Cardiovascular Service Plan

September 2005
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1. INTRODUCTION

Cardiovascular disease (CVD) is the leading cause of death in New Zealand, accounting for 40 percent of all deaths (year 2000). Although mortality from cardiovascular disease has decreased over the last 20 years, age specific death rates remain appreciably higher than the corresponding rates in similarly developed countries such as Australia, Canada and the United States.

The New Zealand Health Strategy (2000) and MidCentral District Health Board's Primary Health Care Strategy (2004) both identify cardiovascular disease as a priority disease state to be addressed in order to improve the District's health status.

MidCentral District Health Board (MidCentral) is responsible for the development and implementation of a coordinated, district wide plan for the prevention and management of cardiovascular disease.

This document is a strategic plan for the development of services over the next three years. It has been developed collaboratively with primary and secondary care providers and community stakeholders.

1.1 Why do We Need a Cardiovascular Disease Service Plan?

Cardiovascular diseases are diseases affecting the heart and circulatory system. They include ischaemic heart disease (CHD), rheumatic heart disease, heart failure, cerebrovascular disease (stroke) and other forms of vascular and heart disease.

Cardiovascular diseases made up 16.7 million, or 29.2% of total global deaths according to the World Health Report 2003. By 2010, cardiovascular disease will be the leading cause of death in developing countries.

Cardiovascular disease has a major impact on the delivery of health services at all levels. In addition to being the leading cause of death, cardiovascular disease is also estimated to account for 11% of the total non fatal disease burden. Of the CVDs, stroke is the greatest cause of disability in older people.

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1 National Heart Foundation Socioeconomic and Ethnic Inequalities in Cardiovascular Disease

2 World Health Organization (WHO) Cardiovascular Disease: Prevention and Control


4 National Heart Foundation (2004) Cardiovascular Disease in New Zealand: A Summary of Recent Statistical Information pg 2
Risk factors for cardiovascular disease are now significant in all populations. In the developed countries, at least one third of all CVD is attributable to five risk factors: tobacco use, alcohol use, high blood pressure, high cholesterol and obesity. Diabetes, physical inactivity and poor diet are other factors which increase individual risks for cardiovascular diseases. Modifying these behaviours is critical for both preventing and controlling cardiovascular disease. Modest changes in one or more of these risk factors within the population can have a large public health impact.

1.2 Purpose of the Cardiovascular Service Plan

Based on the continuum of care, the overall purpose of MidCentral’s Cardiovascular Service Plan is to:

- Prevent the development of cardiovascular disease through the enhancement of health promotion and disease prevention
- Reduce the impact of cardiovascular disease
- Improve the health status of Maori and Pacific peoples
- Improve quality of life
- Reduce hospital readmission rates for cardiovascular disease.

1.3 Vision for the Future

This service plan strives to offer people in the community the best possible health and independence. Our vision for cardiovascular disease in MidCentral District is to:

"Prevent cardiovascular disease and reduce its impact through coordinated services, ensuring accessible, timely support to meet the diverse needs of the individual, their family/whanau and community."

The vision includes cardiovascular services across the continuum of care. This includes treatment, rehabilitation and palliative care services to improve quality of life.

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http://www.who.int/cardiovascular_diseases/resources/atlas/en/
1.4 Objectives

The objectives of the cardiovascular service plan, based on the continuum of care, are:

Prevent the development of cardiovascular disease through **health promotion and disease prevention strategies**

Ensure **early detection and early intervention** to reduce the impact of cardiovascular disease

Manage cardiovascular disease through **effective treatment, rehabilitation and palliative care**

Improve cardiovascular services through a **responsive workforce**

Improve the quality of cardiovascular disease health services in MidCentral District through **planning, innovation, and quality assurance**.

1.5 Principles

- Maori health will be addressed by working within the framework of the Treaty of Waitangi
- Inequalities between different population groups will be reduced
- Access to a comprehensive range of health and wellbeing services related to cardiovascular disease will be timely and equitable for everyone in MidCentral District
- Cultural diversity will be recognised and respected
• Service options will be consistent in terms of quality and best practice. Advice and support provided by services will also be consistent.

• Continuous quality improvement is an underlying principle of all services.

• The care provided to people with cardiovascular disease will be organised and coordinated across providers and the continuum of care.

• All services will be person centred—actively ensuring participation of service users in care. Given the importance of self care, people with cardiovascular disease and their family/whanau will be considered a part of the health workforce and require appropriate skills. This includes people:
  ◊ making their own decisions and managing their own wellbeing
  ◊ participating in the delivery of services to others
  ◊ participating in the planning of services.

1.6 Outcomes

Cardiovascular and stroke clinical indicators are important performance measures. They provide information that allows a district health board and the Ministry of Health to evaluate how programmes and services are influencing wellbeing, emphasising prevention, early detection and management of CVD (including patient self management). Table 1 outlines the indicators required to be reported by MidCentral to the Ministry. A more in depth review of each performance indicator is given in Appendix D.
### Table 1: Ministry of Health Cardiovascular and Stroke Clinical Indicators and Targets

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Outcome</th>
<th>Ideal/expected</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prevention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are smoke free policies in place across the DHB (Y/N)</td>
<td>Reduce CVD contributory risk factors</td>
<td>Smoke free policies in place in DHB facilities and DHB funded provider facilities</td>
</tr>
<tr>
<td><strong>Early Detection</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke risk recognition—primary health indicator</td>
<td>Increase early recognition and response to individuals at risk of suffering a stroke</td>
<td>100% across all target groups</td>
</tr>
<tr>
<td>CVD recognition and follow up—primary care indicator</td>
<td>Increase early recognition and response to individuals with CVD Slow rate of CVD progression, reduce incidence of avoidable CVD related complications</td>
<td>100% across all target groups</td>
</tr>
<tr>
<td><strong>Treatment and Rehabilitation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke management—secondary care indicator</td>
<td>Reduce incidence of avoidable complications from stroke. Strengthen self management capability of individuals, family and whānau</td>
<td>100% of individuals who have been identified as having suffered a stroke event have a management/care plan in place that includes goals that the patient is (1) party to the development of (2) agrees to and (3) are achievable for the patient and follows the best practice advice as detailed in the CVD guidelines.</td>
</tr>
<tr>
<td>Stroke services</td>
<td>Increase coordination across providers, processes and community resources</td>
<td>That every DHB has organised stroke services. That 100% of people who suffer a stroke event are admitted to an organised stroke response, either a unit or services and at least 50% spend the majority of their stay there.</td>
</tr>
<tr>
<td>CVD management—secondary care sector</td>
<td>Slow rate of CVD progression, reduce incidence of avoidable CVD related complications Strengthen self management capability of individuals, family and whānau</td>
<td>100% of individuals who have been identified as having a 5 year absolute CVD risk of 15% and above have a management/care plan in place that firstly includes goals that the patient is (1) party to the development (2) agrees to and (3) are achievable for the patient and follows the best practice advice as detailed in the CVD guidelines.</td>
</tr>
</tbody>
</table>
2. THE PLANNING FRAMEWORK--STRATEGIES

Figure 2 below shows the cardiovascular service planning framework for MidCentral District Health Board (MidCentral). The cardiovascular service planning framework was developed by considering national and international literature, and building on the principles of MidCentral’s Primary Health Care Strategy. It involved focused consultation with people in the community and other key stakeholders.

Figure 2: Cardiovascular Service Planning Framework

Some major risks are modifiable in that they can be prevented, treated, or controlled. Table 2 illustrates the links between cardiovascular disease and other key health areas.
Table 2: Main Linkages between Cardiovascular Disease and Other Priority Health Areas in the New Zealand Health Strategy and MidCentral’ Primary Health Care Strategy

<table>
<thead>
<tr>
<th>Strategy Objective</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>To reduce smoking</td>
<td>Women who smoke only three to five cigarettes a day double their risk of heart attack; men who smoke six to nine cigarettes a day double their risk. There is good evidence that exposure to second hand smoke also causes heart attacks and strokes.</td>
</tr>
<tr>
<td>To improve nutrition</td>
<td>Vegetable and fruit consumption as well as the consumption of fish and fish oils have been found to be protective against cardiovascular disease. High saturated fat intake increases the risk of heart disease and stroke through its effect on blood lipids and thrombosis.</td>
</tr>
<tr>
<td>To reduce obesity</td>
<td>People who are obese (i.e., with a body mass index (BMI) of 30 or greater) are two to three times more likely to develop coronary heart disease than those who are not obese.</td>
</tr>
<tr>
<td>To increase the level of physical activity</td>
<td>People who are sedentary are 1.9 times more likely to die from coronary artery disease than active people, irrespective of other factors. Physical activity can also reduce the risk of stroke.</td>
</tr>
<tr>
<td>Improving child and adolescent health</td>
<td>Although cardiovascular diseases typically occur in middle age or later, risk factors are determined to a great extent by behaviours learned in childhood and continued into adulthood, such as dietary habits, physical inactivity and smoking.</td>
</tr>
<tr>
<td>To reduce the incidence and impact of diabetes</td>
<td>Diabetes is a risk factor for coronary heart disease and stroke. Everyone with diabetes is classified at greater cardiovascular risk.</td>
</tr>
<tr>
<td>Minimise alcohol and drug use</td>
<td>One to two drinks per day may lead to a 30% reduction in heart disease, but heavy drinking damages the heart muscle.</td>
</tr>
<tr>
<td>Management of depression</td>
<td>People with heart disease are more likely to suffer from depression than otherwise healthy people, and conversely, people with depression are at greater risk for developing heart disease. Furthermore, people with heart disease who are depressed have an increased risk of death after a heart attack compared to those who are not depressed.</td>
</tr>
<tr>
<td>To reduce the incidence and impact of respiratory illness</td>
<td>Obstructive sleep apnoea appears to be associated with coronary heart disease, heart failure, and cardiac arrhythmias.</td>
</tr>
</tbody>
</table>

In terms of cardiovascular disease, the key government strategies are the New Zealand Health Strategy (December 2000), the Primary Health Care Strategy (February 2001), He Korowai Oranga–Maori Health Strategy (November 2002) and the Pacific Health and Disability Action Plan (February 2002).

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* Ministry of Health (2001) Tobacco Control Toolkit pg 6
* Ibid pg 8
* Ibid Risk Factor: Diabetes
* Ibid Risk Factors
* Depression and Bipolar Support Alliance (DBSA) Depression and Heart Disease http://www.dbssalliance.org/HeartDisease.html
Chronic Disease Management

A global health needs assessment completed during 2001 indicated disease (morbidity) and death (mortality) rates for people living within MidCentral District's boundaries need to be addressed adequately in primary health care\textsuperscript{18}. Such issues are goals of the local Primary Health Care Strategy\textsuperscript{19}.

The goals of MidCentral's Primary Health Care Strategy are:

- **Access**—People will have ease of access to health care services throughout the district
- **Community Participation**—The community will actively contribute to shaping primary health care services
- **Coordination of services**—There will be seamless follow through of services for all people
- **Infrastructure development**—Primary health care services are supported by planned infrastructure development
- **Integration between primary and secondary care**—People receive care that is not interrupted between primary and secondary care events
- **Quality**—People can expect the best possible quality when receiving primary health care services.

2.1 Maori and Pacific Health

It is important that Maori and Pacific people are heard, so this document includes some sections specifically related to Maori and Pacific peoples.

Maori Health


He Korowai Oranga—Maori Health Strategy (2002) recognises that there must be a

\textsuperscript{18} MidCentral DHB (2004) Primary Health Care Strategy pg 35

\textsuperscript{19} Adapted from TADS Training Programme presentation July 2004
partnership between Maori and health and disability organisations if aspirations for Maori health and desired whanau outcomes are to be realised.

It is essential that the principles of the Treaty of Waitangi are followed:

<table>
<thead>
<tr>
<th>Partnership</th>
<th>Working together with iwi, hapu, whanau/family and Maori communities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>Involving Maori at all levels including planning, development and the delivery of health care programmes and services.</td>
</tr>
<tr>
<td>Protection</td>
<td>Striving for equal levels of health as non Maori and caring for the cultural concepts and values of Maori.</td>
</tr>
</tbody>
</table>

The Maori world view places greater emphasis on the group dynamic as opposed to the individual. In keeping with this belief the Maori view of health is that personal wellbeing is based upon a balance of spiritual, whanau, mental and physical wellbeing. This is encapsulated in the Whare Tapa Wha model, a concept recognised by the World Health Organization.

<table>
<thead>
<tr>
<th>Taha Wairua</th>
<th>Taha Hinengaro</th>
<th>Taha Tinana</th>
<th>Taha Whanau</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus</td>
<td>Spiritual</td>
<td>Mental</td>
<td>Physical</td>
</tr>
<tr>
<td>Key Aspects</td>
<td>The capacity for faith and wider communion</td>
<td>The capacity to communicate, to think, and to feel</td>
<td>The capacity for physical growth and development</td>
</tr>
<tr>
<td>Themes</td>
<td>Health is related to unseen and unspoken energies</td>
<td>Mind and body are inseparable</td>
<td>Good physical health is necessary for optimal development</td>
</tr>
</tbody>
</table>


Te Whare Tapa Wha likens the four dimensions of health (taha wairua, taha hinengaro, taha tinana, taha whanau) to the walls of a house. Symmetry of these four dimensions gives strength and balance to a person in much the same way that walls contribute to a house20.

This concept, together with upholding the principles of the Treaty of Waitangi (i.e., partnership, participation and active protection) need to be carefully considered when developing and implementing strategies to address cardiovascular disease in the Maori population.

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The Pacific Concept of Health

For Pacific peoples, health is a holistic concept which encompasses spiritual, emotional, mental, physical and social wellbeing. The emphasis is on total wellbeing of the individual within the context of the family. The family includes both the nuclear family and the extended family².

2.2 MidCentral’s Cardiovascular Model of Care Across the Health Continuum

Following the continuum of care framework, the vision for MidCentral’s respiratory services sees the person with respiratory illness on a collaborative journey from diagnosis to treatment across the lifespan. As Figure 3 illustrates, primary and secondary health professionals will work together in a coordinated and unified way to deliver the best possible programmes across the health continuum.

Figure 3: MidCentral’s Cardiovascular Model of Care across the Health Continuum

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Achieving the vision of the cardiovascular service plan requires the attainment of four critical success factors.

1. **Health and wellness plans across the continuum**

   Individuals should be able to plan their own treatment and management requirements in conjunction with health professionals who provide them with information tailored for optimum support. People need to review their clinical status and plan the year ahead. Health and wellness plans are a comprehensive assessment of each person's health condition and needs. These health and wellness plans should be easy for the person with cardiovascular disease to understand, so people are able to set themselves targets and learn how to achieve them.

   People with cardiovascular disease and their family/whanau need a range of choices. They need advice and support from health professionals who are engaged in multi disciplinary, multi agency approaches, including the involvement of iwi/Maori providers. Strengthening of clinical alliances improves coordination and collaboration across services and has the ability to reduce cardiovascular complications in the future.

2. **Shared information**

   Enhancing communication and collaboration across the health care continuum is necessary to give enhanced understanding of cardiovascular disease and optimise management strategies. Sharing information helps to standardise practice and assist in the best possible health care being delivered across the continuum.

3. **Shared policy, procedure and guidelines**

   Shared policy, procedure and guidelines across the District are necessary to provide optimum care. Evidence based best practice guidelines should be used to help health care practitioners and consumers make decisions about health care needs. Clinical workers should participate in the planning of services including the involvement of Maori health providers and they should engage in multi disciplinary, multi agency approaches to screening and reviews.

   A positive example of coordination is the Primary Health Care Nursing Professional Framework. The nursing framework is a conceptualised, tiered approach to nursing expertise and requires teamwork at every level. Such teamwork has enabled the nursing workforce to be self training, encouraging expertise to be filtered downwards.
4. **A skilled and experienced workforce**

Continuing education and maintenance of competence is now a part of a necessary programme of continuing self education for all health professionals in New Zealand. In order to deal with cardiovascular disease, it is essential that a programme of continuing medical education and maintenance of professional competence be made available to primary health care workers in MidCentral District.

People with cardiovascular disease and their family/whanau also need regular opportunities to upskill on how best to manage their care and maintain their quality of life.
3. DEMOGRAPHIC PROFILE FOR MIDCENTRAL DISTRICT

MidCentral District covers a wide geographical and demographic area, throughout which MidCentral aims to improve, promote and protect the health of approximately 163,000 people.

3.1 Geography

Territorial Local Authorities (TLAs) are local council areas. In the MidCentral District there are five TLAs: Manawatu, Palmerston North, Tararua, Horowhenua and part of the Kapiti Coast. In the Kapiti Coast TLA, the Census Area units (CAUs) included within the MidCentral District are Otaki, Otaki Forks and Te Horo. These CAUs make up 20% of the population of Kapiti Coast TLA.

While public transport is generally available in Palmerston North and Feilding, public transport in the more rural areas is less available and makes it difficult to access health services. MidCentral District has a significant rural population—28% of the population live outside a major urban or secondary urban area.

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\[=\text{District Health Board 2005/2006 Population Projections (as at 30/6/2004)}\]

\[=\text{MidCentral District Health Board (2001) An Assessment of Health Needs in the MidCentral District Health Board Region}\]
3.2 Population

There are approximately 163,000 people living in the MidCentral District—15.3% Maori, 2.0% Pacific peoples, 3.5% Asian, and 79.3% European (Figure 4).

**Figure 4: MidCentral District—Ethnicity Breakdown**

MidCentral District's population is evenly distributed across gender with males comprising 49% and females 51% of the population. Figure 5 is a breakdown of population (2001 Census) by Territorial Local Authority (TLA).

**Figure 5: MidCentral District Population Distribution by TLA (2001)**

**Horowhenua**—The Horowhenua TLA has the second largest population grouping at 19% of MidCentral District (28,989 people), with the highest proportion of Maori at 20%, and is the most socioeconomically deprived of the five TLA.

**Kapiti Coast**—The smallest population cluster in MidCentral District resides in the Kapiti Coast CAUs (7,761 people). This group makes up 5% of the District's population, and comprises a large aged population reflective of retirees settling on the Coast.

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**Manawatu**—The Manawatu TLA makes up 18% of the District’s population (26,565 people). It has low socioeconomic deprivation, and has, proportionately, a lower Maori population at 13%.

