturally appropriate Quitline services to make them more accessible for Aboriginal and Torres Strait Islander people, and
- Funding for practical community-based initiatives and interventions developed specifically for Indigenous communities and workforces.

In February 2010 the Government announced the appointment of high-profile leader Tom Calma as the inaugural National Coordinator for Tackling Indigenous Smoking. The role of the coordinator will be to:

- Lead and mentor the Tackling Smoking workforce being established under the initiative

- Provide advice and insights which assist to shape policy and program directions in Indigenous tobacco control
- Play a key role in evaluating the Government's $14.5 million Indigenous Tobacco Control Initiative to ensure successful pilot programs are translated into improved services on the ground, and
- Advocate for the importance of, and best practice approaches to, reducing smoking in Indigenous families, communities and workplaces.

As another initiative within Closing the Gap, on 7 December 2009 COAG leaders agreed to the National Strategy for Food Security in Remote Indigenous Communities. The strategy consists of five key actions:

- National Standards for stores and takeaways servicing remote Indigenous communities
- A National Quality Improvement Scheme for remote community stores and takeaways to support implementation of the National Standards
- Incorporation of stores under the *Corporations (Aboriginal and Torres Strait Islander) Act 2006*
- The National Healthy Eating Action Plan for remote communities, and
- A National Workforce Action Plan to improve food security in remote Indigenous communities.

The strategy will be piloted in up to 10 remote communities, beginning in March 2010.

National Bowel Screening Program

The National Bowel Screening Program offers testing to people turning 50, 55 or 65 between January 2008 and December 2010. People eligible to participate in the program will receive an invitation through the mail to complete a simple test called a faecal occult blood test (FOBT) in the privacy of their own home and mail it to a pathology laboratory for analysis. The Government has provided $87.4 million for the Program for the three years from 2008–09 to 2010–11. There is no cost involved in completing the FOBT. More information is available at www.health.gov.au/internet/screening/publishing.nsf/Content/bowel

Community action – working together

The M5 Project Men's Preventive Health Program

The M5 Program, run by the Royal Australian College of General Practitioners (RACGP), encourages men to take action, find a GP, seek help early and take steps to improve their health.

The RACGP is working with a diverse group of non-government and commercial organisations, such as Foundation 49, *beyondblue* and the Heart Foundation, to ensure that this initiative effectively engages men.

The project appeals to men's sense of community and relationship, through use of innovative media, like Target catalogues, and the use of inspirational men who have benefited from early intervention from a GP.

Men are encouraged to take five minutes to get involved by, for example, having a chat to a friend, printing off posters to put up in public places such as clubs or offices, or telling someone about the M5 website, www.m5project.com.au.

Men are also encouraged to take five preventive steps to improve their health:

- Share your family history with your GP
- Know your healthy weight
- Check your blood pressure
- Stop smoking – it's the only health option
- Maintain a healthy mind and a healthy body.

The Australian Government has provided funding to the RACGP to develop and build on the M5 project.

Heart Foundation Walking

Heart Foundation Walking is Australia's largest network of free, community-based walking groups led by volunteer walk organisers.

Walking is the number one preferred activity in Australia, yet over half of all Australians miss out on the health benefits associated with being regularly physically active. Walking has been shown to reduce the risk of heart disease and stroke, and is convenient, free and accessible to almost all Australians. Walking can improve mental health and self-esteem, and being part of a group or social network has also been demonstrated to positively influence mental and physical health.

Heart Foundation Walking is part of the Heart Foundation's broader Active Living agenda, designed to encourage and support walking and physical activity; it also includes focusing on enhancing supportive environments for physical activity.

Partnering with area coordinators from health and community organisations, the Heart Foundation provides a sustainable framework to develop walking groups. Community-based volunteer walk organisers are recruited to lead groups in their local areas, and are provided with resources, training and support to begin and maintain their group. They also receive complimentary Heart Foundation Walking merchandise for their role in organising a local walking group. Walkers are provided with information outlining Heart Foundation Walking and can choose to participate in the Walker Recognition Scheme, which offers certificates, monthly prize draws and other incentives when they reach walking milestones.

For more information visit the website www.heartfoundation.org.au/sites/walking/Pages/default.aspx

Utopia

The Utopia community comprises 16 outstations dispersed over approximately 10,000 km^2 in the Northern Territory. The Urapuntja Health Service provides primary health care and outreach services to outstations.

Health outcomes in Utopia were measured in 1995 and again in 2005. The 1995 study found adults in Utopia had significantly lower mortality rates than adults in other Northern Territory Aboriginal communities, largely due to lower rates of alcohol-related injury.[73] They also had significantly lower hospitalisation rates, and had a lower average body mass index.

