

**NATIONAL STRATEGY FOR HEART, STROKE
AND VASCULAR HEALTH IN AUSTRALIA**

**National Heart, Stroke and Vascular Health
Strategies Group**

February 2004

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Preface

This strategy, prepared by the National Heart, Stroke and Vascular Health Strategies Group, aims to provide a blueprint for improving the cardiovascular health of Australians and reducing the prevalence of heart, stroke and vascular disease. It is intended to guide the National Health Priority Action Council, its member organisations and other key organisations in driving improvements in health services, with the goal of delivering better health outcomes through the National Health Priority Initiative in Cardiovascular Health.

The Strategy provides a policy foundation on which the National Health Priority Action Council can build a practical National Service Improvement Framework for heart stroke and vascular health and against which indicators and targets for measuring national performance can be developed.

Overarching aim

To improve the cardiovascular health status of the Australian population to be among the best in the world.

Specific goals and strategies are identified against each key arena of action in the strategy. In broad terms the Strategy aims to:

- *progressively reduce the inequalities in health outcomes associated with heart, stroke and vascular disease, particularly through a focus on preventive and management practices in relation to Aboriginal and Torres Strait Islander peoples;*
- *improve the care and management of heart, stroke and vascular disease across the continuum of care, to optimise the outcomes by identifying and promoting proven interventions;*
- *support the dissemination and uptake of optimal preventive practices in relation to heart, stroke and vascular disease, and promote consistency in these practices; and*
- *enhance the role of consumers in maintaining and managing their own cardiovascular health.*

Reflecting this overarching aim, the strategy identifies seven areas where there is most potential for improvement. Within each area, the strategy outlines the magnitude of the problem as well as opportunities to address the problem. Priorities for national action focus on approaches that the existing evidence suggests are likely to be most effective.

The strategy aims to link in with and support existing systems of prevention and care of heart, stroke and vascular disease, as well as to initiate coordinated national action in a range of areas. The success of the strategy will depend on partnership and collaboration between a range of key parties within the health policy area, including governments, non-government organisations, service providers, community groups and professional bodies. A range of levers at different levels of government will assist in the implementation of the strategy.

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Introduction

Heart, stroke and vascular disease comprises all diseases and conditions involving the heart and blood vessels. This includes coronary heart disease, stroke, peripheral vascular disease, reno-vascular disease and chronic heart failure. The main underlying problem in these diseases is atherosclerosis, a process that forms abnormal build-ups of fat, cholesterol and other substances in the inner lining of the arteries. It is most serious when it affects the blood supply to the heart (causing angina, heart attack or sudden death) or to the brain (which can lead to a stroke).

Why is a national strategy for heart, stroke and vascular disease important?

Heart, stroke and vascular disease imposes the major burden of ill health in Australia, accounting for 38 per cent of all deaths and 22 per cent of the burden of disease (through premature mortality, ill health, impairment and disability) (AIHW 2004). This burden is proportionately greater than that in many other OECD countries (AIHW 2002).

Heart, stroke and vascular diseases also account for the largest proportion of Australian health system costs, comprising \$3.7 billion (12 per cent) of total costs in 1993–94 (AIHW 2002). In 2002–2003 around \$1.4 billion was spent through the Pharmaceutical Benefits Scheme (PBS) on heart, stroke and vascular drugs, representing around 30 per cent of total PBS expenditure in that year¹. In 2002–03, 16 per cent of visits to a general practitioner were for the treatment of heart, stroke or vascular disease or its risk factors (AIHW: Britt, Miller, et al 2003). In 2001, an estimated 90 per cent of the adult Australian population had at least one risk factor for heart, stroke and vascular disease - tobacco smoking, physical inactivity, overweight or obesity, high blood cholesterol, high blood pressure, heavy alcohol consumption, and diabetes - and 24 per cent of people had three or more risk factors.

Heart, stroke and vascular disease is a major contributor to differences in health status within the Australian population. Of particular concern is the considerable impact of heart, stroke and vascular disease and end-stage renal disease on the health of Aboriginal and Torres Strait Islander peoples, which is much greater than in the general population (ABS & AIHW 2001). Rates of risk factors for heart, stroke and vascular disease and of rheumatic heart disease are also considerably higher among Aboriginal and Torres Strait Islander peoples.

People in the most disadvantaged areas also experience considerably higher death rates from heart, stroke and vascular disease than their counterparts from the least disadvantaged areas—17% higher for males and 16% higher for females (AIHW 2004).

Documented trends and projections demonstrate that, to a large extent, heart, stroke and vascular disease is preventable and better outcomes can be achieved with improved care (Commonwealth Department of Health and Aged Care & AIHW 1999). Age-standardised mortality from coronary heart disease and stroke has fallen by about 70 per cent over the last 35 years. Reductions in tobacco smoking and high blood pressure, as well as improved management and treatment, have contributed to these improvements. Indeed, progress in heart, stroke and vascular disease has contributed more than any other area to health gains in the Australian community over this period (AIHW 2002). However, given the enormous burden attributed to heart, stroke and vascular disease on the Australian community, there is great potential for further gain. The overall burden of these diseases is still considerable,

¹ Based on Health Insurance Commission data, ATCC Codes only.

because of factors such as ageing of the population, increased prevalence of diabetes and unfavourable trends in some risk factors (such as overweight, physical inactivity and poor nutrition). Very importantly, heart, stroke and vascular health gains have not been experienced to the same extent by disadvantaged groups in the population, particularly Aboriginal and Torres Strait Islander peoples, but also those from lower socio-economic groups.

Opportunities provided by a national strategy

The area of cardiovascular health offers particular opportunities for further health gains as outlined below:

- Heart, stroke and vascular disease related to atherosclerosis and other major causes such as rheumatic heart disease could be largely prevented, provided there is effective implementation of proven strategies both at the community level and among individuals.
- Many heart, stroke and vascular diseases have a common aetiology, namely atherosclerosis, and are therefore amenable to shared preventive approaches.
- Many successful interventions, including smoking cessation, improved nutrition and physical activity will have a favourable impact on other National Health Priority Areas, such as cancer control and diabetes.
- The evidence base for effective interventions in those who are known to have or are at high risk of atherosclerosis is extremely strong. Despite this, there is good evidence that effective measures are not being implemented generally and in particular in relevant subgroups of the population.
- There are strong opportunities through the quality use of medicines to optimise appropriate therapeutic interventions aimed at reducing visits for heart, stroke and vascular disease events.
- Strategies developed and implemented to address heart, stroke and vascular disease can model approaches to broader chronic disease prevention and management, and should dovetail with strategies at a national and state level to address the needs of people with chronic and complex conditions.

Dedicated funding from a range of sources for a heart, stroke and vascular health strategy will be required if Australia is to improve its cardiovascular status to be among the best in the world.