**Palmerston North City**—Forty-six percent of MidCentral District’s population resides in the Palmerston North TLA (69,645 people).

**Tararua**—The Tararua TLA makes up 12% of the District’s population (17,412 people), and has, proportionately, the second highest number of Maori within its population at 18%. It has some high socioeconomic deprivation but overall tends towards moderate to low deprivation.  

The District’s population is predicted to experience negligible growth. Statistics NZ forecasts that MidCentral District will grow at a rate of 0.5% per annum, slowing to 0.23% per annum from 2007-2026.

### 3.3 Age Structure

MidCentral District’s population age distribution is similar to both New Zealand and to the World Health Organization World Population (WHOWP), but with notable features. MidCentral District’s population age distribution reveals two peaks in the 10-14 years age group and the 35-39 age group. These two peaks arise from there being a gap in the 20-35 year age group. This grouping at 27% of the total population is 4% lower than the WHOWP. Figure 6 shows MidCentral District’s age distribution.

![Figure 6: MidCentral District General Population Distribution by Age (2001)](image)

As Figure 7 illustrates, Maori in MidCentral District have a younger population structure than non Maori, due to a higher birth rate and lower life expectancy. The difference in life expectancy between Maori and non Maori is reducing. However, it

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27 MidCentral District Health Board (2004) Cancer Services Plan Discussion Document pg 10
28 Statistics NZ DHB Population by Sex & 5 year Age Group 2001
will take time for the population structure to show these changes.

Figure 8 shows steadily declining Maori population numbers as the population ages, whereas Figure 9 shows relatively stable European population numbers until the age of approximately 60, when numbers start to decline²⁹.

**Elderly (65+ years)**

MidCentral District Health Board has the 9th oldest population of all 21 District Health Board areas in New Zealand, with 13.39% (20 766 people) of the population aged 65 years or over at the 2001 Census. This is slightly above the national average of 12.1%.

²⁹ MidCentral DHB Community and Public Health Advisory Committee (CPHAC) Report January 2003 Needs Analysis Update 2
A breakdown of the older population according to territorial authority (Figure 10) shows an uneven distribution across MidCentral District. There are high proportions of elderly in both Horowhenua (18.5%) and Otaki/Otaki Forks/Te Horo (19.8%).

**Figure 10: MidCentral Territorial Authorities Population (2001), 65+ Age Group as a % of All Age Groups**

MidCentral District's Maori population age structure is similar to the national Maori pattern. It is a young population with small numbers in the older age groups, making up only 3% of people aged 65 years and over.

The population structures for both New Zealand and MidCentral District are ageing. The proportion of people aged 65 and over will increase. Additionally, the proportion of people aged over 85 will expand at a faster rate. The growth in the number of older people will increase demand for health and disability services because the utilisation of health services increases as people age.\(^\text{31}\)

### 3.4 Deprivation

Lower socioeconomic status is associated with difficulties in accessing health (and many other services). Higher socioeconomic deprivation is consistently associated with decreasing life expectancy, increasing mortality rates, increasing hospitalisation rates and higher smoking rates. High deprivation areas (deciles 9 or 10) are an important indicator of likely areas of health needs.

Figure 11 shows that overall, MidCentral District presents a slightly more deprived picture when compared to the national average.

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\(^{30}\) MidCentral District Health Board (2004) *Health Needs Assessment for Older Disabled People (Draft)* pg 16

\(^{31}\) Ibid pg 1
Figure 11: MidCentral District Deprivation Profile (2001)

Figure 12 is a breakdown of MidCentral District's deprivation by Territorial Area.

Figure 12: MidCentral District Deprivation Distribution (2001)

3.5 Pacific Peoples

The Pacific peoples population is the largest immigrant minority and it is one of the fastest growing ethnic minority communities in New Zealand. MidCentral District has a small, relatively stable population of Pacific peoples (2.0% of MidCentral District's 2001 population). Although Pacific peoples make up a relatively small portion of MidCentral District's population their morbidity and mortality rates are over represented in our statistics.

= Technical Advisory Service (TAS) District Health Board, Territorial Authority & Ward Deprivation Profiles (2001)
Table 3 lists some key features of Pacific peoples. These findings are national statistics.

Table 3: Pacific Peoples–Society Issues (National Statistics 2001)\(^{23}\)

<table>
<thead>
<tr>
<th>Pacific peoples</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The People</strong></td>
<td>Samoa, Cook Island, Tongan, Niuean, Fijian, Tokelauan</td>
</tr>
<tr>
<td></td>
<td>58% New Zealand born</td>
</tr>
<tr>
<td></td>
<td>89% speak English</td>
</tr>
<tr>
<td></td>
<td>2% of MidCentral District’s population (approx 3,000 people)</td>
</tr>
<tr>
<td><strong>Pacific Children</strong></td>
<td>There are approx 61,000 Pacific children under 15 years in NZ</td>
</tr>
<tr>
<td></td>
<td>53% live in houses with 6 or more people</td>
</tr>
<tr>
<td></td>
<td>34% live in households shared by relatives</td>
</tr>
<tr>
<td></td>
<td>An average of 3 dependant children live in 2 parent families</td>
</tr>
<tr>
<td></td>
<td>62% of Pacific children aged between 5-14 years are obese</td>
</tr>
<tr>
<td><strong>Pacific Women</strong></td>
<td>There are approx 64,000 Pacific women aged 15 and over in NZ</td>
</tr>
<tr>
<td></td>
<td>24% have given birth to 4 or more children</td>
</tr>
<tr>
<td></td>
<td>12% receive the Domestic Purposes Benefit</td>
</tr>
<tr>
<td></td>
<td>48% women are obese (high risk factors for diabetes, coronary heart disease, high blood pressure, osteoarthritis and some cancers) [Note: only 27% of Pacific men are obese]</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td>20% do not have access to a telephone compared to 7.7% of all of NZ</td>
</tr>
<tr>
<td></td>
<td>56% live in rental accommodation</td>
</tr>
<tr>
<td></td>
<td>32.8% own their own home or are rent free (all ethnicities in NZ 67.5%)</td>
</tr>
<tr>
<td><strong>Work and Education</strong></td>
<td>33% have a school qualification</td>
</tr>
<tr>
<td></td>
<td>19% have a tertiary qualification</td>
</tr>
<tr>
<td></td>
<td>Pacific youth aged between 15 and 19 experience higher unemployment rates (33%) than other ethnicities</td>
</tr>
<tr>
<td></td>
<td>Overall unemployment rate 17%</td>
</tr>
<tr>
<td></td>
<td>Most common occupations are service workers and plant and machine operators</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td>Average income for all Pacific people 15 years and over is $12,400</td>
</tr>
<tr>
<td></td>
<td>Average household income is $30,000</td>
</tr>
<tr>
<td></td>
<td>32% of Pacific peoples main source of income was a government benefit</td>
</tr>
<tr>
<td></td>
<td>Only 50% of Pacific people eligible for a community services card actually hold one</td>
</tr>
<tr>
<td><strong>Health Issues</strong></td>
<td>Poor dental health</td>
</tr>
<tr>
<td></td>
<td>Women have higher death rates than non Pacific women from asthma and diabetes</td>
</tr>
<tr>
<td></td>
<td>Higher rates of stroke and heart disease than non Pacific</td>
</tr>
<tr>
<td></td>
<td>Twice as likely to be diagnosed with diabetes as non Pacific</td>
</tr>
<tr>
<td></td>
<td>Highest incidence of rheumatic fever and rheumatic heart disease</td>
</tr>
<tr>
<td></td>
<td>Highest rates of Hepatitis B</td>
</tr>
<tr>
<td></td>
<td>Higher smoking rates (1 in 3 Pacific people smoke)</td>
</tr>
<tr>
<td></td>
<td>Low uptake of screening services</td>
</tr>
</tbody>
</table>

By the year 2031, it is estimated that the Pacific peoples population will have grown by 114% and constitute 7.2% of the total New Zealand population\(^{34}\).

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\(^{34}\) Ministry of Health Pacific Islands Health Information pg 7
3.6 Asian Peoples

MidCentral District's Asian population is 3.4%, representing a significant population. There is currently no data available on Asian peoples in MidCentral District however a Ministry of Health Asian Public Health Project Report (February 2003) conducted in Auckland identified various health and societal issues. Heart disease, high blood pressure and diabetes were three significant health concerns that emerged during the meetings. These three issues are related to poor nutrition and lifestyle choices. The migration experience includes introductions to new foodstuffs that have high cholesterol levels and this is compounded if people are unable to maintain daily physical exercise which is often the case for new migrants.

Key informants also identified coronary heart disease and hypertension as major health issues for Asian people. There was acknowledgement that migrants arriving in New Zealand brought with them these risk factors (eg, smoking, and poor diet, such as high salt intake). Some informants noted that in several Asian countries, health care services are difficult to access, and therefore conditions may not have been treated effectively or previously diagnosed.

A key issue identified in New Zealand research relates to new immigrants and English language proficiency. English language proficiency impacts on access to health care and the determinants of health, especially employment and income prospects.

Nearly one third of Asian peoples in New Zealand have a tertiary education but, overall, Asian peoples have worse than average unemployment rates (7.2% in 2001) and most significantly very low income levels (only 17% of Asian peoples earned over $30,000 in 2001). These figures are reinforced by qualitative research that indicates many Asian people experience difficulties with employment, including under employment where skills are not fully utilised.

Table 4 illustrates the health and social status of Asian peoples in New Zealand.

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Ministry of Health (February 2003) Asian Public Health Project Report: Public Health Needs for the Auckland Region pg 64
### Table 4: Asian Peoples—Society Issues (Asian Public Health Project Report—Auckland Statistics, 2003)*

#### Asian Peoples

**The People**
- Chinese, Indian, Korean, Filipino, Thai, Japanese, Sri Lankan, Cambodian, Vietnamese, Other Asian
- 3.4% of MidCentral District's population (approx. 5,300 people)
- Net migration to New Zealand from Asian countries leads net migration figures with an average of over 15,000 people per year
- 65% live in the Auckland region (they are the 2nd largest population group in the Auckland area making up 12.5% of the population)
- Less than 5% is older than 65 years

**Language**
- Of Asians who have been resident in NZ for less than 10 years, the % of people who cannot speak English or Maori is:
  - 1 in 3 Cambodian and Vietnamese
  - 47% of Cambodian women and 38% of Vietnamese women
  - Between 22% and 28% of Chinese and Korean people
  - 8% of Indian men and 14% of Indian women

**Housing**
- 5.6% do not have access to a telephone compared to 7.7% of all of NZ
- 8.4% of households are without a car (9.7% all ethnicities in NZ)
- 58.6% own their own home or are rent free (67.5% all ethnicities in NZ)

**Work and Education**
- Overall unemployment rate 7.2% (4.8% all ethnicities in New Zealand)
- The Asian ethnic group has the lowest % of people with no qualification (12.2%) compared with any other ethnic group (all groups 23.7%)
- 30.5% have a tertiary education (all ethnicities 27.7%)
- There is considerable variation in education across the Asian immigrant population:
  - 30% of Indian men and 26% of Indian women have a university degree or higher qualifications
  - Chinese and Korean immigrants with tertiary qualifications range between 13% and 23%
  - Between 0%-5% of Cambodian and Vietnamese recent immigrants have a university qualification

**Income**
- 17% aged 15 and over have an income of $30,000 or more compared with 31.2% for the whole population
- 1.8% receives the Domestic Purposes Benefit (compared to all ethnicities 3.7%)

**Health Issues**
- Leading causes of death are similar to the whole population: cancer (especially lung, large bowel and stomach), ischaemic heart disease and stroke
- High abortion rates
- Asian people generally have a positive focus on health and wellbeing, seek medical advice early, but can have language and cultural barriers in accessing health services.
- Asian refugees generally have a poorer health status than other Asians and other population groups
- High incidence for refugee Asians of:
  - infectious diseases (eg, Hepatitis B, HIV, malaria, STDs etc)
  - diabetes
  - poor nutrition (eg, iron deficiency)
  - post traumatic stress disorder

* Statistics from Auckland region

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3.7 Maori

The proportion of Maori living in MidCentral District is 15%, which is slightly higher than in the total New Zealand population (14%). Table 5 illustrates the marked socioeconomic disadvantage, disparity and overall health needs for Maori in New Zealand and MidCentral District.\textsuperscript{37}

Table 5: Maori—Society Issues (National and Regional Statistics)\textsuperscript{38,39}

<table>
<thead>
<tr>
<th>Maori</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The People</strong></td>
</tr>
<tr>
<td>• 15.2% of MidCentral District’s population</td>
</tr>
<tr>
<td>• At the time of the 1996 Census, 43% of Maori mothers were solo mothers</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
</tr>
<tr>
<td>• Maori are far more likely than non Maori to live in the most deprived areas of New Zealand (56% of Maori live in areas with a deprivation index of 8 or more compared to 24% of non Maori)</td>
</tr>
<tr>
<td>• In 1996, only 50% of Maori compared to 72% of non Maori lived in their own homes</td>
</tr>
<tr>
<td><strong>Work and Education</strong></td>
</tr>
<tr>
<td>• Maori are less likely than non Maori to stay on to be senior secondary school students</td>
</tr>
<tr>
<td>• Maori are less likely than non Maori to leave school with a qualification. In 1999, 35% of Maori school leavers left with no qualifications compared with only 13% non Maori</td>
</tr>
<tr>
<td>• Only 18% of Maori school leavers receive a seventh form qualification compared with 44% of non Maori school leavers</td>
</tr>
<tr>
<td>• The Maori unemployment rate is two to three times higher than the non Maori rate\textsuperscript{40}</td>
</tr>
<tr>
<td>• In 1997 Maori represented 40% of those who had been registered as unemployed for more than two years</td>
</tr>
<tr>
<td>• Nearly one third (32%) of all Maori aged 15-19 years are unemployed</td>
</tr>
<tr>
<td><strong>Income</strong></td>
</tr>
<tr>
<td>• Maori incomes in MidCentral District are lower than Maori incomes nationally, and are around 60% of non Maori incomes in the district</td>
</tr>
<tr>
<td>• Maori household incomes are on average $10 000 lower than non Maori household incomes</td>
</tr>
<tr>
<td><strong>Health Issues</strong></td>
</tr>
<tr>
<td>• The smoking rate for Maori women was two and a half times greater than the rate for non Maori women (53% compared to 20%)</td>
</tr>
<tr>
<td>• More than one quarter of Maori aged 15 years and over are hazardous drinkers (27%), compared to 16% of non Maori adults</td>
</tr>
<tr>
<td>• Maori are less likely to access PTCA and coronary artery bypass surgery than non Maori</td>
</tr>
</tbody>
</table>

Appendix B provides a more detailed demographic profile of MidCentral District.

\textsuperscript{37} MidCentral DHB (2001) \textit{An Assessment of Health Needs in the MidCentral District Health Board Region} pg 12
\textsuperscript{38} Te Puni Kokiri Ministry of Maori (2000) \textit{Tikanga Oranga Hauora} ISBN: 0 478 09190 7
\textsuperscript{40} MidCentral District Health Board (2001) \textit{An Assessment of Health Needs in the MidCentral District Health Board Region} pg 12-13
4. **CARDIOVASCULAR DISEASE BURDEN PROFILE**

Cardiovascular diseases are diseases affecting the heart and circulatory system. They include coronary heart disease (CHD), congestive heart failure (CHF), rheumatic heart disease, cerebrovascular disease (stroke) and other forms of vascular and heart disease. This section highlights the burden of cardiovascular disease.

4.1 **Coronary Heart Disease (CHD)**

Coronary Heart Disease (CHD) is the most common form of heart disease, which involves a reduction in the blood supply to the heart muscle by narrowing or blockage of the coronary arteries. It is often characterised by myocardial infarction (heart attack), angina pectoris (chest pain), and atherosclerosis in the coronary arteries. CHD causes almost one fourth of all deaths in men and women and is the leading single cause of death in New Zealand.

- The coronary heart disease death rate is more than twice as high in men as in women
- Eighty five per cent of all coronary heart disease deaths (78% male and 93% female) occur in those over 65 years
- The death rates for Maori under 75 years are two to three times higher than in non-Maori
- In the Maori population, over half of the male coronary heart disease deaths (53%) and 33% of the female coronary heart disease deaths occur in those under 65 years.

Although CHD is declining in New Zealand it still results in the highest number of cardiovascular disease related deaths (91 per 100,000). CHD accounted for 23% of all deaths in 1999, of which just over 52% were attributable to myocardial infarction. Eighty five percent of coronary heart disease deaths occur in those over 65 years.

Once adjusted for age, coronary heart disease mortality rates are higher in males than in females, and in Maori than in non Maori.

Total blood cholesterol, high blood pressure, high body fat mass, and low fruit and vegetable intake are all established risk factors for CHD, along with family history, tobacco consumption, physical inactivity and diabetes.

As Figure 13 shows, MidCentral District’s ischaemic heart disease mortality rates and

\[\text{Figure 13: MidCentral District's ischaemic heart disease mortality rates and}\]

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\[\text{SOURCE: National Heart Foundation www.nhf.org.nz}\]
acute myocardial infarction (AMI) discharge and mortality rates are slightly above the national rates, representing significant health burdens.

**Figure 13: Ischaemic Heart Disease and AMI Discharge and Mortality Rates (1997 and 2002)**

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**Notes:**
1. Data source: NMDS public hospital data, maintained by the NZ Health Information Service (NZHIS).
2. Time period covered—12 months to 31 December for each year.
3. Deaths are for people from each DHB region of domicile.
4. Standardised mortality rate is the ratio of observed to expected mortality rates, multiplied by the overall national rate for all cases in each year.
5. Discharges are for people from the DHB region of domicile. Patients with more than one discharge are counted only once.
6. Standardised discharge rate is the ratio of observed to expected discharge rates, multiplied by the overall national rate for all cases.
7. "_" implies that the number of deaths are less than five.
4.2 Congestive Heart Failure (CHF)

CHF is a condition in which the heart cannot pump out all of the blood that enters it, which leads to an accumulation of blood in the vessels leading to the heart and fluid in the body tissues. Excess blood in the pulmonary (lung) blood vessels can also occur, leading to fluid accumulation in the lungs.

CHF is a significant personal and public health problem and is increasing in prevalence. About two thirds of all patients with heart failure die within five years of diagnosis and mortality rates increase with age.