The follow-up study in 2005 looked specifically at mortality rates since 1995 and trends in risk factors.[74] This study confirmed the results of the earlier study, finding that all-cause and cardiovascular disease mortality rates were lower at Utopia than for Northern Territory Indigenous people in general (although all-cause mortality was still significantly worse than for non-Indigenous Territorians). There were also significant reductions in some risk factors, especially for cardiovascular disease, such as impaired glucose intolerance, high cholesterol, and smoking (in males), and a relatively low rate of hospitalisation for cardiovascular disease.

The 2005 research, which was published in 2008, concluded:

> Contributors to lower than expected morbidity and mortality are likely to include the nature of primary health care services, which provide regular outreach to outstation communities, as well as the decentralized mode of outstation living (with its attendant benefits for physical activity, diet and limited access to alcohol), and social factors, including connectedness to culture, family and land, and opportunities for self-determination.

Personal action – what males themselves can do

Get information on preventable diseases, risk factors and simple steps to start and keep a healthy routine:

- HealthInsite (Australian Government health information website) – www.healthinsite.gov.au
- M5 Project: Men's Preventive Health (Royal Australian College of General Practitioners) – www.m5project.com.au
- Foundation 49 – www.49.com.au (see also the Access to Health Services support document for more detail)
- Freemasons Foundation for Men's Health (tips on losing weight and assessing your health risks) – www.adelaide.edu.au/menshealth
- Cancer Council Australia – www.cancer.org.au – Helpline 13 11 20
- Diabetes Australia – www.diabetesaustralia.com.au – Infoline 1300 136 588
- Heart Foundation – www.heartfoundation.org.au – 1300 36 27 87
  - Have your risk of cardiovascular disease assessed by a GP
  - Recognise the warning signs of heart attack – www.heartattackfacts.org.au/home.aspx
- Measure Up – www.measureup.gov.au
  - Measure your waist (men have an increased risk of chronic disease if their waist measures more than 94 cm and a greatly increased risk if their waist measures more than 102 cm)
- National Stroke Foundation – www.strokefoundation.com.au – StrokeLine 1800 787 653
- QUIT Now: the National Tobacco Campaign – www.quitnow.info.au – Quitline 131 848 or 13 7848.
- Participate if you receive an invitation to participate in the National Bowel Screening Program.
- Talk to your doctor about having a health check or if you are experiencing symptoms, and
- Get your blood pressure and your blood cholesterol checked.

Follow the Heart Foundation's top five tips for sticking with healthy living resolutions

- Small changes to your eating habits can make a big difference. Try switching to reduced fat milk instead of full fat milk, ditching the cakes or biscuits for morning tea, and choosing a piece of fruit or opting for wholegrain bread instead of white.
- Look for ways to build physical activity into your day. Walk or ride a bike instead of driving. If you must drive, park further away and walk the extra distance rather than driving around for the perfect park, or take a break during the day and go for a 15-minute walk.
- Review the changes you've made and note how you are feeling. Changes should be long term, so it's important to be enjoying your life and feeling good about yourself.
- Reward yourself – when a change becomes a habit, buy yourself some new clothes, or visit a place you enjoy.
- Keep going with your changes – it's normal to have days when it all becomes too hard, but don't worry about it. Just keep going with your changes the next day.

Endnotes

1. Begg S, Vos T, Barker B, Stevenson C, Stanley L & Lopez A (2007) *The Burden of Disease and Injury in Australia, 2003*
2. ibid
3. Australian Institute of Health and Welfare (2008) *Indicators for Chronic Diseases and Their Determinants, 2008*, PHE 75
4. ibid
5. Australian Bureau of Statistics (2009) *National Health Survey: Summary of Results 2007–08*, 4364.0
6. *Australian Diabetes, Obesity, and Lifestyle Study 1999–2000*
7. Australian Institute of Health and Welfare (2008) *Aboriginal and Torres Strait Islander Health Performance Framework 2008 Report: Detailed Analyses*, cat. no. IHW22
8. Australian Institute of Health and Welfare (2008) *Rural, Regional and Remote Health Indicators of Health Status and Determinants of Health*, cat. no. PHE 97
9. Australian Institute of Health and Welfare (2010) *A Snapshot of Men's Health in Regional and Remote Australia*, Rural Health Series, no.11. cat. no. PHE 120, Australian Institute of Health and Welfare, Canberra
10. Leahy K, Glover J & Hetzel D (2009) *Men's Health and Wellbeing in South Australia: An Analysis of Service Use and Outcomes by Socioeconomic Status*, Public Health Information Development Unit, p.113
11. Leahy K, Glover J & Hetzel D (2009) *Men's Health and Wellbeing in South Australia: An Analysis of Service Use and Outcomes by Socioeconomic Status*, Public Health Information Development Unit, p.107
12. Australian Bureau of Statistics (2004) *Year Book Australia, 2004*, 1301.0
13. Australian Institute of Health and Welfare (2009) *The Geography of Disability and Economic Disadvantage in Australian Capital Cities*, cat. no. DIS 54
14. www.fhi.se/en/publications/summaries/health-on-equal-terms
15. www.quit.org.au/article.asp?ContentID=7269
16. www.disability.vic.gov.au/dsonline/dsarticles.nsf/pages/Smoking_quit_tips_for_diverse_groups?opendocument
17. Australian Bureau of Statistics (2009) *Perspectives on Migrants 2009*, 3416.0
18. Australian Institute of Health and Welfare (2005) *Living Dangerously Australians with Multiple Risk Factors with Cardiovascular Disease*, Bulletin Issue 24, February
19. Australian Institute of Health and Welfare (2005) *Living Dangerously Australians with Multiple Risk Factors with Cardiovascular Disease*, Bulletin Issue 24, February
20. Clarke R, Emberson J, Fletcher A, Breeze E, Marmot M & Shipley M (2009) 'Life expectancy in relation to cardiovascular risk factors: 38 year follow-up of 19 000 men in the Whitehall Study', *BMJ*, 339:b3513
21. www.heartfoundation.org.au/Professional_Information/General_Practice/Pages/AbsoluteRisk.aspx

