An exploratory study of facilitators and barriers to the primary care management of those with high cardiovascular risk.

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Abstract

Background

In 2003 the New Zealand Guidelines on the screening and management of patients for cardiovascular risk were published, with a revised handbook for primary healthcare staff updated in 2009. Several studies however have identified a significant gap between the guideline recommendations and current practice. This study was initiated to investigate the possible reasons for the evidence-practice gap.

Aim and objectives

The aim of this research study was to explore how primary health care teams manage those at high risk of cardiovascular disease (CVD) and what changes could be made that would enhance management.

The study objectives were:

- To explore how those found to be at high risk of a cardiovascular event are managed in primary care;

- To determine what facilitates and hinders CVD risk management at practice level in the current primary health care environment in New Zealand;

- To establish what strategies and support providers would like to enhance the current management of those at high risk.

Methods

A qualitative approach was utilised for this study using focus groups for the collection of relevant information and opinions. Following the review of the literature an interview schedule was developed to guide the focus group discourse. The selection of the focus groups was guided by a sampling frame which ensured that they were drawn from a variety of settings. Focus groups

were digitally recorded and the recordings transcribed. The Chronic Care Model (CCM) was used as a framework to guide consideration of the literature review findings as well as the process of analysing the text data. The text data was analysed using a general inductive approach which resulted in the emergence of key themes.

Findings

There was a high level of conformity between the findings from the focus group and the literature review but some additional issues did emerge. The self management domain and the delivery system domain of the CCM dominated both the findings from the literature and the themes from the focus groups. The decision support domain appears to have a moderate impact on optimal management of cardiovascular risk, both in the literature and from the focus group findings. Participants in the focus groups identified more barriers to optimal management of those at high cardiovascular risk related to the health system organisation domain, than emerged from the literature. Surprisingly they identified no barriers or facilitators to the use of community resources to assist them in supporting individuals with lifestyle behaviour changes.

Conclusion

This study, elicited new perspectives from New Zealand primary healthcare staff, relevant to issues surrounding the management of patients at high cardiovascular risk. The research has elucidated drivers of sub-optimal management and highlighted solutions available to address the issues within the current New Zealand primary health care environment.

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Dedication: I wish to pay tribute to my mother who died when I was in my early twenties. My mother was and is a constant source of inspiration to me. She was a lady who achieved academically in an era (early 1950's) when women did not usually go to university, especially not to study mathematics at Master's level. She instilled in me values, principles and beliefs that have provided a strong framework for me to live my life by, as well as a love of learning. This thesis is dedicated to the memory of an exceptional woman, my mother.

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List of Abbreviations

Cardiovascular disease	CVD
Cardiovascular risk assessment	CVRA
Primary Health Organisation	PHO
District Health Board	DHB
PHO performance programme	PPP
Chronic Care Model	CCM
Expanded Chronic Care Model	ECCM
Interactive behaviour change technologies	IBCTs
Continuing medical education	CME

Chapter One Introduction

1.1. Introduction to the study

In the year 2000, cardiovascular disease, (CVD), including coronary heart disease, other diseases of the heart and circulatory system and cerebrovasular disease, was the leading cause of death in New Zealand.[1] Coronary heart disease and other diseases of the heart and circulatory system accounted for 30% of all deaths in New Zealand in 2000, compared to all cancers combined which accounted for 29%.[1] There has been a decline in age-adjusted cardiovascular mortality by over 60% since the late 1960's,[2] which can be attributed to both declining levels of major risk factors (smoking, blood pressure and lipids) and to improved medical treatment. Conversely and partly as a consequence of such improvements, there has been an increase in life expectancy and a growth in the aged sector of society,[2] a sector with it's own high intrinsic risk of CVD. Consequently these factors, in conjunction with the escalation of obesity and type 2 diabetes, result in an increasing actual and predicted number of New Zealanders presenting with CVD.[2] The New Zealand Health Strategy,[3] the New Zealand Primary Health Care Strategy,[4] and He Korowai Oranga, the Maori Health Strategy[5] all have a focus on reducing the incidence and impact of CVD.

In a move to address the impact of CVD in New Zealand, the New Zealand Guidelines Group launched the 2003 guideline for the assessment and management of cardiovascular risk.[6] This was one of several guidelines launched globally to address the prevention of CVD.[7] The principal intended audience of the guideline was primary care health professionals. The guideline was especially targeted at this group as they are pivotal to the clinical management of individuals with modifiable cardiovascular risk factors. To that end following the launch of the guideline, the initial focus was on ensuring that the practice of cardiovascular risk assessment became embedded into routine primary care. The burden of CVD and of adverse lifestyle factors are greater for Maori and Pacific peoples and those who are economically disadvantaged.[2,8] Key organisations such as the National Heart Foundation, Maori and Pacific researchers, as well as public health specialists were and are, keen to ensure that the process of cardiovascular risk assessment, (CVRA), does not increase disparities in cardiovascular outcomes.[9]

While work continues to embed the practice of CVRA and management into primary health care in some areas,[9] the consequent challenge of ensuring the

effective management of those identified with high cardiovascular risk (a greater than 15% risk of having a significant cardiovascular event within the next five years) has arisen. A recent Australian paper identified that while general practitioners feel confident in managing medical risk factors such as hypertension, they felt less confident about facilitating significant lifestyle changes such as smoking cessation and weight loss.[10]

The increased workload in primary health care associated with CVRA and management is considerable and cannot be overlooked. Wells and colleagues[8] estimated that approximately 2,087,200 New Zealanders met the criteria for a CVRA in 2006. Of this group they estimated that 13% would have a five year CVD risk of greater than 15% percent, and would therefore require pharmaceutical and lifestyle management of their risk. This 13% does not include the seven percent who have a risk greater than 20%, due to a previous non-fatal myocardial infarction or stroke or a diagnosis of angina. Calculations included in the 2003 guideline[6] suggest that if individuals are appropriately targeted, 55% of future cardiovascular events could be prevented.

The author became increasingly interested in the area of cardiovascular risk management while employed at the West Coast Primary Health Organisation, (PHO), as the Clinical Programmes Manager. The initial challenges of establishing a CVRA programme within a PHO included the following:

- Training of general practitioners and practice nurses in the use of an electronic risk assessment tool;

- Establishing a funding mechanism for payment of risk assessments and for follow up appointments for Maori and Pacific peoples and those living in Quintile Five;

- Provision of resources for communicating risk;

- Training in motivational interviewing.

Once these challenges were addressed, and CVRA started to become a part of routine primary health care practice, the problem changed to ensuring that those identified at high risk were optimally managed.

1.2. Rationale

Unhealthy lifestyles are considered the most important and modifiable cause of the majority of deaths from CVD, rather than medical conditions or genetic predispositions.[11] According to the multinational MONICA study,

approximately a third of the falling rates in coronary heart disease mortality are due to access to modern cardiology treatments and two thirds are associated with risk factor reductions.[12] A paper seeking to explain the decrease in coronary heart disease mortality rates in Ireland found that about 48% of the decline could be attributed to reductions in major risk factors, specifically smoking, cholesterol and blood pressure, and 44% to improved medical and surgical interventions and therapies.[12] Multiple studies across Europe,[13] the United States of America[14] and New Zealand[1] have repeatedly come to similar conclusions. Improvements in population risk factor profiles especially smoking rates, and levels of total cholesterol and blood pressure[15] contribute significantly to reduction in coronary heart disease mortality.

Prevention of a disease occurs at multiple levels. Primordial prevention relates to the prevention of risk factors of disease. Primary prevention refers to the reduction in incidence of the disease in a susceptible population, i.e. those with established risk factors. Secondary prevention endeavours to reduce the consequences of a disease. Tertiary prevention seeks to reduce the complications and disabilities that can develop and quaternary prevention aims to rehabilitate those with significant disease.[16,17]

In a recent paper Tonkin et al.[18] re-emphasised the role lifestyle change has to play in the primary prevention of CVD: "Absolute risk assessment does not replace the need to base all approaches to cardiovascular risk prevention on lifestyle change". This approach is of value whether or not the individual is receiving medications for blood pressure or lipid lowering.

For approximately half of the individuals who experience a myocardial infarction, it will be their last.[15] For many, chronic stable angina is the first symptom of coronary artery disease.[19] The prevalence of chronic stable angina increases as the population ages.[19] Furthermore, for those individuals with stable angina, the risk of a myocardial infarction or stroke is high.[20] This highlights and emphasises the importance of primary prevention[15] if cardiovascular mortality rates are to be reduced further.

1.3. The role of risk factors in relation to the development of cardiovascular disease.

The development of CVD is multifactorial.[21] The association of risk factors, both clinical and lifestyle, with the development of CVD is well established.[16 21 22] The association with some emerging risk factors and CVD is not as conclusive, such as homocysteine, c-reactive protein, lipoprotein(a) and fibrinogen.[23] There is

comparatively modest data regarding the additive benefit of screening for these factors in addition to factors already included in validated global risk assessment tools.[23] For this reason these risk factors are not considered any further within this thesis. Some of the classical risk factors are modifiable, others not. Those that are modifiable include:

- Smoking

- High blood pressure

- High blood cholesterol

- Physical inactivity

- Obesity

- Unhealthy dietary practices

- Excessive alcohol use

- Type 2 diabetes

The behaviourally modifiable risk factors of smoking, unhealthy diet, excessive alcohol consumption and physical inactivity convert to the physiologically modifiable risk factors of hypertension, hypercholesterolemia, diabetes, and obesity. Some risk factors however, are non-modifiable such as aging; the risk of stroke doubles for every decade after the age of fifty-five.[24] Simply being male increases an individual's risk compared to that of a pre-menopausal female, however once past menopause, a female's risk is similar to a males.[24] A family history of CVD is also associated with an increased risk of experiencing a cardiac event.[24]

The presence of multiple risk factors increases the probability of an individual experiencing a cardiovascular event[21,25]. The next section, therefore, reviews the prevalence of modifiable risk factors in New Zealand.

1.4. Prevalence of modifiable risk factors in New Zealand

A Portrait of Health 2006/7[26] is the report of a national health survey that provides a comprehensive, contemporary overview of the prevalence of risk factors within the New Zealand population. Risk factors for the purposes of this study are considered to be modifiable factors or health behaviours. This section provides an overview of the risk factors associated with CVD, namely smoking, high blood pressure, high cholesterol, poor diet, alcohol use, obesity, physical inactivity and type II diabetes and discusses their prevalence in New Zealand.

Tobacco smoking is the leading cause of preventable death in New Zealand.[27] One in five New Zealanders are classed as a current smoker with prevalence peaking in early adulthood, 18-34 years.[26] While New Zealand has seen a decrease in smoking for both men and women and across ethnic groups, the burden of smoking remains notably high within the Maori population, with 42% of Maori adults classed as current smokers.[26] Smoking rates for Maori women are amongst the highest in the world. Those living in quintile five, the most deprived areas, are three times more likely to be a current smoker than those in quintile one.[26]

Hypertension is an important risk factor for CVD. It can be modified by increases in physical activity levels, reduction of salt and alcohol intake and reduction in body weight. In 2000 26.4% of the adult population worldwide had hypertension and this is estimated to increase to 29.2% by 2025.[28] According to A Portrait of Health,[26] one in seven New Zealand adults take medication for hypertension, equating to 425,500 individuals. The authors acknowledge that this is an underestimate of the prevalence of hypertension, as not all individuals with hypertension are diagnosed and not all individuals who are diagnosed take medication.[26] A difference in the prevalence of hypertension by gender or by neighbourhood of deprivation was not reported.[26] Hypertension did increase in prevalence by age. After adjusting for age nearly 40% of Asian men were more likely to be taking treatment for hypertension.[26] The documented prevalence of medicated hypertension in A Portrait of Health[26] for Maori is 10.3%. This is interesting compared to the prevalence of self-reported hypertension reported in the paper by Bramley et al[29] of 23.2% of Maori males and 22.1% of Maori females. Conceivably this may be related to documented findings regarding the barriers facing Maori in relation to health care utilisation and cost of treatments including medication.[30] Less than 20% of people with hypertension have no other associated risk factor for CVD; the remaining 80% have one or more cardiovascular related risk factors.[31]

Elevated cholesterol is a significant risk factor for CVD which is modifiable by changes in diet, levels of physical activity and body weight. At the time of A Portrait of Health survey, one in 12 adults were taking medication for raised cholesterol.[26] Men were more likely to be taking medication for raised cholesterol than women when standardised for age.[26] Taking medication for raised cholesterol was associated with age until sixty five years, when it stabilised to one in five adults.[26] Compared to men and women in the total population, Asian men and Pacific women were more likely, after adjusting for age, to be taking medication for raised cholesterol.[26] While no association was

found between neighbourhood of deprivation and taking medication for elevated cholesterol, adults living in Counties Manukau District Health Board region were significantly more likely to be taking medication than their national counterparts.[26]

In view of the focus on absolute cardiovascular risk,[6] it follows that for any given level of blood pressure or lipid level, cardiovascular risk can vary depending on the presence or absence of other associated cardiovascular risk factors.[31] This therefore makes decisions based on independent measurements of blood pressure and lipid levels somewhat redundant. Blood pressure related risk is a continuum with no lower cut off point, with treatment dependent on an individual's absolute cardiovascular risk and the same being true for lipid levels.[6][32]

Physical inactivity is one of the constellations of risk factors predisposing an individual to the development of CVD. Compared with other developed countries, New Zealand appears to be a physically active nation.[33] In the recent report "Sport, recreation and physical activity participation among New Zealand adults",[34] 48.2% of adults achieved thirty minutes of moderate intensity physical activity on at least five days of the week. This finding is similar to that reported from the 2006/07 New Zealand Portrait of Health.[26] Conversely 12.7% of adults were found to be inactive.[34] Inactivity was classified as achieving less than thirty minutes of moderate intensity physical activity in total over a seven day period.[34] Those adults belonging to the Asian ethnic group were more likely to be inactive than other New Zealand adults.[34] Again this finding mirrored that reported in the 2006/07 New Zealand Portrait of Health survey[26] in which it was also noted that adults resident within Auckland District Health Board region had a significantly higher prevalence of sedentary behaviour compared to their counterparts within other District Health Board regions.[26]

Obesity is a weak independent risk factor for CVD[35][36] but is also a determinant of several other strong risk factors such as hypertension, dyslipidaemia and Type 2 diabetes.[35][36] It was considered that the connection between obesity and an increased risk of a cardiovascular event was mediated via these other risk factors.[35] It has now been proven that obesity represents an independent risk factor for CVD.[6][35] Compared to other OECD countries, New Zealand has a relatively high prevalence of obesity. New Zealand's crude rate was 26.5% compared to an OECD median of 14.9%.[37]

Between 1997 and 2006/07 there has been a 19% percent increase in the prevalence of obesity in New Zealand,[37] (in this report, a BMI of equal than or

greater than 30kg/m^2 for all ethnic groups has been used for those aged over 15 years to define obesity). Obesity levels were greatest in the 55-64 year age range at 36%,[37] followed by the 65-74 year age group.[37] This is of particular relevance in relation to CVRA and management.

Although all sections of society have shown adverse trends in body weight in recent years, obesity is a particular problem in the Polynesian population of New Zealand. In 2006/07, 65% of the Pacific population aged 15 years or more were classified as obese, while for Maori this figure was 43% percent.[26 37] While Asians had the lowest prevalence of obesity for any ethnic group,[26 37] they had a statistically significant increase in the prevalence of obesity between 2002/03 and 2006/07.[37] A sharp increase in the prevalence of obesity between people living in quintile four and quintile five was also noted.[26 37]

An individual's diet can have a strong positive or negative effect on health status throughout his or her life. A diet high in fruit and vegetables is nutritious and it also reduces the risk of CVD.[38] In New Zealand it is recommended that adults eat at least three servings of vegetables and two of fruit each day.[26]

Sixty four percent of New Zealanders eat the recommended three or more servings of vegetables each day with women more likely than men to consume enough vegetables.[26] This picture is similar for fruit intake.[26] An adequate intake of vegetables and fruit was found to be associated with increasing age and, for both men and for women, there was a negative correlation between consumption of vegetables and neighbourhood of deprivation. Those living in the most deprived areas were less likely to consume the recommended servings.[26] This association was not as strong for fruit although women living in more affluent neighbourhoods were more likely to meet the recommendations for fruit consumption.[26] After taking age into account, Pacific and Asian men and women were less likely to eat three or more servings of vegetables each day, while Maori and Asian women were slightly less likely to eat the suggested servings of fruit.[26] From 1997 to 2006/2007 there has been a significant trend towards an adequate intake of fruit across the population, however this trend is not mirrored by the intake of vegetables.[26] Between the 2002/2003 survey and the latest national health survey there has been a significant decrease in the proportion of Maori men consuming an adequate intake of daily vegetables; this decrease was not seen in Maori women.[26]

Alcohol is the most commonly used recreational drug in New Zealand.[39] Excessive alcohol consumption can increase the risks of high blood pressure and obesity, both risk factors for CVD. Any beneficial effects of alcohol are

limited to only one or two drinks each day,[40] however this associated causal benefit has recently been challenged.[41] In New Zealand, men are twice as likely as women to drink in a hazardous way. Hazardous drinking has a strong association with age. Men and women in the 18-24 year age group are most likely to display hazardous drinking patterns.[26] A disproportionate burden of hazardous drinking sits within Maori and Pacific populations and in areas of high deprivation.[26]

There is a significant link between the presence of diabetes and the risk of experiencing a cardiovascular event.[42] The majority of diabetes in New Zealand is Type 2 diabetes[26] which, like obesity with which it is closely associated, is increasing in prevalence at an alarming rate. The most recent estimate of the number of individuals in New Zealand with diagnosed diabetes, (type 1 and 2), is 115,000.[43] Approximately 85%-90% of this total have type 2 diabetes. Pacific men and women are three times more likely to be diagnosed with diabetes than their counterparts in the New Zealand population.[26] Compared to the "European/Other" group, Asian men and women and Maori men and women are more prone to be diagnosed with diabetes.[26] There is also a gradient of increasing incidence of diabetes in neighbourhoods of higher deprivation.[26] Compared to other District Health Board, (DHB), regions in New Zealand, adults living in the Counties Manukau DHB region are significantly more likely to be diagnosed with diabetes.[26]

The information presented above regarding clinical and lifestyle risk factors, illustrates that the burden of adverse modifiable risk factors is carried by Maori and Pacific Peoples and those living in the poorest sections of our society. A recent New Zealand study also found Maori and Pacific patients presenting to a coronary care unit in South Auckland, had a higher burden of modifiable risk factors.[44] Modifiable risk factors should and can be addressed in the primary health care setting. However for Maori and Pacific patients, there are multiple hurdles to overcome in relation to accessing the health care system, including social and economic challenges, cultural barriers and racial discrimination.[45]

1.5. Socioeconomic and cultural determinants of health and their impact on cardiovascular health.

A person's health status is determined by a range of factors. In New Zealand the burden of clinical and behavioural risk factors falls heavily on Maori and Pacific peoples as well as those living in low decile neighbourhoods, as illustrated in the previous section. However these factors are not the only ones associated with increasing a person's risk of developing CVD. There is strong

documented evidence that relates a person's socioeconomic position and their cultural affiliations to their heart health.[46] This was established during the landmark Whitehall study.[47] The impact of wealth or lack of it on health status, is mediated via several pathways. For example:

- Differential access to health care as a result of cost barriers, direct and indirect, impacts most on those with the greatest health need but the least ability to pay for it;[48]

- Housing is recognised as a key determinant of health.[49] Poor housing conditions are linked to a wide range of health conditions and the poorest people in society are more likely to be forced into substandard housing.[49] Poorer housing tends to be located in impoverished environments that do not support healthy living; as a result those who live in poorer areas are more likely to demonstrate at-risk behaviours;[26 37 46]

- There is a well established correlation between years of schooling and a person's health status; in other words, those better educated in society tend to be healthier.[50] In New Zealand schools whose catchment area covers low socioeconomic communities, senior students are less likely to leave attaining higher level qualitifications.[37] Currently only nine percent of Maori and seven percent of Pacific students hold a tertiary qualification at bachelor degree level or above;[37]

- Those with lower economic status tend to face greater stressors. Poor people have least control of their lives and less financial resources to make healthier choices. As a result of a reduced ability to make healthy choices, those affected by poverty experience ill-health and ill-health keeps poor people poor.[51]

The distribution of the Maori population across the ten deciles in New Zealand is skewed towards the lower three deciles, which contain over one half of the Maori population.[46] People of Pacific origin also tend to be clustered in low socioeconomic areas and also have low family and household incomes.[52] Not only do these population groups carry the burden of clinical and behavioural risk factors but they are also encumbered with adverse socioeconomic conditions. As well as being related to cardiovascular mortality, these factors also impact on cardiovascular morbidity, increasing the person's chance of suffering from hypertension, obesity and angina.[53]

Many cardiovascular risk factors appear to be socioeconomically patterned but a person's socioeconomic position alone cannot solely explain the

disproportionate distribution of cardiovascular risk factors. Ethnicity plays a part but to date is poorly understood.[46] It would appear however, that racism plays a role in explaining the disproportionate burden of poor cardiovascular health carried by Maori[46] and Pacific People.[45] In the study by Harris et al.,[45] the authors found that self-reported experience of discrimination had an independent effect on health over and above socioeconomic position.