The standardised discharge rates for congestive heart disease in the MidCentral District are similar to national rates as shown Figure 14 below.

**Figure 14: Congestive Heart Failure—Standardised Discharge Rates per 10 000 Population (1997 and 2002)**

Congestive heart failure occurs mainly as a result of coronary heart disease, but can also result from rheumatic heart disease, hypertension, cardiomyopathy and other cardiac diseases. As a symptom of underlying heart disease, heart failure is closely associated with the major risk factors for coronary heart disease: smoking, high cholesterol levels, hypertension (persistent high blood pressure), diabetes and abnormal blood sugar levels, and obesity.

Among the prominent risk factors, hypertension (high blood pressure) and diabetes are particularly important. Uncontrolled high blood pressure increases the risk of heart failure by 200%, compared with those who do not have hypertension. Moreover, the degree of risk appears directly related to the severity of the high blood pressure.

Congestive heart failure is magnified in individuals with diabetes, in whom incidence rates are two to five times greater than those in the general population.

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4 Ministry of Health Cardiovascular Disease Toolkit

5 Nichols et al. (2004) *The Incidence of Congestive Heart Failure in Type 2 Diabetes: An Update* Diabetes Care 27:1873-1884
4.3 Rheumatic Heart Disease

Rheumatic fever is an acute systemic inflammatory disease that usually occurs after a streptococcal infection of the throat. The bacteria trigger an immune response in which antibodies that are produced to destroy the bacteria attack and inflame the connective tissues in joints, heart valves and other organs. The damage to the valves produced by Rheumatic Fever is permanent. Rheumatic Fever is one of the most important preventable communicable diseases affecting children in New Zealand. Recurrent episodes of rheumatic fever can cause rheumatic heart disease; characterised by changes in the myocardium or scarring of the heart valves that reduce the power of the heart to pump blood. It often requires surgery, to repair or replace the involved valve/s.

Risk factors for the development of the disease include age, ethnicity, poverty and overcrowding.

Although acute rheumatic fever has declined substantially since the 1970s, New Zealand still has unacceptably high rates compared to other developed countries. Figure 15 shows MidCentral District’s standardised discharge rates for chronic rheumatic heart disease have been markedly lower than national rates.

Figure 15: Chronic Rheumatic Heart Disease–Standardised Discharge Rates by Ethnicity 1997/98-2001/02

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Ministry of Health (2003) Cardiovascular Disease Toolkit
4.4 Stroke

Stroke is the brain equivalent of a heart attack. Strokes are caused by disruption of the blood supply to the brain. This may result from either blockage (ischaemic stroke) or rupture of a blood vessel (haemorrhagic stroke). The effects cause a loss of muscle function, vision, sensation, or speech resulting from brain cell damage.

Stroke is the third leading cause of death in New Zealand (33 deaths per 100 000), following cancer and coronary heart disease. About 7 000 New Zealanders have a stroke every year, accounting for approximately 1 in 12 of all deaths in men and 1 in 8 of all deaths in women. It also leaves many with a chronic disability.

Figure 16 shows data from an Auckland stroke study (1991-1992). The study found that for a population of 100 000 the following would apply.

Figure 16: Stroke Burden for a Population of 100,000

Stroke often occurs in people who are already frail and elderly and who have a number of other medical conditions. For example, among the 190 new strokes expected each year in a population of 100 000, 35 people will be in an institution at the time of their stroke.

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* World Health Organization The Atlas of Heart Disease and Stroke

---

27
stroke. A further 50 will already require assistance for self care tasks. All people who have a stroke are at increased risk of another stroke event. There is approximately a 10% chance in the first year and 5% thereafter. Risk factors for ischaemic stroke are similar to those for ischaemic heart disease, whereas risk of haemorrhagic stroke is dominated by blood pressure.

There is also a strong association of diabetes with risk of stroke. People who have diabetes run more than double the risk of having a stroke due to high blood pressure and arteriosclerosis—both of which cause stroke.

Figure 17 illustrates the standardised mortality rates per 100,000 population, and shows the burden of disease is higher for Māori than other ethnicities in MidCentral District. Māori mortality rates in MidCentral District are also higher than rates nationally for Māori.

**Figure 17: Stroke—Standardised Mortality Rates per 100,000 Population 1998-2000**

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### 4.5 Peripheral Vascular Disease (PVD)

Peripheral vascular disease (PVD) is a problem of reduced circulation through the smaller blood vessels peripherally, narrowing of one or more arteries. It mainly affects arteries that take blood to the legs. PVD can occur in individuals without diabetes but is more common and more severe in people with diabetes. It is caused by the same risk factors that cause heart disease.

As Figure 18 illustrates, the narrowing of the arteries is caused by atheroma. Atheroma is like fatty patches or ‘plaques’ that develop within the inside lining of arteries. A patch of atheroma starts quite small, and causes no problems at first. Over the years, a

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* ibid pg 18-19
* Stroke Foundation of New Zealand http://www.stroke.org.nz/index.php/pl_pageid/7
* Standardised mortality rates for Pacific peoples were too small to be included in the graph
* National Heart Foundation www.nhf.org.nz
patch of atheroma can become thicker, reducing the flow of blood through the affected section of artery.

**Figure 18: Peripheral Vascular Disease**

Atheroma can develop in any artery, but the common arteries affected are:

- Arteries taking blood to the heart—which may lead to angina and heart attacks
- Arteries taking blood to the brain—which may eventually lead to a stroke
- Arteries taking blood to the legs—which may lead to PVD.

4.6 Low Socioeconomic Families

While there has been a reduction in cardiovascular mortality across all socioeconomic groups, this decline has been greatest among those of higher socioeconomic position. As a result, socioeconomic inequalities in cardiovascular disease have widened, with cardiovascular disease increasingly associated with disadvantage.

This socioeconomic gradient is also reflected in cardiovascular morbidity rates both in New Zealand and elsewhere. The increasing prevalence of risk factors for cardiovascular disease, such as smoking, obesity and diabetes, may, in lower socioeconomic groups, further widen these inequalities over the next decade.

Figure 19 shows the link between cardiovascular disease and socioeconomic deprivation.

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* Picture Source: Peripheral Vascular Disease: http://www.patient.co.uk/showdoc/23068800/
* Peripheral Vascular Disease: http://www.patient.co.uk/showdoc/23068800/
According to the 1996/97 New Zealand Health Survey ("Taking the Pulse"), people in lower socioeconomic groups were more likely to have two or more cardiovascular risk factors, regardless of whether socioeconomic status was measured in terms of family income, educational status or NZDep96 scores. This is consistent with findings in New Zealand that there is a strong association between ischaemic heart disease and socioeconomic status.\(^5\)

Figure 20 shows the results from the 1996/97 survey based on family income (age and sex standardised).

Greater cardiovascular morbidity among lower socioeconomic groups places a heavier burden on this group, resulting in increasing demands for health services.\(^6\)

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\(^6\) Ministry of Health (May 1999) Taking the Pulse - the 1996/97 New Zealand Health Survey pg.02
\(^6\) Ibid

4.7 Cardiovascular Disease and Maori and Pacific Peoples

As Figure 21 illustrates, for the 2003/04 financial year, the vast majority of cardiovascular admissions to Palmerston North Hospital were people of European ethnicity (88%). Maori made up the second highest admissions (10%). Pacific peoples represented 1% of admissions.

While the majority of admissions were European, the burden of cardiovascular disease is greatest amongst Maori and Pacific peoples.

Figure 21: Total Cardiovascular Admissions to Palmerston North Hospital by Ethnicity 2003/04

Maori and Pacific peoples have the highest rates of mortality for all categories of cardiovascular disease and tend to be admitted to hospital with CVD at a substantially earlier age than European/other ethnicities.

Figure 22 shows that 2.5% of the European admissions to Palmerston North Hospital were people under 45 years of age, compared to 11% of total Maori admissions. People older than 65 years make up the majority of European admissions (80%) but only 60% of Pacific admissions (Figure 23) and 37% of total Maori admissions (Figure 24). Such data indicate the disproportionate burden of premature cardiovascular death and disease among Maori and Pacific peoples.

Figure 22: European—Cardiovascular Admissions to Palmerston North Hospital by Age Band 2003/04
Coronary Heart Disease in Maori and Pacific Peoples

Since the late 1960s (when coronary heart disease rates peaked in New Zealand), age standardised death rates for coronary heart disease have fallen at a slower pace in Maori than in non Maori.

Currently, mortality from all cardiovascular diseases is higher among Maori than the general population and is the leading single cause of death for Maori.

Nationally, the coronary heart disease mortality rate for Maori aged under 65 years is almost three times higher than that of non Maori in this age group. In the Maori population, 56% of all male coronary heart disease deaths and 34% of all female deaths occur in those under 65 years. Similar figures apply for Pacific peoples (55% male and 33% female). In contrast, for those of neither Maori nor Pacific origin, 16% of male deaths and 5% of female deaths occur in those under 65 years. This is illustrated in Table 6 which shows in Maori under 65 years, death rates are three to four times higher than in those of neither Maori nor Pacific origin.
Heart Failure in Maori and Pacific peoples

Maori have the highest hospital admission rates for heart failure. Nationally, discharge rates for heart failure in 1999-2000 were nearly three times those of non Maori (32 per 10000 compared to 12.6 per 10000) and are four times or more for Maori under the age of 65 years.

Pacific peoples have a lower discharge rate for heart failure than Maori but have more than twice the discharge rate of Europeans/others (24.4 per 10000 compared to 11.9 per 10000). The high discharge rates for heart failure for both Maori and Pacific peoples are likely to reflect the higher incidence of cardiovascular disease and diabetes in these populations. They may also reflect delays in access to primary care services and in detection and treatment of disease.

Rheumatic Heart Disease In Maori and Pacific peoples

Maori and Pacific peoples have the highest discharge rates nationally for both rheumatic fever and rheumatic heart disease.

Just over 31% of Pacific peoples (17 cases) and 21% of Maori (15 cases) who had developed rheumatic fever in New Zealand were readmitted to hospital for rheumatic fever during 2000-2001. It is therefore not surprising that Maori and Pacific peoples are more likely to develop rheumatic heart disease. National hospitalisation rates in 2000-01 for rheumatic heart disease in both Maori and Pacific peoples were three times the rate for Europeans/others (27 and 27 per 100 000 compared to 1 per 100 000).

Pacific peoples have the highest national hospitalisation rate for rheumatic fever, over nine times that of non Pacific/non Maori (24 per 100 000–54 cases–compared to 1 per 100 000).

Table 6: Death Rates from Coronary Heart Disease in New Zealand According to Ethnic Origin

<table>
<thead>
<tr>
<th>Ethnic Origin</th>
<th>Age 25-44</th>
<th>45-64</th>
<th>65-74</th>
<th>75+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>6</td>
<td>75</td>
<td>431</td>
<td>1924</td>
</tr>
<tr>
<td>Maori</td>
<td>20</td>
<td>264</td>
<td>905</td>
<td>2398</td>
</tr>
<tr>
<td>Pacific peoples</td>
<td>16</td>
<td>219</td>
<td>823</td>
<td>1722</td>
</tr>
<tr>
<td>Total Population</td>
<td>9</td>
<td>97</td>
<td>466</td>
<td>1935</td>
</tr>
</tbody>
</table>

NB: Others = (non Maori, non Pacific peoples)

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63 NZ Heart Foundation statistics (internet) www.nfh.org.nz
64 Ibid
Stroke in Maori and Pacific peoples

Stroke is more common in Maori and Pacific peoples than in Europeans, and the average age for a stroke is around 10 years lower for Maori and Pacific peoples than for Europeans. The average age of stroke is 56 years for Maori, 60 years for Pacific peoples and 73 years for New Zealand European. The reasons for this are uncertain but there is a higher incidence of obesity, diabetes and high blood pressure in Maori and Pacific peoples. These are all risk factors for stroke, which can be managed.

The chance of being dependent at 12 months post stroke is three times higher among Maori and Pacific peoples than among Europeans who have a stroke.

Nationally, Pacific peoples have the highest hospital discharge rate for stroke: 139.6 per 100,000 compared with 89.1 and 86.1 per 100,000 for Maori and European/other respectively.

Readmission rates for stroke in 2000-2001 were higher for Maori than for Europeans/other (11.5% compared to 10.2%).

4.8 Cardiovascular Disease and Asian Peoples

Although there is very little data on Asian peoples and cardiovascular disease in New Zealand, studies from overseas have outlined a significant burden of cardiovascular disease in Asian peoples living outside of Asia.

Most Asian peoples have traditionally been fairly small and slender, but changes in diet and less physical activity may be contributing to an increase in overweight and obesity in these populations.

Hypertension and diabetes were found to be two to three times higher among South Asians compared to whites in Britain. This is probably due to insulin resistance syndrome associated with a pronounced tendency to central obesity. Similarly in the US, immigrant Asian Indian men are shown to have a high prevalence of coronary heart disease, type 2 diabetes, low HDL (high density lipoprotein) cholesterol and hypertriglyceridaemia. Disease of the heart and stroke are also the leading cause of death amongst Asians in the US.

There is an apparent increase in cardiovascular deaths among Asian immigrants who have lived in Australia for more than 10 years.

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65 Stroke Foundation of New Zealand Life After Stroke: NZ Guideline for Management of Stroke. Pg 15
67 Stroke Foundation of New Zealand Preventing Stroke. Pg 3
68 Ministry of Health (2003) Cardiovascular Toolkit
69 Stroke Foundation of New Zealand Life After Stroke: NZ Guideline for Management of Stroke. Pg 15
5. RISK AND PROTECTIVE FACTORS FOR CARDIOVASCULAR DISEASE

Risk factors do not add their effects in a simple way. Rather, they multiply each other's effects. Generally, each risk factor alone doubles a person's chance of developing Coronary Heart Disease. Someone who has high blood cholesterol and high blood pressure, and smokes cigarettes is eight times more likely to develop Coronary Heart Disease than someone who has no risk factors. So, it is important to prevent or control risk factors that can be modified.

There is a strong correlation between cardiovascular diseases (CVDs) and non-communicable chronic diseases as illustrated in Figure 25. An asterisk (*) indicates the mortality and burden related to cardiovascular disease. Those at highest absolute risk derive the most benefit from treatment.

Figure 25: Attributable Burdens, Total Mortality NZ for Different Causes (1997)

Cardiovascular disease can be reduced through lifestyle change and/or appropriate drug therapy. The following section outlines the risk factors for cardiovascular disease. Many of these risk factors are interrelated.

5.1 Smoking

Around 4500 people in New Zealand die prematurely from smoking each year. This equates to around 12 people a day dying from smoking. Cigarette smoking is associated with a two to three fold increase in coronary artery disease, stroke and...
peripheral vascular disease. It is also thought to be the single most preventable cause of heart disease. Figure 26 illustrates the cardiovascular risks of smoking. Cigarette smoking increases the risk of coronary heart disease; that with other factors, greatly increases the risk.

**Figure 26: Cardiovascular Risks of Smoking**

Smoking increases blood pressure, decreases exercise tolerance and increases the tendency for blood to clot. Within one day of quitting smoking, the chance of a heart attack decreases. Within two weeks to three months of quitting, circulation improves and lung function increases by up to 30%. Excess risk of heart disease is reduced by half after one year's abstinence. In those with existing heart disease, cessation reduces the risk of recurrent infarction or death by half.

For every person who dies from diseases related to second hand smoke exposure, many more will suffer from non fatal conditions. Table 7 shows findings from a study by Woodward and Laugesen (2001). The study estimates that second hand smoke results in significant morbidity.

**Table 7: Morbidity Related to Exposure to Second Hand Smoke**

<table>
<thead>
<tr>
<th>Number Per Annum</th>
<th>New Zealand¹</th>
<th>MidCentral District²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital admissions for children &lt;2 years with chest infections</td>
<td>&gt;500</td>
<td>20</td>
</tr>
<tr>
<td>Episodes of childhood asthma</td>
<td>15,000</td>
<td>600</td>
</tr>
<tr>
<td>GP consultations for asthma and other respiratory conditions in children</td>
<td>27,000</td>
<td>1,080</td>
</tr>
<tr>
<td>Hospital operations to treat glue ear</td>
<td>1,500</td>
<td>60</td>
</tr>
<tr>
<td>Cases of meningococcal disease</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>Hospital admissions for ischaemic heart disease</td>
<td>1,200</td>
<td>48</td>
</tr>
<tr>
<td>Hospital admissions for people suffering from strokes</td>
<td>500</td>
<td>20</td>
</tr>
</tbody>
</table>

¹ Woodward & Laugesen 2001
² Crude estimate based on the proportion of the NZ population residing in the MidCentral District, and the prevalence of smoking

---


Ibid

MidCentral District Health Board (Feb 2004) *Smoking Related Harm and the Need for Smoking Cessation Services across the MidCentral District Health Board Region* pg 6

Ibid
Since 1970, nationally, consumption of tobacco products has declined by 62%. New Zealand is ranked third lowest out of 13 selected OECD countries for tobacco consumption per adult. Although tobacco use in New Zealand has fallen, smoking continues to be a problem among Maori, Pacific peoples, lower socioeconomic groups, and beneficiaries.

A reduction in smoking prevalence is a priority population health objective of the New Zealand Health Strategy. It is also a Maori priority health gain area (He Korowai Oranga).

5.2 Obesity

Obesity is an independent predictor of coronary heart disease, congestive heart failure, and cardiovascular morbidity and mortality. People who are obese (i.e., with a body mass index (BMI) of 30 or greater) are two to three times more likely to develop coronary heart disease than those who are not obese. Risk of comorbidities and total mortality increases in individuals with a BMI greater than 25. For people with a BMI greater than or equal to 30, mortality rates from all causes, but especially cardiovascular disease, are increased by 50 to 100% above that of people with a BMI of 20 to 25. Table 8 highlights the attributable mortality for body mass and ischaemic heart disease.