Approach to the strategy

The strategy focuses on areas that contribute to the largest absolute burden of ill health and includes areas for which there is evidence for potential gains in health outcomes. Within the strategy, the following have been identified as the key arenas for action and are considered individually:

- heart, stroke and vascular disease in Aboriginal and Torres Strait Islander peoples;
- consumer engagement and information;

- prevention of heart, stroke and vascular disease for:
 - the general population;
 - people and groups identified as being at high risk; and
 - people who have heart disease or stroke;
- cardiac emergency treatment and acute care;
- stroke emergency treatment and acute care;
- heart failure; and
- rehabilitation for patients with heart, stroke and vascular disease.

Within each arena for action:

- the magnitude of the problem is considered;
- opportunities and the evidence for measurable and sustainable improvement in cardiovascular health are highlighted; and
- strategic approaches are identified as priorities for national action.

I Heart, stroke and vascular disease in Aboriginal and Torres Strait Islander peoples

Goal

To eliminate the gap in health status between Aboriginal and Torres Strait Islander peoples and the rest of the Australian population in the area of heart, stroke and vascular disease by:

- increasing primary health care capacity;
- reducing risk factors for heart, stroke and vascular disease through population-based and consumer-based initiatives; and
- reducing disparities in access to primary health care, cardiac rehabilitation and related treatments, end-stage renal services and specialist vascular procedures.

Rationale

Magnitude of the problem

Australian Aboriginal and Torres Strait Islander peoples die from heart, stroke and vascular disease at three times the rate of other Australians². This difference is even greater among those aged 25–44 years, where Aboriginal and Torres Strait Islander peoples' death rates were ten times those of other Australian men and women respectively (AIHW 2004).

Aboriginal and Torres Strait Islander peoples also have higher rates of risk factors for heart, stroke and vascular disease — tobacco smoking, physical inactivity, diabetes, high blood pressure and obesity — compared to the rest of the Australian population (ABS 2001, National Health Survey. Aboriginal and Torres Strait Islander Results, Australia 2001. ABS Cat. No. 4715). For example, around half of all Aboriginal and Torres Strait Islanders are smokers, with prevalence rates reportedly as high as 80 per cent in some communities.

The incidence and death rates of heart, stroke and vascular disease among Australian Aboriginal and Torres Strait Islander peoples are higher than those in indigenous populations of Canada, United States and New Zealand and the prevalence of rheumatic heart disease among Aboriginal and Torres Strait Islander peoples is one of the highest in the world (Commonwealth Department of Health and Aged Care & AIHW 1999).

Opportunities

Appropriate primary health care is the foundation for initiatives to reduce health disparities between the Aboriginal and Torres Strait Islander population and the rest of the Australian population (NRHA 1999).

A number of reports have identified strategies to reduce risk factors, for example the *National Aboriginal and Torres Strait Islander Tobacco Control Project* (NACCHO 2002) and the *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan* (NPHP 2001).

The *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action plan* (NATSINSAP) (NPHP 2001) outlines a number of vital action areas to improve the nutritional health status of Aboriginal and Torres Strait Islander peoples including:

² Data pertain to Aboriginal and Torres Strait Islander peoples in Queensland, South Australia, Western Australia, and the Northern Territory, during 2000-02.

- Improving food supply in rural and remote communities
- Improving food security and socio-economic status
- Family focused nutrition promotion
- Addressing nutrition issues in urban areas
- Improving the environment and household infrastructure to support a safe and nutritious household food supply and developing national food and nutrition information systems.

Healthy weight programs specifically designed for Aboriginal and Torres Strait Islander people have been shown to be effective and could be of assistance to the increasing number of Aboriginal and Torres Strait Islander peoples who are overweight and obese.

Rheumatic fever and rheumatic heart disease registers are recommended by the World Health Organization (1988). They have led to improvements in the rates of notification of patients with rheumatic fever and rheumatic heart disease and in adherence to secondary prevention with penicillin (Commonwealth Department of Health and Aged Care 2000).

Experiences in other countries show that sizeable gains towards decreasing the health gap are achievable within a timeframe of 10–15 years. In Australia, some chronic disease projects suggest that chronic disease death rates can be halved in as short a period as five years, as long as appropriate primary health care capacity is in place (Hoy et al 2003).

Strategies

- Support the provision of a comprehensive primary health care program for Aboriginal and Torres Strait Islander peoples.
- Improve identification and formal approaches to management and communication of risk factors (including physical inactivity, poor nutrition, tobacco smoking and substance abuse) through implementation of initiatives such as the “Well Person’s Health Check”.
- Provide increased support, training and guidelines for health care providers delivering heart, stroke and vascular health care for Aboriginal and Torres Strait Islander peoples, including Aboriginal health workers.
- Initiate intersectoral approaches, including education, transport, recreation and environment sectors, to increase population-based involvement in physical activity (eg collaborative approaches between the primary health care sector and Australian Sports Commission).
- Implement existing Aboriginal and Torres Strait Islander health strategies, for example the National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan (NATSINSAP) (NPHP 2001) and the 1997 *Aboriginal and Torres Strait Islander Health Information Plan... This Time Let’s Make it Happen* (AHMAC, AIHW & ABS 1997).
- Effectively identify people with coronary heart disease and stroke.
- Improve identification, management and treatment of people with rheumatic heart disease, especially through follow-up of patients, development of educational resources and echocardiogram guidelines and wider provision of Multidisciplinary Outreach Services.

- Improve identification, management and treatment of people with early signs of renal, coronary and cerebrovascular disease.
- Improve awareness of symptoms and early warning signs of acute episodes.
- Identify ways to improve Aboriginal and Torres Strait Islander access to tertiary level vascular procedures and services, especially in rural and remote areas.
- Develop and implement guidelines for general practitioners and other health care providers providing acute care in remote Australia, including non-hospital thrombolysis.
- Support the recently endorsed Aboriginal and Torres Strait Islander Health Workforce National Strategic Framework to increase participation in the health workforce and competency-based training for Aboriginal health workers in the area of heart, stroke and vascular disease.
- Increase the availability of and access to heart and stroke rehabilitation and secondary prevention to all Aboriginal and Torres Strait Islander patients.
- Include representation by Aboriginal and Torres Strait Islander peoples in the development and implementation of initiatives.
- Ensure services and information are culturally appropriate.

Priorities for national action

- *Support the provision of a comprehensive primary health care program for Aboriginal and Torres Strait Islander peoples.*
- *Identify, manage and treat people with rheumatic fever and rheumatic heart disease.*
- *Provide increased support, training and guidelines for health care providers delivering heart, stroke and vascular health care for Aboriginal and Torres Strait Islander peoples, including Aboriginal health workers.*
- *Implement intersectoral programs to prevent the ill health of Aboriginal and Torres Strait Islander peoples including preventive programs aimed at people with known disease.*

2 Consumer engagement and information

Goal

To improve health outcomes by promoting the role of consumers in managing their health in partnership with health care providers and in helping to shape services to be better targeted to consumers' needs.