Overall in New Zealand there appears to be a good understanding of the determinants of health. However, our knowledge of how to address the complex interaction between socioeconomic and cultural determinants and the distribution of lifestyle risk behaviours is not so comprehensive. As a result, well-intended health policy has the potential to widen the gap in the distribution of adverse health behaviours, for example, the prevalence of smoking between Maori as compared to non-Maori.[26]

1.6. Clustering of risk factors

In the previous section, cardiovascular risk factors and their prevalence in New Zealand society were considered in isolation. However, the evidence is pointing to the clustering of multiple risk factors in individuals as the norm.[21] [54] [55]

In a United States of America study, reviewing data from the 2001 National Health Interview Survey, they estimated that only 10% of the adult population had none of four risk factors considered; smoking, being overweight, inactivity and risky drinking.[54] Just over 33,000 adults were included in the sample population which over-sampled Afro-Americans and Hispanic populations. Of this sample, 41% had two risk factors and 17% had three or more. They identified that the risk factors co-occurred in particular clusters. The most common co-occurrence was inactivity and being overweight which affected 26% of the sample.[54] Of those found to have three or more risk factors, the most common grouping was smoking, being overweight and physical inactivity. Men were found to have more risk factors than women and those aged 40-64 years had higher risk factor profiles.[54] Being divorced, separated or widowed also impacted adversely on an individual's risk profile.

It is well established that the risk of coronary heart disease increases when more risk factors are present,[21] which in view of the findings from the review of the National Health Interview Survey data, is particularly sobering in that 41% had two modifiable risk factors present.

In New Zealand, Maori and Pacific people are more likely to be affected by multiple modifiable risk factors.[44] [56] [57] No evidence was identified which could

match the information from the United States of America regarding the prevalence of modifiable risk factors within the New Zealand population as a whole, yet the paper by Wells et al.[8] estimated that 272,000 people are at high cardiovascular risk. While some of this risk may be due to non-modifiable risk factors such as age, it can also be used as a surrogate measure for the presence of multiple modifiable risk factors. What has not been determined from the New Zealand evidence is the pattern of multiple risk factors within the general population. Robust knowledge of the prevalence and pattern of risk factors within the population has the potential to assist health planners. It can determine the future incidence of CVD, as well as assist in deciding which preventative strategies should be a focus for health care providers. The relevance of this information is further emphasised by the significant reductions in coronary heart disease that can be achieved by primary prevention.[58]

1.7. Role of primary health care in relation to preventative health care

The high presence of cardiovascular risk factors within the New Zealand population presents primary health care with significant opportunities to incorporate disease prevention, health promotion and the early detection of problems[59] into their daily practice. These opportunities also allow primary health care to potentially provide broad coverage across individual patients, their families and the communities in which they live,[59] however with these opportunities come significant challenges.

As previously stated in this thesis, risk factor reduction strategies have been associated with having the most impact on coronary heart disease mortality.[12 15] While primordial population-based prevention may be the most sustainable way to address the prevention of heart disease, there is also a need to effectively treat those identified at high risk.[60]

Those working in primary health care; general practitioners and practice nurses, are in positions of significant influence and can play a constructive role in assisting patients to make positive lifestyle choices.[35] Nine out of ten adults in New Zealand have a primary care provider,[26] with adults over 45 years being more likely than those aged 15-44 years to have a primary care provider. Asian adults are significantly less likely than men and women in the total population to have a primary healthcare provider. Five out of six adults visited their usual provider during the course of the previous year, with this rate being higher in women.[26]

This illustrates the huge potential that primary health care has to promote behaviour change with their adult population. General practitioners and practice nurses are perceived as reliable and credible sources of information and they have frequently built up strong relationships with patients over a significant length of time.[61] Unfortunately, visits to primary health care are frequently missed opportunities to promote behaviour change.[35]

An Australian paper[62] recently described the frequency with which general practice comes into contact with individuals with modifiable risk factors. For example, overweight patients represented 34.6% of all encounters in 2005-2006, but only a third of these patients were asked about their exercise and physical activity habits. Only between 15-30% were provided with some form of dietary advice. Significantly less than one in five general practitioner consultations involved an intervention to support behaviour change.[62] In New Zealand, less than half the adults who are smokers have their smoking habit addressed with them by their health care provider. Only one in four adults who are overweight or obese have the issue discussed with them.[26] In some instances, these missed opportunities can be due to the increasing blurring of roles between the general practitioner and practice nurse, resulting in one thinking the other will address the issue.[61]

In summary, opportunities for behaviour change in primary health care are frequently missed, despite the evidence for the potential impact of primary preventative health care on cardiovascular mortality and morbidity.

1.8. Screening and risk prediction

Since the launch of the 2003 Cardiovascular Risk Assessment and Management Guidelines,[6] the level of priority given to CVRA and management has been determined independently by the various PHOs across the country. No formal screening programme has been implemented around the guidelines and as a result, CVRA and when applicable, intervention, is inconsistently applied.

A screening programme can be defined as "a strategy used in a population to detect a disease in individuals without signs or symptoms of that disease".[63] The purpose behind screening initiatives is to identify a disease early in a community and facilitate timely intervention and management.[63] So does the CVRA programme meet with the World Health Organisation's criteria for screening?

Table 1: Consideration of cardiovascular risk assessment against WHO screening criteria

WHO criteria for screening	Cardiovascular risk assessment
The condition sought should be an important health problem for the individual and community	Yes[64]
There should be an accepted treatment or useful intervention for patients with the disease	Yes there are pharmacological interventions however adherence to these is variable[64]
The natural history of the disease should be adequately understood	Yes[65]
There should be a latent or early symptomatic stage	Yes[65]
There should be an acceptable screening test or examination	The blood tests involved are acceptable however absolute risk assessment tools share a common issue: they are derived from large population studies hence they are suited to rank ordering risk in sub groups and less precise in individuals[18]
Facilities for diagnosis and treatment should be available	Yes, diagnostic tests are available however the use of them in asymptomatic individuals has been questioned[66]
There should be an agreed policy on whom to treat as patients	Yes, those at 15%> cardiovascular risk over 5 years[6]
Treatment started at an early stage should be of more benefit than treatment started later	Yes
The cost should be economically balanced in relation to possible expenditure on medical care as a whole	Overall the health economics are favourable[18] [64]
Case finding should be a continuing process and not a once and for all project	This is possible using PMS systems in primary care

It would seem that CVRA warrants consideration as an official screening programme; however other factors need to be considered. The impact of a CVRA on the individual in relation to personal matters such as life insurance is another factor worthy of consideration.[67] If CVRA was made a mandatory screening programme, underwriters may possibly require disclosure of risk levels for those falling in the age range for assessment.

In the longer term, cardiovascular risk programmes although effective, show a lower response to invitations for screening. Rates of adherence to follow up visits and medication are low.[64]

Overall, the potential of any population-based preventive strategy depends on the number of people participating, their baseline levels of risk and the changes in risk achieved by their actions after initial testing.[68] With this in mind, the potential of CVRA is in the hands of PHOs who will decide whether or not they are committed to supporting their member practices to participate in an organised programme.

1.9. Aim and objectives of the study

The aim of this research study was to explore how primary health care teams manage those at high risk of CVD and what changes could be made that would enhance management?

The study objectives were:

1.   To explore how those found to be at high risk of a cardiovascular event are managed in primary care;

2.   To determine what facilitates and hinders CVD risk management at practice level in the current primary health care environment in New Zealand;

3.   To establish what strategies and support providers would like to enhance the current management of those at high risk.

The strategies and the tools primary health care uses to identify individuals at high cardiovascular risk were not a focus of this study.

1.10. Summary

An effective approach to reducing cardiovascular morbidity and mortality is to effectively manage cardiovascular risk factors. The proven risk factors for CVD are raised cholesterol levels, hypertension, cigarette smoking, obesity, physical inactivity, diabetes, age, family history, and male sex. The first six of these risk

factors have the potential to be modified, reducing the risk of a future cardiovascular event.[6] However it has been well established in New Zealand and elsewhere, that many of those identified at high cardiovascular risk are not managed optimally.[57] [59] [69] [70] The barriers to optimal management within the New Zealand primary health care setting have not been described in the current literature. This exploratory study seeks to explore the issues facing primary health care and consider potential solutions.

Chapter Two Literature Review

This chapter begins with an explanation of the literature search process utilised to identify papers. This is followed by an overview of the evidence related to current management strategies in primary prevention of CVD which include modification of lifestyle risk factors, pharmacotherapies and the ongoing follow up evaluation of risk factors.

A key focus of this chapter is on the facilitators and barriers to the implementation of strategies to modify lifestyle behaviour. The other two aspects of management, pharmacotherapies and the ongoing management of risk factors, are considered in less detail. It is acknowledged that for those identified at high risk, more intensive treatment with medications is frequently required; however modification of risky lifestyle factors offers many advantages over other strategies. It has minimal potential to cause harm and can possibly affect multiple risk factors concurrently.

Primary health care is already tasked with the management of those with long term conditions. The framework widely recognised as underpinning the effective management of long term conditions, The Chronic Care Model, is used as a framework to explore facilitators and barriers to effective management of those at high cardiovascular risk. The process of cardiovascular risk factor management encompasses many of the same challenges intrinsically associated with chronic disease management. The model lends itself as a framework for considering elements necessary to promote optimal care for those at high cardiovascular risk.

2.1. The literature search

The literature search aimed to identify papers which had previously considered facilitators and barriers to the management of people identified at high cardiovascular risk and to gain an understanding of what was already known on the topic. To find papers of interest, a detailed search string was developed. The terms used in the search string included:

- CVD risk assessment
- CHD risk assessment
- CV risk assessment
- Cardiovascular disease risk assessment
- Coronary heart disease risk assessment
- Cardiovascular risk assessment
- Guidelines
- Implementation
- Primary health care
- Primary care
- General practice
- Primary prevention
- Cardiovascular risk factors
- Lifestyle strategies
- Lifestyle interventions
- Management
- Behaviour change strategies
- Behaviour change interventions
- Change management
- Facilitators
- Barriers

Some terms were truncated with "$" to ensure that the search string was as sensitive as possible to all potential papers relevant to the topic and when appropriate terms were combined using either of the Boolean operators, "or" or "and".

Electronic databases searched included:
- OVID, this database is a collection of databases including AMED, EMBASE, MEDLINE and PsycINFO

- CINAHL

"Google scholar" was also used as a search engine.

Papers were sourced from 1995 to 2009 and a limit of English language only was placed on the searches.

Hand searching of the reference lists of papers obtained from the electronic search was undertaken to identify further studies or reviews that could potentially be relevant. While the literature review was formally completed on 31 July 2009, relevant articles identified since then have been incorporated. A total of 337 studies and review articles were appraised for relevancy to this study.

2.2. Review of current strategies related to the primary prevention of cardiovascular disease

The 2003 New Zealand Guidelines for the Assessment and Management of Cardiovascular Risk[6] outline the optimal management for those identified at high cardiovascular risk. This includes intensive lifestyle and pharmaceutical interventions as outlined below:

•   Specific individualised lifestyle advice on a cardio protective dietary pattern, physical activity and smoking cessation. The lifestyle advice should be given by the primary health care team for three to six months prior to initiating drug treatment

•   Aspirin and drug treatment of all modifiable risk factors, (blood pressure lowering, lipid modification and glycaemic control)

•   Risk factors treated to a level that will lower five year cardiovascular risk to less than 15% (by recalculating risk)

•   CVRA at least annually, risk factor monitoring every three to six months.

This management approach has been reiterated in the recently published Cardiovascular Guidelines Handbook.[71] The role of lifestyle risk factor modification as a first line of action for the group of people identified at high cardiovascular risk, as well as the role of the primary health care team, is clearly highlighted in these guidelines. For individuals at high cardiovascular risk, optimal management has the potential to reduce their risk of a cardiac event by 50%.[6 69 71]

New Zealand studies however, have shown that optimal management is not the norm. A recent study by Rafter, et al.,[69] described the incomplete documentation of cardiovascular risk factors in primary care and other contemporary New Zealand studies have consistently shown gaps in the

prescribing of recommended pharmacological therapies for high risk individuals.[56][57]

It is highly probable that the lack of documentation of behavioural cardiovascular risk factors in primary care[69] is associated with low levels of counselling around modification of lifestyle in primary care.[62] What however, is the evidence supporting modification of cardiovascular risk, both behavioural and physiological, in primary health care and more specifically the evidence supporting the modification of multiple risk behaviours?

2.2.1. Brief overview of the evidence for interventions addressing single cardiovascular risk factors in primary care

Irrespective of age, smoking cessation is beneficial.[72] There is good evidence supporting the use and effectiveness of brief intervention counselling and pharmacotherapies delivered in primary health care in promoting smoking cessation.[73] Primary care providers are ideally placed to influence smoking cessation rates in individual patients who smoke, through the provision of opportunistic advice and support.[73] The delivery of brief intervention counselling and cessation support is reported to be quite low in studies.[72] In a recent review by Brinson, improvements in the provision of smoking cessation support in primary care practice of between 5%-10%, would be realistic.[72] To achieve this a multi-component strategy offering on site skills based training, audit, feedback and electronic reminders linked to electronic referral systems, would have to be implemented in a comprehensive manner.[72]

Physical activity is considered an fundamental part of the lifestyle advice for people at increased risk of a cardiac event[6] as it has been shown to have favourable effects on blood lipid profiles and blood pressure.[6] Physical activity can also promote weight loss and assist with weight loss maintenance.[6]

In New Zealand, the Green Prescription programme has been implemented widely in primary care.[74] The Green Prescription is a "green" script dispensed by either a general practitioner or practice nurse with advice on physical activity.[6] Two New Zealand studies have tested its effectiveness in primary care.[74][75] The earlier study[75] showed that referral by general practitioners to this scheme for sedentary adults aged 40-79, resulted in increased physical activity levels and improved quality of life over a 12 month period. The more recent study[74] looked at an adapted "green prescription approach using a practice nurse to deliver the "green prescription", instead of a community exercise facilitator. Follow up telephone support was extended to a nine month period

with an added 30 minute visit with the primary care nurse at six months. The target group in this study were inactive women aged 40-79 years and follow up was for two years. While the researchers found the intervention had no impact on clinical outcomes such as blood pressure or lipid levels, physical activity increased significantly in the intervention group and there was a positive impact on quality of life.

The EXERT study in the UK,[76] compared the effectiveness and cost effectiveness of a leisure centre based exercise programme, an instructor-led walking programme or advice only, in patients referred by their general practitioner. Participants were aged 40-74 years, were considered inactive and had at least one of the following cardiovascular risk factors: moderate to mild hypertension, obesity, current smoker, diabetes, and/or a family history of myocardial infarction at an early age. The authors concluded that the inclusion of a ten week programme of supervised exercise or walks may not be more effective than the provision of information about their availability. They suggest that subsidised schemes may be best to focus on patients with higher absolute risk.

Increasing weight has a significant impact on chronic conditions such as Type 2 diabetes and coronary heart disease as well as negatively influencing clinical risk factors such as hypertension and dyslipidaema.[77] However, just a ten percent reduction in weight for overweight and obese individuals has been associated with clinically meaningful reductions in hypertension, lipids and risk of mortality.[77] General practice is potentially the ideal setting to prevent and manage overweight and obese individuals. It is where most people, obese or not, come into contact with medical services, and do so repeatedly over time, often with family/whanau members present.

A key study based in primary care and focused on weight loss was the UK Counterweight study.[78] Between 2000 and 2005, 56 general practices enrolled 1906 patients. At the data closure date, 1419 patients had reached ≥ 12 months and 825 had reached ≥ 24 months. The table below illustrates changes in weight and BMI in the 1419 patients who reached twelve months.[79]

Table 2: Change in weight and BMI from baseline in 1419 patients enrolled for at least 12 months.

Follow up attendance (months)	Attenders, (n)	Mean (SD) weight change, kg	95% CI	Mean (SD) BMI change, kg.m²	95% CI
0	1419	-	-	-	-
3	775	-3.34 (3.53)	-3.59 to -3.09	-1.22 (1.28)	-1.32 to -1.13
6	548	-4.24 (5.19)	-4.68 to -3.80	-1.55 (1.88)	-1.71 to -1.39
12	642	-2.96 (6.64)	-3.47 to -2.44	-1.08 (2.41)	-1.27 to 0.89

Brief multi-contact behavioural counselling provided in primary health care, targeting individuals engaged in drinking excessive levels of alcohol has been demonstrated to be effective in reducing average alcoholic drinks per week and increasing the likelihood of drinking at moderate levels at 6 and 12 months follow up.[80]

Blood pressure is a key determinant of absolute cardiovascular risk[6][32] and the relationship between the two is robust and predictive.[81] This association is consistent irrespective of gender, different racial and ethnic groups and different countries.[81] Hypertension is a commonly managed problem in primary care, accounting for 9.6 encounters per 100,[82] and there is good evidence to support the initiation of anti-hypertensive treatment in those at high cardiovascular risk.[6][32] Guidelines also recommend the provision of advice and support in regard to smoking cessation, nutrition, physical activity, body weight and the safe use of alcohol, if appropriate.[6][32] The revised blood pressure target of treatment for those identified as being of high risk of a cardiovascular event with or without diabetes is less than 130/80 mmHg.[71] Any reduction in blood pressure towards these targets is beneficial, however to reach target many individuals have to take more than one anti-hypertensive medication as demonstrated in recent studies[83][84].