Table 8: Attributable Mortality for Body Mass Index and Ischaemic Heart Disease (1997)

<table>
<thead>
<tr>
<th>Sex</th>
<th>Ethnicity</th>
<th>Deaths (count)</th>
<th>Years of Life Lost (count)</th>
<th>Deaths (Rate)</th>
<th>Years of Life Lost (Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non Maori</td>
<td>792</td>
<td>9,043</td>
<td>69.3</td>
<td>828</td>
</tr>
<tr>
<td></td>
<td>Maori</td>
<td>148</td>
<td>2,385</td>
<td>183.0</td>
<td>2,633</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>940</td>
<td>11,428</td>
<td>78.2</td>
<td>979</td>
</tr>
<tr>
<td></td>
<td>Non Maori</td>
<td>541</td>
<td>5,309</td>
<td>32.6</td>
<td>359</td>
</tr>
<tr>
<td></td>
<td>Maori</td>
<td>80</td>
<td>1,173</td>
<td>102.7</td>
<td>1,363</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>621</td>
<td>6,482</td>
<td>37.2</td>
<td>434</td>
</tr>
</tbody>
</table>

Rate per 100,000, age standardised to WHO World Population

Table 9 shows the risk reduction associated with a 1kg/m² lower body mass index for a person with ischaemic heart disease.

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79 National Heart Foundation (2004) Cardiovascular Disease in New Zealand, 2004 pg 15
80 Ministry of Health (2003) The Assessment and Management of Cardiovascular Risk pg 49
Table 9: Risk Coefficients for Ischaemic Heart Disease for a 1kg/m² Lower Body Mass Index\textsuperscript{82}

<table>
<thead>
<tr>
<th>Age Group (years)</th>
<th>Risk coefficient</th>
<th>Risk reduction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-34</td>
<td>0.87</td>
<td>13</td>
</tr>
<tr>
<td>35-44</td>
<td>0.88</td>
<td>12</td>
</tr>
<tr>
<td>45-54</td>
<td>0.90</td>
<td>10</td>
</tr>
<tr>
<td>55-64</td>
<td>0.92</td>
<td>8</td>
</tr>
<tr>
<td>65-74</td>
<td>0.94</td>
<td>6</td>
</tr>
<tr>
<td>75+</td>
<td>0.96</td>
<td>4</td>
</tr>
</tbody>
</table>

Reduction in weight has been shown to reduce blood pressure. From 76 randomised controlled trials (RCTs) evaluating the effect of weight loss on blood pressure, an analysis demonstrated that a 10kg weight loss in hypertensive patients was associated with an average reduction of 7 mm Hg systolic and 3 mm Hg diastolic blood pressure compared with controls. Reduction in weight can also reduce lipid levels (National Heart, Lung and Blood Institute 1998).

5.3 Physical Activity

Physical inactivity is second to smoking as a modifiable risk factor for poor heart health and is associated with 8% of all deaths in New Zealand. Strong research evidence shows that physical activity reduces the risk of many of the most serious diseases, conditions and disability in New Zealand including cardiovascular disease. People who are sedentary are 1.9 times more likely to die from coronary artery disease than active people, irrespective of other factors\textsuperscript{83}. Physical activity can also reduce the risk of stroke. Table 10 shows the effect of physical activity on diseases such as cardiovascular disease and stroke.

Table 10: Effect of Physical Activity on Specific Disease States and Known Risk Factors for Disease\textsuperscript{84}

<table>
<thead>
<tr>
<th>Condition</th>
<th>Reducing risk</th>
<th>Reduce symptoms</th>
<th>Improve outcome</th>
<th>Type of activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>++</td>
<td>++</td>
<td>+++</td>
<td>A</td>
</tr>
<tr>
<td>CHD</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
<td>A,E</td>
</tr>
<tr>
<td>CVA (Stroke)*</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>S,A*</td>
</tr>
<tr>
<td>Depression</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>A</td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>A,E</td>
</tr>
<tr>
<td>Hypertension</td>
<td>++</td>
<td>++</td>
<td>+++</td>
<td>A,E</td>
</tr>
<tr>
<td>Smoking</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>A</td>
</tr>
<tr>
<td>Stress</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>A</td>
</tr>
</tbody>
</table>

Key:

\textsuperscript{82} Ibid
\textsuperscript{83} Ministry of Health (2003) Cardiovascular Toolkit pg 8
The New Zealand Nutrition survey identified that over one third of New Zealanders (40%) are physically inactive.

5.4 Nutrition

There is increasing recognition that diet is important for good health. Nutrition plays a major role in all three leading causes of death for New Zealanders—ischaemic heart disease, cancer and stroke. It is a major determinant in the prevalence of obesity, hypertension and type 2 diabetes.

Studies have shown that vegetable and fruit intake is linked to other healthy behaviours. For example, people consuming vegetables and fruit frequently are likely to have other healthy habits: they are more likely to exercise regularly, be non smokers, and have low intakes of saturated fat and cholesterol.

As Table 11 shows, there are significant health benefits from increasing fruit and vegetable intake. An 80g/day (one serving) increase in vegetable and fruit intake was associated with a 0.9% lower risk of ischaemic heart disease in adults aged up to 64 years, dropping to 5.4% lower risk in adults aged 75 years and over. Ischaemic stroke was reduced by 6.2% among adults aged up to 54 years, dropping to 3.7% lower risk in adults aged 75 years and over.

Table 11: Risk Coefficients for Ischaemic Heart Disease and Stroke for an 80g/day Higher Vegetable and Fruit Intake

<table>
<thead>
<tr>
<th>Age Group (years)</th>
<th>Ischaemic Heart Disease</th>
<th>Ischaemic Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Risk coefficient (%)</td>
<td>Risk reduction (%)</td>
</tr>
<tr>
<td>25-34</td>
<td>0.901</td>
<td>9.9</td>
</tr>
<tr>
<td>35-44</td>
<td>0.901</td>
<td>9.9</td>
</tr>
<tr>
<td>45-54</td>
<td>0.901</td>
<td>9.9</td>
</tr>
<tr>
<td>55-64</td>
<td>0.901</td>
<td>9.9</td>
</tr>
<tr>
<td>65-74</td>
<td>0.916</td>
<td>8.4</td>
</tr>
<tr>
<td>75+</td>
<td>0.946</td>
<td>5.4</td>
</tr>
</tbody>
</table>

"If more New Zealanders adopted healthy lifestyles, basing their food intake on the Food and Nutrition Guidelines, the population’s health status would be likely to improve significantly. Furthermore, a decrease in diet-related morbidity and mortality, especially those associated with type 2 diabetes, cardiovascular disease and some cancers, could be expected."

5.5 Hypertension (High Blood Pressure)

Blood pressure is a measure of the force of the blood being pushed by the heart through the arteries. This pressure is created when the heart beats, forcing blood around the body, and also by the elastic resistance of the arteries themselves. Blood pressure is high (hypertension) when the force is excessive.

Hypertension is a major risk factor for coronary artery disease and is the most important risk factor for stroke. Hypertension is especially dangerous because it frequently has no symptoms. It has been estimated that among those aged 15 years and over, nearly 22% of males and 18.2% of females have high blood pressure. Research has demonstrated that most, if not all, of the rise in systolic blood pressure with age typically seen in Western populations can be explained by the excessive salt intake that characterises these populations. On average, New Zealanders consume approximately 9 grams of salt per day, which is above the current World Health Organization recommended intake level of between 3 to 6 grams per day depending on body mass. Sources of salt consumption are as follows: approximately 10% is naturally present in foods; 75% is a food additive in manufactured foods; and 15% is added to food in cooking or at the table.

Sodium is not the only nutritional factor affecting blood pressure: increasing fruit and vegetable intake will lower blood pressure by increasing potassium intake and so reducing the sodium-potassium ratio; as will increasing physical activity and reducing alcohol consumption.

5.6 Blood Cholesterol

Cholesterol is a fatty chemical mainly produced in the liver and is an important part of a healthy body because it is used to form cell membranes, some hormones and other necessary tissues. The association between cholesterol level and risk of developing cardiovascular disease has been found to be continuous and graded. That is, the risk of cardiovascular disease mortality increases with rising cholesterol levels.

Low density lipoprotein (LDL) carries most of the cholesterol from the liver to the cells. If there is an excess of cholesterol or it cannot be properly delivered to the cells, LDL cholesterol tends to accumulate in the vessel walls. Together with other substances it can form plaque, a thick, hard deposit that can clog the arteries. This condition is known as atherosclerosis. For this reason LDL cholesterol is often called 'bad.'
cholesterol. Lower levels of LDL cholesterol reflect a lower risk of heart disease.

As Table 12 illustrates, lowering blood cholesterol by 1 mmol/L reduces the risk of ischaemic stroke and heart disease substantially.

Table 12: Risk Coefficients for Ischaemic Heart Disease and Stroke for a 1 mmol/L Lower Total Blood Cholesterol

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Ischaemic Heart Disease</th>
<th>Ischaemic Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Risk Coefficient (%)</td>
<td>Risk Coefficient (%)</td>
</tr>
<tr>
<td>25-34</td>
<td>0.27 73%</td>
<td>0.69 31%</td>
</tr>
<tr>
<td>35-44</td>
<td>0.27 73%</td>
<td>0.69 31%</td>
</tr>
<tr>
<td>45-54</td>
<td>0.48 52%</td>
<td>0.65 35%</td>
</tr>
<tr>
<td>55-64</td>
<td>0.56 44%</td>
<td>0.70 30%</td>
</tr>
<tr>
<td>65-74</td>
<td>0.67 33%</td>
<td>0.83 17%</td>
</tr>
<tr>
<td>75+</td>
<td>0.70 30%</td>
<td>0.84 17%</td>
</tr>
</tbody>
</table>

5.7 Excessive Alcohol Consumption

Although there is evidence that light to moderate alcohol consumption provides protection against coronary heart disease for some population groups, long term heavy alcohol use contributes to a wide range of organ damage. Drinking too much alcohol can lead to high blood pressure, heart failure and an increased calorie intake. (Consuming too many calories can lead to obesity and a higher risk of developing diabetes.) Excessive drinking and binge drinking can also lead to stroke. Other serious problems include foetal alcohol syndrome, cardiomyopathy, cardiac arrhythmia and sudden cardiac death.

5.8 Diabetes

Diabetes is a major risk factor for coronary artery disease, stroke and peripheral vascular disease. The case fatality rate among those who have a cardiovascular event is higher in people with diabetes than in those without diabetes. It is associated with a two to three fold increased risk in coronary artery disease in men and a four to five fold increase in premenopausal women. There is also a five fold increase in heart failure among people with diabetes.

Through management of diabetes and its associated risk factors, people with diabetes can substantially reduce their heart related complications, as shown in the Table 13.
Table 13: % Reduction of the Risk of Diabetic Heart and Kidney Complications Shown in Recent Studies (2001)\(^5\)

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Type 1 diabetes % reduction</th>
<th>Type 2 diabetes % reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved blood glucose control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nephropathy</td>
<td>34-57</td>
<td>70</td>
</tr>
<tr>
<td>Cardiovascular &amp; peripheral vascular disease</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>All diabetes related complications</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Improved blood pressure control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microvascular disease</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Heart failure</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>All diabetes related complications</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Diabetes related deaths</td>
<td>32</td>
<td></td>
</tr>
</tbody>
</table>

5.9 Obstructive Sleep Apnoea (OSA)

Sleep apnoea is a serious, potentially life threatening breathing disorder characterised by brief interruptions of breathing during sleep. It owes its name to a Greek word, apnoea, meaning “want of breath.” There are two types of sleep apnoea: central and obstructive. Central sleep apnoea, which is less common, occurs when the brain fails to send the appropriate signals to the breathing muscles to initiate respirations\(^95\). Obstructive sleep apnoea (OSA), the most common form of apnoea, is caused by repetitive upper airway obstruction during sleep as a result of narrowing of the respiratory passages.

OSA often occurs in obese people with comorbid conditions\(^96\). Substantial evidence shows that patients with OSA have an increased incidence of obesity and hypertension compared with individuals without OSA and that OSA is a risk factor for the development of hypertension and obesity\(^97\).

Some studies have shown that patients with the disorder are also at increased risk for cardiac arrhythmias. Furthermore, the prevalence of angina and myocardial infarction is increased in patients with apnoea\(^98\).

5.10 Stress

Concern is increasing about the adverse effects that stress may have on health. Chronic life stress and anxiety increase the risk of heart disease and stroke\(^99\). Chronic stress can create significant damage to the cardiovascular system by triggering increased blood pressure. 

\(^{91}\) PriceWaterhouseCoopers (2001) Diabetes NZ Inc Type 2 Diabetes Managing for Better health Outcomes pg.42
\(^{92}\) National Sleep Foundation (USA) Sleep Apnoea http://www.sleepfoundation.org/publications/sleepap.cfm
\(^{93}\) Victor, Lyle D (Nov 15, 1999) Obstructive Sleep Apnea American Family Physician Journal Vol 60 (8).
\(^{95}\) Victor, Lyle D (Nov 15, 1999) Obstructive Sleep Apnea American Family Physician Journal Vol 60 (8).
pressure, coronary artery vasoconstriction, and reduced blood flow.

5.11 Risk Factors in Maori and Pacific Peoples

It is widely accepted that a person's risk of cardiovascular disease is determined by the synergistic effect of all the cardiovascular risk factors.

The 1996-97 New Zealand Health Survey “Taking the Pulse” identified Maori as being more likely to have two or more risk factors, and less likely to have no risk factors than European or Pacific peoples, or people from other ethnic groups. Pacific peoples were slightly more likely to have multiple risk factors than European people.

Figure 27 illustrates that Maori and Pacific peoples have a higher risk of cardiovascular disease than other ethnicities in New Zealand.

**Figure 27: Number of Cardiovascular Risk Factors, by Ethnicity 1996/97 (Age and Sex Standardised)**

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6. CURRENT SERVICES AND PROVIDERS

In MidCentral District there are a large and varied number of agencies involved in the prevention, promotion and treatment of people with cardiovascular disease and their family/whānau.

General Practice Teams\textsuperscript{102}

General practice teams include general practitioners and practice nurses and are a significant first point of contact for people with undiagnosed or diagnosed cardiovascular disease.

General practice teams do the vast majority of cardiovascular management ie, the assessment of cardiac risk profiles, lifestyle change, diagnosis, management and ongoing follow up. They also provide generalist Palliative Care for their patients.

General Practitioners

There are approximately 110 general practitioners in MidCentral District. While MidCentral District as a whole is slightly higher than the New Zealand average for GP FTE per 100,000 population, the distribution is uneven with a higher proportion in Palmerston North and a lower proportion in rural areas\textsuperscript{103}.

There are three Independent Practice Associations (IPAs) in MidCentral District covering the majority of practicing GPs. They are MIPA (Manawatu IPA), TIPA (Taranua IPA) and The Doctors\textsuperscript{104}.

Maori Health Providers

There are five contracted Maori Health providers in MidCentral District offering a range of services including Maori Mobile Disease State Management Nurses and smoking cessation programmes. They are:

- Te Runanga O Raukawa – from Otaki to Bulls on the West coast
- Whakapai Hauora – Palmerston North
- Te Wakahuia – Palmerston North
- He Puna Hauora – Palmerston North
- Rangitane O Tamaki Nui-a-Rua – Dannevirke

\textsuperscript{102} MidCentral DHB (October 2001) \textit{An Assessment of the Health Needs in the MidCentral DHB Region} pp 30-32
\textsuperscript{103} Medical Council of New Zealand (2001) \textit{Medical Workforce Survey}
\textsuperscript{104} MidCentral DHB (2003) \textit{Referred Services Strategy for MidCentral District Discussion Document} pg 12
MidCentral Health

MidCentral Health offers a wide range of secondary health care services including cardiovascular outpatient services, rehabilitation services, District Nursing/Hospital in the Home Service, and a heart failure clinic. Patients who have been assessed as requiring cardiology services, are referred by emergency services, a primary or secondary general physician, or other specialist as either an acute or elective referral. Patients accessing tertiary services will have been assessed and referred by a secondary care specialist as requiring advanced specialist care.

Palmerston North hospital’s cardiology services include a heart failure clinic, and a coronary care unit. Cardiac rehabilitation outpatient services are also available. The heart failure clinic runs two parallel clinics—a specialist clinic and a nurse run clinic.

MidCentral Health also provides stroke rehabilitation and specialist palliative care services.

Generalist and specialist services are working in a more unified way with primary and secondary health services forming an integrated relationship.

District Nursing Services

District Nursing provides a comprehensive range of specialised nursing services in the primary care setting 24 hours a day seven days a week throughout MidCentral District.

Hospital in the Home (HITH)

The HITH service is based on the premise that health care and treatment provided in the patient’s home could be, at least for certain conditions, similar or better than that provided in the hospital environment. The patient group is those with health care needs that:

- cannot be met by a generalist medical or nursing service alone, and
- without specialist nursing services are at risk of further deterioration, and
- providing care in the community would not further compromise their health.

The goals of the HITH service are to: prevent avoidable admission to, or enable early discharge from, hospital; provide support to people with long term or chronic personal health problems; and promote self care and independence. HITH keeps infectious patients out of hospital and prevents exposing patients to harmful organisms. Patients are also more accessible to family and friends and hospital beds are freed up for elective procedures.

National Heart Foundation

The National Heart Foundation of New Zealand is the charity that leads the fight against cardiovascular disease (heart, stroke and blood vessel disease).

The Heart Foundation works with the food industry, schools, churches, workplaces, early childhood centres, cardiac clubs, Te Hotu Manawa Maori, the New Zealand
Guidelines Group and the Ministry of Health on a variety of initiatives and guidelines to improve heart health including providing comprehensive information to the public on how to manage heart disease\footnote{Ministry of Health (2003) Implementing the New Zealand Health Strategy 2003 pg 42}.

**Other Providers and Services**

- Health Promotion services
- Residential care facilities
- Medlab
- Te Hotu Manawa Maori (NZ Heart Foundation for Maori)
- Occupational Health Services
- Sport Manawatu
- Smoking cessation services
- Quitline.

**Palliative Care Services**

Specialist palliative care is provided through MidCentral Health’s hospital Palliative Care team and through Arohanui Hospice.

**Pharmacy**

The pharmacist is an integral part of the health care team. The practice of pharmacy includes the custody, preparation and dispensing of medicines and pharmaceutical products, the provision of advice on health and wellbeing, including health screening, and the selection and provision of non prescription medicine therapies and therapeutic aids. The pharmacist acts as a medicines manager, ensuring safe, quality use of medicines and optimising health outcomes by contributing to the selection, prescribing, monitoring and evaluation of medicine therapy. The pharmacist researches information and provides evidence based advice and recommendations on medicines and medicine related health problems to patients, their carers and other healthcare professionals. Pharmacy is an essential part of the health care system in New Zealand\footnote{The Pharmacy Council of New Zealand}. 