Rationale

Magnitude of the problem

Heart, stroke and vascular disease is a chronic condition, and prevention of acute events requires people with the disease or at risk of developing it to work in partnership with their health care providers. Engaging consumers in managing their health can improve concordance with medication regimes and with lifestyle counselling. Services also need to be organised to address the geographic, cultural and socioeconomic diversity of consumer needs.

The evidence base underpinning consumer participation in health supports:

- a link between structured approaches to self-management education and better patient outcomes in relation to chronic disease (Lorig et al 1999);
- the importance of having a written action or care plan, prepared through partnership between the consumer and health care provider, with the consumer able to self-monitor between health care visits; and
- the importance of access to quality health information in raising the confidence of patients to deal with their condition (Consumer Focus Collaboration 2001).

Opportunities

Broad approaches to self-management of chronic and complex conditions are under development at a national level such as the Sharing Health Care Initiative and specific initiatives are underway in relation to conditions such as arthritis and asthma. Through building on these programs there are opportunities to develop self-management education approaches and resources that are targeted to heart, stroke and vascular disease.

There also appears to be substantial potential for gain through the development of information for people at risk or with existing heart, stroke and vascular disease, as long as the information is accessible for diverse groups of consumers.

As well as contributing to their own health, people with heart, stroke and vascular disease and those who are at risk of developing it, can offer a particular expertise and perspective on the safety and quality of the services they receive. Consumers and consumer networks need to be at the centre of service development and delivery. This can be used to enhance service improvements and increase the likelihood of concordance in others.

Strategies

- Improve the availability of high quality, accessible and culturally appropriate information to consumers on:
 - preventing heart, stroke and vascular disease;
 - warning signs of acute heart and stroke events;
 - the benefits and risks of treatments, to facilitate decision-making; and
 - medications and their side effects and alternatives.
- Support the development of appropriately structured care plans, developed in partnership with individual patients in order to meet their needs, including discharge plans, to increase consumers' understanding of their treatment regimes.
- Strengthen the capacity and confidence of consumers to self-manage their condition(s).
- Use the experiences of and work with consumers and their carers through the patient journey along the continuum of care to facilitate continuous quality improvement.
- Increase support for community-based consumer networks for people with heart, stroke and vascular disease and their carers.
- Design activities to take into account the diverse needs of consumers from disadvantaged groups including Aboriginal and Torres Strait Islander peoples, people who are socio-economically disadvantaged and people from culturally and linguistically diverse backgrounds.
- Increase support and information for carers of people with chronic heart, stroke and vascular conditions and support for existing community-based consumer networks for people from the at risk groups, such as Aboriginal and Torres Strait Islander people, older people, and people affected by mental illness to enable them to develop appropriate strategies for improving the heart, stroke and vascular health of their members.
- Develop information to consumers that will increase their understanding and acceptance (destigmatisation) of the role of depression, lack of quality social support and social isolation as independent and significant risk factors in heart, stroke and vascular disease.
- Consumer representatives for people from at risk groups should be included in the development stage for any projects, information and resources, dissemination, other strategies aimed at the consumers.

Priorities for national action

- *Improve the availability of high quality, accessible and culturally appropriate information for consumers on prevention, treatment and management of heart, stroke and vascular disease.*
- *Support the development and effective use of written action plans.*
- *Strengthen the capacity of consumers to self-manage their condition and adhere to care plans and treatment regimes through a team approach.*
- *Increase support for community-based consumer networks for people with heart, stroke and vascular disease and their carers.*

3. Prevention of heart, stroke and vascular disease

Goal

To maximise the opportunities for prevention of heart, stroke and vascular disease, through uptake by consumers and providers of key evidence-based messages and strategies that are tailored to:

- *the general population;*
- *people and groups at high risk; and*
- *people with recognised heart, stroke or vascular disease.*

Rationale

Magnitude of the problem

Much of the death and illness caused by heart, stroke and vascular disease is preventable. However, levels of risk factors for heart, stroke and vascular disease continue to be unfavourable, with around 11.7 million adult Australians (90 per cent of the adult population) having at least one of the major risk factors for heart, stroke and vascular disease in 2001. Specifically (AIHW 2004):

- *tobacco smoking* — in 2001, 19.5 per cent of Australians smoked on a daily basis;
- *physical inactivity* — in 2000, 54 per cent of the population aged 18–75 years did not undertake physical activity at the levels recommended to achieve health benefits;
- *high blood pressure* — in 1999–2000, about 3.6 million Australians over the age of 25 (30% of those over 25 years) had high blood pressure or were on medication for that condition; and
- *overweight and obesity* — in 1999–2000, over seven million adult Australians aged 25 and over (60 per cent of those over 25 years) were overweight and of those, over 2.6 million (21 per cent of the population aged 25 and over) were obese.

While the prevalence of some risk factors is decreasing, physical inactivity and overweight and obesity are on the increase. Cardiovascular risk depends on the overall pattern of risk factors. Around 24 per cent of the adult population have three or more major risk factors, greatly increasing their risk of heart, stroke and vascular disease. Risk factors also tend to cluster according to socio-economic disadvantage, among Aboriginal and Torres Strait Islander peoples, and in those with diabetes or metabolic syndrome.

Depression, social isolation and lack of quality social support are independently associated with onset and prognosis of coronary heart disease and are of the same order of magnitude as standard risk factors such as smoking and high cholesterol. Australian data shows that nearly 50% of patients admitted to hospital with coronary heart disease have symptoms of depression compared with 5% of general population (Bunker et al, 2003).

Opportunities

A recently released report entitled *Returns on Investment in Public Health: An economic and epidemiological analysis* (Applied Economics 2003) estimates that public health programs to

reduce coronary heart disease over the last 30 years have averted approximately 450,000 early deaths resulting in a net return of over \$8.4 billion.

Modelling contained within the National Health Priority Area report on cardiovascular health (Commonwealth Department of Health and Aged Care & AIHW 1999) indicates that there are potentially significant gains from interventions to prevent heart, stroke and vascular disease.

Strategies may be most effective when targeted specifically towards people who are at high risk (Ebrahim et al 2000). Approaches to the general population (for example measures aimed at shifting whole population behaviours) and to high-risk individuals (with an appropriate combination of lifestyle, pharmacological and other medical approaches) are complementary.

The value of cardiovascular prevention through risk factor programs will be amplified because of their concurrent impact on other diseases — for example, the effects of tobacco control on cancers and lung disease, and of physical activity on type two diabetes and some cancers. The importance of secondary prevention is also emphasised for people with peripheral arterial disease as they are at much increased risk for and often die of coronary heart disease or stroke.