Hyperlipidaemia is a problem frequently managed in association with hypertension in primary care and accounts for almost 4 of every 100 encounters.[85] Until recently the body of evidence supporting the use of lipid lowering agents focused on their use in relation to the secondary prevention of CVD.[86] Between 1984 and 2002 several studies were undertaken looking at the applicability of cholesterol lowering drugs for those at high risk of a cardiovascular event.[86] While the results supported their use, certain patient groups such as women and diabetics were not adequately represented in these

studies.[86] In 2004, the CARDS study demonstrated the benefit of treating Type 2 diabetics with at least one additional cardiovascular risk factor with atorvastatin 10 mg/daily.[87] This study showed a significant reduction in cardiovascular and stroke events even when individuals had an initial low density lipoprotein (LDL) cholesterol of <4.14mmol/L.[87] However, a more recent meta-analysis has established the benefit of statins in people without established CVD but with risk factors.[88] This meta-analysis reviewed ten studies, with 70,388 participants in total of which 23,681 (34%) were women and 16,078 (23%) had diabetes. There was a mean follow up of 4.1 years. Treatment with statins was found to significantly reduce all cause mortality, major coronary events and major cerebrovascular events.[88] The use of statins to reduce cholesterol levels in primary care should always be accompanied by advice in relation to a cardioprotective diet and support to lose weight in individuals who are overweight or obese.[6]

Type 2 diabetes, the most prevalent form of diabetes, is another key risk factor linked to cardiovascular risk.[6] The incidence and prevalence of Type 2 diabetes is increasing in New Zealand.[89] For people with diabetes morbidity and mortality from CVD is between two to five times higher.[6] Multiple studies have shown that the effective management of blood pressure and lipid levels as well as HbA1c are pivotal to reducing the risk of a cardiovascular event in individuals with Type 2 diabetes.[6][90]

2.2.2. Overview of the evidence in relation to multiple behavioural risk factor interventions to address cardiovascular disease prevention in primary health care settings

Multiple risk factors increase a patients overall CVD risk, with their effects being multiplicative.[91] The combined effect of modifiable risk factors was well illustrated in the landmark INTERHEART study.[92] While relatively good evidence exists around prevalence, burden of illness and how to intervene for the four key behavioural risk factors individually,[93] there are gaps in knowledge in regard to the efficacy of multiple risk factor interventions in the primary health care setting.[7] Despite this, primary health care teams are being encouraged to undertake absolute CVRAs which de-emphasise addressing individual risk factors and encourage the focus on concomitant risk factors.[6][94]

Strong evidence exists to support multiple risk factor behaviour change from the secondary care sector, the evidence being derived from cardiac rehabilitation programmes.[95] Evidence is equally strong for cardiac rehabilitation programmes delivered in the outpatient or home setting.[96]

However, there is a growing need to be able to provide strong evidence and guidance to primary health care teams regarding multiple risk factor behaviour change in the primary care setting.

The literature review identified three systematic reviews of multiple lifestyle interventions in the primary health care setting.[97-99] The following table provide a summary of these reviews.

Table 3 Summary of systematic reviews of multiple lifestyle interventions in primary care

Systematic Reviews	Types of study included	Types of participants	Types of intervention	Types of outcome measured	Search methods	Findings	Conclusions
Multiple risk factor interventions for primary prevention of coronary heart disease[97]	RCTs of at least 6 months duration with parallel group design. Trials maybe randomised by individual or group	Adults aged at least 40 yrs. General population, workforce population and high risk groups No evidence of CVD	Counselling or educational interventions, +/- pharmacological treatments, which aim to reduce more than one CVD risk factor	Total mortality CHD mortality Net changes in blood pressure, smoking status and total blood cholesterol	MEDLINE search 1966-April 1995 using RCT filter, this was updated by searching Cochrane Central register of controlled trials on the Cochrane Library Issue 3, 2001. MEDLINE 2000-September 2001 and EMBASE 1998-September 2001 using an RCT filter for both	Multiple risk factor interventions comprising counselling, education and drug therapies were ineffective in achieving reductions in total or CVD mortality when used in the general or workforce populations of middle aged adults. Pooled effects of interventions were statistically insignificant however a benefit of treatment of about a 10% reduction in CHD mortality may have been missed	The use of health promotion techniques for one on one or family orientated information and advice on a range of life style issues given to people at low risk of CVD is not particularly effective. Health protection through national fiscal and legislative changes that focus on reducing smoking, dietary consumption of fats, salt and calories and increase provision of and opportunities for exercise should be of higher priority when considering interventions targeting the general population.

Systematic Reviews	Types of study included	Types of participants	Types of intervention	Types of outcome measured	Search methods	Findings	Conclusions
Lifestyle interventions in primary care[98]	RCTs that reported outcomes at 12 months or longer and there had to be a control group	Adults 18 yrs or older, either gender. Without pre-existing CVD or diabetes	Interventions had to be lifestyle orientated and focus on health eating or increased physical activity; smoking could not be the main focus. Trials had to be conducted within the context of primary health care and carried out by primary care providers Trials involving drug treatment in combination with lifestyle counselling were excluded.	Cardiovascular risk scores, blood pressure, lipid levels, weight or body mass index, morbidity and mortality	MEDLINE, EMBASE and CINHAL from January 1985-December 2007, filtered for RCTs and systematic reviews. Search limits English language and human subjects	Studies found little benefit from lifestyle orientated interventions compared with usual care. Only two of the seven studies showed consistently positive results and these were around blood pressure improvements	Primary care providers time would be better spent focusing on those at higher cardiovascular risk

Systematic Reviews	Types of study included	Types of participants	Types of intervention	Types of outcome measured	Search methods	Findings	Conclusions
Effectiveness of individual lifestyle interventions in reducing cardiovascular disease and risk factors[99]	RCTs that followed up participants for at least one year with a dropout rate of <20% at 12 months. Primary prevention and secondary prevention studies were included. If drug treatment as well as lifestyle intervention used, only included if drug treatment was not the primary prevention strategy	Study had to include at least 60 adults of working age. Studies on participants >65 yrs were excluded	Interventions had to seek to modify CVD risk factors through lifestyle change. Interventions targeting diet, smoking cessation, exercise, alcohol reduction or a combination of these were included	Total mortality, cardiovascular mortality, new cardiovascular events	English language literature searches were performed on MEDLINE, DARE, EMBASE and the Cochrane library between 1966-1998	Multiple risk primary prevention studies did show changes in both behavioural and physiological risk factors but these were not as clinically significant as those seen in the secondary prevention studies	Those at high risk with multiple risk factors should be targeted. In primary multi-factorial prevention morbidity is slightly reduced and mortality very little.

The conclusions from these three systematic reviews were consistent. They all suggest that for interventions to enhance outcomes, they should target those at highest risk of a cardiac event.[97-99]

Two other studies were found that were not included in the three systematic reviews identified. The first of these was a UK study by Hardcastle, et al.[100] This study had three aims, two of which are of particular interest:

- To determine the effects of a motivational interview based on coronary heart disease risk factors among patients with one or more cardiovascular risk factor

- To determine the effects of the number of counselling sessions attended on any change in coronary heart disease risk factors.

At their baseline assessment, all participants received a standard leaflet that provided information on exercise and nutrition. Those allocated to the treatment group were then given an appointment for their initial face-to-face consult with a Physical Activity Specialist, (PAS) and/or a Registered Dietician, (RD). Over the following six months, those allocated to the treatment group had the opportunity to meet the PAS or RD on a further four occasions.[100] The intervention group significantly increased their walking and their combined physical activity compared to those in the control group, however there were no differences in relation to fruit and vegetable consumption between groups.[100] When an intention-to-treat analysis was used, it revealed the following statistically significant results; a greater reduction in BMI and diastolic blood pressure in the intervention group. The BMI result was confusing as the control group actually reduced their fat intake significantly more than the intervention group. The intervention group also showed a trend towards greater reductions in systolic blood pressure and cholesterol. There were positive associations between attendance at a greater number of counselling sessions and reduction in weight, cholesterol and triglycerides. This intervention illustrates the acceptance of patient centred counselling within the primary health care arena. Currently in New Zealand however, the general practice team rarely includes a dietician or a physical activity specialist and access to these professions within the wider primary health setting is not always straightforward.

Two key UK primary care based prevention studies, the OXCHECK and the British Family Heart Study [101] raised concerns regarding the economic viability of population based screening for CVD risk. Wister and colleagues[102] conducted a randomised trial in response to these highlighted concerns regarding the costs

and resources required to implement cardiovascular risk reduction programmes. In this trial participants received a health report card coupled with a Telehealth counselling approach,[102] averaging 30 minutes twice a year. At baseline, the Framingham risk score for those in the primary prevention arm was higher in the intervention group, 12.55 compared to the control group, 11.06. At the one year follow up, the mean Framingham risk score decreased in the intervention group by 3.07 points compared to 1.10 points in the control group.[102] Statistically significant improvements in the primary prevention arm were also found for total cholesterol and systolic blood pressure. Both of these findings and the reduction in global cardiovascular risk score remained significant after adjusting for age, gender, education, income and total score on the 36-item short form health survey.[102] Nutrition and health confidence also improved significantly. The authors of the study are unable to conclude whether the improvements in the Framingham score were linked to better medical management or behavioural changes. They do however, theorise that the changes in cholesterol and systolic blood pressure may be linked to improved medical interventions, but that the positive changes in relation to nutrition and health confidence could be linked to some level of behavioural or psychosocial change.[102] Overall this study does provide some positive evidence related to a low cost intervention for the management of cardiovascular risk that could easily be integrated into New Zealand's primary health care system.

In summary, there remains a lack of clinical trials looking at multiple risk factor reduction, particularly in regards to the utilisation of lifestyle change approaches, within the primary health care setting. However the evidence around multiple risk factor reduction in the secondary care setting is robust and provides guidance as to the elements that are linked to success. These include:

- Assessment and tailoring of the intervention to patient needs;

- Greater effectiveness of interactive education and skill building compared to didactic education;

- Self monitoring, goal setting, identification of barriers and problem solving;

- Use of multidisciplinary teams or nurse led programmes;

- Multiple follow up contacts.[103]

These elements are also evident amongst the self management research base[103] and further guidance can also be obtained by reviewing the evidence around multiple behavioural risk factor changes and prevention of Type 2 diabetes. The next section will consider the evidence base around these programmes.

2.2.3. Overview of evidence for interventions to address multiple behavioural risk factors in diabetes prevention in primary health care settings

In relation to the prevention of Type 2 diabetes, the evidence is more robust. In the expectation that this condition could potentially be reversed due to the important role played by lifestyle factors in its development, several lifestyle intervention studies have been conducted and demonstrated the efficacy of utilising a behavioural risk factor modification approach.[104-106] Most lifestyle interventions aimed at preventing or delaying the onset of Type 2 diabetes target individuals with impaired glucose tolerance, with the objective of achieving and maintaining a healthy body weight, either through diet, exercise, or a combination of both.[105 106] Dietary recommendations were very similar in all the major studies[107] and emphasised the importance of the following:

- Reducing fat intake;
- Increasing vegetable intake;
- Moderately restricting calorie intake of those who are overweight and obese.

In addition, moderate physical activity, on all or most days of the week, was promoted, for the duration of between 30-40 minutes with some variability around the relevance of high intensity and resistance training. The modes used to promote exercise varied between the interventions[107]:

- Provision of exercise goals and tips on how to increase daily exercise;
- Provision of weekly supervised exercise training.

The addition of a pharmaceutical agent was normally considered secondary to, or for use in combination with lifestyle intervention. No definitive criteria are evident as to when pharmaceuticals should be considered. "Unsuccessful attempt at 5% loss of initial body weight after six months"[107] has been suggested as a possible criterion.

The following tables provide an overview of the major diabetes prevention studies.

Table 4: Summary of international studies on lifestyle interventions

Study	No. of people	Years of follow up	Mean age, mean BMI	Type of intervention	Intervention	Targets	Relative risk reduction of T2DM v control	Number needed to treat
Malmo study, Sweden[108]	181 (men only)	6.0	48 yrs, 26 kg/m²	Diet and exercise	6 months of supervised physical training throughout and 6 months of dietary treatment	Unspecified weight loss	63%	~
Da Qing, China[106]	577	6.0	45 yrs, 25.6 kg/m²	Diet, exercise, or both	7 sessions in first 3mths, then quarterly. Diet group received individual and group counselling sessions, those with a BMI > 25 were encouraged to lose weight. Exercise group encouraged to increase their daily exercise. Diet and exercise group received both interventions as above. Control group received routine advice.	BMI< 23 kg/m², healthier diet	31% (diet), 46% (exercise) and 42% (diet and exercise)	4.5
DPS, Finland[105]	522	3.2	55 yrs, 31 kg/m²	Diet, exercise	7 sessions in 12 months, then every quarter. Control group received limited advice on diet and exercise. Intervention group given tailored detailed advice on diet, weight reduction, and exercise, as well as free gym membership and supervised activity sessions	5% weight loss, decreased fat intake, increased fibre intake and > 150 minutes of exercise/wkly	58%	3
Japanese study[104]	458 (men only)	4.0	55 yrs; 24 kg/m²	Diet, exercise	Control group advised to lose weight if BMI ≥ 24, intervention group if BMI ≥ 22 – by eating smaller meals and increasing physical activity. Advice repeated every 6 months, for controls, and every 3-4 months, for intervention group	Achieve and maintain ideal body weight	67%	4

Table 5: Summary of studies involving lifestyle interventions with oral hypoglycaemic agents

Study	No. of people	Inclusion criteria + population characteristics	Years of follow up	Mean age, mean BMI	Oral hypoglycaemic agent	Type of intervention	Frequency of intervention	Effect of intervention	Number needed to treat
Diabetes prevention programme, U.S.[i109]	3234	IGT + fasting glucose > 5.3mmol/L. 45% ethnic minority	2.8	51 yrs; 34kg/m²	Metformin	Diet, exercise	16 sessions in 6mths; then monthly. Twice-weekly supervised exercise sessions	Decreased progression to diabetes by 58% in lifestyle intervention and 31% in metformin group	7 with lifestyle intervention and 14 with metformin
Stop to prevent non-insulin-dependent diabetes (STOP-NIDDM)[110]	1429	IGT + fasting glucose > 5.6mmol/L, aged 40-70, BMI 25-40kg/m²	3.9	55 yrs, 31kg/m²	Acarbose*	General advice on diet, weight loss and activity	Every 12/12	Acarbose decreased progression to diabetes by 25%. Weight loss 0.5kg	11
XENDOS, Sweden[111]	3277	IGT,	4	43.4yrs, 37.4kg/m²	Orlistat	General advice on diet, weight loss and activity	Dietary counselling every 2 weeks for the first 6 months and monthly thereafter	37% risk reduction of developing type 2 diabetes in orlistat group, mean weight loss after 4 years was significantly greater with orlistat:5.8 vs. 3.0 kg with placebo	4
Indian diabetes prevention programme[112]	531	Fasting glucose<7.0mmol/L ; 2 hr glucose 7.8-11.0mmol/L, age 35-55, 21% women	3	45.9yrs, 25.8kg/m²	Metformin	Diet and exercise, metformin, diet and exercise, and metformin alone	6 month intervals	Reduction in progression to diabetes in lifestyle group 28.5%, metformin group, 26.4% and lifestyle and metformin group 28.2%	6.4 with lifestyle intervention and 3 with lifestyle intervention and metformin

In relation to preventing or delaying the onset of Type 2 diabetes, the clearest evidence is from studies where participants had impaired glucose intolerance and the intervention focused on dietary modification and increasing physical activity. It is of interest to note that these studies have been replicated successfully in various countries as well as in real world primary care settings.[113]

There are also elements common to these studies which are very similar to the elements which underpin secondary prevention cardiovascular risk reduction programmes. For these studies, the elements can be summarised as follows:

- The studies put in place goals which were modest;

- The four studies utilising lifestyle approaches and the Diabetes Prevention Programme all featured intensive interaction with staff, and individualised counselling, with group sessions on a voluntary basis;

- Follow-up was rigorous in all the studies, especially for participants not achieving their goals;

- Each study stressed the importance of contracting around patient-centred goals; although the goals around diet and weight were established by the investigators, the individual participants set their own goals during their individualised counselling sessions. Goals set followed the SMART theory – specific, measurable, achievable, realistic, and time-bound;

- Self-monitoring was used to enhance empowerment and self-efficacy. Participants maintained records of their diet and physical activity levels and documented their progress on charts;

- The studies acknowledged the significance of the social context in which the participants lived their lives and the impact this has on diabetes prevention efforts. In the Diabetes Prevention Programme, the Diabetes Prevention Study, and the Malmo study, spouses were encouraged to participate in the individual counselling sessions. The studies recognised the significance of the family in optimising outcomes;

- Feedback to providers was also used as a motivation strategy. In the Diabetes Prevention Programme, all of the sites received feedback on how well they were doing, relative to the other sites;

Improving cardiovascular mortality and morbidity requires significant attention is paid to addressing multiple risk factors as illustrated above; however changing lifestyle behaviours is not the only challenge facing primary health care teams. For many of those identified at high cardiovascular risk, achieving global cardiovascular risk reduction requires the addition of medications.

2.2.4. The role of pharmacotherapy in risk factor reduction

Pharmacotherapy is a key component of the management of those at high risk of a cardiovascular event. Due to the evidence around the benefit of addressing absolute risk,[6] clinicians are frequently faced with the challenge of prescribing multiple medications for individuals who may only have mildly elevated physiological risk factors but whose overall risk is high. While it has been identified that general practitioners tend to feel more confident around treating modifiable medical risk factors than they do addressing lifestyle risk factors,[10] recent New Zealand[56] and Australian[114] studies have shown that in practice there is a gap between the prescribing recommended in the guidelines and that audited in everyday practice. Sub-optimal prescribing of medications is not the only challenge when it comes to the pharmacological management of those at high cardiovascular risk. It could be reasonable to assert that medication non-adherence should be considered another cardiovascular risk factor.[115]

For patients to gain optimal benefit from prescribed medications they need to demonstrate high levels of compliance and diligence.[94] In a recent Canadian study, an association between declining global cardiovascular risk reduction and the presence of multiple pharmacologically modifiable cardiovascular risk factors was established. The authors felt that this could have been attributed to the need for polypharmacy and a consequential lower compliance with pharmaceutical interventions.[116] However these findings differ from a more recent Italian study which found that high adherers were more likely to have cardiovascular risk factors.[117] A significant finding in this study was that high adherence with anti-hypertensives was associated with a 38% decreased risk of a cardiovascular event, compared to low adherers.[117]

While the evidence may be mixed in regard to the presence of multiple pharmacologically modifiable risk factors and adherence to multiple medications, there is no avoiding the fact that commencing the treatment journey is only the start. Adherence to multiple medications and maintaining multiple lifestyle changes is challenging for both the patient and their primary health care team. The ongoing support and management of individuals

identified at high cardiovascular risk presents a significant challenge to primary health care.

2.2.5. The size of the challenge

Wells and colleagues[8] estimated that across New Zealand there are approximately 272,000 people at high risk of a cardiovascular event over the next five years. The average number of people in this category per DHB is 5,903 and the median number is 5,030; the range across the 21 DHBs is 1070-15,130. These figures provide an idea of the impact of implementing a CVRA and management programme nationally on primary health care. Not only will those individuals identified at high cardiovascular risk require a repeat assessment each year but they will require ongoing management and monitoring three to six monthly,[6][71] this is over and above the everyday workload in primary care. It is therefore unsurprising that frequently the outcomes attained in clinical trials are not replicated in everyday practice.

Translating research to the frequently less than optimal situations that face general practice is complex.[118] There are many barriers which hinder the adaption and adoption of new findings and these blocks can occur at many levels – patient, provider, or system. The next section considers a framework for chronic disease management that will provide a structure for the consideration of the barriers and facilitators to the management of those identified at high cardiovascular risk later on in this chapter.

2.3. Overview of the Chronic Care Model

Modification of adverse lifestyle behaviours can reduce morbidity and mortality as well as improve quality of life.[119] Despite this, opportunities to address patients' lifestyle behaviours in primary care consultations are frequently missed amongst the competing demands of the multi-agenda primary care consult.[119][120] The need for health systems to focus not just on the treatment of disease but also the prevention of illness, was considered one of the ten characteristics of a high performing chronic care system in a recent paper by Chris Ham.[121] As primary health care is required to address both preventive health care and the monitoring and management of chronic illness, the utilisation of the same quality improvement model to enhance the delivery of both, may result in greater gains.[119]

The Chronic Care Model (CCM)[119][122] was developed to provide an adaptive framework for either quality improvement strategies or the design of chronic condition programmes in relation to a variety of chronic conditions, care arenas

and populations.[119] Due to the similarities between preventive care and the management of chronic conditions, it has been proposed that the CCM may be an effective framework for enhancing the delivery of, or designing risk management strategies.[119] [123] It was recognised however, that the community component of the CCM lacked the scope and depth necessary to encompass the broader areas of preventive health care and health promotion and required enhancement.[124] The Expanded Chronic Care Model (ECCM)[124] was then developed in recognition of this need.[124] Other iterations of the CCM have also strengthened the community component of the original model. The World Health Organisation's adaption of the CCM,[125] the Innovative Care for Chronic Conditions (ICCC) framework, emphasizes the role of the community by acknowledging the role of community partners and caregivers. An overview of the components of the CCM and the descriptor of these is provided in Table 6 below.