**Primary Health Care Nurses\footnote{MidCentral DHB (April 2004) Primary Health Care Strategy pg 46}**

Primary health care nurses are crucial to the implementation of the Primary Health Care Strategy, and can contribute to reducing health inequalities, achieving population health gains, and promoting and preventing disease.

Nurses working in primary health care have a number of roles including public
health nurses, practice nurses, district nurses, Plunket nurses, community nurses, disease state nurses and child health nurses.

Primary health care nurses work in many environments, such as: being mobile within the community, in general practice clinics, within MidCentral's provider arm (MidCentral Health), in Maori health provider organisations.

The majority of community based nurses in MidCentral District work in general practice. Large numbers work in district nursing roles and providing community based and focused health care, such as diabetes, respiratory and palliative care.

The registered nursing workforce—primary and secondary health care sectors—in MidCentral District totals 1,955. The ratio of nurses per 10,000 population is 122, compared with the national ratio of 106. Of the 1,955 nursing workforce, 157 (8%) are Maori, well below the District's proportion of Maori population (17%).

**Primary Health Organisations**

Funded by District Health Boards, Primary Health Organisations (PHOs) work with their communities to provide primary health care services for their enrolled populations. PHOs will improve coordination between primary and secondary care and develop closer links between communities and primary health care providers such as GPs, practice nurses and Maori health providers.

Currently there are four established PHOs in MidCentral District:

- **Taranua PHO**—Established 1 July 2003, it has an estimated enrolled population of 15,500
- **Otaki PHO**—Established on 1 April 2004, it has an estimated enrolled population of 5,500
- **Horowhenua PHO**—Established on 1 July 2004, it has an estimated enrolled population of 23,000
- **Manawatu PHO**—Established 1 January 2005, it has an estimated enrolled population of 94,000.

**Public Health Services**

The Public Health Service has health promotion staff who deal with various issues, such as: nutrition and physical activity, tobacco control, alcohol, mental health and sexual health.

The Public Health Service promotes health by:

- Supporting community action, healthy environments, healthy public policy, and the development of individual's skills to enable people to make personal choices about their health and wellbeing.
• Monitoring and enforcing legislation to promote and protect healthy environments

• Working with communities, individuals, local government, schools and other agencies to provide health advice and information

• Working to strengthen partnerships with Maori and to provide culturally appropriate services.

The Health Promoting Schools Advisor works alongside the Public Health Nurses with schools promoting best practice such as physical activity and nutrition in the school setting.

**Stroke Foundation of New Zealand**

The Stroke Foundation of New Zealand is a non-profit organisation which began in 1980. Since its development, the Foundation has created a network of over 40 Field Officers and 100 Stroke Clubs throughout New Zealand. This network provides information, understanding, care, support and rehabilitation to help people who have had a stroke to regain the best quality of life they can. The network also assists their families and caregivers.

The Stroke Foundation promotes research into the causes of stroke, improvements in rehabilitation and stroke support needs in the community, as well as providing stroke prevention information**68.**

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**68** Stroke Foundation of New Zealand website  www.stroke.org.nz
7. OPPORTUNITIES FOR IMPROVEMENT

7.1 Health Promotion and Disease Prevention

Health promotion and disease prevention need to occur across the continuum of care. Assessment and treatment of cardiovascular risk are important parts of primary and secondary providers' roles. There are effective interventions for preventing, reducing and managing cardiovascular risk.

Assessment of risk for the primary prevention of cardiovascular disease is the role of primary health care providers. Interventions are directed at modifying cardiovascular risk factors to reduce the absolute risk of cardiovascular disease. Effective health promotion and disease prevention interventions include:

- promoting healthy lifestyles and smoke free environments
- quitting smoking
- changing lifestyle factors and encouraging supportive environments (good eating habits, increase in physical activity and non smoking as the norm)
- maintaining healthy blood pressure
- improving lipid profiles (for those who need it)
- more intensive control of diabetes.

Assessment of risk for the secondary prevention of cardiovascular disease is the role of both primary and secondary care providers. Interventions are directed at modifying cardiovascular risk to reduce the risk of further events or death. Other interventions are additional drug therapy, revascularisation and cardiac rehabilitation.

7.2 Secondary Cardiology Services

Referrals to the cardiology department at Palmerston North Hospital have increased gradually over the last few years. At the same time issues with medical staffing and resources have reduced the department’s outpatient throughput with the result that waiting lists have grown significantly. In September 2004 there were over 300 people who had been waiting more than six months to be seen.

Cardiology services are underdeveloped. Resources need to be reshaped, with an increase in scope and range of services. An optimal balance is required, including better primary care management. There is a need for interventional procedures to be provided locally. There is also the potential for the Hospital in the Home service to be utilised more for cardiology.

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**Ministry of Health (2003) Cardiovascular Toolkit pg 9**
7.3 Cardiac Rehabilitation

Phase II cardiac rehabilitation programmes are provided by MidCentral Health from Palmerston North Hospital and are limited to secondary referrals. The degree of participation in the programmes needs to be improved with both primary health care and secondary care patients participating. The services need to be made more accessible geographically by making at least some of them community based. They should also be run as a collaborative activity between various primary health care providers, including Maori health providers, and agencies such as the Heart Foundation.

Phase III rehabilitation is currently being developed by the local branch of the National Heart Foundation in Palmerston North, and the aim is to establish a community Phase III programme. On exiting the hospital based cardiac rehabilitation programme, patients could be referred directly to the maintenance programme providing a streamlined service.

7.4 Coronary Heart Disease

Primary and secondary prevention, diagnosis, and appropriate medical and surgical procedures require adequate medical nursing and support staff with appropriate facilities and equipment.

In reducing morbidity and mortality of patients with acute coronary syndrome it is important that acute pre hospital and hospital care is set up effectively to systematically assess and manage these patients. Early treatment with thrombolysis for eligible patients has been identified as important in reducing morbidity and mortality from myocardial infarction. Once patients with unstable angina or myocardial infarction have been admitted to hospital, it is important to have an effective process for assessing and managing them to ensure that they receive the appropriate care.

7.5 Stroke Services

There is now overwhelming evidence that the single most important intervention that would improve outcomes for all people who have had a stroke is the provision of organised stroke services. Organised stroke services provide the benefits of early assessment and timely intervention and have been proven beyond doubt to reduce both morbidity and mortality following stroke. The benefits apply to all patients regardless of age, stroke severity or comorbidities, and are sustained for at least 5-10 years.

Efficient and effective management of patients depends upon a well organised, expert service that can respond to the particular needs of each patient. Consequently, the organisation of stroke services and care of patients must be considered at every level of service delivery including primary care, hospital, community services (including both rehabilitation and support services), palliative care services and volunteer organisations (eg, Stroke Foundation).
Integration and organisation are the keys to good stroke services thus key linkages are required across the entire continuum. The organised stroke service should act as a model for the integrated continuum of care.

For a breakdown of Organised Stroke Services as set out in the guidelines, see Appendix C.

7.6 Heart Failure

Heart failure is one of the areas of medical and surgical treatment where there is good evidence for the effectiveness of treatment and clear evidence that early and consistent treatment prolongs life. It is important that patients are diagnosed accurately and managed appropriately to improve quality of life and to prevent unnecessary hospital admissions. The management of heart failure is an important role of the primary care provider. Effective links between primary and secondary providers are needed in both managing heart failure and preventing hospital admissions.110

For patients who are approaching the end of their lives or have complex symptom control issues, specialist palliative care services need to be involved.

7.7 Rheumatic Heart Disease

Primary prevention of rheumatic fever and rheumatic heart disease is achieved through early identification by primary care providers, adequate antibiotic treatment, and improvements to socioeconomic determinants of health such as reducing overcrowding. This strategy encourages parents to take their children to the doctor when they have a sore throat. It is particularly important that people are aware of the importance of early diagnosis and treatment.

7.8 Maori and Pacific Peoples

A facility audit for rehabilitation services completed by the National Heart Foundation in August 2000 highlighted the lack of participation in cardiac rehab programmes by Maori and Pacific peoples and this is seen as an area of priority. The Phase II and Phase III programmes must be accessible and meet the needs of Maori and Pacific peoples, as well as invite input from these populations into the policy and decision making processes for these services.

7.9 Asian Peoples

An Asian Public Health Project Report on Asian health needs in the Auckland region (February 2003) identified that language and cultural barriers are the biggest obstacles to better utilisation of health services. Asian peoples, particularly new migrants, face
language and economic barriers to improved health status. Being unable to communicate effectively can cause miscommunication and can impact on the quality of health care services in terms of costs, incorrect assessments or intervention, and inefficiencies. Key informants in the Auckland study stated that Asian peoples find it difficult to describe their health problems to the health professionals. Also, Asian peoples find it difficult to understand the process, diagnosis and case management plan explained to them because English is not their first language. This problem is compounded by the scarcity of Asian speaking health professionals\textsuperscript{111}.

Despite this, the report also found some strong positive indicators for improving public health for Asian peoples. In particular, Asian communities appear to be generally cohesive, have a strong sense of culture, identity and belonging, and an eagerness to participate and integrate into mainstream service delivery\textsuperscript{112}.

Overseas studies indicate that effective public health for Asian people requires the development of culturally appropriate or sensitive programmes. There is value in seeking ways of extending nutrition, physical activity, healthy lifestyle programmes and other health promotion programmes for key Asian population groups.

\textsuperscript{111} Ministry of Health (February 2003) \textit{Asian Public Health Project Report : Public Health Needs for the Auckland Region pg 68}
\textsuperscript{112} Ibid pg 73-74
8. **BRIDGING THE GAP**

The following sections outline some initiatives that have been piloted to manage illness which can easily be adapted to apply to the management of cardiovascular disease.

8.1 **Primary Health Palliative Care Project Model**

The Primary Health Palliative Care Service is a quality initiative in which Arohanui Hospice, Manawatu Independent Practice Association and general practice teams work together to provide an enhanced palliative care service. The service is targeted at patients diagnosed with a terminal illness and who have less than 12 months to live. The project aims to ensure that patients receive quality, coordinated health care services. This pilot can be easily adapted to apply to the management of cardiovascular disease by building on the skills and expertise of interdisciplinary teams, made up of both generalist and specialist services.

The service involves developing a care plan for the patient covering all the aspects of care, for example; medical, nursing, social, cultural, and spiritual. This care plan is a living document which all parties contribute to and update. It outlines the current plan of care for the patient, including the goals agreed to by the patient and family/whanau.

MIPA facilitates training and Arohanui Hospice provides it for General Practice Teams who intend participating in this Project. Training involves three two-hour sessions. General Practice team members must complete the training before providing care under the terms of the service. A palliative care resource manual is provided as part of the initial training.

The project looks to build on the skills and expertise of both generalist and specialist services to provide the best possible palliative care in the community.

8.2 **“Expert Patient” Concept**

Research and practical experience in North America and Britain are showing that today's patients with chronic diseases can become key decision makers in the treatment process. By ensuring that knowledge of their condition is developed to a point where they are empowered to take some responsibility for its management and work in partnership with their health and social care providers, patients can be given greater control over their lives.

Self management programmes can be specifically designed to reduce the severity of symptoms and improve confidence, resourcefulness and self efficacy.

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This approach recognises that knowing about an illness is not the same as knowing about a person's life and that, by default, patients are the primary decision makers in control of the daily self management of their illness.

The role of health professionals is to help patients make informed decisions to achieve their goals and overcome barriers through education, appropriate care recommendations, expert advice, and support. Care then becomes a collaboration between equals; professionals bring knowledge and expertise about cardiovascular disease and its treatment, and patients bring expertise on their lives and what will work for them.

Self management education is the essential foundation for the empowerment approach. Patients need to learn about cardiovascular disease and they also need information about various treatment options, how to make changes in their behaviours, and how to solve problems. In addition, patients need to understand their role as a decision maker and how to assume responsibility for their care.

Patients identify long term goals towards which they will work. Patients then choose and commit to making a behavioural change that will help them to achieve these goals. The final step is for patients to evaluate their efforts and identify what they learned in the process.

“When acute disease was the primary cause of illness, patients were generally inexperienced and passive recipients of medical care. Now that chronic disease has become the principal medical problem, the patient must become a co-partner in the process.”

Holman and Lorig, British Medical Journal 200 0;320: 526-7
9. THE WAY FORWARD–SUMMARY OF OBJECTIVES AND INITIATIVES

This section sets out the five objectives and 62 initiatives developed to prevent cardiovascular disease and reduce its impact.
Objective 1  Prevent the development of cardiovascular disease through health promotion and disease prevention strategies

Healthy lifestyles are beneficial to cardiovascular disease control. While health promotion recognises that personal lifestyle factors have an important impact on the health of the individual, it places emphasis on changing the environment to enable optimum conditions for health and for behaviour change.

Primary prevention is defined as preventing the development of cardiovascular disease in the general community. It means eliminating or minimising exposure to the cause of the disease as well as maximising protective factors such as healthy lifestyle choices. Effective primary prevention interventions include:

- Changing lifestyle factors and encouraging supportive environments (good eating habits, increasing physical activity and non smoking as the norm)
- Advocacy for healthy public policy and initiatives
- General health education
- Treaty based health promotion practices
- Reducing high blood pressure
- Improving lipid profiles (for those who need it)
- More intensive control of diabetes.

The following initiatives will help with the promotion of health and the primary prevention of cardiovascular disease in MidCentral District.

Initiative 1. Promote healthy living to the general population, with emphasis on Maori, Pacific peoples and other high risk groups. Healthy living includes good nutrition, regular physical activity, stress management, moderate alcohol consumption and smoke free living. This includes supporting interventions in preschool and school based settings.

Initiative 2. Support regional and national healthy living initiatives such as HeHa (Healthy Eating, Healthy Action), Push Play, Five Plus a Day, and the National Heart Foundation's "Jump Rope for Heart".

Initiative 3. Work with community workers such as Public Health staff, Maori health providers, Well Child providers and general practice teams to reinforce cardiovascular education and services.

Initiative 4. Work with territorial local authorities, schools, marae, workplaces, non government organisations and the community to provide a healthy environment and healthy public policy. This includes promotion of healthy food, physical activity and smoke free environments.
**Initiative 5.** Support health providers to actively promote smoking cessation in accordance with the national smoking cessation guidelines.

- Support the implementation of the findings of the Cowan and Langley Report into the identification of smoking status and the appropriate support for those wishing to quit.

**Initiative 6.** Encourage MidCentral Health and other health service providers to establish a policy that only healthy food and drink choices are provided and remove existing unhealthy vending machines currently within their facilities.

**For Maori**

**Initiative 7.** Support and partner with iwi/Maori providers and Maori communities to promote cardiovascular health for Maori.

**Initiative 8.** Develop culturally appropriate health promotion programmes and activities for Maori. For example healthy marae programmes, kohanga (pre), kura (school), and wananga (university) based services and programmes in nutrition, physical activity, smoking cessation and healthy lifestyles. Such promotion should:

- create awareness of cardiovascular disease and prevention practices
- incorporate Maori knowledge (matauranga Maori) and follow appropriate cultural processes (tikanga)
- be based on Maori health frameworks and models (eg, Whare Tapa Wha/Te Pae Mahutonga) and guided by Maori principles (such as tapu/noa, aroha, and family/whanaungatanga)
- be delivered through close coordination with Manawhenua, Maori health providers and key Maori influences.

**For Pacific Peoples**

**Initiative 9.** Support and partner with Pacific providers and Pacific communities to promote cardiovascular health for Pacific peoples including education on nutrition, physical activity, smoking cessation and healthy lifestyles. Such education should:

- incorporate Pacific knowledge and follow appropriate cultural processes
- be based on Pacific health frameworks and models guided by Pacific principles
- be delivered through closer coordination with Pacific health providers and local elders.
For Asian Peoples

**Initiative 10.** Develop culturally appropriate/sensitive programmes in nutrition, physical activity, healthy lifestyle programmes and other health promotion programmes for key Asian population groups.

**Initiative 11.** Support and partner with Asian communities/leaders to promote cardiovascular health for Asian peoples including education on nutrition, physical activity, smoking cessation and healthy lifestyles.
Objective 2  Ensure early detection and early intervention to reduce the impact of cardiovascular disease on wellbeing

Early detection means detecting cardiovascular disease before a person develops symptoms or as soon as practicable after their development. The objective is to reduce the impact of cardiovascular disease on wellbeing.

Lifestyle interventions are an important aspect of keeping a person with cardiovascular disease well throughout their life. Improving nutrition, weight management, physical activity, management of stress and smoking cessation are critical parts of care as they are important for the prevention of recurrent cardiovascular disease and complications.

Screening

Initiative 12. Work with Primary Health Organisations (PHOs) and stakeholders to develop systematic screening for cardiovascular risk at the following recommended ages\(^{15}\).

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maori, Pacific peoples and people from the Indian subcontinent</td>
<td>Age 35 years</td>
<td>Age 45 years</td>
</tr>
<tr>
<td>People with known cardiovascular risk factors or at high risk of developing diabetes</td>
<td>Age 35 years</td>
<td>Age 45 years</td>
</tr>
<tr>
<td>Asymptomatic people, without known risk factors</td>
<td>Age 45 years</td>
<td>Age 55 years</td>
</tr>
</tbody>
</table>

Initiative 13. Provide regular cardiovascular screening to the general population to be provided through general practice and in other community settings such as workplaces.

Initiative 14. Provide opportunistic screening to target population groups such as Maori and Pacific peoples using appropriate providers and in appropriate settings. For example, Maori providers working in marae or community settings.

Initiative 15. Promote regular screening to the elderly by working with relevant agencies such as residential care providers.

Early Intervention

Initiative 16. Offer echocardiograms and other key tests in the primary care setting to enable better general practice management.

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\(^{15}\) New Zealand Guidelines Group (Dec 2003) *The Assessment and Management of Cardiovascular Risk*
Initiative 17. Provide improved community based resources for working with individuals identified by health professionals as at risk of cardiovascular disease:

- Enhancement of the Green Prescription programme at the regional level
- Physical activity and exercise promotion programmes—through PHOs at the local level
- Nutrition and health promotion programmes
- Psychological support for lifestyle change
- Smoking cessation programmes
- An “expert patient” programme to encourage and support better self management
- Increased collaboration with intersectoral partners such as Sport Manawatu and Sport Horowhenua.