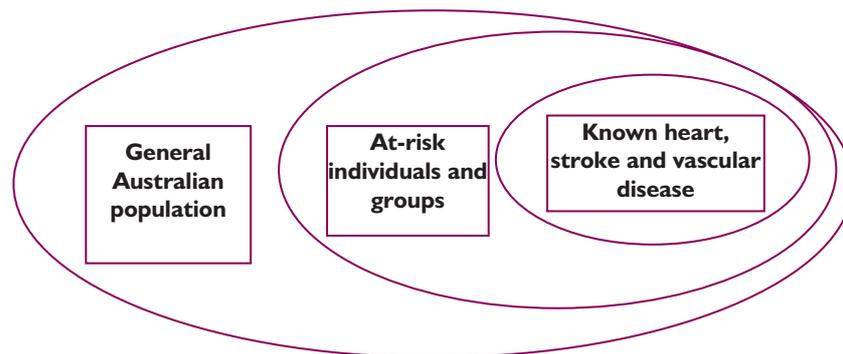
Reducing the prevalence of smoking is considered one of the most effective strategies for preventing cardiovascular disease. Around 13 per cent of heart, stroke and vascular deaths are due to smoking. Australia's National Tobacco Strategy (MCDS 2000) provides a strong framework for tobacco control and its ongoing implementation should be encouraged.

Prevention activities need to be carried out across the life cycle. For example long term public health benefits may be achieved through addressing maternal and infant nutrition to reduce the prevalence of low birth weight and increase the proportion of infants fully breastfed to six months.

Optimal health in-utero and childhood greatly increases the likelihood of healthy ageing in later life. Conversely, high levels of childhood obesity and related poor nutrition and underactivity are linked to poorer health in later life, including heart, stroke and vascular disease.

Many Divisions of General Practice have conducted programs in the prevention, treatment and management of heart, stroke and vascular disease. Learnings from these programs could lead to improved models for broader program delivery.

Strategies



Population-based strategies

- Link in with and support national coordinated approaches to promoting physical activity, healthy eating and healthy weight in the population to minimise the risk of heart, stroke and vascular disease.
- Continue support for activities relating to other risk factors such as tobacco control.
- Support initiatives to improve the food supply in rural and remote areas and to promote availability of good nutrition and physical activity at important points within the community, such as schools and workplace settings.

Support for activities that impact on peri-natal health, parental education and child health for example through linking with “Health Promoting Schools” programs.

Promote an understanding of the role of depression, lack of quality social support and social isolation as independent and significant risk factors in heart disease, amongst both the general public and health professionals.

People and groups at high risk

- Implement specific programs for Aboriginal and Torres Strait Islander peoples (see Section I).
- Develop and promote targeted approaches to increase physical activity, promote healthy eating and increase the proportion of people with healthy weight for groups potentially at high risk, such as older people with comorbidities including diabetes and mental health conditions, Aboriginal and Torres Strait Islander peoples, people who are socio-economically disadvantaged, people who are living in remote areas and people with a mental health condition such as depression, or who are socially isolated or lack quality social support.
- Develop appropriate strategies directed at decreasing the burden associated with risk factors of heart, stroke and vascular disease such as elevated cholesterol and blood pressure.
- Promote appropriate strategies directed at increased awareness and improved management of atrial fibrillation and transient ischaemic attack.
- Develop information and tools to support consumers and general practitioners in assessing individual absolute risk for heart, stroke and vascular disease – this will enable

identification and appropriate cost-effective management of both low-risk individuals (by lifestyle changes) and high-risk individuals (by lifestyle and pharmacological therapies).

- Collaborate and forge closer links with those working in the area of chronic disease prevention and management particularly diabetes, chronic kidney disease and mental health conditions.

People with known disease

- Implement specific programs to address ill health among Aboriginal and Torres Strait Islander peoples (see Section 1).
- Encourage best practice in medication and lifestyle management to minimise chances of a further event, by disseminating nationally agreed guidelines and implementing other measures to support primary health care providers.
- Increase concordance with medication regimes by gaining a better understanding of the barriers to concordance in certain groups of patients, and attempting to remove these barriers.
- Extend the concept of nurse educator, a role that has been very successful in diabetes management. This would involve introducing multi-skilling, multidisciplinary and multi-disease approaches.
- Develop information support systems in health care to assist with risk factor monitoring, management and recall of patients with known disease (eg CARDIAB, CV-Data implementation and data linkage) while satisfying privacy requirements.
- Implement specific programs to identify and address barriers to improved recognition, management and treatment of depression in people with heart, stroke and vascular disease.

Priorities for national action

- *Support national coordinated approaches to nutrition, physical activity and tobacco control by building on existing work.*
- *Target appropriate measures to increase physical activity, improve nutrition and decrease smoking in groups potentially at high risk:*
 - *Aboriginal and Torres Strait Islander peoples;*
 - *socio-economically disadvantaged people;*
 - *older Australians;*
 - *people with a mental health condition such as depression and people who are socially isolated or lack quality social support;*
 - *people who are living in rural isolation; and*
 - *people with known or recognised disease.*
- *Develop information and tools to support consumers and general practitioners to match treatment to the level of risk of future heart, stroke and vascular events.*

4 Cardiac emergency treatment and acute care

Goal

To reduce pre-hospital death rates and hospital and post-discharge morbidity and mortality through access to timely, equitable and effective emergency and acute cardiac interventions.

Rationale

Magnitude of the problem

It is estimated that 48,700 coronary events occur in Australia each year based on data on 40-90 year olds in 2001-02, leading to around 29,915 hospitalisations (AIHW 2004). Around 25 per cent of people who have a heart attack die within an hour of their first ever symptoms, with around half of all heart attack deaths occurring before the person reaches hospital (AIHW 2004).

A person who suffers a heart attack has double the chance of surviving if they get to hospital within an hour of feeling the symptoms. This benefit is reduced to 25 per cent when treatment is given within three hours. Patients typically take up to two hours to decide to go to hospital (Kelly et al 2002) and around 50 per cent of heart attack patients delay seeking treatment by more than six hours (Dracup et al 1997).

Time is also a critical factor in the likelihood of experiencing life-threatening arrhythmia and in the survival of people who experience a cardiac arrest, with the likelihood of successful resuscitation decreasing by 10 per cent every minute. While treatments for cardiac arrest have improved, delays in seeking treatment continue to contribute to mortality (Kelly et al 2002). When cardiac arrest victims are offered prompt defibrillation following the event, their chance of survival increases dramatically.

The number and type of cardiac treatments vary across different geographic locations. People living in rural and remote areas and Aboriginal and Torres Strait Islander peoples are less likely to receive prompt treatment during acute episodes.

Opportunities

It is estimated that around 4,000–5,000 lives could be saved each year in Australia in people aged 69 years and younger if heart attack victims recognised their symptoms and promptly sought treatment. At least that number again could be saved in the over 70 age group.

The greatest gains could be achieved by reducing the time between an acute event and access to emergency treatment, by raising awareness within the community of the importance of swift action. In addition, appropriate placement of public access defibrillators could help to provide prompt treatment for the 15 per cent of cardiac arrests that occur in public places.