Table 6: The Chronic Care Model components and descriptors

Chronic Care Model	Descriptor
Health system organisation	The structure, goals and values of the organisation. Senior management and clinical champions need to be visible and committed to improving delivery of health care
Self management support	Collaboratively assisting patients and their families to acquire the skills and confidence to manage their condition(s)
Decision support	Treatment decisions need to be based on explicit, proven guidelines. Health care organisations need to integrate proven guidelines into the day to day practice of providers in an accessible and easy to understand manner to ensure the delivery of optimal care
Delivery system design	This element highlights the need for team work and to clarify roles and tasks within an organisation. Planned visits and follow up care are important elements
Clinical information systems	To manage preventive health care and chronic conditions it is necessary to have a system which can track individual patients as well as populations of patients. Robust systems can be used to provide feedback on quality of care provided.
Community resources	To improve the health of the community health care providers need to establish linkages with community based resources such as exercise programmes, weight management programmes, self help groups etc and mobilise these

The extension of the original CCM by Barr et al.,[124] emphasises the importance of the community component, not only in its relation to health care but also in relation to its impact on the root cause of health and social determinants.[119] The ECCM acknowledges that an individual's health and the behaviours they pursue are related to the social, cultural, political and economic conditions that impact on their life.[119]

Issues related to preventative care and care of those impacted by chronic conditions are frequently complex and involve addressing multiple risk factors.[119] Greater recognition of the impact of an individual's community on their health and improved utilisation of resources within that community to support the individual may assist primary care in working with individuals at high cardiovascular risk. In a study by Hung et al.,[119] primary care however, infrequently utilised community based resources to assist their patients. This study also found a positive association between the implementation of elements of the CCM within primary health care and the use of strategies targeting risk behaviours.[119]

The CCM has strong synergy with the key directions embedded in the 2001 Primary Health Care Strategy.[4] Both focus strongly on the health of communities as well as individuals, collaborative health promotion and disease and injury prevention, and the need for health care organisations to engage with the communities they serve.

In view of the interconnectedness between the CCM and the New Zealand Primary Health Care Strategy,[4] the following section will review the literature around the barriers to the optimal management of those at high cardiovascular risk using the CCM framework. However, barriers identified in the literature which relate to a community element will be considered in relation to the sub elements of this domain, identified in the ECCM[124] in recognition of the role they play in preventative health care.

2.4. Barriers to optimal management of those at high cardiovascular risk.

The inadequate delivery of cardiovascular risk management may be related to a variety of factors. This section considers the barriers identified in the literature review and discusses them under the relevant domain from the CCM. The majority of barriers identified from the literature sit within the self management and delivery system design domains.

2.4.1. The Health System Organisation

This element of the CCM emphasises the importance of leadership support for high quality care and a culture that promotes quality improvement efforts.[119] Lack of leadership can have a negative effect on embedding the service into day to day practice.[16] In a recent New Zealand report, "Where next for PHOs in New Zealand?"[126], the need for better clinical engagement and leadership within PHOs was recognised.

At the more macro level, the importance the Ministry of Health places on CVRA has not been clear until recently when the following became one of the new health targets: *"Increased percent of the eligible adult population will have had their CVD risk assessed in the last five years"*,[127] albeit six years after the launch of the guidelines[6] themselves. The lack of central leadership around this preventive health care service has been significant with only the National Heart Foundation of New Zealand, and some key academics encouraging the health system to take a more national systematic approach to CVRA and management.[128][129]

Currently capitation funding provides the main source of public funding for primary health care in New Zealand.[130] Until the recent addition of CVRA to the list of clinical indicators monitored by the PHO Performance Programme,(PPP Programme), no additional money was available to primary health care for undertaking this task.[131] To date however, no additional money has been tagged to patients at high cardiovascular risk who require ongoing monitoring and management, similar to the funded annual review programme for people with diabetes (Get Checked).[132] The lack of incentives for preventive interventions is frequently cited as a barrier in the literature[59][133-135] and may be a factor in the slow uptake of recommendations contained within the 2003 guideline.[6]

At present, the primary health care system in New Zealand requires individuals to fund part of their consultation with a co-payment. In essence, this means that approximately 30-50 percent of a general practitioner's income is generated via a fee for service basis rather than capitation.[136] A recent American study[137] found that cost barriers significantly decreased use of behavioural counselling programmes. While America has a different primary health care system to that of New Zealand, here in New Zealand, co-payments are considered an inhibiting factor in relation to population and prevention orientated programmes.[136] The Commonwealth Fund's surveys have identified the cost of accessing primary health care in New Zealand as a barrier.[121]

In New Zealand there appears to be a lack of direction around self management at a policy level. In both the UK and Australia, initiatives are in place which actively support self management[138] and these have assisted in the acceptance of the role of self management in the health care system. Self management has a key role to play in the management of cardiovascular risk and the next section reviews the barriers identified to the self management of cardiovascular risk in the literature.

2.4.2. Self management

A variety of barriers were identified via the literature which could potentially impact on a person's ability to self manage their cardiovascular risk.

A significant barrier identified in several papers was an individual's perception of their cardiovascular risk.[139-143] Some aspects of CVD do not give rise to perceptible symptoms, so patients may not always understand the need to make lifestyle changes.[142] In one study, a patient expressed the following: "*How do I convince myself about the fact that I should act preventively, when I feel well?*".[144] Even when individuals do understand the risk associated with some of their unhealthy habits, there is a tendency to minimise their risk relative to others.[142] A Dutch study[139] found that nearly a third of patients were either too optimistic or too pessimistic as regards their risk levels. A UK study[140] showed that the majority of people attending for screening, saw their risk of a heart attack as average or lower than average. A bias towards optimism is well documented and can impede a patient's readiness to change.[142] [143] A divergence between a patient's actual cardiovascular risk and the patient's risk perception can lead to tension between health professional and patient,[139] creating an additional barrier to cardiovascular risk management and potentially affecting adherence to management strategies.[10] Many general practitioners find explaining cardiovascular risk challenging and time consuming[145] and feel pessimistic about their ability to meaningfully assist patients with lifestyle changes.[10] Doctors have reported feeling weighed down by the complexity of managing patients with multiple risk factors.[133] The whole area of communication is fraught with difficulties for both the health professional and patient. Many of the perceived barriers identified by practicing primary care doctors in a recent study[146] relate to their communication ability. These included promoting a patient's understanding of treatment goals, skills to facilitate patient adherence, and skills to provide dietary recommendations. The majority of general practitioners and practice nurses have limited exposure to techniques in effective health behaviour change,[16] and so lack the confidence they require to promote adherence to behaviour change regimes and medications.[16] Lack of

confidence to communicate effectively with patients can potentially impact on the health professional's ability to involve the patient in decision making.

Including patients in decisions about their health is not always the norm but is believed to be important from a variety of perspectives including an ethical, clinical and public health perspective.[147] [148] A strong case can be made for the importance of the role of shared decision making in the arena of CVD prevention.[147] Patients are frequently faced with having to think about multiple lifestyle changes as well as considering the implications of taking lifelong medications.[147] If patients are to effectively manage their CVD risk, they need to be involved in decision making.

Research indicates that involving patients in health care decisions generally results in better health outcomes.[147] [149] While shared decision making in health care is a relatively recent phenomenon, most patients are not currently involved in health care decisions pertinent to them, to the degree they would like.[149] Interactive decisional aids have been developed to assist with the process of shared decision making. Currently, the understanding in relation to the optimal format for interactive decision aids is limited.[150] The format of the interactive decisional aid is not the only factor impacting on risk communication; how risk communication is framed, is also pivotal.[59] Efficacy in relation to preventing heart diseases was shown to increase by using gain framed messages as opposed to loss framed messages.[59] Improved attendance at screening can also be enhanced by the use of wellness framed messages as opposed to messages framed as threats,[59] while the use of negatively framed communication around absolute cardiovascular risk can promote acceptance of treatment.[59]

Barriers also exist regarding the implementation of decision support resources for patients. In part, this is due to lack of evidence to support their use in facilitating shared decision making in routine practice.[151] Other roadblocks include lack of time and clinician attitudes.[151] A recent study by van Steenkiste and colleagues[152] established that general practitioners found the new approach of working in a partnership with patients as challenging. They found the use of decision aids difficult, as they were perceived as time consuming and possibly increased the general practitioners' low self efficacy regarding behaviour change.

While there is an ever growing body of evidence around shared decision making and the use of interactive decision aids, the implementation of the concept is faced with several obstacles, with time being identified as a significant constraint.[151] However, involving patients in their health care

decisions and hence reducing decisional conflict and improving congruence between patient preferences and the selected clinical options, has been shown to improve adherence to treatment decisions.[153]

Adherence to advice regarding lifestyle change and the consistent taking of medication, is challenging. Adherence can be defined as: *"persistence in the practice and maintenance of desired health behaviours and is the result of active participation and agreement".*[154] This definition further emphasises the role of shared decision making in health care. Research has established that adherence to lifestyle changes and medication varies between 20%-90%,[155] with estimates generally averaging around 50%.[11] Adherence is influenced by the following: perceived health risk status, health knowledge, goal setting and decision support, presence of a collaborative relationship with the health care provider, self-efficacy and the influence of socio-economic demographics.[154] A personal belief that there is a level of individual risk and susceptibility influences adherence, as does family and peer support.[154] The absence of these factors results in barriers to a successful transition and adherence to a healthier lifestyle.

The presence or not of ambivalence can also have a significant impact on decisions patients make in relation to lifestyle changes and treatments.[144] Kehler and colleagues[144] identified five sub-types of ambivalence and all relate to motivation regarding lifestyle change and taking medications. The sub-types were:

- Perception ambivalence related to ambivalent feelings regarding perceptions of risk;

- Demand ambivalence, related to conflicting demands from health care system, family and their own demands, creating a sense of confusion and increasing levels of stress;

- Information ambivalence, related to confusion about how much and what type of information they needed;

- Priority ambivalence, derived from either a low commitment to prioritise health or as a result of physical barriers preventing individuals to participate in health behaviours, such as arthritic pain preventing participation in exercise;

- Treatment ambivalence emerged from ambivalent feelings related to the need to make lifestyle changes and take medications.

Ambivalence can have an inhibitory influence on an individual's decision regarding lifestyle change and taking medications,[144] thus affecting their self management ability. The complexity of ambivalence as illustrated above highlights the need for effective communication during the consultation.

While most doctors are exposed to communication skills during medical school, very few are exposed to effective counselling techniques[16] which results in low levels of self efficacy in this area.[16] The case managers in the American Diabetes Prevention Programme were trained in counselling on nutrition, exercise and behaviour modification; topics not commonly covered in the curriculum of doctors or nurses.[109]

A health professional's ability to communicate effectively is of particular importance when the health provider and patient do not share a common culture.[156] For Maori, the majority of their health care interactions are with health care providers of another culture and so there is significant potential for misunderstanding.[156] The following have been documented in the research as occurring when a provider and patient are from different cultures; less listening and discussion, lower standard of care and less attention to establishing, building and maintaining the relationship,[156] all of which have the potential to impact on the individual's ability to manage their cardiovascular risk.

Low levels of health literacy is an additional barrier which effects a person's ability to self manage.[138] Health literacy relates to an individual's ability to identify and understand health messages, as well as knowing how to access information and services and the skills to decide which information is relevant.[138] Health literacy is central to a person's ability to participate in decisions related to their health care, as it impacts on their ability to be able to communicate effectively with their health care provider.[138] While health literacy also influences a patient's adherence to treatment,[138] health literate individuals are also better able to make healthy choices and adopt healthy lifestyles.[157] It has been established that people with poor levels of health literacy are not so responsive to health education; they utilise disease prevention services less and are more likely to experience higher health care costs.[149] According to the American Medical Association, poor health literacy is "a stronger predictor of a person's health than age, income, employment status, education level and race".[158] While some individuals may have high rates of functional literacy, this does not always translate to health literacy ability as the vocabulary and concepts used in healthcare can appear foreign.[149]

There is a strong correlation between socioeconomic disadvantage and CVD prevalence and mortality.[46] A person's socioeconomic position affects the extent to which an individual can manage their health and the opportunities they have to do so effectively.[159][160] Barriers to self management potentially impact more on those who are disadvantaged in society. In New Zealand society, socioeconomic inequalities are not the only inequalities impacting on a person's health status; a person's ethnicity also effects their health status.[46] The work of Harris et al.,[45] showed that Maori are disproportionately affected by racism compared to European ethnic groups. The study also showed a relationship between poor health and experiences of racism that was independent of socioeconomic position.[45] Recently a study[161] identified some common obstacles to self management that disproportionately affect disadvantaged cardiac patients. Barriers identified which are pertinent to the New Zealand health care setting and those at high cardiovascular risk are illustrated in the table below.

Table 7: Barriers to self management for disadvantaged patients

Theme	Impact
Inadequate coordination of care	In the study this related to secondary primary care coordination but in relation to those at high cardiovascular risk it is equally likely that this could occur between general practice and allied health or general practice and a community support programme.
Lack of continuity	This was identified as causing confusion and anxiety for patients. Disadvantaged patients reported not seeing the same health care provider. This could equally impact on those at high cardiovascular risk.
Inadequate information	Lack of information was identified as impacting on understanding and ability to self manage, especially in relation to medications.
Lack of provider support	A poor relationship between provider and patient was more likely to result in patient being non-adherent with medications due to the provider not taking time to explain purpose of the medication, possible side effects or potential adverse reactions.
Psychosocial issues	Changing unhealthy behaviours and having to adhere to multiple medications were cited as causes of stress and anxiety.
Social supports	Importance of having family and friends to support you to stay on track

The information presented above illustrates the significant barriers which have the potential to impact on an individual's ability to manage their high cardiovascular risk status. Two key themes underpin many of the barriers highlighted; communication challenges and a patient's characteristics, circumstances and perceptions.

2.4.3. Delivery system design

Reduction in cardiovascular morbidity and mortality can be achieved by the delivery of effective preventive health care services.[162] However, Hung, et al.,[119] identified that practices whose culture did not support quality improvements were less likely to adopt recommended preventive services to assist patients modify their risk behaviours. This section considers the challenges related to the delivery of effective health care, as a result of organisation barriers within primary health care.

The previous section on self management considered factors which impact on an individual's ability to self manage, however factors which have impeded the acceptance of self management programmes within primary health care are also worthy of consideration.[138 163] These programmes have the potential to assist primary health care with the management of those at high cardiovascular risk. While promotion of a person's ability to self manage is part of primary care, self management support programmes are generally established alongside primary health care frequently with inadequate engagement between the two.[163] This lack of integration within primary health care, low levels of awareness around referral pathways and uncertainty amongst health care professionals regarding the effectiveness of such programmes, has resulted in low rates of referral.[138 163] The low numbers of health professionals trained in self management is yet another barrier to the acceptance of the role of self management within the current health system.[164] Self management requires the individual to gain not only knowledge but also skills.

A key impediment for those with multiple risk factors is that many of the programmes that are available and funded to assist people with risk management are single risk factor focused, such as smoking cessation or weight management programmes. This does not address the fact that the majority of individuals at high cardiovascular risk have multiple lifestyle risk factors to modify.[165] The challenges facing those identified at high cardiovascular risk are very similar to those with established CVD.[59] Currently there are no formal multiple risk factor modification programmes delivered in primary care in New Zealand for those at high cardiovascular risk, similar to cardiac rehabilitation programmes delivered in secondary care for individuals with established heart disease.

While the Primary Health Care Strategy,[4] recognised the fact that no one health professional can meet an individual's needs, in the current health system in

New Zealand it is still rare to find allied health professionals such as dieticians, pharmacists and physiotherapists co-located in general practice. Limited access to specialist support staff has been recognised as a barrier to cardiovascular risk management.[133] In the study by Rosal et al.,[133] physicians in the focus groups expressed a wish for assistance with managing cardiovascular risk and favoured the use of support staff over additional physician training in behavioural modification. The authors considered that this finding was possibly linked to time and financial constraints.[133]

The General Practitioner is generally viewed as the provider of primary health care. This presents another barrier to preventive health care, which does not always require medical care. The benefits of involving primary care nurses in disease prevention are well established,[166] however the lack of understanding by the public of the expanding role of the practice nurse, adds to the difficulty in re-designing the delivery of primary health care.[167] Horsburgh et al.,[168] found that the establishment of nurse led clinics for managing cardiovascular and diabetes risk reduction in primary health care, required the presence of a practice champion to assist with the adoption of changes.

Teamwork is one of the principles underpinning primary health care.[169] The Primary Health Care Strategy[4] acknowledges the essential role of multidisciplinary teams to the delivery of effective primary health care, however current funding models neither support or promote this.[169] The readiness of general practitioners and practice nurses to work together is not enough to ensure and sustain collaborative practice.[169] Barriers to teamwork identified in a recent literature review by Xyrichis and Lowton[170] comprised of two themes each with three categories. The information has been collated into Table eight below.

Table 8: Barriers of teamwork in primary health care [170]

Themes	Category 1	Category 2	Category 3
Team structure	Team premises – lack of geographical co-location is a barrier	Size and composition of the team – large teams are less effective and teams with less occupational diversity are less likely to be innovative Lack of a clear understanding of who the leader is can result in frustration and poor decision making	Organisational support - lack of organisational support can result in team members feeling discouraged and they tend to gravitate to old ways of working.
Team processes	Team meetings – lack of regular team meeting does not promote inter-professional team working and can result in misconceptions regarding roles and responsibilities	Clear team goals – lack of agreed clear goals and objectives is a barrier to good team functioning and deters understanding around roles and responsibilities and inhibiting effective working	Use of audit – if teams do not receive feedback as to their effectiveness they can find it frustrating

In a recent paper Pullon highlighted the precursors required for successful team working and these included:

- Prior and/or concurrent inter-professional education, training and learning about working in teams;

- Organisational and structural support at both the health system and practice level;

- Dedicated, uninterrupted and adequately funded time for team development and refection;

- Effective leadership.[169]

She also commented that all or most of these have to be in place to ensure effective team working.

The lack of shared training opportunities for general practitioners and practice nurses[167] equates to missed opportunities to promote reciprocal inter-professional respect and effective teamworking.[169] While PHOs can ensure that continuing medical education sessions are open to general practitioners and practice nurses, responsibility for ongoing workforce development needs to be supported at Ministry of Health and DHB levels, as it sits outside the existing resources available at a individual practice or PHO level.[169] The Clinical Training Agency[171] unfortunately does not support training courses open to multiple health professionals. Potentially this equates to a missed opportunity.

In multiple papers,[16] [142] [172] time is raised as a key constraint to the establishment of CVRA and management programmes due to the time taken for behaviour change. To overcome time constraints requires a revisiting of roles and responsibilities within the general practice team.[168] However, historic professional boundaries in primary health care and its associated hierarchical structure make effective team work challenging.[173] Teamwork has been identified as a specific organisational requirement for effective CVRA and management.[162]

Other barriers within the current system can be as simple as an inability to get an appointment to see a general practitioner, practice nurse or allied health professional and arranging transport to the practice for an appointment.[160]

The barriers considered in this section essentially relate to funding mechanisms and team working, both within the practice and with community partners. Until these barriers are addressed, the CVRA and management programme in primary health care is going to be problematic, and its potential unfulfilled.