Initiative 18. Provide cardiovascular resource material in appropriate languages including Maori and major Pacific and Asian languages.

Initiative 19. Encourage all health professionals, particularly in the primary health care setting, to identify cardiovascular risk factors in their clients and provide appropriate interventions or referral to other services. This includes screening for heart failure of at risk people.

Initiative 20. Provide for each client, where appropriate, a treatment management plan with adequate follow up, support and encouragement until risk is minimised or eliminated.

Initiative 21. Investigate the feasibility of developing a “Heart Health Warrant of Fitness Check” programme targeted to high need groups but available to all. Integrate this service with other service plan initiatives (owing to the risk factors for CVD being similar to other conditions such as diabetes).

For Maori and Pacific Peoples

Initiative 22. Offer marae/community based programmes for Maori with cardiovascular risk factors to improve physical activity, weight management and smoking cessation, for example.
Objective 3 Manage cardiovascular disease through effective treatment, rehabilitation and palliative care

People with cardiovascular disease need access to appropriate assessment, diagnosis and episodic specialist treatment including organised stroke services\(^{116}\) and cardiology services.

Effective management of cardiovascular disease depends on the successful management of comorbid states. Integration and organisation are essential. Linkages between primary and secondary providers (and services) are required across the entire continuum of care. In MidCentral District both cardiovascular and stroke services need further development.

Palliative Care

Patients with complex symptom needs and those with a terminal condition also require supportive care from Palliative Care Services.

Palliative care is the active total care of patients whose disease is not responsive to curative treatment. Palliative care embraces the physical, social, emotional and spiritual elements of wellbeing—tinana, whanau, hinengaro and waima—and embraces a person’s quality of life while they are dying\(^{117}\).

The goal of palliative care is the achievement of the best possible quality of life for patients and their families. Palliative care:

- Affirms life and regards dying as a normal process
- Neither hastens nor postpones death
- Provides relief from pain and other distressing symptoms
- Integrates the psychological and spiritual aspects of patient care
- Offers a support system to help patients live as actively as possible until death
- Offers a support system to help the family cope during the patient’s illness and in their own bereavement.\(^{118}\)

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\(^{116}\) as outlined in Life after Stroke New Zealand Guideline for Management of Stroke

\(^{117}\) Ministry of Health (2001) New Zealand Palliative Care Strategy pg vii

\(^{118}\) World Health Organization (1990)
**Stroke Services**

**Initiative 23.** MidCentral Health will develop an organised stroke service (that complies with guidelines). This includes establishment of a Lead Stroke Clinician position to provide overall coordination, leadership and management through the secondary continuum. The stroke service is to include acute, rehabilitation, and outpatient speciality phases. In particular, the stroke service will have staff with specialist or good knowledge of stroke, provide ongoing education about stroke for staff, patients and caregivers, and have written protocols for assessment and management which are consistently used across the continuum of care.

**Initiative 24.** Ensure timely follow up of all stroke patients (admitted and not admitted) through stroke follow up clinics and/or neurovascular clinics as part of a comprehensive stroke service in order to improve the management of all stroke patients whether admitted to hospital or managed in the community by primary healthcare services. Services will include appropriate and timely investigations. Secondary prevention, support, education and rehabilitation will be initiated as quickly as possible and delivered by a coordinated interdisciplinary team who will achieve good liaison with the appropriate community providers.

**Specialist Cardiology Services**

**Initiative 25.** Enhance cardiology services through further development of a service model that provides comprehensive, quality and efficient services on a sustainable basis.

**Initiative 26.** Develop appropriate specialist cardiovascular services in the primary health care sector and promote the integration of secondary cardiology services and the primary health care sector. For example, general practice teams could upskill to become subspecialised in cardiology. In particular secondary cardiology services will provide:

- Education and professional development of primary health care providers
- Support for primary health care providers, eg, through consultation and liaison services
- Increased services in a community setting through the development of new community services and enhanced capacity of existing services. For example, congestive heart failure and cardiac rehabilitation services; district nursing service/Hospital in the Home
- Coordination and integration of clinical care with other providers.
**Initiative 27.** Rework funding and contracting arrangements for secondary cardiology services to support involvement in primary health care (as detailed in initiative 26).

**Initiative 28.** Provide improved access to nutrition and psychological support services in the hospital environment.

**Initiative 29.** Improve the assessment and management of patients with myocardial infarction so that they receive early treatment with thrombolysis. This includes both acute prehospital and hospital care.

**Initiative 30.** Improve access to interventionist treatment for coronary artery disease.

**Community Care**

**Initiative 31.** Provide access to nutritional and psychological individual, family and group support based in the community. This includes psychological specialists, social workers, dietitians and Focussed Health Nurses (including Disease State Nurses).

**Initiative 32.** Provide community based clinical coordination resources to manage the care of people with complex needs (eg, comorbidities) through a range of agencies including Maori providers.

**Initiative 33.** Develop specialist cardiology nurse led interdisciplinary clinics in community settings, in collaboration with primary health care providers such as general practice teams and outreach services (eg, Maori providers). Services are to include assessment, education, support and risk factor management. The team will include the input of specialist cardiology nurses, primary health care nurses, pharmacists, Maori providers and psychological support. These clinics will also see follow up patients awaiting cardiology clinic appointments that have not been seen within the allocated timeframe.

- Priority should be given to establishing a service for cardiac chest pain patients that provides ongoing nursing case management.

**Congestive Heart Failure Clinic**

**Initiative 34.** Develop a community based heart failure service. This service will be interdisciplinary: including cardiologist/s, specialist nursing, general practitioners, Maori Health providers, primary health care nurses, with access to pharmacists, psychologists, social workers, dietitians and physiotherapists. Participation in the heart failure service is to follow specialist assessment to ensure the right patients receive the right service.
Initiative 35. Offer regular clinics providing assessment and educational strategies in Horowhenua and Tararua, in conjunction with a monthly cardiologist clinic for patient review as required.

Cardiac Rehabilitation

Initiative 36. Make cardiac rehabilitation services more accessible and improve participation by making them both hospital and community based, and open to both primary care and secondary care referrals. Run services as a collaborative activity between various primary health care providers, including Maori providers, and agencies such as the Heart Foundation.

Initiative 37. Establish a supervised Phase II cardiac rehabilitation exercise programme based either in the community or through MidCentral Health to augment the education programme that is currently offered and to provide a streamlined transition between Phase I and Phase II, promoting adherence to long term exercise. The service is to be led by a physiotherapist and cardiac rehabilitation nurse clinician.

- Subject to local refinement following the evaluation of the “Heart manual” pilot.

Initiative 38. Once the cardiac rehabilitation exercise programme is successful, extend the programme to patients with heart failure and into regional areas.

Initiative 39. Support the local branch of the National Heart Foundation to develop well resourced Phase III cardiac clubs in the community to support individuals and their families living with coronary heart disease.

Palliative Care

Initiative 40. Ensure referral to Specialist Palliative Care Services for complex symptom management and involvement of Palliative Care Services to improve quality of life and ease the process of dying for patients with end stage cardiovascular disease.

- Ensure the provision of a management plan around dying and death with attention to Palliative Care Services, for patients with end stage cardiovascular disease.

Initiative 41. Support the use of the “Liverpool Care of the Dying Pathway” for patients with end stage cardiovascular disease.
**For Maori and Pacific Peoples**

**Initiative 42.** Ensure the Phase II and Phase III rehabilitation programmes are accessible, appropriate and meet the needs of Maori and Pacific peoples. Programmes are to be run collaboratively in the community with Maori and Pacific providers wherever possible.

**Initiative 43.** Ensure appropriate referrals are made and family/whanau are informed of all their choices so there is support during hospital appointments. In particular, ensure Maori and Pacific clients are offered the opportunity of involving Maori or Pacific providers in their care.

**Initiative 44.** Undertake a review of the Disease State Management Nursing services to ensure equitable distribution of services across the District.
Objective 4  Improve cardiovascular services through a responsive workforce

The key to the successful delivery of services is a skilled and fully operational workforce. The following initiatives will achieve this for the cardiovascular/stroke field.

Professional Development

Initiative 45. Develop a cardiovascular education programme for primary health care run collaboratively by MidCentral Health (cardiology and organised stroke services) and primary health care providers. The programme is to include interactive sessions on user determined topics.

- Support primary health providers to utilise MidCentral Health services as a training ground for primary health care professional development (eg, Congestive Heart Failure services). Ensure MidCentral Health is adequately resourced to provide this.

Initiative 46. Actively recruit appropriate cardiovascular/stroke personnel locally, nationally and internationally.

- Increase number of skilled sonographers.

Initiative 47. Support nursing professional development through the primary health care nursing professional development framework. This includes supporting the development of specialist nursing and nurse practitioner roles throughout the sector and ensuring that integration roles are supported.

Initiative 48. Investigate strategies for increasing both the primary and secondary workforce to an appropriate level to facilitate the integrated approach promoted by this Service Plan. For example, ensure access to specialist support for primary health care providers particularly iwi/Maori health care providers and Disease State Management nurses (Focused Health nurses).

Initiative 49. Ensure ongoing professional development opportunities are available for local primary health care providers.

For Maori and Pacific Peoples

Initiative 50. Provide opportunities for health professionals and support staff to create a more culturally aware and skilled workforce that is responsive to Maori and Pacific cultures.

Initiative 51. Continue to work with local iwi/Maori providers and Maori/Pacific communities in planning, purchasing, delivering and monitoring culturally appropriate services for Maori and Pacific peoples who have cardiovascular disease and their family/whanau.
Initiative 52. Develop a Pacific health workforce to help identify and address issues specific to Pacific peoples.
Objective 5  Improve the quality of cardiovascular disease services in MidCentral District through planning, innovation and quality assurance

Initiative 53.  Support and encourage Primary Health Organisations (PHOs) to include a cardiovascular strategy in their plans. Including prevention, promotion, screening, treatment and rehabilitation measures.

Initiative 54.  All primary and secondary resources need to be coordinated across the continuum of care. To ensure clarity, direction and a better working environment, there will be:

- Shared policies, procedures and guidelines based on evidenced best practice
- Improved communication and collaboration across the health care continuum through freely accessible data
- Strengthened clinical alliances to improve early referral to appropriate services
- Timely follow up in addition to early referral to appropriate services.

Initiative 55.  Establish a Collaborative Cardiovascular Health and Wellbeing Group focussed on cardiovascular health to provide oversight, coordination and monitoring for cardiovascular services across the District. The group will:

- Ensure associated nationally consistent performance indicators are developed and monitored
- Commission an annual survey of people with cardiovascular disease to provide feedback on service delivery as an input into service planning
- Recommend appropriate research projects
- Foster innovation to meet targets for health improvement
- Include cross sector representation (including consumers and Maori)
- Advise MidCentral and MidCentral’s PHOs on cardiovascular disease and the management of cardiovascular disease across the District
- Develop best practice guidelines, protocols and pathways based upon the nationally consistent evidence based cardiovascular group of guidelines and promulgate throughout the District
- Establish a quality framework for other components of care, for example, education to ensure consistent provision of correct information by all providers.
**Initiative 56.** Develop a health promotion strategy for the District to coordinate and focus actions across health areas and to ensure the best use of the resources available.

**Initiative 57.** Ensure MidCentral District’s population based needs analysis has a focus on Asian peoples to assist in planning and reviewing priorities for services.

**Initiative 58.** Introduce innovative ways of handling information. For example, web based applications for sharing programmes, clinical protocols, guidelines, coordination and monitoring.

**Initiative 59.** Review policies on financial assistance for travel to improve access to services for those who live in hard to reach, isolated communities or those for whom travel is a barrier for other reasons.

**Initiative 60.** Improve the outpatient booking system so it is more patient friendly and takes into account geographical location, demographics and transport considerations of patients.

**Initiative 61.** Ensure indicators for cardiovascular health status and service performance are developed and monitored. This includes developing new measures focused on primary prevention not covered by existing ones.

**For Maori and Pacific Peoples**

**Initiative 62.** Involve local iwi, Maori, Pacific elders, and other agencies in the Collaborative Cardiovascular Health and Wellbeing Group to ensure improved coordination, continuity and access to appropriate services to provide appropriate, affordable, available and acceptable services and initiatives for Maori and Pacific peoples.
10. INVESTMENT APPROACH

To support the plan over the next three years, the Funding Division has developed a high level framework that is based upon the continuum of care model. The Division is currently working on the detailed costings. The framework is presented in Table 14.

Table 14: Cardiovascular Investment Approach

<table>
<thead>
<tr>
<th>Continuum of Care</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease prevention and health promotion</td>
<td>$75 000</td>
<td>$300 000</td>
<td>$300 000</td>
</tr>
<tr>
<td>Early detection and early intervention</td>
<td>$105 000</td>
<td>$420 000</td>
<td>$420 000</td>
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<tr>
<td>Effective treatment, rehabilitation and palliative care</td>
<td>$245 000</td>
<td>$980 000</td>
<td>$980 000</td>
</tr>
<tr>
<td>A responsive workforce</td>
<td>$50 000</td>
<td>$200 000</td>
<td>$200 000</td>
</tr>
<tr>
<td>Planning, innovation, and quality monitoring</td>
<td>$25 000</td>
<td>$100 000</td>
<td>$100 000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$500 000</td>
<td>$2 000 000</td>
<td>$2 000 000</td>
</tr>
</tbody>
</table>
11. **GLOSSARY OF TERMS AND ABBREVIATIONS**

**Acute Myocardial Infarction** Also called a heart attack; results from permanent damage to an area of the heart muscle. This damage is incurred when the blood supply to the area of the heart is interrupted because of narrowed or blocked blood vessels. In the majority of cases this narrowing or blocking is due to coronary artery disease.

**Angina** Discomfort in the chest caused by an inadequate supply of blood to the heart muscles.

**Arteriosclerosis** Arteriosclerosis is a general term for the hardening and thickening of the arterial wall, with a loss of elasticity.

**Atherosclerosis** A type of arteriosclerosis, atherosclerosis is a complex process of thickening and narrowing of the arterial walls caused by the accumulation of lipids, primarily cholesterol, in the inner layer of an artery. With the addition of other debris and connective tissue, blood flow is restricted and can lead to a heart attack or a stroke.

**Blood Pressure** A measure of the force of the blood being pushed by the heart through the arteries. This pressure is created when the heart beats, forcing blood around the body, and also by the elastic resistance of the arteries themselves. The pressure is measured on a blood pressure gauge in millimetres of mercury (mm Hg).

**Body Mass Index (BMI)** A formula to assess body weight in relation to height. Weight in kilograms is divided by height in metres squared (kg/m²). In western society, a person is considered overweight when his/her BMI is above 25, obese when it is above 30 and severely obese when it is above 35.

**Cardiovascular Disease (CVD)** Any abnormal condition of the heart or blood vessels. Cardiovascular disease includes coronary heart disease, stroke, congestive heart failure, peripheral vascular disease, congenital heart disease, endocarditis, and many other conditions.

**Cholesterol** A waxy, fat like substance used by the body to build cell walls. It is either produced in the liver or absorbed from the animal fats we eat. Cholesterol is carried in the bloodstream by particles called lipoproteins. Although there are several kinds, the ones to be most concerned about are low density lipoprotein (LDL) and high density lipoprotein (HDL). A high level of cholesterol in the blood—hypercholesterolemia—is a major risk factor for coronary heart disease, which leads to a heart attack.

**Chronic** Continuing over a certain period of time; long term.

**Congestive Heart Failure (CHF)** The inability of the heart to deliver an adequate blood flow, due to heart disease or hypertension. CHF is associated with breathlessness, salt and water retention, and edema.

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All definitions unless otherwise indicated are sourced from: Ministry of Health (2003) Cardiovascular Toolkit pg 43-46
Comorbidity  The presence of multiple disorders in one individual. These simultaneous conditions may be independent of each other, or they may be correlated. Comorbidities often influence the risk of complications for surgery as well as overall prognosis.

Coronary Artery  Blood vessels that deliver oxygenated blood to the muscle of the heart.

Coronary Heart Disease (CHD)  This is the most common form of heart disease, which involves a reduction in the blood supply to the heart muscle by the narrowing or blockage of the coronary arteries.

DHB  District Health Board.

Diagnosis  The process of identifying the nature of a disorder.

Dietitian  A health care professional who specialises in food and nutrition.

Early Intervention  A process used to recognise warning signs for health problems and to take early action against factors that put individuals at risk. Early intervention can help people get better in less time and can prevent problems from becoming worse.

Electrocardiogram (ECG)  A test using electrodes placed on the chest, arms and legs to record the rhythm and electrical activity of the heart.

Focussed Health Nurses  Focussed Health Nurses demonstrate specialist knowledge and skills in the provision of clinical assessment, therapeutic interventions, evidence based treatment regimens and referral to other health professionals to assist individuals who have a specific chronic disease process which has life altering implications to achieve optimal health.

Focussed Health Nurses provide health services across the lifespan, working with individuals and their families in a variety of community and institutional settings. They utilise specialist nursing knowledge, assessment skills, and judgement in the planning and provision of competent care, management, advice, advocacy and treatment.

Focussed Health Nurses’ practice has a holistic educative focus and may be preventative, curative, rehabilitative, or palliative, depending on the needs of the client and family and the setting in which care is given. Care is provided in the context of facilitating self care practices to foster self determination and autonomy for the individual and their family/whanau.

Health Promotion  A combination of educational, organisational, economic and political actions designed with consumer participation, to enable individuals groups and whole communities to increase control over and to improve their health through attitudinal, behavioural social and environmental changes. While health promotion recognises that personal lifestyle factors have an important impact on the health of the individual, it places emphasis on changing the environment to enable optimum conditions for health and for behaviour change.

Written by Helen Snell (Nurse Practitioner, MidCentral Health) as part of her Nurse Practitioner portfolio.
Heart Attack (Myocardial Infarction) Death of, or death to part of, the heart muscle (myocardium) due to an insufficient blood supply, caused by blockage of one or more of the coronary arteries (infarction).