Only 26 per cent of patients with heart attack are seen by a doctor within 10 minutes of arrival at hospital and only 40 per cent receive thrombolytic therapy within one hour (Palmer et al 1998). There is also potential for gain if more eligible patients received aspirin and reperfusion therapy, which have been shown to be highly effective. There is substantial international evidence supporting the administration of thrombolysis by health professionals as emergency treatment in the event of cardiac arrest outside a hospital environment. (Morrison et al 2000).

Distance from the nearest hospital may significantly delay the receipt of thrombolytic therapy, especially for Aboriginal and Torres Strait Islander peoples who may have limited access to transport and may live in outstation communities. Non-hospital thrombolysis is a recognised intervention, which has been demonstrated in the Northern Territory and may need to be more widely promoted.

There is wide variation between the States/Territories in rates of cardiac procedures. Waiting times to receive cardiac services carry significant social and economic costs and are often critical in determining whether the patient returns to work at all (Commonwealth Department of Health and Aged Care & AIHW 1999).

Australian data on short and long-term outcomes following cardiac surgery and coronary angioplasty are needed to clarify the roles of each intervention in various patient groups.

Strategies

- Raise community awareness of the early warning signs of a heart attack and the importance of receiving urgent medical attention.
- Increase the chance of survival after cardiac arrest through strategic and cost-effective placement of public access defibrillators and strategic training in cardiopulmonary resuscitation.
- Implement measures (eg telephone links, guidelines, training and professional support) to support health workers in rural and remote locations to provide improved emergency care, including measures to facilitate non-hospital thrombolysis.
- Utilise specialist outreach services to ensure that patients in rural and remote areas, including Aboriginal and Torres Strait Islander peoples, have better access to high quality emergency cardiac care.
- Develop systems for measuring and improving clinical performance in relation to acute cardiovascular procedures (eg coronary artery bypass graft and percutaneous coronary angioplasty).
- Increase the implementation of electronic and paper-based decision-support tools to assist clinical decision-making within the context of acute as well as chronic health care.

Priorities for national action

- *Increase community awareness of the symptoms of heart attack and other cardiac emergencies.*
- *Implement measures to support health workers who provide emergency services in rural and remote areas.*
- *Implement measures to help prevent death and disability due to sudden cardiac arrest.*
- *Develop systems for measuring and improving clinical performance in relation to acute cardiovascular procedures (eg coronary artery bypass graft and percutaneous coronary angioplasty).*

5 Stroke emergency treatment and acute care

Goal

To reduce stroke mortality and morbidity rates in Australia to those of benchmark regions such as Scandinavia.

Rationale

Magnitude of the problem

Each year there are an estimated 40,000-48,000 stroke events among Australians, which equates to a stroke occurring every 11-13 minutes. The majority (70%) of these are first ever strokes. Each year about 12,000 people who have previously had a stroke suffer another stroke. Stroke was the principal diagnosis for approximately 40,251 hospital admissions in Australia in 2001-02, with an average length of stay of 9.6 days (AIHW 2004). Nearly 25 per cent of people who suffer a stroke die as a consequence of the stroke within one month and stroke is the leading cause of disability.

Stroke accounted for 9 per cent of all deaths in Australia in 2002 (AIHW 2004). Stroke mortality rates were twice as high among Aboriginal and Torres Strait Islander peoples in Queensland, South Australia, Western Australia and the Northern Territory in 2000-02 than among other Australians living in these four jurisdictions. This may be linked to multiple risk factors. Furthermore, males in the most disadvantaged areas experienced higher deaths rates from stroke than their counterparts from the most advantaged areas in 2000-02.

Emergency treatment of stroke is critical to limit damage to the brain and to prevent complications and recurrent stroke events (Commonwealth Department of Health and Aged Care & AIHW 1999). However, recognition of the signs and symptoms of stroke in the general community is poor, resulting in delays in seeking medical care and early treatments for stroke. Furthermore, triaging of stroke patients following their arrival in hospital emergency areas is often slow (Crawford et al, 2003).

Opportunities

Improving knowledge of the early warning signs of stroke has been linked to people seeking earlier access to emergency treatment both in Australia and overseas (Collins et al 2002). A review of randomised trials of thrombolysis indicated benefits of selective use of such treatments within the first three hours. Early and accurate diagnosis and intervention is critical.

There is evidence that appropriate organisation and coordination of stroke services improves patient outcomes. Stroke patients who receive organised inpatient care in a stroke unit are more likely to be alive, independent and living at home one year after the stroke, according to a Cochrane Review of stroke unit care (Stroke Unit Trialists' Collaboration 2001).

Stroke units have a coordinated approach to the management of stroke, with staffing by a multidisciplinary team of experts. A meta-analysis of all existing randomised trials of management within stroke units compared to general wards found that specialised units reduced the odds of death and dependency of stroke by about 29 per cent (Stroke Unit Trialists' Collaboration 2001).

Case management is important for smooth transition from emergency, acute care to rehabilitation. Management of the emotional consequences of stroke is largely neglected, but needs to occur during psychological assessment following a stroke and as part of the rehabilitation process (discussed in Section 7).

Strategies

- Raise awareness of stroke (brain attack) among both consumers and health care providers, including general practitioners and paramedics, particularly in relation to the early symptoms and signs of stroke and the importance of receiving urgent medical attention.
- Develop and implement access to appropriate clinical pathways to ensure optimal emergency treatment for stroke is provided in different geographic areas.
- Support health workers in rural and remote locations to provide optimal emergency care in the event of a stroke, through provision of guidelines, training and professional support.
- Revise guidelines for acute stroke management to incorporate recent developments in stroke care, including the appropriate use of thrombolytic therapy.
- Further develop specialist outreach services to ensure that patients in rural and remote areas, including Aboriginal and Torres Strait Islander peoples, have access to high quality stroke services.
- Increase the availability of stroke unit care and associated multidisciplinary approaches to acute stroke management through the development of practical models for implementation in a range of geographical settings (including a hub-and-spoke approach to service support).
- Improve diagnosis and management of depression after stroke, including the provision of information to consumers and their families and carers about reasonable expectations in terms of mood swings and depression. This links to rehabilitation and long term follow up.

Priorities for national action

- *Increase community awareness of the early warning symptoms and signs of stroke.*
- *Increase availability of stroke unit care.*
- *Ensure access to appropriate stroke services for disadvantaged groups:*
 - *Aboriginal and Torres Strait Islander peoples; and*
 - *people living in rural and remote areas.*

6 Chronic heart failure

Goal

To reduce morbidity and mortality from chronic heart failure through improved identification and management of people with this condition.

Rationale

Magnitude of the problem

It is estimated that at least 300,000 Australians have chronic heart failure³ and about 30,000 new cases are diagnosed each year. In 2001-02, heart failure was the principal diagnosis in 41,874 hospitalisations and it contributed to 2 per cent of all deaths (AIHW 2003). Prevalence increases with age to more than 10 per cent among those aged 65 years or older.