22. www.heartfoundation.org.au

23. www.aihw.gov.au/mortality/data/faqs.cfm

24. Begg S, Vos T, Barker B, Stevenson C, Stanley L & Lopez A (2007) *The Burden of Disease and Injury in Australia 2003*, Australian Institute of Health and Welfare, Canberra

25. Wilkins D, Payne S, Granville G & Branney P (2008) *The Gender and Access to Health Services Study*, UK Department of Health

26. Australian Institute of Health and Welfare (2008) *Australia's Health 2008*, Australian Institute of Health and Welfare, Canberra

27. www.heartfoundation.org.au

28. Australian Bureau of Statistics (2007) *Causes of Death*, 3303.0

29. www.aihw.gov.au/publications/can/ca08/ca08.pdf

30. www.mydr.com.au/cancer-care/lung-cancer-what-you-need-to-know

31. www.strokefoundation.com.au

32. www.aihw.gov.au/cdarf/data_pages/incidence_prevalence/index.cfm#Stroke

33. www.aihw.gov.au/publications/cvd/hsvd/hsvd-c06.pdf

34. Australian Bureau of Statistics (2003) *Disability, Ageing and Carers*, *Australia: Summary of Finding, 2003*, 4430.0

35. www.aihw.gov.au/cdarf/diseases_pages/index.cfm

36. Begg S, Vos T, Barker B, Stevenson C, Stanley L & Lopez A (2007) *The Burden of Disease and Injury in Australia 2003*, Australian Institute of Health and Welfare, Canberra

37. Australian Institute of Health and Welfare (2008) *Indicators for Chronic Disease and Their Determinants*, www.aihw.gov.au/publications/phe/ifcdtd08/ifcdtd08-c01.pdf

38. www.news.com.au/couriermail/story/0,23739,25693585-5006048,00.html

39. www.cancer.org.au/Healthprofessionals/patientfactsheets/Early_detection/ED_bowel_cancer.htm

40. www.aihw.gov.au/diabetes/index.cfm

41. Australian Institute of Health and Welfare (2008) *Diabetes Australian Facts, 2008*, cat. no. CVD 40, Australian Institute of Health and Welfare, Canberra

42. www.rhef.com.au/2009/10/08/risk-assessment-for-type-2-diabetes-should-now-be-carried-out-from-the-age-of-40/

43. Aoun S, Donovan R, Johnson L, Egger G (2002) *Preventative Care in the Context of Men's Health Journal of Health Psychology* Vol7 No. 3 243–252

44. Zurich and National Heart Foundation (2009) Zurich Heart Foundation Heart Health Index (Australia)

45. Wilkins D, Payne S, Granville G, Branney P (2008) *The Gender and Access to Health Services Study*, Department of Health Men's Health Forum UK

46. Aoun S, Donovan R, Johnson L, Egger G (2002) 'Preventative care in the context of men's health', *Journal of Health Psychology*, vol.7, no.3, pp.243–252

47. Zurich and National Heart Foundation (2009) *The Zurich Heart Foundation Heart Health Index* (Australia)

48. Wilkins D, Payne S, Granville G, Branney P (2008) *The Gender and Access to Health Services Study*, Department of Health Men's Health Forum UK

49. ibid

50. Aoun S, Donovan R, Johnson L, Egger G (2002) 'Preventative care in the context of men's health', *Journal of Health Psychology*, vol.7, no.3, pp.243–252