2.4.4. Decision support

A contemporary paper[174] considered the 2003 New Zealand Cardiovascular Risk Assessment and Management Guidelines to be the fifth most rigorously developed of the recent guidelines in this area. Despite the rigour of their development, implementation and uptake of the guidelines by primary care has not been consistent. Audits of the risk management of those identified at high cardiovascular risk have shown evidence-practice gaps, here in New Zealand and elsewhere.[56] [70] [114] [175] A recent European study[135] documented the following implementation barriers in specific regard to cardiovascular prevention guidelines; patient compliance, lack of time, and health policy. An earlier

review by Benjamin et al.[16] considered the following as barriers to guideline implementation and uptake: resentment of the perceived rigidity of guidelines and the apparent loss of autonomy, concerns regarding the scientific rigor and independence of the guideline as well as disagreement between guidelines. Van Steenkiste et al.,[175] highlighted similar concerns around guidelines but also drew attention to knowledge and skill barriers which impacted on the implementation of guidelines. These knowledge and skill barriers related to lack of knowledge of the high risk approach and lack of self efficacy around risk communication and behaviour change which was linked to a negative perception around preventive medicine.[175] However, while it may be easy to point the finger at health professionals for not following the evidence contained within the guidelines, the current health care system is not wholly supportive of, or set up, to support preventive health care.

As illustrated above, the barriers to the implementation and uptake of guidelines are well documented in the literature.[176] In an attempt to overcome some of these issues, computerised decision support at the point where decisions are made, has evolved. In theory, computerised decision support should lead to safer, more effective and better quality of care.[177] In New Zealand, there are a small number of such programmes to choose from to support CVRA and management including PREDICT[TM56], EDGE[56] and Bold Promise.[178] Despite the proven benefits associated with these systems such as improved patient safety, better disease specific outcomes and reduced healthcare costs,[179] barriers to the implementation of these support packages in primary care exist. These barriers include the capital investment required to purchase the package, on-going maintenance costs, the staff requirement to maintain such the systems,[177] computer literacy issues, compatibility of software with patient management systems, and the potential for the duplication of record keeping (if information does not pre-populate).[176] There is also the perception that they have the potential to harm the doctor patient relationship and threaten clinician's autonomy.[180] In Australia, clinical computerised systems are established in general practice in a somewhat proprietary manner, with an absence of active engagement between the software developers, government, clinicians and funders.[181] It is probable that these challenges also exist in New Zealand.

2.4.5. Clinical information systems

Poor clinical information systems were identified in a recent study by Crosson and colleagues as a barrier to delivering appropriate care,[160] citing difficulty in accessing current information at the point of care as a key obstacle. Clinical

information systems allow for the creation of registers of individuals at high cardiovascular risk and allow for their care to be tracked over time as well as facilitating their recall for regular checks.[121] Studies looking at the effect of disease registers have found them to have a positive effect on the quality of care[182] as they allow practices to audit their care and hence support quality improvement. However, the quality of the data entered into the clinical information system ultimately impacts on its use and general practice data can be variable.[182]

While lifestyle intervention should form the initial management of patients at high cardiovascular risk,[6 59] European research has shown that the recording of lifestyle interventions is variable across multiple countries.[59] A recent New Zealand study looking at the documentation of blood pressure, cholesterol, smoking and diabetic status found that all these risk factors were only documented in 16.1% of 1680 notes audited in primary care.[69] While this study audited notes prior to the launch of the 2003 CVRA guidelines,[6] two more recent Australian studies[183 184] highlighted similar issues. If relevant data is not recorded, then the potential of clinical information systems to support the effective management of cardiovascular absolute risk over time is unmet[183] and the potential to prevent disease lost.[119]

2.4.6. Community Resources

There has been little research undertaken to establish the link between community resources and effective chronic condition management[182] or the role of community resources in disease prevention.[119] There are a multitude of barriers to the provision of lifestyle interventions in primary health care as previously alluded to. However, making multiple lifestyle changes and sustaining long term pharmacological treatments is complex, and individuals need to be connected with resources in the community which can support them to do so.[134] As previously mentioned, the integration between community resources and primary health care is generally underdeveloped.[163] A 2006 study by Jilcott et al[185] found that linking patients to community resources to assist with the facilitation of behaviour change, was problematic.

Potentially patients could receive significant support for behaviour change from various community programmes. Lack of awareness and low levels of confidence amongst primary health care professionals regarding many community run support programmes,[186] is a significant barrier to patient participation in such programmes. Low number of referrals to such programmes result in a knock-on effect, threatening the programmes'

existence.[186] The significance of the CCM's community element has received an growing focus [119] as evidenced by the emergence of the Expanded Chronic Care Model.[124]

Overall, it would appear that more strategies need to be developed to improve the utilisation of services beyond the clinic walls to support people making lifestyle changes such as referral to local groups or evidence based websites.[59]

The sections above have discussed the myriad of barriers to the effective management of those at high cardiovascular risk within the primary health care sector, as identified from the literature.

The final section of this chapter explores the facilitators to optimal cardiovascular risk management that were discussed in the literature. The facilitators are again considered within the framework of the CCM as potential approaches for addressing the barriers outlined above.

2.5. Potential facilitators to the optimal management of individuals with high cardiovascular risk.

The incorporation of approaches in primary health care to change adverse lifestyle behaviours, maintain healthy ones and improve adherence to lifetime medication, is challenging. However the potential for synergies between the care of people with chronic illness and those needing support with preventive care, offers several opportunities. Some of the facilitators discussed below are accessed from the literature regarding chronic condition management while some come from papers focused on preventive health care.

2.5.1. The Health System Organisation

Funding arrangements can facilitate access to primary health care, however the evidence about the best way to fund primary health care to meet preventive health care is limited and inconclusive.[187] Policy makers have found it challenging to invest in preventive health care to the same extent they have in treatment services.[121] Increased funding would allow for more reasonable reimbursement policies related to preventive health care.[16] [119] However, a key success of the Primary Health Care Strategy,[4] the reduction in cost to accessing first contact care[188] has lessened this barrier to accessing preventive care.

In New Zealand, primary health care is funded via a blended payments system, including a fee for service, (patient co-payments can make up to half of the cost of a GP visit), capitation and distinct funding streams such as Services to Improve Access, Health Promotion and Care Plus.

In their rapid review of the literature, Young and colleagues[187] suggested that based on the limited current evidence, funding will result in better health care if it is:

- based on key generic principles to identify the target population and their issues;

- underpinned by principles to direct implementation and monitoring;

- assisted by practice level funding that supports the primary care team to deliver preventative health care by embedding information management support, education, training and research and evaluation strategies;

- monitored according to practice level targets;

- measured in relation to service outputs and short and long term health outcomes.

They then suggest that any funding system needs to ensure the cost effective use of upfront payments to practices for planning, implementation and monitoring of preventive care. These activities require support from information management, practice organisation and team management and they propose that this support could be provided via support from an organisation similar to a PHO.

The inclusion of preventive service markers in the PPP[189] measures is a useful start, as achievement of targets set are linked to a monetary incentive payment. Of the initial list of clinical indicators monitored, four out of the eight included preventive health care markers such as cervical smears recorded in the last three years.[189] The inclusion of a measurement focused on CVRAs is a positive step.[127] The PPP is based on a similar philosophy to the Quality Outcomes Framework, (QoF) in the UK.[190] A key benefit of the QoF is that it has shown that financial incentives can lead to the adoption of new approaches that contribute to improved quality of care,[191] which is relevant in relation to preventive health care initiatives.

2.5.2. Self management

Barriers to self management were many and conversely, facilitators to strengthening this approach in primary health care are also numerous.

Effective communication between general practitioners or practice nurses and patients regarding the individuals risks and potential strategies to reduce risk, is crucial.[150] The more capable the communication, the greater the potential to

save lives, reduce the risk of illness and increase cost effectiveness.[150] A focus group study by Hill and colleagues,[150] found that consumers and general practitioners shared comparable preferences for formats of how absolute risk was conveyed. Graphical formats were identified as the most preferred format, with icons and line graphs seen as confusing or possibly misleading.[150] Consumers in this study did not like the use of the term "absolute" preferring the term "personalised", which then linked the risk back to them.[150] Both consumers and general practitioners showed a preference for the five year risk time frame, considering a ten year time frame too remote and not aiding the promotion of behaviour change.[150] Consumers also stated the importance of the general practitioners communication skills.[150] General practitioners and practice nurses understanding of absolute risk, confidence in communicating the concept to the patient and the ability to use the tools effectively, all facilitate risk management.[150] The need for unambiguous risk communication tools is vital to resolve the discord between patient and health professional understanding of risk and to facilitate the shared decision making process.[150]

Communication approaches that assist in promoting behaviour change include assessment of readiness to change, motivational interviewing, the 5"As", (Assess, Advise, Agree, Assist and Arrange follow up), and collaborative goal setting.[192] A systematic review of providers' attitudes to shared decision making reported that the three most frequently cited facilitators were motivation of health professionals to embed shared decision making into practice, their perception that implementation of shared decision making will lead to improved patient outcomes and finally the perception that implementation of this style of working will enhance health care processes.[193] [194]

The "5As" framework has a long history in supporting behaviour change. Glasgow and colleagues suggest that a more systematic use of the framework will enhance behavioural change management in primary health care.[195] The "5As" framework is more than a theoretical approach. It provides staff with a set of "how to" guidelines and is consistent with other behavioural change approaches, such as motivational interviewing and stages of change.[195] The "5As" cycle is illustrated below in Figure One.[196]

Figure 1: Five A's cycle [196]
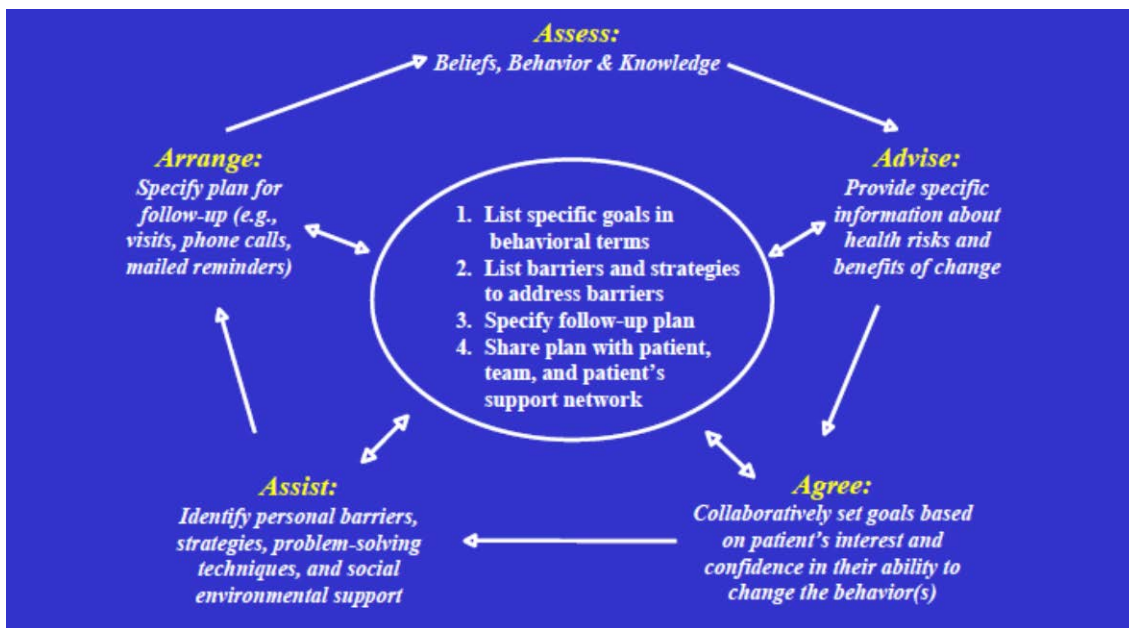
Each step informs the next, so they are not designed to be used in isolation. The final two "As", have been found to be especially significant in relation to behaviour change outcomes. Unfortunately, they are the two components least likely to be conducted.[195] The "5As" framework lends itself to promoting community, primary health care integration as some of the outcomes of the "As" can be delivered outside of the general practice.[196]

Goal setting and action planning go hand in hand.[192] When specific goals are drilled down to specific courses of action, this is known as an action plan.[192] Facilitators to the adoption of this process include the use of non-clinician staff[192] and the training of practice nurses in the process of action planning and goal setting.[192] The most frequent goals set by primary care patients involve physical activity and diet.[197] Since participation in physical activity influences other health behaviours such as smoking cessation and dietary changes,[198] then at a practice level, ensuring people who have multiple behaviours to change are issued with a Green Prescription,[75] may facilitate a behavioural change momentum.[198]

Another strategy to assist with goal setting is the use of computers with interactive programmes to work with patients to set goals.[192] Internet based patient education and support interventions have been associated with increased knowledge and improved behavioural and clinical outcomes.[199] Glasgow and colleagues[200] suggest that interactive behaviour change technologies (IBCTs) may have potential to assist with behaviour change

support before, during and after the consultation in primary care.[200] Interactive behaviour change technologies include web based behaviour change programmes, CD ROM interventions using touch screen kiosks or similar, interactive voice response technologies and personal digital assistants.[200] The use of IBCTs in conjunction with the "5As" model of behaviour change is discussed by Glasgow and colleagues[200] and they prefer an overview of how IBCT may be used in connection with the "5 A's" model as illustrated in Table nine below.

Table 9: Examples of using IBCTs to support behaviour change counselling before, during and after practice visits[200]

Timing	5As	
Before	**Assess**	**Prior to visit** E-mail reminder re goal set last visit, uploading of self monitoring records (e.g. diet and exercise)
	Advise	**Waiting room** Patient completes computerised health risk appraisal or self management form and receives immediate feedback Patients are surrounded by information on e-health promotion
During	**Agree**	**Nurse consult** Nurse gives patient print out or PDA (Personal Digital Assistant) feedback on changes since last visit, e.g. blood pressure, weight related to behaviour Nurse or PDA inquires about self management goal(s) since last visit Electronic self management form displays area that is currently of most concern (highlighted for doctor, to reinforce for patient and signify the importance of self care).
	Assist	**GP Consultation** General practitioner checks PDA, computer or printed self management form and discusses area of most concern. Message: "I see you would most like to discuss X, this is a serious health issue and your behaviour is important in managing it". Reinforces patient's willingness to change behaviour and writes a prescription for an e-health behaviour change programme

After	Arrange	Internet/CD ROM follow up
		Reviews and clarifies goal(s) for behaviour change
		Develop specific, realistic, measureable action plan
		Has patient identify barriers to goal and assists in problem solving
		Constructs plan for continued support
		Transmits goal with copy for patient and plan for follow-up to practice

While the use of IBCTs is relatively new, their efficacy has been tested in rigorous trials in motivated clinical practices.[200] Behavioural change counselling has the greatest effect when it is coordinated and sustained[200] and IBCTs offer the opportunity to augment the range of support on offer. A pilot study by Goessens, et al.,[199] identified the following benefits of supplementing usual care with the internet: it removes the burden of transportation to the practice, contact is at a time of the patient's choosing, more intensive contact is possible compared to a face-to-face contact and the key messages are readable and accessible at any time.

The Coaching patients On Achieving Cardiovascular Health, (COACH) programme from Australia has achieved significant results in patients with established coronary heart disease.[201] In view of the fact that the risk factors requiring management in this patient group will be the same as those in patients at high cardiovascular risk, the potential of this programme for those at high cardiovascular risk is worthy of consideration. Briefly, the COACH programme is a disease management programme delivered via the telephone.[201] COACH assists people to achieve targets for their risk factors and encourages them to take the recommended medications for the management of their particular condition(s).[201] Generally the programme lasts about six months and involves the patient's usual doctor(s).[201] In two randomised control trials, COACH was found to result in significantly better risk factor status than usual care.[201] In the study reviewing outcomes at the two year follow up stage, 18 months following cessation of the intensive coaching, all variables (lipid profile, blood pressure, glucose status, body mass index, BMI, waist measurement, smoking status, performance of regular walking and adherence to recommended drugs – aspirin, lipid modifying medications, rennin-angiotensin system antagonists and beta blockers) with the exceptions of BMI, adherence to anti platelet therapy and adherence to beta blockers, were significantly better compared to the initial assessment.[201] This programme clearly assists with

improving adherence and intuitively, it would appear it addresses ambivalence as well. It has significant potential for those at high cardiovascular risk and depending on how it was implemented, the potential also to reduce the workload for primary health care.

Another strategy identified to assist in supporting self management of cardiovascular risk factors, is the addition of a community health worker to the team.[202] A community health work (CHW) is a trusted and respected member of the community.[203] The CHW is able to provide encouragement for positive healthy behaviour within their community as well as bridging the cultural and linguistic barriers between their community members and health and social services.[202] [203] Other roles assumed by CHW include that of patient and community advocate, "coaches" for risk factor management and "navigators" for patients, assisting them through the health care system.[203] Randomised control trial evidence exists of the significant improvements in participants' blood pressure care and control due to the involvement of CHWs.[203] Feedback on the National Health Committee's discussion paper regarding people with chronic conditions highlighted a need for generic CHWs as a way of connecting the patient to health and social services.[204] An individual likened this connecting to "paving the way" for nurses to begin working with people.[204] The importance of the CHW speaking the same language as their clients and being part of their community was also noted.[204]

In the 2005 report by CBG Health Research Limited for the Ministry of Health, they suggested a distinction could be drawn between CHWs linked to a practice or practices and those who could be based within the Primary Health Organisation in a more community development role.[205] The former has the potential to enhance the individual's ability to self manage, while the latter could have a more population health perspective and focus on promotion of environments and services that promote self management in the community. This further highlighted the potential of these roles. In view of their proven efficacy and given their natural ability to enhance cultural competency at practice level and bridge the health literacy divide, the incorporation of the CHW model, especially in areas where practice teams are looking after populations most in need,[202] is clearly a facilitator to improved self management.

An approach that has been shown to facilitate compliance with multiple medications is to combine patient education with other strategies such as decreasing dose frequency, improving tolerability of the regime and motivational strategies.[115] Blood pressure management was shown to improve from 28%-81% through the use of a pharmacist managed hypertension clinic,

utilising frequent follow up and patient education.[115] Utilisation of home blood pressure monitoring is another strategy which has enhanced adherence with medication.[115]

A final and somewhat controversial possible facilitator of lifestyle behaviour change, is the use of financial incentives, not for primary health care but for patients.[206] Incentivised behaviour change has been studied in relation to smoking and weight loss programmes.[206] Of the 17 trials included in a recent Cochrane review, none demonstrated higher quit rates when incentives were used,[206] however a recent workplace trial did show higher cessation rates at 12 months.[206] This trial used incremental incentives with the largest linked to abstinence at 12 months.[206] In relation to weight loss programmes, a meta analysis has shown a weak relationship in favour of incentives when they formed more than 1.2% of the individual's income.[206] There are of course, consequences to using financial incentives as well as moral concerns, however it is one of the numerous ways of potentially changing behaviour, ranging from provision of information to legislation and therefore, deserves contemplation.[206]

2.5.3. Delivery System design/re-orientation of health services

The literature contains several suggestions regarding how best to facilitate changes in how the health system delivers care, that will bring about maximal health gain.