In Australia, the direct health costs of heart failure amounted to \$416 million in 1993-94 (AIHW 2001). Much of the high cost of caring for heart failure patients relates to hospital readmissions, many of which might be prevented by better management at and following discharge.

Despite a reduction in deaths associated with heart, stroke and vascular disease, based on extrapolations from overseas the prevalence of heart failure is rising and is expected to increase markedly with the ageing of the population, decreased fatality rates after heart attack and more sensitive techniques for diagnosis.

People with chronic heart failure may have a poorer quality of life than people with most other common medical conditions. Many people with heart failure experience severe and prolonged depressive illness. A palliative approach needs to emphasise the quality of life, promoting physical and psychosocial well-being.

Opportunities

Clinical trials investigating pharmacological and non-pharmacological treatments have demonstrated that treatment of heart failure is effective in improving symptoms. However, in practice proven pharmacological interventions are often not used or are not used at the appropriate dose. Also there is under-use of appropriate diagnostic testing for heart failure (specifically, echocardiography) in Australia (Krum et al 2001).

Consumer involvement in managing heart failure has been shown to improve concordance with medication regimes and attendance of therapy sessions, leading to a reduction in unnecessary hospital admissions. Home visits by a nurse and pharmacist following a hospital admission for heart failure significantly reduces the number of unplanned readmissions (Stewart et al, 1999, Stewart & Horowitz, 2003)

There is potential to improve clinical diagnosis and management of heart failure by developing and disseminating targeted educational and information tools.

³ There are no national data on the number of Australians who have heart failure, so figures have been derived by extrapolating overseas information.

Strategies

- Promote measures to prevent rheumatic fever and improve management of people with rheumatic heart disease to prevent heart failure.
- Develop a minimum data set enabling the correct diagnosis, improved management and monitoring of heart failure patients to enable monitoring and evaluation of current practice and outcomes.
- Implement best-practice guidelines and protocols for diagnosing and managing heart failure in acute and primary care settings and ensure that there is a process to update the guidelines so that they remain current.
- Develop better communication systems and networks to strengthen partnerships between hospitals, specialists and general practitioners.
- Develop and identify models to ensure quality of care for patients in non-urban areas that incorporate measures to support health professionals and patients, particularly those supporting self-management.
- Develop processes to improve out-of-hospital patient care and prevent unnecessary hospital readmissions — this may include care planning, post-discharge follow-up and support of self-management.

Priorities for national action

- *Improve the diagnosis, assessment, management and monitoring of heart failure patients.*
- *Ensure best-practice management of chronic heart failure through multidisciplinary care and care planning.*
- *Support use of self-management and home-based care of patients with chronic heart failure.*

7 Rehabilitation after an acute heart, stroke or vascular event

Goal

To reduce disability and recurrence of acute events by ensuring that all patients have access to a structured rehabilitation program and high quality ongoing care and secondary prevention following an acute heart, stroke or vascular event.

Rationale

Magnitude of the problem

People recovering from heart attacks, cardiac procedures or stroke are not routinely accessing programs and support during their rehabilitation period.

Participation in cardiac rehabilitation is estimated to range between 10–53 per cent, depending on the procedure, and approximately 39 per cent of hospitalised stroke patients are admitted for inpatient rehabilitation (AIHW: Secondary prevention bulletin – from published data from Bunker et al 1999).

In part this is a problem of access – there is a reported deficit of rehabilitation programs and services. However, this is also a problem of uptake. Where services exist patients often are not referred to them or, if referred, are reportedly not taking up or completing rehabilitation programs.

Participation in rehabilitation services is particularly low for Aboriginal and Torres Strait Islander people, people from culturally and linguistically diverse backgrounds and people living in rural and remote areas.

A further barrier to optimal rehabilitation and recovery is that insufficient attention is being given by service providers to the social and emotional consequences of heart attacks, cardiac procedures or stroke and the role which psychosocial factors play as a risk factor for further acute episodes.

Needs may vary for different conditions. The needs of people recovering from a stroke are significantly different from those of people recovering after a heart attack or heart surgery and accordingly, the sort of rehabilitation programs and services differ in terms of scope, duration and nature. Most patients have some level of disability as a result of a stroke. Recovery is most rapid in the weeks following stroke, and there is evidence that early rehabilitation plays an essential role in optimal recovery (National Stroke Foundation, 2002). However one year after stroke about half of all survivors are still dependent on others for daily living activities (Hankey et al 2002).

Services need to address support for mobility, communication, social and occupational participation and independence and psychosocial or emotional support. Services also need to support measures for prevention of recurrent stroke through medication management and lifestyle change. The needs of carers for practical and psychosocial support are also often not acknowledged through existing service provision. Rehabilitation for stroke must begin in the acute hospital environment and may continue in a specialised inpatient rehabilitation unit, through hospital outpatient services and should recognise the special needs of young stroke survivors or of people who need to return to the workforce.

In cardiac rehabilitation, the longer term challenges are particularly around ensuring that there is uptake of lifestyle and pharmacological interventions to ensure optimal recovery and prevent a further cardiac event. It is estimated that only a minority of eligible patients participate in cardiac rehabilitation programs even though the World Health Organisation recommends that programs should be available and routinely offered to everyone with cardiovascular disease. Barriers to uptake of services include lack of transport, cost and social isolation. Around one in six people who have experienced acute myocardial infarction become depressed at the time of the event (Hare and Bunker 1999). Depression is associated with increased mortality, recurrent coronary events, angina and rehospitalisation.

The level of social support experienced by patients has been shown to be directly linked to an improved sense of social and emotional well being, yet access to organised support groups is variable across Australia. The expertise of consumers and carers who have direct experience of heart disease or stroke is not being fully utilised through rehabilitation programs and services.

Opportunities

Comprehensive cardiac rehabilitation, incorporating secondary prevention programs, has been shown to reduce death rates by 25 per cent in patients who have had a heart attack. However these benefits are dependent on program participation and long-term concordance with physical activity and other behaviours to reduce cardiovascular risk.

General practitioners are ideally placed to play a coordinating role in patient care through linkages with other services, reinforcement of the importance of maintaining lifestyle changes and ongoing monitoring of medications as part of the maintenance phase of rehabilitation programs.

Local programs carried out in Victoria in secondary prevention have demonstrated improvements for patients in biomedical and lifestyle risk factors and highlight the value of nurse practitioners providing ongoing coordination and care (Vale et al 2002).

There is a need to extend the availability of psychological services in the community dealing with the emotional well-being of stroke survivors, such as counselling services, information and education programs.

Hospital discharge care plans are not always seen by general practitioners which limits their capacity to play an active role in ensuring ongoing care. Many general practitioners do not receive sufficient access to continuing education about long-term consequences of heart attack and stroke, the benefits of rehabilitation and the role of the general practitioner in this process.

There is also an opportunity for the development of care plan templates to meet the needs of people with heart, stroke and vascular disease. Care plans for stroke survivors should acknowledge the longterm nature of recovery.