Heart Disease Heart disease refers to any disease or condition of the heart, including coronary heart disease, heart failure, hypertensive heart disease, congenital heart disease, disorders of the heart valves, infections of the heart, cardiomyopathy, conduction disorders, and rhythm disorders.

Heart Failure Occurs when the heart muscles become overworked from the strain of pushing blood through narrow, hard blood vessels.

High Density Lipoprotein (HDL) Cholesterol is carried in the bloodstream by lipoproteins. HDL recovers cholesterol from cells, vessel walls and other lipoproteins and thus tends to prevent or reverse the build up of plaque in the arteries. For this reason, HDL cholesterol is considered 'good' or 'protective'.

Hypertension Persistently elevated blood pressure; also called high blood pressure.

Ischaemic Heart Disease Includes heart attack and related heart problems caused by narrowed coronary arteries and thus less blood and oxygen reaching the heart. Also called coronary artery disease and coronary heart disease.

Intersectoral Between sectors.

Lipoprotein A particle composed of protein and lipids that transports the lipids in the bloodstream and lymph system. Lipoproteins are of varying size and density and contain different amounts of lipids and proteins.

Low Density Lipids (LDL) Carry most of the cholesterol from the liver to the cells. If there is an excess of cholesterol or it cannot be properly delivered to the cells, LDL cholesterol tends to accumulate in the vessel walls. Together with other substances it can form plaque—a thick, hard deposit that can clog those arteries. This condition is known as atherosclerosis. For this reason LDL cholesterol is often called 'bad' cholesterol. Lower levels of LDL cholesterol reflect a lower risk of heart disease.

Liverpool Care Pathway for the Dying Patient (2004) (LCP) An internationally recognised, interdisciplinary document which provides an evidence based framework for the care of the 'imminently terminal' patient, their family and whanau. It has been developed to transfer the hospice model of care into other care settings. The Care Pathway philosophy reflects the endeavours of clinicians to bring together research, evidence, professional judgement and common sense to provide the very best care for their patients.

The LCP provides guidance on the different aspects of care required, including comfort measures, anticipatory prescribing of medicines and discontinuation of inappropriate interventions. Additionally, psychological and spiritual care and family support is included.

http://www.lcp-mariecurie.org.uk/
Maori  Indigenous people of New Zealand.

Morbidity  Illness.

Mortality  Death.

Obesity  When people have 20% (or more) extra body fat for their age, height, sex and bone structure, fat works against the action of insulin. BMI > 30 (see BMI).

Objective  The end result a programme seeks to achieve.

Obstructive Sleep Apnoea (OSA)  The most common form of apnoea, it is caused by repetitive upper airway obstruction during sleep as a result of narrowing of the respiratory passages\(^\text{122}\).

Alternative names: Sleep Apnoea, Sleep Apnoea Syndrome.

Ottawa Charter  The Ottawa Charter was presented at the first International Conference on Health Promotion (Ottawa 21 November 1986) to achieve Health for All by the year 2000 and beyond. It outlined the ultimate ideal and vision of how the goal of health should be obtained through actions at various levels: global, national, community and individual.

Pacific Peoples  The population of Pacific Island ethnic origin (eg, Tongan, Niuean, Fijian, Samoan, Cook Islands Maori and Tokelauan), incorporating people born in New Zealand as well as overseas.

Palliative Care  The active total care of patients whose disease is not responsive to curative treatment. Palliative care seeks to improve patients' quality of life by relieving physical, emotional, and spiritual pain for patients and their caregivers.

Prevalence  The number of instances of a given disease or other condition in a population at a designated time. Prevalence includes both new (incidence) and existing instances of a disease.

Peripheral Vascular Disease  Diseases of blood vessels outside the heart and brain. It is often a narrowing of the vessels that carry blood to leg and arm muscles.

Prevention  Eliminating or minimising exposure to the cause of disease, and maximising protective factors such as healthy lifestyle choices.

Primary Health Care Nursing Professional Development Framework  A framework that strengthens the Primary Health Care Nursing Network to enable nurses to improve community health and wellness. The objectives are to enable clinical nursing leadership in the Primary Health Care Nursing Network; influence MidCentral's strategic direction and primary health care nursing workforce development; build capacity of primary health care nursing; foster an evidence based approach to practice; and utilise information technology to strengthen nursing networks\(^\text{123}\).

\(^\text{122}\) Victor, Lyle D (Nov 15, 1999) Obstructive Sleep Apnoea American Family Physician Journal Vol 60 (8)
**Protective Factors**  Factors that make it less likely individuals will develop a problem or disorder. Protective factors may encompass biological, psychological or social factors in the individual, family and environment.

**Pulmonary Rehabilitation**  A programme that can help a person learn how to breathe easier and improve his/her quality of life. It includes treatment, exercise training, education and counselling.

**Rheumatic Heart Disease**  Damage or scarring of the heart valves due to rheumatic fever.

**Rheumatic Heart Fever**  An acute systemic inflammatory disease that usually occurs after a streptococcal infection of the throat. The bacteria trigger an immune response in which antibodies that are produced to destroy the bacteria attack and inflame the connective tissues in joints, heart valves and other organs. The damage to the valves produced by Rheumatic Fever is permanent.

**Risk Factor**  An aspect of personal behaviour or lifestyle, an environmental exposure, or an inborn or intended characteristic that is associated with an increased risk of a person developing a disease.

**Standardised Discharge Rate**  Is the ratio of observed to expected discharge rates, multiplied by the overall national rate for all cases.

**Stroke (Brain Attack)**  Loss of muscle function, vision, sensation, or speech resulting from brain cell damage caused by either an insufficient supply of blood to part of the brain, often due to blockage or narrowing of the arteries supplying blood to the brain, or a haemorrhage. The haemorrhage may involve bleeding into the brain itself or the space around the brain.

**Symptom**  Any indication of disease noticed or felt by a patient; in contrast, a sign of an illness is an objective observation.

**Target**  An intermediate result towards the objective that a programme seeks to achieve.

**Treaty of Waitangi**  The founding document of New Zealand.

**Thrombolysis**  The breaking up of a blood clot. Thrombolysis involves injecting a clot dissolving agent, such as streptokinase, reteplase or tissue plasminogen activator (TPA), to dissolve a clot in a coronary artery and restore some blood flow.

**Unstable Angina**  If an attack of angina differs from a person’s regular pattern (stable angina), appearing suddenly, with greater intensity or when at rest, it is considered unstable. The most common cause is reduced blood flow to the heart muscle due to narrowing of the coronary arteries by atherosclerosis. An artery may be abnormally constricted or partially blocked by a blood clot. Inflammation, infection and secondary causes can also lead to unstable angina. It may warn of an impending heart attack.

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12. REFERENCES


Depression and Bipolar Support Alliance (DBSA) Depression and Heart Disease http://www.dbasalliance.org/HeartDisease.html

Dr Harry McNaughton, Hon Medical Director of the Stroke Foundation


Hayman, Kamala (September 15, 2004) Obesity Causing Upswing in Heart Disease The Press Newspaper


MidCentral District Health Board (2001) An Assessment of Health Needs in the MidCentral District Health Board Region

Ministry of Health (March 2003) Asian Public Health Project Report Wellington, New Zealand

MidCentral District Health Board (2004) Cancer Services Plan Discussion Document pg 10


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MidCentral District Health Board (2004) Primary Health Care Strategy

MidCentral District Health Board (2003) Referred Services Strategy for MidCentral District Discussion Document pg 12

MidCentral Health Public Health services (Feb 2004) Smoking Related Harm and the Need for Smoking Cessation Services Across the MidCentral DHB Region


Ministry of Health (2003) Heart Disease Toolkit Ministry of Health: Wellington, NZ

Stroke Foundation of New Zealand Preventing Stroke Pg 3

TADS Training Programme presentation July 2004

Technical Advisory Service (TAS) District Health Board, Territorial Authority & Ward Deprivation Profiles (2001)


Thurston & Ranford (February 2005) Care of the Dying a Pathway to Excellence Connect-The Newsletter of Counties Manukau District Health Board page 5


Victor, Lyle D (Nov 15, 1999) Obstructive Sleep Apnea American Family Physician Journal Vol 60 (8)


Internet resources

Stroke Foundation of New Zealand website www.stroke.org.nz

NZ Heart Foundation statistics (internet) www.nfh.org.nz

Pharmaceutical Society of New Zealand What is Pharmacy http://www.psnz.org.nz/

The Marie Curie Liverpool Care Pathway http://www.lcp-mariecurie.org.uk/

Peripheral Vascular Disease http://www.patient.co.uk/showdoc/23068800/

13. APPENDIX A - STAKEHOLDERS

The stakeholders who assisted with the development of this Plan are set out in Table 15 below.

**Table 15: Cardiovascular Stakeholders**

<table>
<thead>
<tr>
<th>Person</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrienne Kennedy</td>
<td>Nurse Clinician, MCH</td>
</tr>
<tr>
<td>Allan Watson</td>
<td>Clinical Director, Internal Medicine, MCH</td>
</tr>
<tr>
<td>Amanda Hogan</td>
<td>Service Manager, Cardiology, MCH</td>
</tr>
<tr>
<td>Andrew McNabb</td>
<td>Neurologist, MCH</td>
</tr>
<tr>
<td>Andrew Orange</td>
<td>Clinical Services Manager, MIPA</td>
</tr>
<tr>
<td>Anthea Gregan</td>
<td>Clinical pharmacist, Cardiology, MCH</td>
</tr>
<tr>
<td>Brigitte Hunt</td>
<td>Nurse Clinician, MCH</td>
</tr>
<tr>
<td>Brian Adams</td>
<td>National Heart Foundation Represenative</td>
</tr>
<tr>
<td>Brian O'Grady</td>
<td>Stroke Foundation of NZ</td>
</tr>
<tr>
<td>Bronwyn Ferry</td>
<td>Manawatu Branch Representative, National Heart Foundation</td>
</tr>
<tr>
<td>Chiquita Hansen</td>
<td>Director of Nursing, Primary Health Care, MCH</td>
</tr>
<tr>
<td>Claire Oliver</td>
<td>Community Pharmacists</td>
</tr>
<tr>
<td>Chloe OSullivan</td>
<td>Clinical Nurse Specialist, MCH</td>
</tr>
<tr>
<td>Craig Johnston</td>
<td>Senior Portfolio Manager, Funding Division</td>
</tr>
<tr>
<td>Denise White</td>
<td>Clinical Nurse Specialist, Community, MCH</td>
</tr>
<tr>
<td>Gill George</td>
<td>Disease State Management Nurse, Te Waikahuia</td>
</tr>
<tr>
<td>Heather Mordaunt</td>
<td>Health Promoter Nutrition/Physical Activity, Public Health Unit, MCH</td>
</tr>
<tr>
<td>Jane Aylesing</td>
<td>Practice Development Coordinator, MIPA</td>
</tr>
<tr>
<td>Joy Christian</td>
<td>Acting Senior Portfolio Manager, Primary Health Care, Funding Division</td>
</tr>
<tr>
<td>Jurriean De Groot</td>
<td>Clinical Director Rehab and Therapy Services, MCH</td>
</tr>
<tr>
<td>Kate Bolton</td>
<td>Clinical Nurse Specialist, EketHealth, MCH</td>
</tr>
<tr>
<td>Leigh Hikawai</td>
<td>Director of Nursing Maori, Primary Health Care, MCH</td>
</tr>
<tr>
<td>Michelle Jennings</td>
<td>Disease State Management Nurse, Te Runanga O Raukawa</td>
</tr>
<tr>
<td>Oriona Aarevai</td>
<td>Maori Health Advisor, Maori Health Unit, MCH</td>
</tr>
<tr>
<td>Paul Tanser</td>
<td>Clinical Director, Cardiology, MCH</td>
</tr>
<tr>
<td>Raafet Shameen</td>
<td>Cardiology specialist (in private practice)</td>
</tr>
<tr>
<td>Shirley-Anne Gardiner</td>
<td>Health Planner, Funding Division</td>
</tr>
<tr>
<td>Tui Hancock</td>
<td>Disease State Management Nurse, Te Runanga O Raukawa</td>
</tr>
<tr>
<td>Virginia Jones</td>
<td>Te Hots Manawa Maori (NZ Heart Foundation for Maori), National representative and Whakapap Hauna, Clinical Team Manager</td>
</tr>
<tr>
<td>Warren Nichols</td>
<td>GPIGP Liaison Officer, MCH</td>
</tr>
</tbody>
</table>

MCH - MidCentral Health  MIPA - Manawatu Independent Practice Association
14. APPENDIX B - DEMOGRAPHIC PROFILE
MIDCENTRAL DISTRICT

Smoking Prevalence

National smoking prevalence was estimated at 24.5% in 2002. According to the Ministry of Health's tobacco toolkit, MidCentral District's smoking prevalence is slightly above the national average for both females and males (Table 16).

Table 16: Smoking Prevalence (Indirectly Standardised) by DHB Region 1998-2000

<table>
<thead>
<tr>
<th>DHB Region</th>
<th>% Male</th>
<th>% Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northland</td>
<td>29</td>
<td>34</td>
</tr>
<tr>
<td>Waitemata</td>
<td>24</td>
<td>22</td>
</tr>
<tr>
<td>Auckland</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td>Counties Manukau</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>Waikato</td>
<td>29</td>
<td>25</td>
</tr>
<tr>
<td>Bay of Plenty</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Lakes</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>Tairawhiti</td>
<td>38</td>
<td>39</td>
</tr>
<tr>
<td>Taranaki</td>
<td>32</td>
<td>27</td>
</tr>
<tr>
<td>Whanganui</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>MidCentral</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Hawke's Bay</td>
<td>33</td>
<td>28</td>
</tr>
<tr>
<td>Wairarapa</td>
<td>35</td>
<td>32</td>
</tr>
<tr>
<td>Hutt</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>Capital &amp; Coast</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Nelson Marlborough</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>West Coast</td>
<td>32</td>
<td>38</td>
</tr>
<tr>
<td>Canterbury</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>South Canterbury</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Otago</td>
<td>28</td>
<td>25</td>
</tr>
<tr>
<td>Southland</td>
<td>28</td>
<td>26</td>
</tr>
<tr>
<td><strong>National Average</strong></td>
<td><strong>25.9</strong></td>
<td><strong>24.9</strong></td>
</tr>
</tbody>
</table>

Prevalence was calculated by multiplying crude NZ gender specific rates (male 26% and female 25%) by the indirectly age standardised DHB region rate ratio.

The matching of TLAs to DHB regions is approximate only.

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*Ministry of Health (2003) Tobacco Toolkit pg 7*
According to a MidCentral 2003 survey, Maori smoking levels are higher than those of non-Maori (32.9% compared to 19.7%). While a significant proportion of MidCentral District's population do still smoke, it is encouraging to note that 30.3% of Maori and 28.9% of non-Maori are ex-smokers. Overall, people who have quit smoking actually outnumber those who continue to smoke.

**Nutrition**

As Figure 29 illustrates, overall, the proportion of people in MidCentral District consuming two or more servings of fruit per day is higher than the national average, however fewer people consume three or more servings of vegetables.

Figure 30 shows that Maori have a similar consumption of fruit per day to non-Maori, but they consume fewer servings of vegetables than non-Maori.

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**Figure 28: MidCentral District Smoking Status by Ethnicity (2003)**

**Figure 29: MidCentral District Fruit and Vegetable Consumption per Day, by Gender (2003)**

**Figure 30: MidCentral District Fruit and Vegetable Consumption by Ethnicity (2003)**

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127 Ibid pg 16
128 Ibid pg 17
Alcohol Consumption

**Figure 31: Alcohol Consumption in MidCentral District—KAP Survey (2003)**

A Health Knowledge, Attitudes and Practices (KAP) Survey of the residents of MidCentral District conducted in 2003 found that while approximately one quarter of respondents never drink alcohol (27.3%), about one out of five respondents drink alcohol three or more times weekly (21.1%). This is shown in Figure 31.

**Figure 32: Alcohol Intoxication in MidCentral District—KAP Survey 2003**

Figure 32 shows the alcohol intoxication rates from the MidCentral DHB KAP survey. As the results show, males have a significantly higher rate of excessive alcohol consumption than females in the MidCentral District. 20.6% of males get intoxicated 1-2 times fortnightly versus 9.1% of females. A higher proportion of females report never becoming intoxicated.

**Figure 33: Alcohol Intoxication in MidCentral District by Ethnicity—KAP Survey 2003**

Alcohol intoxication by ethnicity shows Maori have a higher proportion of people getting intoxicated than non Maori (Figure 33).

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Ibid pg 20  
Ibid pg 21  
Ibid pg 22
15. APPENDIX C - CARDIOVASCULAR GUIDELINES

There are several national cardiovascular disease guidelines which are associated with the management of cardiovascular risk. These include cardiovascular risk, cardiac rehabilitation and the management of stroke. They cover all aspects of the recommended management and self care of people at risk of heart disease and stroke and those who already have heart disease or stroke.

Cardiac Rehabilitation

The cardiac rehabilitation guidelines (2002) state that “cardiac rehabilitation is the coordinated sum of intervention required to ensure the best physical, psychological and social conditions so the patients with chronic or post acute cardiovascular disease may, by their own efforts, preserve or resume optimal functioning in society and, through improved health behaviours, slow or reverse progression of disease”.

Cardiac rehabilitation is divided into three phases—phase one, phase two, and phase three. This is outlined below:

<table>
<thead>
<tr>
<th>Evidenced Best Practice and Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stopping cardiovascular disease before it happens (Prevention)</td>
</tr>
<tr>
<td>Secondary Prevention (Screening and Early Detection)</td>
</tr>
<tr>
<td>Tertiary Prevention (Treatment and Rehabilitation)</td>
</tr>
</tbody>
</table>

Cardiac Rehabilitation

Phase I

This occurs while a person is still in hospital as an inpatient. This phase involves individual inpatient, family/whanau contact, for support and beginning education. There are inpatient education groups for patients and their family/whanau. These education programmes include re-management and recognition of cardiac symptoms and the beginning of risk factor identification and management.

There is a commitment to provide education and upskilling of nursing staff to provide competency based cardiac nursing.