To be able to effectively support patients to make multiple behavioural changes requires practices to redesign their environment and processes.[195] Essential practice restructuring steps include defining the roles and responsibilities of staff, transforming the delivery of care from a doctor centric approach to one that utilises the staff within the practice and the utilisation of electronic tools and telephone follow up.[195]

The "teamlet" model of primary care has been suggested as a possible option for redesigning the delivery of care and reducing the workload of the general practitioner.[207] In this model, two health coaches are assigned to one general practitioner. Health coaches can be nurses, health educators or community health workers but should be culturally and linguistically concordant with their patients.[207] The "teamlet" process involves a pre-visit with the health coach who ensures the necessary tests are completed, assesses progress towards goals and negotiates the consult agenda.[207] This is followed by the consult involving the patient, health coach and general practitioner. The health coach's role during the consult is to assist the clinician by undertaking tasks such as filling in forms to be signed, so that the clinician can focus on the patient.[207] The post visit

follows the consult and during this time, the health coach re-caps with the patient what was discussed during the consult and engages the patient in setting goals and negotiates an action plan.[207] Between visits, health coaches either telephone or e-mail patients to discuss how things are progressing and find solutions if patients are encountering barriers.[207] This model shares the care across other staff and reduces the general practitioner's work load. However, potential challenges to the concept include:

- Lack of continuity of care;

- The possible negative effect of a third person being present in the doctor patient consult;

- "Teamlet" patient relationships may prove difficult if patients want to share information with either the doctor or the health coach but do not want them to tell the other.[207]

Another option for addressing the challenges of general practice work load and the tyranny of the brief consult, is the concept of shared medical appointments.[208] The appeal of these is linked to their ability to facilitate patient peer support and improve practice efficiency[208] as well as improving patient access and knowledge[209] and reducing the use of emergency care.[209] In the shared medical appointment, a group of patients (8-20), are seen by a multidisciplinary team over a one to two hour appointment.[209] [210] Group visits have also been found to improve patient satisfaction with care and quality of life.[209] [210] The multidisciplinary team usually consists of the patient's usual general practitioner or nurse practitioner, a practice nurse, a medical assistant and a behavioural health specialist.[209] The potential benefits of shared medical appointments for both patients and providers are listed below:

- Patient benefits

    o Learning opportunity in an interactive setting in the company of others with the same chronic condition, concerns questions, difficult lifestyle behaviours;

    o Sharing of experiences, successes and failures with peers;

    o Socialising with peers and potentially forming a support network;

    o Increasing access via decreased waiting time.

- Provider benefits

- Increased productivity without increasing hours or costs;

- Improved access and efficiency while reducing the backlog;

- Empowering patients to be responsible for their own care;

- Freeing of slots for acute visits;

- Increasing patient education.

An additional benefit of shared medical visits is that they may assist in the promotion of inter-professional team work.[211] A preliminary evaluation suggests that participation in shared medical appointments enhanced confidence in the ability to communicate with other health care professionals from different disciplines.[211]

In a small study, Kirsh and colleagues[210] examined the use of shared medical appointments for patients with diabetes with high cardiovascular risk. In this study the intervention group showed significantly greater reductions in HbA1c and systolic blood pressure compared to controls.[210]

A key challenge to the embedding of group visits in primary health care is that for many patients, they find the concept hard to understand.[211] Low patient numbers decrease the cost efficiencies and impact on group benefits.[211] However, this model of care potentially has possibilities within the soon-to-be established integrated family health centres in New Zealand.[212]

In an effort to increase the rate of cardiovascular risk assessments and management, and in recognition of the dearth of research regarding the best models for implementation, Wan and colleagues[145] suggest a shared risk management model. This study was a focus group study with general practitioners, patients and key informants.[145] Their proposed model focused on the patient's self assessment of risk prior to the consult and shared care in relation to management of risk.[145] Both patients and general practitioners thought the concept of the patient undertaking a self assessment of risk prior to the consult was a good idea.[145] Patients felt it would increase their awareness and assist the discussion they had with the general practitioner during the consult.[145] Patients also felt that involving other health professionals in cardiovascular risk management would assist them in managing their risk.[145] Some patients did express concern that advice from different health professionals was not always consistent and could be confusing.[145] General practitioners considered that patient self assessment could assist in generating the discussion around cardiovascular risk as well as saving them time and

improve their understanding of the patient's risk.[145] General practitioners believed the waiting room was the preferred place for a patient to complete the self assessment, as they thought the form might get lost or not be completed if mailed to the patient's home[145]. The concept of sharing the management of cardiovascular risk with other practice staff was supported by general practitioners, however some key informants expressed concern that it might add complexity to management tasks and require additional funding and training.[145] Overall, participants in the focus groups supported patient self assessment of risk as a means of facilitating improved self management skills as well as the sharing of roles with other practice staff.[145] It was acknowledged however, that the latter needed to be supported by effective systems.[145]

A recent study looking at improving cardiovascular prevention by using best Continuing Medical Education (CME) practice, found that a clinical intervention where nurses were trained to assist with knowledge translation post CME by providing practices with support, resulted in improved patient care.[213] Nurses were trained to screen medical records of those older than 55 years old for potentially undermanaged high risk cardiovascular patients, prompt doctors to reassess cardiovascular preventive care in these patients by placing a label in the front of their notes, report on the most recent pertinent information such as bloods and complete a checklist.[213] The intervention was designed to overcome barriers to preventive care in general practice including a lack of time, lack of patient detection systems and lack of reminders. The results reinforced the evidence that providing follow up post CME, is more effective than CME alone.[213]

Another recent study also used nurses as practice change facilitators to improve the delivery of health behaviour services to patients.[214] Nurses have been shown to be effective in assisting practices to review their performance, identify goals for improvement and provide support for change.[214] The two nurses in the study were trained in communication and facilitation as well as the practical application of the "5A's" model to support practice change.[214]The principles that apply to supporting an individual to change behaviour are equally pertinent to supporting a practice to change its behaviour (processes of care).[195] As a result of the support provided by the nurses, practices were able to identify and implement practice change improvement plans.[214] The plans identified specific roles for staff such as the receptionist to distribute patient questionnaires (ask), to nursing/medical staff asking about health behaviours and interest in changing (ask and assess), to doctors providing advice and assistance.[214] Very few of the practices selected to address the final "A", arrange.

However, a large percentage of practices increased their recording of asking patients about their health behaviours and documented having intervened with them.[214]

The importance of nurse led interventions in the management of cardiovascular risk factor reduction is well established.[215] The use of nurse led clinics is verified in relation to blood pressure management, cholesterol reduction, dietary modification and increasing physical activity.[215] Their role in successful smoking cessation is less clear.[215] In New Zealand, nurse led CVRA programmes have been shown to be successful.[216] An audit in a Northland general practice where a nurse led CVRA and management clinic was established, showed that of the patients with a follow up risk assessment (53% of patients who had an initial assessment), improvements were seen for several risk factors.[216] Cardiovascular risk factors that improved were weight loss and compliance with medications, which had a flow on effect in relation to blood pressure and lipid control.[216] Other improvements included increased levels of reported physical activity and more patients attempting to stop smoking.[216] The use of the nurse to facilitate the clinic was a key factor in this initiative, as the general practitioners often lacked the time to engage with patients around cardiovascular risk reduction.

A case management approach has also been identified as a strategy to enhance cardiovascular risk management. A Canadian study looked at the use of a nurse and dietician case management approach for reducing risk factors in low income, primarily ethnic minority patients where 63.0% of the cohort had Type 2 diabetes and the primary outcome was the Framingham risk score.[217] Both the control and the case management group continued their usual care with their primary care doctor.[217] The case management group received a one on one nurse and dietician-led case management intervention.[217] Principal case management interventions included the following:

- Intensive individualised care

- Continuity of care and coordination of with primary and speciality care

- Self management support

- Implementation of evidence based treatment guidelines for primary and secondary cardiovascular prevention

- Behavioural counselling to improve physical activity, nutrition, weight management, stress reduction and medication adherence.[217]

The primary outcome of a change in the Framingham risk score was significantly different in the case management group compared to usual care. Compared to the usual care group, the Framingham risk score of the case management group was significantly lower at 15 months (difference between groups, -1.13; 95% CI, -1.94 to -0.32; P=.001), after adjusting for baseline risk scores. This equates to five fewer heart disease events per 1000 individuals per year, related to the intervention.[217] Among those patients randomly assigned to the case management group, the amount of change seen in the Framingham risk score was inversely associated with the number of face to face contacts (r=0.22; P=.001).[217] The mean number of case management visits was eight which equated to 11.2 hours of contact time.[217] This study demonstrates the efficacy of the case management approach in a high needs population.[217]

Other options for addressing cardiovascular risk reduction in primary care include the model used in the EUROACTION study.[218] The EUROACTION[218] programme focused on lifestyle changes and actively involved patients at high cardiovascular risk, their partners and other family members. Patients and their partners were assessed initially for lifestyle, risk factors, and drug treatment. This was followed by weekly assessments by a practice nurse and group workshops. Patients were provided with personal record cards and their partner/family with a family support pack. The rationale for this was because of the concordance married couples show in relation to lifestyle and predisposition to change.[218] In this study, those patients making the largest changes had partners making the similar changes.[218] As well as its focus on promoting healthy lifestyles, the programme also paid attention to the management of risk factors and the correct use of cardioprotective medications.[218] Improvements were apparent in lifestyle behaviours and clinical parameters, as well as prescribing behaviour.[218]

The approach taken by David Nixon and his team in the Foundation Programme, in Masterton, New Zealand, provided some key insights in relation to effective strategies for change in primary care.[219] Six key changes were implemented as part of a quality improvement programme. These included:

- Attachment of a limited READ code list to the side of every computer to assist staff to remember READ codes and to ensure consistency;

- Formation of disease registers;

- Practice guidelines were developed which were pragmatic and based where possible, on New Zealand guidelines. These guidelines also became the focus for joint doctor and nurse CME. All clinical staff committed to these guidelines;

- The practice created specialist diabetes, cardiovascular and respiratory nurse leads;

- The patient centred approach was embraced, meaning patients understood the management options and that care was delivered in a culturally, socially and financially appropriate manner;

- The use of technology to support the process.[219]

These changes instigated at the practice level meant that the practice was able to "virtually" calculate the cardiovascular risk of its eligible population.[219]

Irrespective of the strength of evidence around different approaches to service delivery, changing the behaviour of health professionals is challenging.[220] The use of opinion leaders to disseminate the prevention message assists with attitude change.[16] In care settings where training opportunities are limited due to time constraints and resource issues, a local opinion leader is frequently the key source of knowledge for his/her peers and so has the potential to act as an agent of change.[220]

2.5.4. Decision support

Electronic decision support has been defined as "access to knowledge stored electronically to aid patients, carers and service providers in making decisions on health care".[181] Evidence from a systematic review suggests the electronic decision support systems improve practitioner performance.[221] The findings of this systematic review were mirrored in a recent New Zealand study looking at the effects of the integration of electronic decision support into routine primary care practices and its effect on CVD risk assessment.[222] Unfortunately the implementation of effective clinical decision support systems is fraught and easy solutions to ensure success are absent.[223]

A systematic review[224] of the evidence related to improving clinical practice through use of clinical decision support, established the following features as key:

- Provide decision support automatically as part of clinician workflow;

- Deliver decision support at the time and location of decision making;

- Provide actionable recommendations;

- Use a computer to generate the decision support.

When feasible, the authors all recommend that clinical decision support systems provide periodic feedback, request that the reason for not following the system recommendations be documented and that decisions can be shared with patients.[224] Overall the findings of this systematic review suggested that effective clinical decision support systems minimise the effort required by clinicians to receive and act on system recommendations.[224]

Any clinical decision support system is only as reliable as the knowledge base underpinning it and in the world of medical science, this changes rapidly.[223] Future clinical decision support systems will be more effective if they are "evidence adaptive" by automatically and continuously updating themselves to ensure access to the most recent medical science.[223]

Doctors in the REACT survey[225] felt a key priority in relation to improving guideline uptake, was better doctor and patient education. Other priorities included better promotion of clinical practice guidelines and simplification of guidelines.[225] The 2003 Assessment and Management of Cardiovascular Risk Guideline[6] and the 2009 Cardiovascular Guidelines handbook[71] have successfully merged many guidelines and this has been identified as a key factor to aid implementation. The authors of the 2003 Guideline[6] also ensured it was available in a summary version; another adjunct identified as assisting implementation.[225]

Continuing Medical Education (CME) is another element which assists in the decision making process for general practitioners as does Continuing Nurse Education (CNE) for practice nurses. General practitioners are required to participate in CME for recertification.[226] Practice nurses need to undertake twenty four hours of professional development each year as part of the requirement to maintain their annual practicing certificate.[227] The literature around CME, points to some key facilitators when it comes to the delivery of effective professional development education. These include the following: use of interactive format,[226] multimedia activities as opposed to single media activities,[228] multiple exposures to the information being conveyed[228] and the use of locally respected health personnel as educators.[229]

2.5.5. Clinical information systems

As previously stated, clinical information systems have been identified as important to planning care for individual patients.[182] There appears to be a lack

of evidence in the literature regarding factors that facilitate the establishment of clinical information systems in primary care. A systematic review focusing solely on factors which facilitate the successful implementation of electronic medical records was identified and has some relevance.[230] The authors of this review divided the facilitators into three phases: pre-implementation, implementation and post-implementation as follows[230]:

Pre-implementation

- o Ensuring a governance structure is in place for the project;

- o Ensure a project manager and project champion have been identified;

- o Assess preparedness of the practice/organisation and address any barriers; sell the concept;

- o Involve the stakeholders thereby gaining their active participation and effective endorsement of the pre-implementation and implementation phase;

- o Choose the software carefully. Establish a well defined selection process and carefully consider the usability of the system;

- o Ensure the system has robust data security;

- o Make certain all data is pre-loaded.[230]

Implementation

- o Workflow and redesign; clinical workflow needs to fit with system. This can be improved iteratively during implementation;

- o Provision of training to users. Hands on training immediately prior to going live has been documented as being significant;

- o Implementation assistance. The vendor needs to be responsive and flexible to allow for modifications to the system as identified by the users;

- o Guarantee support for the users of the system in the time after implementation;

- o Ability for users to feedback and the need to monitor and track progress following implementation.[230]

Post-implementation

- o Confirm that technical support remains accessible in a timely manner to ensure business continuity;

- o Establish user groups led by the project champion. A small percentage of doctors are active adopters of innovation and technology and formation of such groups assists the process of acceptance of the new system;

- o Incentives, the use of audit and feedback to show the users the difference the new system is making to improving patient safety and increasing efficacy of care is useful in encouraging continued use of the system.[230]

The implementation and establishment of clinical information systems is a challenging process, and needs to be underpinned by extensive planning.

2.5.6. Community resources

This final section considers facilitators that could potentially result in improved synergy between primary health care and community resources. Hung et al.,[119] suggest that enhancement of the community's resources beyond the clinic setting is one of two key factors critical to disease prevention.

The Robert Wood Johnson Foundation Prescription for Health Initiative in conjunction with the Agency for Healthcare Research and Quality, found that combining clinical efforts with community involvement was more effective in supporting patients to make lifestyle changes.[231] They funded primary care practice-based research networks to explore and test new ways of supporting patients to address their negative health behaviours.[232] Generally, these projects identified a lack of infrastructure linking primary health care with community resources.[232] Lessons learned by the teams undertaking the research were that to be successful, initiatives that focused on building bridges with the community to support patients depended on:

- Steps taken to initiate the bridging process which included pre-identifying the available resources, development of guides used to refer patients to the resources and engaging a person who could assist patients;

- Practice challenges: practices had to develop the capacity to identify patients at risk, be able to make referrals and increase their awareness regarding community resources available in their area;

- Resource availability: community resources that are available, accessible, affordable and perceived as valuable by patients;

- Effective use of the bridges, once established.[232]

As a result of these projects, both primary health care and community agencies began to think about each other differently and saw the value in each other and appreciated the significance of the linkage.[232]

Another option discussed in the literature as a way of brokering the roadblocks between general practice and the community, is the use of a community health advisor/community health educator.[233 234]

A recent paper looked at the role of a community health educator liaison (CHERL) whose purpose was to forge relationships with practices, patients and community resources, to facilitate behaviour change in patients.[234] The rationale for the establishment of this position was to overcome barriers to referral including a lack of awareness regarding the availability of resources and their quality, the transient nature of community programmes due to fluctuating funding and the frustration of primary health care providers related to not receiving any feedback regarding the patient referred.[234] The roles performed by the CHERL are illustrated in table ten below:

Table 10: Community Health Educator Referral Liaison, (CHERL) tasks.

Audience	Task
Practice	Develop a relationship with the practice to act as a resource
	Educate clinicians and clinical staff regarding health behaviour care processes ("5A's") and recommendations for health behaviour improvement
	Assist practice in developing systematic plan to identify patients needing health behaviour improvement and for
	referring patients to the CHERL (including offering CHERL referral to patients and faxing that referral)
	Accept patient referrals from participating practices
	Provide patient-specific feedback in the form of a letter outlining patient contact (or lack of contact) with CHERL, and patient goals and progress toward goals at regular intervals
Patient	Develop supportive relationships with the patient
	Assist patient by providing health behaviour-change support via telephone. This support is behaviour-change-specific counselling toward the accomplishment of single or multiple behavioural goals

	Connect patient with community, healthcare, or web-based resources, including identifying and coordinating referral to resources
	Serve as an advocate for the patient in coordinating and negotiating the use of community and practice resources
Community	Develop and maintain a knowledge base of community, healthcare, and web-based resources available to assist patients with health behaviour change. This includes services that may be needed before behaviour change can occur (such as counselling services for depressed patients)
	Develop a relationship with the community resources and leverage these relationships to improve access and use resources on behalf of patients.

Patients referred to the CHERL liaison generally had two unhealthy behaviours to address; the most common of which were diet and physical activity.[234] Community resources most commonly used by the CHERL when referring patients included "quit" lines and self help "quit kits" for smoking cessation, Weight Watchers, diabetic education, dieticians or informational websites for diet and to YMCAs or hospital based fitness and rehabilitation programmes for physical activity.[234] Due to the lack of a comparison group in this study, it is not possible to make a definitive statement regarding the effectiveness of these positions. However, for the patients who enrolled with the CHERL liaison, they demonstrated improvements in health behaviours, irrespective of race, level of education or income.[234] Practice teams were supportive of the positions and the positions provide an option for expanding primary care teams and enhancing their links with the community.[234]

Community pharmacies are a generally underutilised service within the primary health sector. A recent UK study demonstrated that they can be used effectively to assist general practice in identifying individuals at high cardiovascular risk.[235] While this approach is focused on risk assessment as opposed to risk management, it is of interest as the service was accessed by groups who traditionally do not engage with primary health care such as men and ethnic groups but who are generally at high risk.[235]

The focus of this thesis is on those individuals who are at high cardiovascular risk and who require personal support to assist them in modifying and managing their risk. However, many of the determinants of heart health are structural and environmental and as such, are outside the control of the individual and the health care provider. Population health focused strategies are more useful in addressing these challenges and as their name suggests,

target the population at large, aiming to shift the entire population's distribution of risk factors in a positive direction.[236] These strategies include:

- Laws and regulations such as tobacco control laws;

- Tax and price interventions which can provide disincentives for people to commence or continue unhealthy habits that impact on cardiovascular risk such as smoking;

- Improving the built environment which can influence the nutritional and physical activity behaviours of a community. For example, in neighbourhoods with a high density of fast food outlets, obesity rates are higher;

- Public awareness campaigns have been used extensively, especially in the relation to risk factors for chronic conditions.[236]

2.5.7. Summary

In summing up, the literature highlighted multiple barriers as well as multiple solutions to the challenge of achieving optimal cardiovascular risk management in primary care. If the many barriers and solutions were condensed into themes within the CCM, a table would emerge as illustrated below. (It should be acknowledged that certain themes could sit within more than one domain. For example, interactive decision aids could also be considered under decision support. For clarity of presentation it was decided however to allocate a theme to one domain only.)