Local planning authorities can play a key role in improving ongoing quality of life in the post recovery phase of rehabilitation by supporting physical environments, local support groups, community transportation and building regulations and codes to enable access for people of different physical abilities.

Strategies

- Develop, pilot and evaluate multidisciplinary models of heart, stroke and vascular rehabilitation, secondary prevention and step-down services following discharge from hospital after an acute heart or stroke event.
- Ensure that rehabilitation programs are of an appropriate duration with ongoing reviews and monitoring.
- Develop, pilot and evaluate home linkage rehabilitation programs and information delivery using various technologies (multimedia, internet, telephone) to provide information components of rehabilitation programs.
- Explore alternative models of rehabilitation service provision and ongoing prevention and care to meet the diversity of consumer needs and engage groups of consumers who face barriers to participating in rehabilitation programs, including Aboriginals and Torres Strait Islander peoples, people from culturally and linguistically diverse backgrounds and people in rural and remote areas.
- Improve the recognition and treatment of depression and the importance of psychosocial health and support as part of rehabilitation programs, ensuring linkages across programs to address mental health problems as comorbidities.
- Increase the capacity of general practitioners and Divisions of General Practice to provide rehabilitation support and appropriate referrals during the rehabilitation phase.
- Increase the number of practice nurses linked to general practices or Divisions of General Practice programs. Practice nurses can play a pivotal role in case coordination and patient education.
- Improve discharge planning within a community services setting, and ensure that patients receive a written care plan which includes advice and referral on an appropriate rehabilitation program.
- Assign responsibility to individual providers for coordinating and planning care during the rehabilitation phase, to promote continuity of care in the transition between services and to optimise care coordination.
- Increase access to consumer networks to build consumer confidence and the ability to self-manage after an acute heart or stroke event, including access to consumer support networks.
- Develop better support systems to ensure the needs of carers are more consistently met in relation to information provision, psychosocial support and respite care.

Priorities for national action

- *Develop, pilot and evaluate multidisciplinary models of heart, stroke and vascular rehabilitation, together with innovative ways to deliver aspects of rehabilitation programs.*
- *Develop, pilot and evaluate multidisciplinary models of secondary prevention programs.*
- *Address the rehabilitation needs of disadvantaged groups, including Aboriginal and Torres Strait Islander peoples.*
- *Support better recognition and treatment of mental health conditions and the importance of psychosocial health in the context of rehabilitation programs.*

Appendix — Membership of the National Heart, Stroke and Vascular Health Strategies Group

This Strategy is an initiative of the National Heart, Stroke and Vascular Health Strategies Group of the National Health Priority Action Council. The National Heart, Stroke and Vascular Health Strategies Group was established to provide expert advice on appropriate best-practice strategies and interventions for heart, stroke and vascular disease (based on the current and latest evidence of effectiveness).

The members of the National Heart, Stroke and Vascular Health Strategies Group are:

Professor John Chalmers (Chair)

Ms Karen Carey-Hazell — Consumers' Health Forum

Professor Geoff Donnan — National Stroke Foundation

Mr Phil Fagan-Schmidt — National Health Priority Action Council nominee

Dr Judith Frayne — Stroke Society of Australasia

Professor Mark Harris – University of Sydney

Ms Ellen Hawes – Queensland State Health Representative

Mr Robert Holt — National Aboriginal Community Controlled Health Organisation

Professor Garry Jennings — Cardiac Society of Australia and New Zealand

Dr Timothy Mathew – Australian Kidney Foundation

Professor Ian Ring — Public Health Representative

Dr Jeanette Tait — General Practice Partnership Advisory Council

Professor Andrew Tonkin — National Heart Foundation

Ms Lisa Wardlaw-Kelly — Australian Government Representative

Further copies of the Strategy can be obtained from:

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National Heart, Stroke and Vascular Health Strategies Group

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Copies of the Strategy and other documents and information relating to the Cardiovascular Health National Health Priority Area can also be obtained electronically via the Department of Health and Ageing website at: www.health.gov.au.

Glossary

Action Plan	A plan to support consumer self management of care, in partnership with a medical practitioner or health care provider. It covers actions needed and support available around issues such as medication, allied health services and lifestyle changes.
Angina	Temporary chest pain or discomfort when the heart's own blood supply is inadequate to meet extra needs, as in exercise.
Atrial Fibrillation (AF)	A particular type of irregular heartbeat where the upper chambers of the heart atrium beat rapidly and unpredictably.
Cardiac arrest	Cessation of an effective heartbeat, usually when the heart is in ventricular fibrillation or when the heart is completely stopped.
Chronic	Persistent and long-lasting.
Consumer	Refers to people whom either directly or indirectly make use of health services.
Community	In this context community refers to the broader population of citizens who pay for and have an interest in health care services.
Coronary heart disease	Disease resulting from narrowing of the heart arteries which can cause problems such as heart attack and angina (chest pain). Also known as ischaemic heart disease.
Defibrillation	Delivery of a very strong electrical current to the heart in an attempt to stop ventricular fibrillation.
Diabetes	A chronic condition in which the body makes too little of the hormone insulin or cannot use it properly. This raises the blood glucose level and causes other widespread disturbance of the body's energy processes.
Health Care Providers	Include medical practitioners, nurses and allied health professionals such as physiotherapists, occupational therapists, dietitians, speech pathologists and psychologists.
Heart attack	Damage to the heart muscle due to interrupted blood supply. Also called myocardial infarction.
Heart failure	A term used when the heart cannot pump blood well enough to meet the body's normal needs.
Peripheral vascular disease	Reduced blood supply or impaired return of blood affecting the extremities.
Morbidity	Refers to ill health in an individual and to levels of ill health in a population or group.
Mortality	Death.

National Service Improvement Framework	Tools for service improvement in the national health priority chronic conditions. They will provide a high level guide to service planners, designers, providers and funders on the health care and health service requirements for people at risk or with a chronic condition across the continuum of care.
Reperfusion therapy	Use of a cardiac intervention, such as angioplasty or “clot-busting” drug therapy during a heart attack to restore blood flow to the heart muscle.
Rheumatic fever	An acute, serious disease that affects mainly children and young adults and can damage the heart valves, the heart muscle and its lining, the joints and the brain. Is brought on by a reaction to a throat infection by a particular bacterium.
Rheumatic heart disease	Damage to the heart valves and other parts of the heart following rheumatic fever.
Stroke	Destruction of brain tissue resulting from disorders of blood vessels that supply the brain. Also called cerebrovascular accident.
Thrombolysis	Pharmacological treatment with a class of drugs that can break up fibrin blood clots
Transient Ischaemic Attack (TIA)	Clinical syndrome characterised by an acute loss of focal cerebral function with symptoms lasting less than 24 hours.