Phase II

The Outpatient Programme operates from hospital discharge to 12 weeks. This phase involves weekly outpatient cardiac education, managed and supervised by the hospital,
open for referral from primary health care. The components of the cardiac rehabilitation groups may include empowering patients to make lifestyle changes, nutrition and weight management, smoking cessation, managing psychosocial aspects of life and pharmacotherapy. There is ongoing personal follow up and support, which includes exercise guidelines, but not supervised exercise training.

**Phase III**

Cardiac rehabilitation increases post rehabilitation exercise levels but long term change is unlikely unless rehabilitation is extended long term. Therefore it is suggested that patients engage in Phase III (maintenance phase of cardiac rehabilitation) programmes to improve exercise participation.

Phase three is an ongoing maintenance programme designed to maintain health gains. It includes exercise, education and emotional support; patients learn how to enhance their health and wellbeing.

**The Assessment and Management of Cardiovascular Risk**

This guideline covers the assessment and management of people with known cardiovascular disease or who are at risk of developing cardiovascular diseases, including people with type 1 and type 2 diabetes.

Absolute Cardiovascular Risk Treatment decisions are based on the likelihood an individual will have a cardiovascular event over a given period of time. This replaces decision making based on individual risk factor levels. By knowing the risk level an individual and their practitioner can make decisions for prevention and treatment of cardiovascular disease, including lifestyle advice, diabetes care, the prescription of lipid modifying and blood pressure lowering medication and/or medication after myocardial infarction or ischaemic stroke.

The cardiovascular disease included in the guideline are angina, myocardial infarction, coronary death, ischaemic stroke, transient ischaemic attack and peripheral vascular disease.

**Life After Stroke: New Zealand Guidelines for Best Practice in Rehabilitation After Stroke**

*Life After Stroke: New Zealand Guidelines for Best Practice in Rehabilitation After Stroke* states that organised stroke services, which require the recognition of existing stroke services into units with designated beds, interdisciplinary teams and early rehabilitation programmes, have been shown to reduce mortality and morbidity following a stroke. It is therefore a priority that stroke services are delivered in an effective and organised manner. “Without an organised stroke service, adherence to recommendations about specific interventions is likely to have little impact on

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*NZCG (Dec 2003) The Assessment and Management of Cardiovascular Risk pg vii*
outcomes for people with stroke\textsuperscript{7,8,9}.

These are guidelines to assist a provider in moving toward delivery of an “organised stroke service”. They are not service specifications and therefore do not form part of contract compliance requirements but should be used as guidance in service specification development for provision of this service. Organised stroke services are services which are planned and coordinated from the time of admission (or the time of the stroke) until discharge from community rehabilitation support. They:

- specialise in stroke and rehabilitation
- have an interdisciplinary team coordinated under a ‘lead clinician’. The interdisciplinary team (doctor, nurse, physiotherapist, occupational therapist, speech language therapist) undertake assessment and collaboration with ward based nursing and therapy staff in goal setting, planning of treatment, discharge, arrangement, discharge arrangement, and liaison with patients and relatives. This team meets weekly
- provide prompt assessment, treatment, secondary prevention, rehabilitation and education.

**Organised Stroke Services**

These guidelines are applicable to all stroke services, including services for people with Transient Ischaemic Attack, that are provided in MidCentral District. They cover the entire continuum of care and as such should be read in conjunction with the service specification for Specialist General Medicine and related specifications such as AT&R service, Home Support, Environmental Support Services, Carer Support, Needs Assessment and Service Coordination specifications and the New Zealand Stroke guidelines.

The organisation of stroke services, as set out below, would likely result in compliance with many of the specific recommendations for “best practice” in stroke care and improve the overall outcomes.

The management by stroke services of the individual involves a complex sequence of relationships and events. The level of intervention will depend on the condition of the individual, his/her consent for treatment, the qualifications, training and experience of the clinical staff and the level of clinical support available. Services provided should include:

- designated beds within a general ward or specialist Assessment, Treatment and Rehabilitation (AT&R) or Stroke Unit with sufficient capacity to manage most patients admitted to hospital with stroke
- a lead clinician of the service
- a coordinated interdisciplinary team

\textsuperscript{7} Ministry of Health (2003) \textit{Implementing the New Zealand Health Strategy 2003} pg.42
• staff with specialist expertise in stroke and rehabilitation
• education programmes for staff, patients and carers
• agreed protocols for common problems
• an outpatient neurovascular service or clinic for the rapid assessment of transient ischaemic attack (TIA) and minor stroke
• timely access to brain and vascular imaging services
• timely assessment, investigation and ongoing treatment/management in the community for patients not admitted to hospital
• community based rehabilitation and support services
• integration of all the above service components including primary and secondary services for stroke.

All patients with a definite or presumptive diagnosis of a new stroke or TIA should be admitted to hospital unless:

• their symptoms have fully recovered or are recovering rapidly such that within a few days there is likely to be no or minimal interference in activities of daily activities and
• they live with a carer who is competent to provide care and nominated by the person with stroke, or they are able to recover home alone and
• diagnostic and secondary prevention issues can be addressed promptly by, or in discussion with specialist stroke services (promptly implies 100% assessed within 7-14 days) and
• there is a formal arrangement with a primary care health practitioner and
• any required initial input from specialist rehabilitation and support services (such as DHB home help and personal care) can be instituted immediately (immediately implies same day for support and next day for rehabilitation services) unless there is minimal residual deficit only

OR

• in the opinion of the treating doctor AND the person with stroke/family of the person with stroke, no benefit to the person is likely through admission to hospital. This might apply in situations, for example, where the person was already substantially disabled or suffering from a terminal illness

OR

• despite a full understanding of the benefits of admission to hospital, the person with stroke and his/her family may decide to have care at home. In this situation the person with stroke should be offered and have access to specialist review and investigations, as well as community rehabilitation and support services (such as home help and personal care) which should be instituted immediately (immediately implies same day for initial support, next day for rehabilitation services).
Other cardiovascular disease guidelines include the Guideline for the Management of Heart Failure, and Guidelines for Prehospital Administration of Fibrinolytic Therapy by New Zealand General Practitioners.

Inpatient organisation for different sized district health boards are also reflected in the new Stroke guidelines that are under consultation; Table 17 below is a suggested configuration.

**Table 17: New Stroke Guidelines**

<table>
<thead>
<tr>
<th>Organised Stroke Services Key Components</th>
<th>Large DHB (pop &gt;180,000)</th>
<th>Medium DHB</th>
<th>Small DHB (pop &lt; 80,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location and type of stroke inpatient care/facility—acute care beds</td>
<td>Either in a combined acute and rehabilitation stroke unit or an acute stroke unit.</td>
<td>Either an acute stroke unit or aggregation of stroke patients in a general ward.</td>
<td>Aggregation of stroke patients in a general ward.</td>
</tr>
<tr>
<td>Location and type of stroke inpatient care/facility—rehabilitation beds</td>
<td>Either in a combined acute and rehabilitation stroke unit or a rehabilitation stroke unit.</td>
<td>Either a rehabilitation stroke unit or aggregation of patients in an AT&amp;R ward.</td>
<td>Aggregation of patients in an AT&amp;R ward.</td>
</tr>
<tr>
<td>Inpatient multidisciplinary team (MDT) expertise and specialisation in stroke and rehabilitation</td>
<td>An MDT with expertise in stroke and rehabilitation, dedicated to stroke.</td>
<td>An MDT with expertise in stroke and rehabilitation but not dedicated solely to stroke.</td>
<td>An MDT with expertise in rehabilitation.</td>
</tr>
<tr>
<td>Organised Stroke Services Key Components</td>
<td>Large DHB (pop &gt;180,000)</td>
<td>Medium DHB</td>
<td>Small DHB (pop &lt; 80,000)</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------------------------</td>
<td>------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Community Rehabilitation Service</td>
<td>Close links should exist between inpatient and community rehabilitation services.</td>
<td>A dedicated community MDT with expertise in stroke and rehabilitation. Some team members may be “stroke dedicated” (eg, nurses) while others may have an additional non stroke caseload (eg, physician, speech language therapist).</td>
<td>A community MDT with expertise in rehabilitation and the management of stroke. It is expected that all team members would have an interest and expertise in stroke, but it is likely they will also have an additional non stroke caseload.</td>
</tr>
<tr>
<td>Neurovascular or Outpatient Services</td>
<td>Diagnosis and secondary prevention issues in those patients with minor stroke or transient ischaemic attack in the community or not admitted to hospital. Patients should have access to specialist advice, outpatient assessment and investigations within 7-14 days.</td>
<td>This assessment should be via a specialised neurovascular clinic or service.</td>
<td>This assessment should ideally be via a specialised neurovascular clinic or service but may occur via other specialist clinics and services.</td>
</tr>
</tbody>
</table>
Cardiovascular Disease

Rationale
Cardiovascular disease (CVD) is the leading cause of death and morbidity in New Zealand. Early detection of those at risk and early intervention through primary care are two of the key approaches to controlling CVD.

Links to sector monitoring framework

<table>
<thead>
<tr>
<th>Indicator</th>
<th>SOI framework reference</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>POP-02 Cardiovascular disease</td>
<td>A fair and functional health system Improving quality and equity and access</td>
<td>CVD is the leading cause of death and morbidity in New Zealand. Early detection of those at risk and early intervention through primary care are two of the key approaches to controlling CVD. The indicator covers the four key aspects of stroke prevention, primary care, secondary care and individual responsibility as a continuum of care.</td>
</tr>
</tbody>
</table>

DHB indicator framework reference
Population priorities.
Outcome.
May also contribute to monitoring of Maori health, Pacific health, inequalities, primary health and older people services.

Changes in practice that can be expected by setting expectations and monitoring DHB performance against this indicator
Emphasis on prevention, early detection and management of CVD including patient self management.

Deliverable
The indicator covers four key aspects of cardiovascular services.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Reduce CVD contributory risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>CVD risk reduction</td>
</tr>
<tr>
<td>How to measure</td>
<td>Smoking- Are smoke free policies in place across the DHB (Y/N).</td>
</tr>
<tr>
<td>Rationale</td>
<td>Modification of lifestyle factors such as smoking, exercise and obesity are crucial components to the prevention of CVD.</td>
</tr>
<tr>
<td>Ideal/expected</td>
<td>Smoke free policies in place in DHB facilities and DHB funded provider facilities.</td>
</tr>
<tr>
<td>Commentary</td>
<td>Other health promotion indicators will be added in the future but if they exist could be reported now (eg, salt reduction, sugar intake). Promoting health and preventing disease need a population health approach of the wider determinants of health (culture, education, employment and housing).</td>
</tr>
<tr>
<td>Outcome</td>
<td>Increase early recognition and response to individuals with CVD</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Indicator</td>
<td>CVD recognition and follow up—primary care indicator</td>
</tr>
<tr>
<td>How to measure</td>
<td>Numerator: (Data source: DHB) The number of people in each target group who have had their 5 year absolute CVD risk recorded in the last five years.</td>
</tr>
<tr>
<td></td>
<td>Denominator: (Data Source DHB) The number of people in each respective target group.</td>
</tr>
<tr>
<td>Rationale</td>
<td>CVD is the leading cause of death and morbidity in New Zealand. Early detection of those at risk and early intervention through primary care are two of the key approaches to controlling CVD.</td>
</tr>
<tr>
<td>Ideal/expected</td>
<td>100% across all target groups.</td>
</tr>
<tr>
<td>Commentary</td>
<td>The DHB should explore other options/opportunities for recognising people at risk of CVD. Primary care options include, as a point of contact for people at risk, community groups, churches etc.</td>
</tr>
</tbody>
</table>
## Outcome

**Increase coordination across providers, processes & community resources**

### Indicator

#### How to measure

**Numerator:** (Data source: DHB)

The number of people who have suffered a CVD event who attend a cardiac rehabilitation outpatient programme as defined below.

**Denominator:** (Data Source: DHB)

The number of people who have suffered a CVD event who were admitted and discharged from hospital.

A CVD event is defined as patients with coronary heart disease, specifically those following an acute coronary syndrome (acute Myocardial infarction/unstable angina) and following coronary artery bypass surgery and angioplasty. (2002 NZGG Cardiac rehabilitation guidelines).

#### Rationale

There is strong New Zealand and overseas evidence that patients with coronary heart disease should be referred to a cardiac rehabilitation programme, except for individual cases excluded on clinical grounds. Special consideration to cardiac rehabilitation programmes for appropriateness and acceptability to Maori and Pacific peoples who are at high risk is important.

Rehabilitation, post a cardiac event, is very important to the ongoing minimisation of risk for the individual.

This indicator attempts to ensure that the services that are provided to these people are coordinated across all providers so as to ensure the greatest possible gains for the individual and reduce their risk or follow on CVD events.

#### Ideal/expected

That 95% of those who suffer a CVD event as defined are offered (via referral and follow up) and utilise the services that are available to them to support the rehabilitation post a CVD event. Cardiac rehab clinics are seen as a key part in the set of services available to support people.

If a DHB does not have a cardiac rehabilitation clinic this indicator highlights the importance and need for DHB to establish this service.

#### Commentary

In the future, reporting indicators may include detail in regard to phase I (inpatient rehabilitation), phase II (outpatient rehabilitation) and phase III (long term maintenance).

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### Reporting period

Annually in the third quarter.

DHBs identified as partially meeting or not meeting expectations for any component indicator in the third quarter to provide full reporting in the fourth quarter for that component(s).
## POP-03 Stroke

### Deliverable

The indicator covers four key aspects of stroke services.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Reduce stroke contributory risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Stroke risk reduction</td>
</tr>
<tr>
<td>How to measure</td>
<td>Measured in 1.1 and 2.1</td>
</tr>
<tr>
<td>Rationale</td>
<td>Modification of lifestyle factors such as smoking and obesity are crucial components to the prevention of stroke. Smoking cessation reduces/decreases the risk of stroke by at least 1.5 times. People with a body mass index (BMI) &gt;25 (especially those with BMI &gt;30) decrease the risk of stroke with graduated lifestyle change. Stroke risk may be reduced by almost 50% with regular exercise.</td>
</tr>
<tr>
<td>Ideal/expected</td>
<td>As per 1.1 and 2.1</td>
</tr>
<tr>
<td>Commentary</td>
<td>Other health promotion indicators will be added in the future but if they exist could be reported now (eg, salt reduction, sugar intake). Promoting health and preventing disease needs a population health approach of the wider determinants of health (culture, education, employment and housing).</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Outcome</th>
<th>Increase early recognition &amp; response to individuals at risk of suffering a stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Stroke risk recognition –primary health indicator</td>
</tr>
</tbody>
</table>
| How to measure | Numerator: (Data source: DHB) The number of people in each target group who have had their CVD/stroke risk score recorded in the last five years. 

Denominator: (Data Source DHB) 
The number of people in each respective target group. |
| Target groups: | Maori/Pacific and Indian subcontinent men >35 years of age 
Maori/Pacific and Indian subcontinent women >45 years of age 
European and other men >45 years of age 
European and other women >55 years of age. |
<p>| Rationale | The identification of risk factors for stroke in general is not optimal and requires an increase in both the awareness of these risk factors and the appropriate, evidence based use of existing therapeutic interventions. More aggressive identification and monitoring in primary care is vital. In this first year CVD risk assessment may be used as a substitute for the stroke risk assessment. |
| Ideal/expected | 100% across all target groups. |
| Commentary | DHBs should explore other options/opportunities for recognising people at risk of stroke. Primary care options include as a point of contact for these people, community groups, churches etc. |</p>
<table>
<thead>
<tr>
<th>Outcome</th>
<th>Reduce incidence of avoidable complications from strokes. Strengthen self management capability of individuals, family/whanau.</th>
</tr>
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<tbody>
<tr>
<td>Indicator</td>
<td>Stroke management–secondary care indicator</td>
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</tbody>
</table>
| How to measure | **Numerator:** (Data source: DHB)  
The number of people who have suffered a stroke event who have a management/care plan which includes patient specific goals and follows best practice guideline advice which specifically includes antiplatelet therapy and blood pressure lowering therapy. This may take the form of a stroke risk discharge template completed for each patient.  

**Denominator:** (Data Source: DHB)  
The number of people who have suffered a stroke event who were admitted and discharged from hospital. |
| Rationale | The management of risk factors after stroke in general is not optimal and requires an increase in both the awareness of these risk factors and the appropriate, evidence based use of existing therapeutic interventions. Long term antiplatelet treatment after stroke shows a reduction of 25 non-fatal strokes and 36 serious vascular events per 1000 treated over 29 month period. Treatment with a statin after stroke is associated with a reduction of major vascular events including stroke. Blood pressure lowering treatment has a grade A level of evidence in reducing the risk of recurrent stroke. A comprehensive plan of care covering all aspects of stroke is vital to ensure risk reduction. |
| Ideal/expected | That 100% of individuals who have been identified as having suffered a stroke event have a management/care plan in place that includes goals that the patient is (1) party to the development of (2) agrees to and (3) are achievable for the patient and follows the best practice advice as detailed in the stroke guidelines. |
| Commentary | A management plan in this first year may be the development of a generic template for people with stroke with individual goals completed. In future years more specific targets will be introduced, eg, the number of people who suffered a stroke event who were discharged from hospital:  
% discharged on aspirin  
% discharged on BP lowering medication  
% discharged on statin. |
### Outcome

**Increase coordination across providers, processes and community resources**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Stroke services</th>
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</table>
| How to measure | **Numerator:** (Data source: DHB)  
The number of people who have suffered a stroke event who have been admitted to organised stroke services and remain there for their entire hospital stay.  

**Denominator:** (Data Source: DHB)  
The number of people who have suffered a stroke event. |
| Rationale   | There is overwhelming evidence that the most important intervention which can improve outcomes for all people with stroke is the provision of organised stroke services (Cochrane Collaboration Stroke Unit trialists–grade A evidence). Refer Stroke Guidelines. Organised stroke services cover from the acute stroke event to the eventual discharge from rehabilitation services. |
| Ideal/expected | That every DHB has organised stroke services.  
That 100% of people who suffer a stroke event are admitted to an organised stroke response, either a unit or services and at least 50% spend the majority of their stay there. |
| Commentary | Organised stroke services are shown to improve outcomes and are also cost effective. Information on the implementation of stroke services can be obtained from the Ministry of Health. |

**Reporting period**

Annually in the third quarter.

DHBs identified as partially meeting or not meeting expectations for any component indicator in the third quarter to provide full reporting in the fourth quarter for that component(s).