Table 11: A thematic representation of the barriers and facilitators to the optimal management of those at high cardiovascular risk

Health system organisation	Self management	Delivery system design	Decision support	Clinical information systems	Community resources
Barriers					
Lack of leadership at MoH level	Communication	Time	Clinical disagreement with guideline content	Quality and completeness of data collected is variable	Limited linking of patients to community resources, problematical due to poor infrastructure
Short term and inadequate funding	Patient circumstances, characteristics & perceptions	Cost of accessing care	Cost of electronic decision support systems		Low levels of health professional confidence in community resources
	Health providers values and beliefs	Lack of access to & integration with allied health & other community resources	Computer literacy and IT packages not user friendly		
	Lack of access to appropriate resources	Uncertainty around roles and responsibilities	Compatibility of software with patient management systems		
Facilitators					
Adequate funding	Communication	Nurse led clinics	Decision support available at time and location of decision making	Robust planning & monitoring prior to, during & post implementation	Establish a person to act as broker between general practice & community resources
Incentivisation; this could be financial or other, such as a free appointment	Interactive decision aids	Shared learning opportunities	Merging of appropriate guidelines into one resource		
	Use of community resources/supports	Self assessment of risk prior to consult	Robust guideline development		
		A team and systems approach to the tasks involved in the process, e.g. recall			
		Opinion leaders			

When the barriers from the literature are themed, they predominantly sit in the following three domains of the CCM: self management, delivery system design and decision support. The solutions however, are skewed to the following domains: health system organisation, self management and delivery system design.

Self management, while a relatively new concept in health care, has always existed as it is people themselves who provide the majority of the care related to their health or ill health.[237] While there have been multiple studies and systematic reviews of the evidence related to self management and self management support, there remain uncertainties.[121] These uncertainties drive the barriers to a greater acceptance by health professionals of the concept. As a result, many of the ideas inherent to self management such as shared decision making, have been slow to embed into the current system. Self management however, is part of the solution to optimising the management of cardiovascular risk. Individuals at high cardiovascular risk make significant day to day decisions regarding how they are going to live. If health related outcomes for those at high cardiovascular risk are to improve, they need to be supported to develop skills and gain knowledge so they can make positive decisions regarding lifestyle choices.

The delivery system design domain of the CCM was identified as both a barrier to, and a facilitator of the effective management of those at high cardiovascular risk. Many of the barriers documented in relation to this domain are discussed by Chris Ham in his recent paper, which outlines why they need to be addressed.[121] For example a key characteristic of a high performing health system relates to the provision of care free at the point of contact or at least at a cost that is not considered a barrier. Improved access to other health professionals is another key facet of what Ham considers a high performing health system.

The decision support domain was associated with multiple barriers mainly related to electronic decision support and the systems associated with it, although the benefits of such a system are well documented.[177] Facilitators associated with decision support were also present in the literature, but these were linked more to guidelines, the development process associated with them, the merging of multiple related guidelines and the translation of the guideline into a decision support system available at the time and location of decision making. This dominance of the guideline in association with the facilitators of decision support, highlight the significance of these resources to clinical decision making and therefore the imperative of ensuring they are developed in a robust manner.

A feature of a high performing health system, according to Ham,[121] is a system that focuses on prevention of ill health and is not just on addressing sickness. Ham points to the need for resources to flow more to primary health care to address the growing issue of chronic conditions and prevention of ill health. It is therefore not surprising that the literature acknowledged the need to review processes within the current health system, as crucial to improve the management of those at high cardiovascular risk.

Chapter Three Methodology

This chapter provides an overview of the qualitative theory that underpinned the methodology used for this study and discusses the application of the methodology in relation to this study.

3.1. Explanation of and justification for the methodology underpinning this study

This study utilised a qualitative research approach because fundamentally qualitative research is "exploratory" in nature.[238] It attempts to describe, understand and explain a particular experience.[238] Qualitative research helps not only to describe a situation, but it helps the researcher to move to a more meaningful understanding of the situation being researched.[239] Hence when endeavouring to understand complex interactions, such as those between a patient and a health professional, qualitative research methods are appropriate. The qualitative approach allows the researcher to ask study participants why they behaved in a certain way, to drill down into decision making processes and enquire about any underlying factors that may have influenced behaviour.

The qualitative methodological approach was adopted for this piece of research as it suited the exploratory nature of the study. This study sought to provide insight and understanding of the everyday challenges health professionals are faced with when endeavouring to ensure that people at high cardiovascular risk are managed optimally, as well as, enablers of optimal management. The researcher's aim was to, "tell the story", in the health professionals own words and to provide the, "real inside story", around the topic. This study was not seeking to provide a conclusive answer, but rather to clarify the problem and establish future research priorities.

Qualitative methods include a variety of different approaches for obtaining data. Some forms are obtrusive such as focus groups, participant observation and in-depth interviews. Others are unobtrusive such as document analysis and discourse analysis. This study utilised a focus group methodology to generate data. The choice of method was driven by the nature of the study aim.

Focus groups are group discussions arranged to look at a specific set of issues[240], and for this reason this qualitative approach was appropriate for this study.

A focus group can be defined as follows:

A group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research.[241]

It is important to distinguish between focus groups and group interviewing. While group interviewing involves interviewing a number of people concurrently, the process centres on the questions and answers between the researcher and the participants. Focus groups, on the other hand, are distinguished by the interaction between participants.[240][241]

A focus group involves bringing together a group of participants who have specific experience of or opinion about the topic under investigation. The group is frequently homogenous in regard to some dimensions and heterogeneous across others.[239]

The primary objective of a focus group is to elicit participants' attitudes, beliefs, feelings and experiences in regard to the topic being studied.[241] The focus group interaction highlights their view of the world, the language they use in relation to the issues of interest and their values and beliefs associated with the topic of interest.[241] Focus groups are considered an ideal way to explore complexity[242] and as such are an effective technique for exploring the attitudes and experience of health care staff working with patients.[243]

Groups can be 'naturally occurring' such as people who work together. Many researchers recommend aiming for homogeneity in a focus group to aid discussion[242] as well as to take advantage of the participants' shared experiences.[243] However, it is acknowledged that it can also be advantageous to bring together diverse groups, for example a variety of professions working in the same area. This approach enables the researcher to gain a diversity of perspectives on the topic under discussion.[242] Focus group participants do need however, to feel comfortable with each other if they are to engage fully in the discussion.[240][242] Some researchers suggest that convening a focus group of participants that share a common characteristic is a useful strategy to consider,[242] for example health professionals working in primary health care.

In qualitative research the selection of the sample has a substantial effect on the quality of the research. People are frequently selected according to the aim and objectives of the research. Dimensions such as gender, age, and role may impact on selection of participants.[244] When dimensions are utilised to underpin the selection of participants this is referred to as purposeful sampling.[244] The strength of this approach is that the cases selected will be "information rich".[244] Information

rich participants are those who have experience about the topic central to the research question and whose experience maybe considered typical.[244]

There is no specific number suggested for the quantity of focus groups required to provide the information necessary to answer the research question. It is generally accepted that formation of focus groups continue until there is completeness of understanding around the research question.[245] As for the number of participants per focus groups the optimal number suggested ranges from six, to ten participants.[246] The researcher requires enough participants to gain a variety of perspectives yet does not want the groups to be so large that they become disorderly and fragmented.[242]

Qualitative research processes such as semi-structured interviews or focus groups are frequently guided by a schedule.[238] While the schedule can be quite specific the questions tend to be open ended. Utilising open ended questions assists the facilitator to stimulate discussion, explore issues identified in the literature relevant to the research question, as well as enabling a free flowing conversation, so that content not predicted by the facilitator will be proffered by the participants.[240] [247]

A particular issue for those participating in focus groups is confidentiality.[241] Focus groups always include more than one participant, so the researcher is required to clarify the strategies to be used to promote confidentiality. These strategies include anonymising data from the groups, anonymising the groups, and encouraging focus group participants to keep what they hear while participating in the group confidential.[241]

Like all other methods of research, focus groups have their strengths and limitations. Focus groups elicit information that is relevant to the participants and it lets the researcher explore the salient points associated with the information.[241] As a result of the interaction between the participants the information is generally rich and descriptive, and large amounts of text data can be generated in a short timeframe.[242]

Limitations of this method include the difficulties of organising focus groups,[241] and as they usually involve a small number of participants, can limit the generalisability of the findings. Focus groups are not entirely confidential or anonymous as participants will know the others present,[241] and for this reason it could be assumed that groups are inhibiting compared to the privacy of an individual interview situation. In some instances however, less inhibited members of the group can 'break the ice', and shyer participants then join in the conversation.[240] For the researcher the group dynamics can be challenging when

moderating the group. Interpretation of the text data can be demanding and time consuming for the researcher and in some cases researchers can misuse the findings and consider them conclusive instead of exploratory and the formative step in researching an area of interest.[248]

There is a wide ranging array of methods associated with the analysing of data obtained during qualitative research. This next section provides an overview of and justification for the analytical approach used in this study, the general inductive approach.[249]

There are many procedures associated with the analysis of qualitative data, including grounded theory, phenomenology, discourse and narrative analysis.[250] Some analytical approaches however, are generic and are not considered within one of the traditional approaches. The "general inductive approach", is apparent in a great deal of qualitative data analysis, but frequently without a name being given to the method.[250] Table twelve below presents an overview of the general inductive approach compared to three other approaches used in qualitative research.

Table 12:Comparison of approaches to qualitative analysis[250]

	General Inductive Approach	Grounded Theory	Discourse Analysis	Phenomenology
Analytic strategies and questions	What are the core meanings evident in the text, relevant to the research objectives.	To generate or discover theory using open and axial coding and theoretical sampling.	Concerned with talk and texts as social practices and their rhetorical or argumentative organisation.	Seeks to uncover the meaning that lives within experience and to convey felt understanding in words.
Outcome of analysis	Themes or categories most relevant to research objectives identified.	A theory that includes themes or categories.	Multiple meanings of language and text identified and described.	A description of lived experience.
Presentation of findings	Description of most important themes.	Description of theory that includes core themes.	Descriptive account of multiple meanings in text.	A coherent story or narrative about the experience

Inductive analysis is an approach characterised by repeated meticulous readings of the raw data. This interpretation process allows the researcher to derive themes which can be used to develop a model or framework which links the themes that emerge from the raw text data. The researcher allows the theory to emerge from the data rather than testing to see if the data is consistent with prior assumptions or theories, commonly known as a deductive approach.[250]

The purpose of the general inductive approach is to:

- Condense extensive raw text data;

- To establish clear links between the research objectives and the summary findings from the raw text data

- To ensure the links are transparent and defensible;

- To develop a model or theory from the text data.[249] [250]

An overview of the process of inductive analysis is shown in table thirteen below.

Table 13: The coding process in inductive analysis[249] [250]

Initial reading of text data	Indentify specific text segments related to the objectives	Label the segments of text to create categories	Reduce overlap and redundancy among the categories	Create a model or framework incorporating the most important categories
		→		→
Many pages of text	Many segments of text	30-40 categories	15-20 categories	3-8 categories

With this method findings are dependent on the researcher's interpretation of the raw text data. There are however, procedures that can be undertaken to support the trustworthiness of the research findings.[249] These procedures include having another coder take the category descriptions and finding the text that belongs to that category, participants comment on the categories or the interpretations made and peer debriefings. Comparisons of the findings with previous research in the area can also be undertaken to endorse the study findings.

The general inductive approach was deemed as suitable for this study, for two principle reasons. Firstly qualitative research frequently produces significant amounts of useful raw data[251] and the general inductive approach is a useful

method to use when seeking to condense a significant amount of raw text data.[249] Secondly an inductive research approach does not start with a theory or hypothesis to corroborate. It commences with the researcher immersing themselves in the data to discover information which may assist in providing some explanation or ideas around the topic being explored. As such the approach was suitable for the study as the researcher had no hypothesis to prove or disprove.

Software packages, such as NVivo 8, can be used in conjunction with manual management of text data. Software tools allow researchers to classify, sort and arrange the unstructured raw text data in a way that makes the process of coding and identifying themes easier. The software package does not undertake the analysis of the text data for the researcher; it is merely a tool to assist with the management of data via its ability to import documents directly from word processing packages. Text data is then coded on screen. A system of coding stripes can be easily be seen, making it simple to identify which codes have been used elsewhere.[252] NVivo also allows for the linking of memos with codes, enabling the researcher to make analytical notes and if necessary change them as the project progresses.[253] Welsh[252] suggests that software packages such as NVivo 8, should be viewed as a useful adjunct to manual data analysis and management and not as an alternative to the manual process.

3.2. Methodological process of this study

Prior to commencing the research, ethical approval for this study was sought. The New Zealand Health and Disability Ethics Committees were contacted to determine if formal ethical approval was required for this study. The chair of the Multi Region Ethics Committee deemed this unnecessary. Instead approval was given at departmental level as the study met the criteria for a Category B Proposal. The study was approved by the Head of the Department of General Practice and Primary Health Care, at the University of Wellington, Professor Tony Dowell. Approval was also sought from the Kaitakawaenga Rangahau Maori. This was provided on condition the ethnicity of participants in the focus groups was collected, (see appendix one).

To support this piece of work, funding applications were submitted to two organisations with a specific interest in heart health. The research was funded by The Capital Cardiovascular Research Trust.

Following the literature search, papers were read and organised into appropriate groupings. The reading of papers allowed the researcher to identified key themes which then underpinned the focus group schedule of questions.[238] The guide for

the focus groups is available in appendix two. The questions were designed to start discussion around a broad topic area and prompts were listed to ensure that all issues identified in the literature and relevant to the research question were put forward for discussion.

The sampling frame[244] developed for the selection of participants ensured that they were drawn from a variety of Primary Health Organisations. The variables considered within the sampling frame were:

- Large versus small PHO
- Urban versus rural PHO
- GP centric versus community centric PHO
- Maori versus mainstream PHO
- Length of time undertaking cardiovascular risk assessments, six months, one year, three years, five years
- Type of decision support used

Initially four PHO's were approached, some of these were willing to participate others due to various reasons, such as the impact the swine flu pandemic was having at the time, did not feel able to participate. Other PHOs who met the sampling frame criteria were then contacted. All PHOs approached were sent a letter, (see appendix three), along with a copy of the information sheet and consent form participants would receive (appendices four and five).

Each PHO approached was asked to provide between eight to twelve participants, as it was felt that by asking for this range of participants at least six participants and at most ten participants would volunteer. The researcher in association with a key person at each PHO arranged a mutually acceptable date for the focus groups, and a suitable venue, usually one used previously by the PHO. Food/kai and beverages were provided at all the focus groups.

All participants in the focus groups were health professionals and in some cases participants derived from the same practice. However, they were not from a homogenous professional grouping; participants were either general practitioners or practice nurses. All participants were provided with an information sheet and a consent form to sign,[247] (see appendices four and five) and each participant completed a brief demographic information sheet, (see appendix one). Participants received a koha for participating in the focus group. Focus groups were facilitated by the researcher and the discussion digitally recorded. Each group was planned to last between one and one and a half hours and ground rules were established by the researcher. Participants were given the opportunity to modify or add to the

ground rules. Participants were also given opportunity at the start of each focus group to ask the researcher any questions regarding the research, such as, what was going to happen to the data and how the findings were going to be shared

In this study strategies utilised to protect confidentiality included anonymising data from the groups, anonymising the groups, and encouraging focus group participants to keep what they heard while participating in the group confidential[241].

Focus groups were digitally recorded and the recordings transcribed by an organisation recommended by the university. Transcriptions were then e-mailed to the key contact for each focus group so they could be circulated to participants. This process served two purposes. It allowed participants to review what was said and make additional comments. Secondly, for participants who perhaps had an issue or issues that they were reluctant to discuss within the group situation, it provided them an opportunity to convey this to the researcher.

Following the focus groups the process of analysis of the text data commenced. This involved repeated and meticulous readings of the text data. Transcriptions were formatted homogenously prior to loading into NVivo 8. Text segments of interest were highlighted both manually and in the software. Following this initial process text segments containing significant and similar information were assigned to a category manually or a node in the software. The high level categories that emerged were used to develop a model that encapsulated other sub themes. Together they conveyed the key findings of the research.

To ensure the analysis of the text data was trustworthy, the transcripts as well as the findings were shared with the researcher's supervisors. One supervisor undertook to consider the text data and the interpretation of it by the researcher. The researcher also compared the findings to the current body of literature related to the area.

3.2. Summary

In this chapter the methodology approach utilised for this study, including a description of data collection and analytical processes utilised were outlined. Justification for the use of the methodology was presented and the methodology of the study described.

Chapter Four: Results

Initially an overview of the focus groups is presented including, the characteristics of each group which covers a breakdown of the participant's demographics, including their profession, time since qualifying and ethnicity. This is followed by the findings from the text data analysis. The findings are presented under the high level categories that emerged from the analysis.

4.1. Characteristics of focus groups and participants

Following consultation of the sampling frame, four PHOs were formally contacted by letter to take part in the study. The four PHOs approached met a variety of variables encompassed in the sampling frame including small and provincial, community focused, urban, large size, and Maori. Of the four initially contacted, two accepted and two declined. Those that declined did so as a result of the impact of Swine Flu at the time of the study. A further recruitment drive was undertaken and another one PHO agreed to participate. In total, three focus groups took place with a total of twenty-nine participants.

Table 14: Characteristics of the PHO's who agreed to provide participants for the focus groups

Focus group	Characteristics
Group One	Provincial, small
Group Two	Community focused, urban
Group Three	Maori, urban, large size

The PHOs that agreed to provide participants for the focus groups covered a broad range of characteristics. Due to the depth and quality of the material provided by participants, it was considered that three focus groups were sufficient as data saturation was reached.

During one of the focus groups there was "equipment failure" of the recording device. This failure was noted by the researcher shortly after the end of the focus groups. A full summary of the session was immediately documented from field notes and potent quotes documented. These summary notes along with the quotes were e-mailed to participants for corroboration. This also allowed participants the opportunity to add in additional information.

Figure two below illustrates the professional groupings of the 29 participants.

Figure 2: Number of participants from each professional grouping.
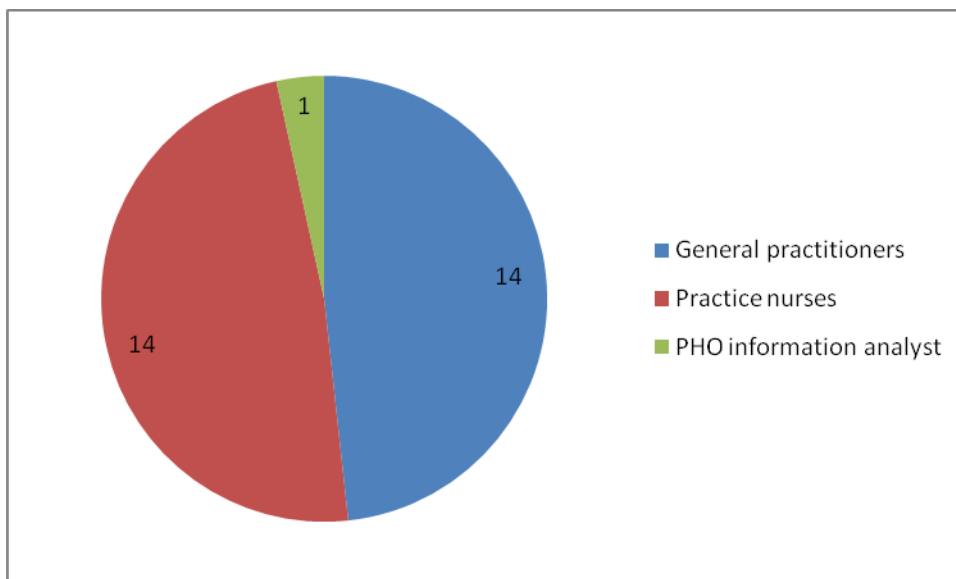
All the practice nurse participants were female. Forty-three percent or six of the general practitioners were male and the PHO information analyst was male.

The ethnicity of the general practitioners is illustrated below in figure three. The group of "Other" which comprised of five general practitioners included two Sri Lankan, one British, one South African and one Indian.