References

- ABS & AIHW (2001) *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples 2001*. ABS Cat No 4704.0, AIHW Cat No IHW 6. Australian Bureau of Statistics, Canberra.
- AHMAC, AIHW & ABS (1997) *The Aboriginal and Torres Strait Islander Health Information Plan... This Time Let's Make it Happen*. AIHW Cat No HWI 12. Australian Institute of Health and Welfare, Canberra.
- AIHW (2001) *Heart, Stroke and Vascular Diseases — Australian Facts 2001*. AIHW Cat. No CVD 13. Australian Institute of Health and Welfare, Canberra, National Heart Foundation of Australia, National Stroke Foundation of Australia (Cardiovascular Disease Series No 14).
- AIHW (in preparation to be released in 2004) *Heart, Stroke and Vascular Diseases – Australian Facts 2004*. AIHW Cat. No CVD xx. Canberra: Australian Institute of Health and Welfare, National Heart Foundation of Australia (Cardiovascular Disease Series No xx).
- AIHW (2002) *Australia's Health 2002*. Australian Institute of Health and Welfare, Canberra.
- AIHW (2003) *Secondary prevention and rehabilitation after coronary events or stroke – a review of monitoring issues*. AIHW Cat No. CVD 25, Canberra.
- Applied Economics (2003) *Returns on Investment in Public Health: An economic and epidemiological analysis prepared for the Commonwealth Department of Health and Ageing*, Canberra.
- AIHW (2003) Britt H, Miller GC, Know S, et al. General practice activity in Australia 2002–03. AIHW Cat. No. GEP 14. Canberra: Australian Institute of Health and Welfare (General Practice Series No. 14).
- AIHW (2003) Field B Heart failure...what of the future? Bulletin No. 6. AIHW Cat No. AUS 34. Canberra: AIHW.
- Bunker SJ, Colquhoun, Dm, Esler, MD, Hickie IB et al (2003) "Stress" and coronary heart disease: psychosocial risk factors National Heart Foundation of Australia position statement update *Medical Journal of Australia* 178:272-276
- Collins DR, McCormack PME, O'Neill D (2002) General perceptions of stroke. Poor knowledge of stroke can be improved by simple measures. *British Medical Journal* 325 (7360): 392.
- Commonwealth Department of Health and Aged Care & AIHW (1999) *National Health Priority Areas Report: Cardiovascular Health 1998*. AIHW Cat No PHE 9. Australian Institute of Health and Welfare, Canberra.
- Commonwealth Department of Health and Aged Care (2000) *National Health Priority Areas Early Wins Project: Final Report*. Prepared by Carla Cranny & Associates, Department of Health and Aged Care, Canberra.
- Consumer Focus Collaboration (2001) *The Evidence Supporting Consumer Participation in Health*. Consumer Focus Collaboration, Canberra.
- Crawford S, Wang Y, Parsons M (2003) Emergency Department Assessment of Acute Stroke: Time is Brain Annual Australasian College of Emergency Medicine Meeting in Perth November 2003
- Dracup K, McKinley SM, Moser DK (1997) Australian patients' delay in response to heart attack symptoms. *Medical Journal of Australia* 166: 228–29.
- Ebrahim S, Davey Smith G, Bennett R (2000) Health promotion activity should be retargeted at secondary prevention. *British Medical Journal* 320: 185.
- Hankey GJ, Jamrozik K, Broadhurst RJ, Forbes S et al (2002) Long-term disability after first-ever stroke and related prognostic factors in the Perth Community stroke Study, 1989-1990. *Stroke* 33:1034-1040
- Hare DL & Bunker SJ (1999) Cardiac rehabilitation and secondary prevention *Medical Journal of Australia* 171:433-439
- Hoy WE, Baker PRA, Kelly A et al (2003) Sustained reduction at four years in natural deaths and renal failure from a systematic renal and cardiovascular treatment program in an Australian Aboriginal community. *Kidney International* 63 (Suppl 83): S66–S73.
- Kelly AM, Kerr D, Patrick I et al (2002) Benchmarking ambulance call-to-needle times for thrombolysis after acute myocardial infarction in Australia: a pilot study. *Internal Medicine Journal* 32(4): 138–42.

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- Krum H, Tonkin AM, Currie R et al (2001) Chronic heart failure in Australian general practice. The Cardiac Awareness Survey and Evaluation (CASE) Study. *Medical Journal of Australia* 174: 439–44.
- Lorig K, Sobel D, Stewart A et al (1999) Evidence suggesting that a chronic disease self-management program can improve health status while reducing hospitalisation — A randomised trial. *Medical Care* 37: 1: 5–14.
- MCDS (2000) *National Tobacco Strategy 1999 to 2002–03*. Ministerial Council on Drug Strategy, Commonwealth Department of Health and Aged Care, Canberra.
- Morrison L, Verbeek R, McDonald A, Sawasdsky B, Cook D (2000) Mortality and prehospital Thrombolysis for Acute Myocardial Infarction A meta-analysis *Journal of American Medical Association* May 24/31. 2000 Vol 283, No 20 2686-2692
- NACCHO (2002) *Tobacco Time for Action — National Aboriginal and Torres Strait Islander Tobacco Control Project*. National Aboriginal Community Controlled Health Organisation, Canberra.
- National Stroke Foundation (2002) *Stroke Services in Australia* National Stroke Unit Program Policy Document www.strokefoundation.com.au
- NPHP (2001) *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan*. Strategic Inter-Governmental Nutrition Alliance, National Public Health Partnership, Canberra.
- NRHA (1999) *National Workshop on Heart Disease 1999 — Report*. Summary of workshop held in Townsville, 17–19 October 1999. National Rural Health Alliance, Canberra.
- Palmer DJ, Cox KL, Dear K et al (1998) Factors associated with delay in giving thrombolytic therapy after arrival at hospital. *Medical Journal of Australia* 168: 111–14.
- Senes S & Britt H (2001) *A General Practice View of Cardiovascular Disease and Diabetes in Australia*. AIHW Cat No CVD 17 (Cardiovascular Disease Series No 18). Australian Institute of Health and Welfare, Canberra.
- Stewart S, Horowitz JD. (2003) Specialist nurse management programmes: economic benefits in the management of heart failure *Pharmacoeconomics*. 21(4):225-40
- Stewart S, Vandenbroek A, Pearson S, Horowitz JD (1999) Prolonged Beneficial Effects of a Home-Based Intervention on Unplanned Readmissions and Mortality Among Patients With Congestive Heart Failure *Archives of Internal Medicine* 159: 257-26.
- Stroke Unit Trialists' Collaboration (2001) Organised inpatient (stroke unit) care for stroke (Cochrane Review). In: *The Cochrane Library*, Issue 2, 2001, Update Software, Oxford.
- Vale MJ, Jelinek MV, Best JD, on behalf of the COACH study group. (2002) How many patients with coronary heart disease are not achieving their risk factor targets? Experience in Victoria 1996-1998 versus 1999-2000. *Medical Journal of Australia* 176:211-215
- World Health Organization. (1988) Rheumatic fever and rheumatic heart disease – report of a WHO study group. World Health Organization Technical Report Series (764) 1-58