51. Wilkins D, Payne S, Granville G, Branney P (2008) *The Gender and Access to Health Services Study*, Department of Health Men's Health Forum UK

52. Australian Institute of Health and Welfare (2004) *Heart, Stroke and Vascular Diseases – Australian Facts 2004*, Australian Institute of Health and Welfare, Canberra, p.26

53. Wilkins D, Payne S, Granville G, Branney P (2008) *The Gender and Access to Health Services Study*, Department of Health Men's Health Forum UK

54. Aoun S, Donovan R, Johnson L, Egger G (2002) 'Preventative care in the context of men's health', *Journal of Health Psychology*, vol.7, no.3, pp.243–252

55. Richardson N (2004) *Getting Inside Men's Health*, South Eastern Health Board

56. ibid

57. Robertson R (2008) *Using Information to Promote Healthy Behaviours*, a King's Fund Report Under the Kicking Bad Habits programme

58. Magkos F, Yannakoulia M & Chan J (2009) *Management of the Metabolic Syndrome and Type 2 Diabetes Through Lifestyle Modification*, Annu. Rev. Nutr, 29, pp.223–56

59. Digenio AG, Mancuso JP, Gerber RA et al (2009) *Comparison of Methods for Delivering a Lifestyle Modification Program for Obese Patients*, Annals of Internal Medicine, 150, pp.255–62

60. Tate DF, Jackvony EH & Wing RR (2003) 'Effects of internet behavioural counselling on weight loss in adults at risk for type 2 diabetes: A randomized trial', *JAMA*, 289(14), pp.1833–1836

61. Tate DF, Wing RR & Winett RA (2001) 'Using internet technology to deliver a behavioural weight loss program', *JAMA*, 285(9), pp.1172–1177

62. Elmer PJ, Obarzanek E, Vollmer WM et al (2006) 'Effects of comprehensive lifestyle modification on diet, weight, physical fitness, and blood pressure control: 18-month results of a randomized trial', *Annals of Internal Medicine*, 144, pp.485–495

63. Lindstrom J, Ilanne-Parikka P, Peltonen M et al (2006) 'Sustained reduction in the incidence of type 2 diabetes by lifestyle intervention: Follow-up of the Finnish Diabetes Prevention Study', *The Lancet*, 368(9548), pp.1673–1679

64. Eddy D, Schlessinger L & Kahn R (2005) 'Clinical outcomes and cost-effectiveness of strategies for managing people at high risk of diabetes', *Annals of Internal Medicine*, 143, pp.251–264

65. Laatikainen T, Dunbar J, Chapman A et al (2007) 'Prevention of type 2 diabetes by lifestyle intervention in

an Australian primary healthcare setting: Greater Green Triangle Diabetes Prevention Project', *BMC Public Health*, 7:249

66. Eriksson KF & Lindgarde F (1991) 'Prevention of type 2 diabetes mellitus by diet and physical exercise: The 6-year Malmo Feasibility Study', *Diabetologia*, 34, pp.891–8

67. Elmer PJ, Obarzanek E, Vollmer WM et al (2006) 'Effects of comprehensive lifestyle modification on diet, weight, physical fitness, and blood pressure control: 18-month results of a randomized trial', *Annals of Internal Medicine*, 144, pp.485–495

68. Lindstrom J, Ilanne-Parikka P, Peltonen M et al (2006) 'Sustained reduction in the incidence of type 2 diabetes by lifestyle intervention: Follow-up of the Finnish Diabetes Prevention Study', *The Lancet*, 368(9548), pp.1673–1679

69. Eddy D, Schlessinger L & Kahn R (2005) 'Clinical outcomes and cost-effectiveness of strategies for managing people at high risk of diabetes', *Annals of Internal Medicine*, 143, pp.251–264

70. World Health Organization Commission on Social Determinants of Health (2008) *Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health*, Final Report of the Commission on Social Determinants of Health, Geneva

71. Colagiuri R, Thomas M & Buckley A (2007) *Preventing Type 2 Diabetes in Culturally and Linguistically Diverse Communities in NSW*, Dept. of Health, Sydney

72. Syme SL (2009) *The Importance of the Community as an Empowered Partner for Health and Wellbeing*, Communities in Control Conference 2009

73. McDermott R, O'Dea K et al (1998) 'Beneficial impact of the homelands movement on health outcomes in Central Australian Aborigines', *Aust N Z J Public Health*, 22, pp.653–8

74. Rowley K, O'Dea K, Anderson I, McDermott R, Saraswati K, Tilmouth R, Roberts I, Fitz J, Wang Z, Jenkins A, Best J, Wang Z & Brown A (2008) 'Lower than expected morbidity and mortality for an Australian Aboriginal population: 10-year follow-up in a decentralised community', *MJA*, 188(5), pp.283–7

Note:

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