Figure 3: Ethnicity breakdown of general practitioner participants.
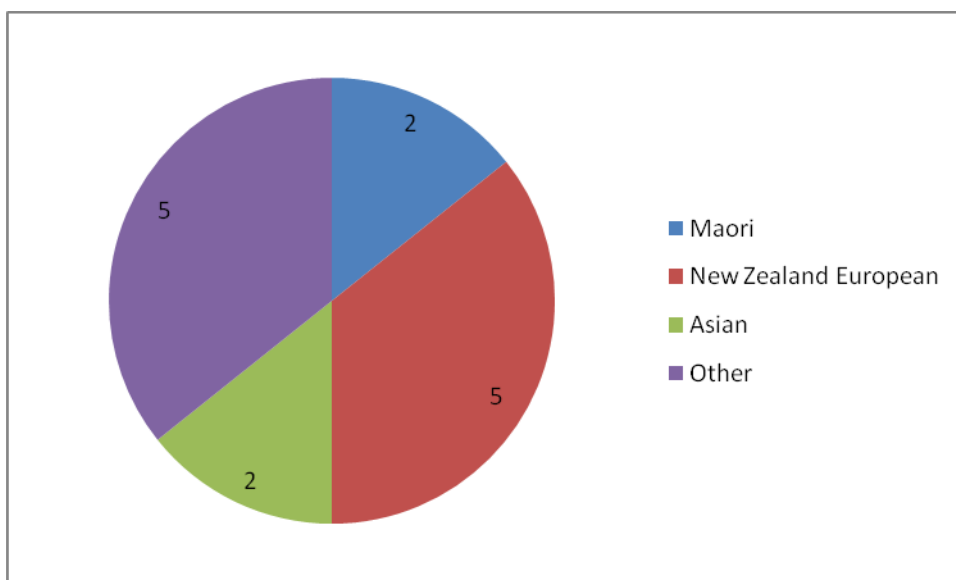
For the practice nurses, the ethnicity breakdown is illustrated below. It will be noted that the total comes to fifteen; participants were able to choose more than one ethnicity. The 'other' was an Australian practice nurse.

Figure 4: Ethnicity breakdown of practice nurse participants.
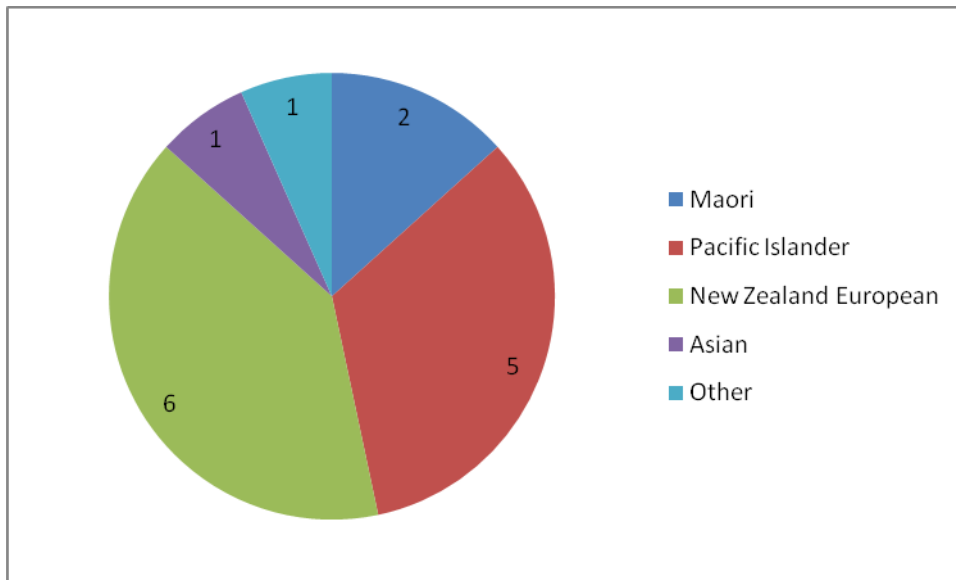
The PHO information analyst who took part in one of the focus groups was New Zealand European.

Figure five compares the age ranges of the participants. For practice nurses, there is a fifty / fifty split with half being under forty five years and half over. There is a wider spread in the age ranges of general practitioners, but the majority (57%) fell into the two older age ranges.

Figure 5: Comparison of the age ranges of the professional groupings.
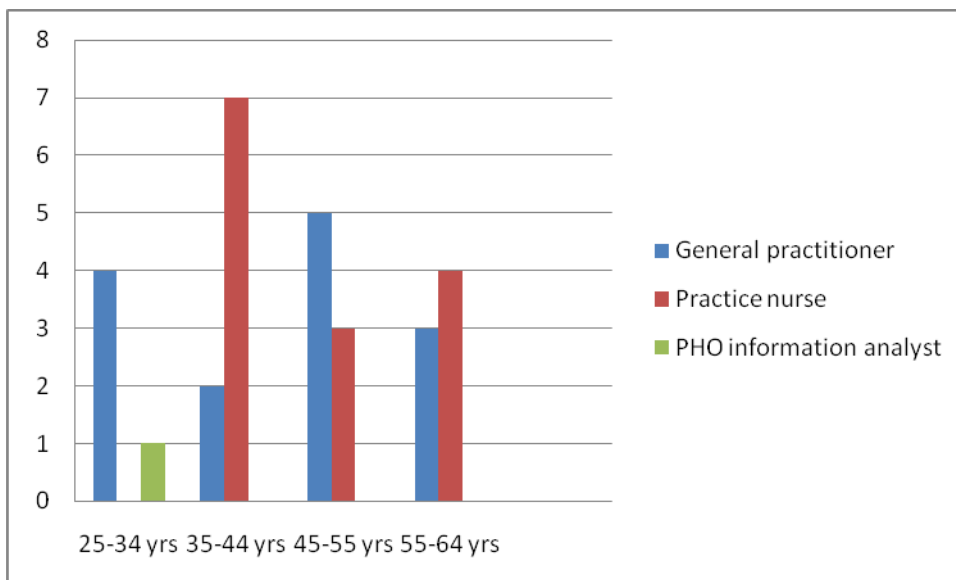
There was a wide range of years since qualifying for both main professional groups as illustrated in figure six. Fifty percent of general practice participants had

been qualified less than 20 years and 50% percent more than 20 years. This picture was mirrored for practice nurses.

Figure 6: Years since qualifying for general practitioners and practice nurses
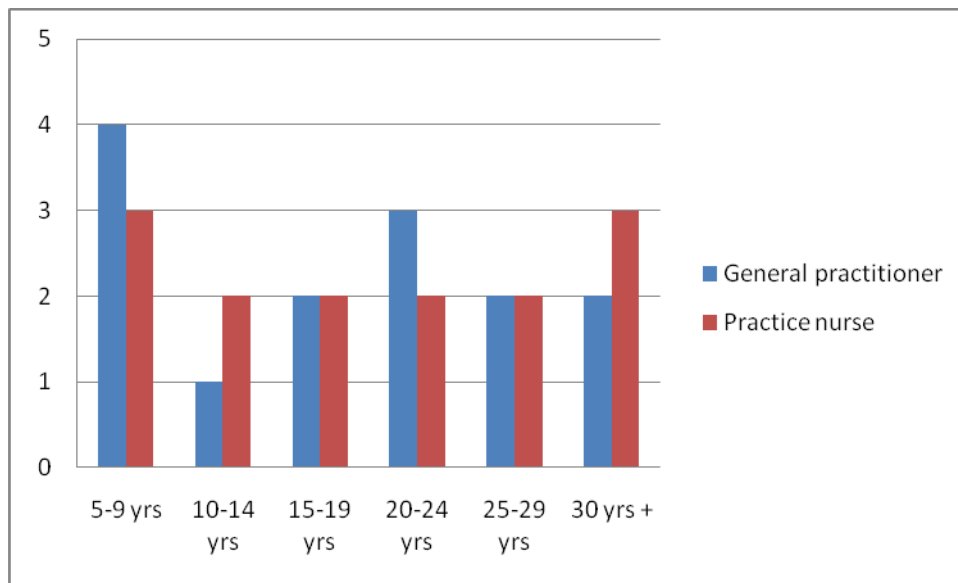
4.2. Findings

This section summarises the findings from the focus groups. The project aimed to identify facilitators and barriers to the optimal management of those at high cardiovascular risk. The analysis of the text data from the focus groups resulted in the emergence of a hierarchy of inter-related top level categories as illustrated in the figure seven below:

Figure 7: Inter-relationship of themes
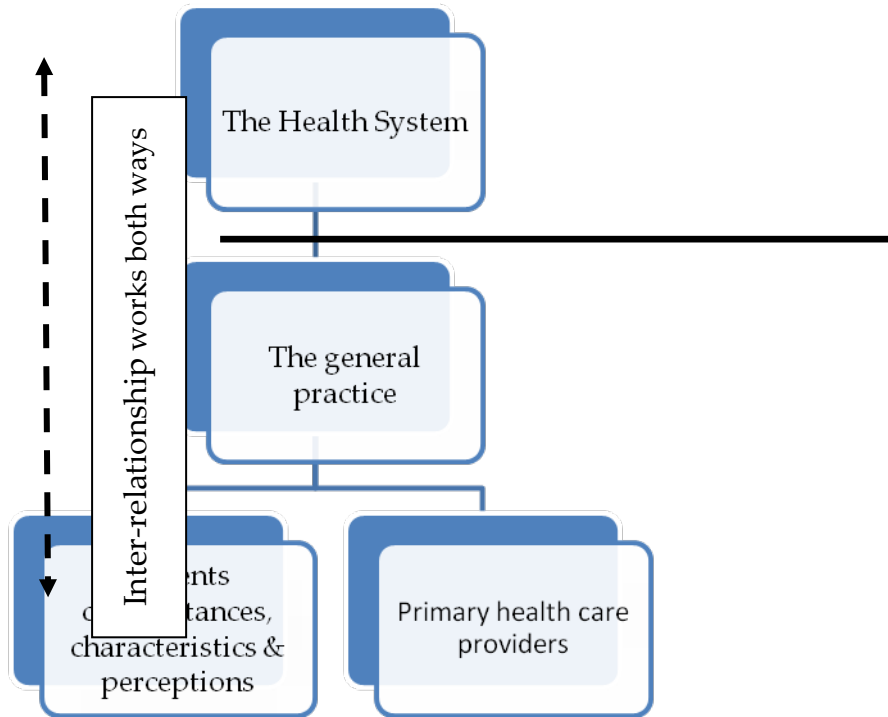
The findings are presented in ascending order as the majority of key findings relate to top level categories below the line.

4.2.1. Patient circumstances, characteristics and perceptions

Participants in the focus groups spoke of key characteristics that make a patient challenging to work with. These included a fatalistic acceptance by some cultures regarding their health.

> *"Some of the Maori and Pacific Island, in fact a lot of the ones that I work with, have this perception that they've......, that their parents died at such an age so, they're not gonna make it past that age anyway, so let's not take medications or do whatever. That's really common. I see that quite a lot". F2*

> *"The easy acceptance of such negative changes by certain racial groups reflects a cultural aspect that needs to be addressed". F1*

Participants spoke of being overwhelmed by those patients who are burdened by a low socioeconomic status and the challenges of the environment they live in.

> *It's the low socioeconomic group. Incomes are not great. And you just adding in well, you should be eating this and you should be eating that and you, it's just too much" F2*

"You can't change that pattern that they're in because they're surviving... it's what they're locked into...and that would be the group where there's a lot of high risk". F2

"The environment many of our patients live in is not conducive to making lifestyle behaviour changes...multiple fast food outlets, pavements may not be safe, lack of cycle ways etc". F1

Participants expressed recognition of the sheer scope and scale of heart health being greater than just the health care sector. The need for environmental change to reinforce the work they do in relation to promoting heart health was talked about.

Changing the whole environment...., the non-medical stuff. And a starter would be cheaper, affordable good food and all the things that go with that like cooking lessons...making the environment more conducive". F2

Individuals at high cardiovascular risk are frequently asymptomatic and participants discussed the difficulty of motivating these patients.

"... because they, don't feel unwell. They don't feel sick, so it's really difficult to get their attention, motivation to get things. Like say they, they come with gout of something, you know, they know.." F3

"...many of our patients have acute issues and a cardiovascular risk assessment doesn't mean anything to them as they don't feel there is anything wrong with them in that area". F1

For individuals who have had a life free of illness, participants spoke of the struggle to get them to accept treatment.

Paradoxically it's the people who've had really good health who cannot get their head around going onto aspirin or statin or something like that." F2

All participants at the focus groups agreed that the norm was individuals with multiple risk factors who frequently had other issues in life to deal with as well.

One of the issues is this is just one of often multiple problems, that it is just one aspect, important though it is, on a big cluster of stuff that is going on". F3

"...in terms of what you uncover, which is you uncover a lot of stuff". F3

"It's not an issue for them, 'cause there's so much else going on, and they actually forget." F2

"You know, where do you start?" F2

Participants spoke of the expectation of patients that the health system will take responsibility for their health and that ill health can be alleviated by a pill.

"You know they, they expect to wait until they're sick and then they'll get a pill, or medicine, or whatever...you know, society's got the expectation nowadays that, you know, you'll go to the doctor..." F2

"And people across the board, no matter what the condition is, like us to take responsibility for their health. And what we are trying to do is get them to take responsibility and traditionally that's not been the case". F2

Participants voiced a range of ideas in regard to how managing their own risk could be made easier for patients. This included making access to allied health professionals easier by having a co-located integrated service.

"..if I send them to a dietician, or to Pacific Health for Quit Line or Smoke Free they don't go, but if it's here somehow I think it'd be easier".F3

Many of the suggestions related to public health policy and included:

"Ban cigarettes";

"Tax on fast food;...tax on processed food";

"G.S.T. free fruit and vegetable; G.S.T take off healthy food within the supermarket". F2

4.2.2. Primary health care providers

Primary health care providers identified key issues that impacted on them and how they worked in relation to supporting patients to change and self manage. The key issues fell into the following sub-categories; communication and motivating behaviour change, values and beliefs.

Communication and motivating behaviour change

A key issue highlighted around behaviour change and communication was how key health messages are conveyed.

"So I think the way the messages are placed is really important. Otherwise it becomes very undoable". F3

"...but the messages need to (be) really simple and consistent, possibly across all cultural things and eat more fish is a message that you can put out there...". F3

However one practice commented on the use of resources that were, *"...heavily pictorial"*, (F2), to tackle the issue of low levels of health literacy.

Participants indicated that they found it difficult to convey the concept of self management to patients.

> *"It is very difficult to change the way people think and to get people to take responsibility for themselves".* F2

> *"The concept of preventive care and "self management" is often a difficult one to impart".* F3

The challenge of conveying risk was highlighted in the focus groups.

> *"I think one of the biggest challenges is that the average person isn't trained in statistics and understanding risk and absolute risk and relative risk and all those things that we, (health professionals), struggle to understand. For example 15% 5 year risk doesn't sound very impressive and getting that across to someone...I've not completely figured that out".F2*

> *"I think generally a lot of people, ... a lot of our clients that we have they life on a day to day,... week to week basis and investing, looking at the next 10,5,10 years ahead is the...".F3*

The issue of misunderstanding by health provider and patient was raised as an issue.

> *"Misunderstanding negotiated management plan by mistakenly assuming each other understands the plan. For example a patient takes a script out of respect for the clinician, but chooses not to start the medication".* F1

> *"I've been caught out a couple of times with the, 'oh yes doctor, I'll do that doctor', only to be told by the nurses it's not happening".* F2

The positive and negatives of the resources available to assist primary health care health professionals, designed to support CVRA and risk management, was a key topic. One practice developed its own resources, (see appendix six) as it found others of little use.

> *"...lot of stuff that comes through's very complex and actually I find them of very little use in dealing with the patients sometimes. So one of the challenges was something that's just simple and reproducible regardless of these low, moderate, high. So the messages on the three cards are exactly the same except there's some variation with the medication".F3*

The lack of culturally appropriate resources was another concern identified in one of the focus groups.

> *"You know, written in English and it shows you how to have, cook some healthy meals or change the traditional dishes just a few twigs to the recipe and you've suddenly got a much healthier dish. ...having something like that happening, like, Samoan recipes changed, if they were high fat or whatever,...and actually having it there for people to think, ah okay, that's how I do it".F3*

The National Heart Foundation's flip charts were viewed as very useful by practice nurses when the CVRA and management programme was launched by their PHO.

> *"...they were good when you first started because it was all, it was just getting your patter,...took a bit of evolving... and so it was good to have some prompts". F2*

However they were not considered very user friendly. Participants at all three focus groups received no official training in their use, and this may have impacted on how they were utilised within the practice.

> *"...cause it was a bit clunky sometimes to go to it and flip through to the right page, so often you'd have the most relevant page open". F2*

The latest resource to assist primary health care "Your Heart Forecast"[A], developed by the National Heart Foundation and the University of Auckland was well liked overall.

> *"...and that's where the "Your Heart Forecast" is really helpful...well I showed him that because you can modify it and then show them what can happen if they can get on top of it...and all of a sudden it's a wakeup call". F2*

One Maori/Pacific outreach nurse discussed how she makes it interactive by getting the patients to click on the programme when she does outreach visits in the patient's home. Only one concern was voiced regarding the interactive resource.

> *"I am not sure with our patients some of them may not understand graphs". F3*

Although participants acknowledged that patients with multiple risk factors were the norm, this was not generally viewed as a challenge. Health professionals

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[A] Your Heart Forecast http://www.yourheartforecast.org.nz/index.asp?pageID=2145872462 accessed May 2010

considered that frequently a lifestyle change in one aspect of a patient's life had a domino effect on other aspects of their lifestyle.

> *"I think also that sometimes if you focus on one thing, there are so many good spin offs from it, such as if you focus on the diet, then you know the weight is controlled, the cholesterol levels, their blood sugar, so you actually often only need to focus on the one thing and you get a ricocheted effect coming off for the total health". F2*

The benefit of primary health care's longitudinal relationship with its patients and promoting behaviour change was highlighted in discussion.

> *"I've just felt that I'm getting nowhere with, and then there's been something else that happened. For one it was another family member had a heart attack, and then it suddenly dawns on them, and all that work that you've done in the past is actually quite helpful".F2*

For health professionals working with Maori, the benefit of involving the whanau/family in the dialogue with the patient, regarding behaviour change, was considered a positive.

> *"...you talk to the whole family about that, the patient. Cause that's what the patient wants. Plus the family want that as well. And that helps make some influence over how, how changes occur". F2*

The Maori/Pacific outreach nurse also commented on the usefulness of being able to visit patients in their own homes as frequently whanau/family are present to join in the discussion.

For those patients living in challenging circumstances, the possibility of using incentives to assist the health professional to promote and maintain behaviour change was voiced.

> *"For the majority of our enrolled patients with their cultural/socioeconomic and educational background I feel that perhaps some form of incentives...e.g. for seeing the doctor and being on medications regularly might be a push/carrot factor". F1*

It was recognised that training, especially general practitioner training, has changed over the years. This was felt to be particularly so in relation to communication skills training. The following two quotes illustrate the change over time:

> *"...the importance of communication and how to use it, methods of using it, might not be called motivational,...has always been through the G.P. training. I think in*

the past it was called a 'good bedside manner', and you were expected to learn it by osmosis". F2

"I mean I graduated in 2002, and came through as the curriculum had all just changed over, and we had an awful lot of, sort of, mentoring, and communication skills and motivational interviewing. So and interviewing techniques. All lots of, sort of, videos, interviews with actors and that type of thing". F2

Other facets of training that were identified as assisting the general practitioner with communication were cultural competency training and population health training, to appreciate the wider determinants of health. Nurses identified a variety of training programmes they had undertaken that assisted them in communicating effectively with patients. These included, smoking cessation training, motivational interviewing, a diabetes educators' course and post graduate papers in long term conditions. The PHARMAC seminars related to cardiovascular risk were considered helpful.

Values and beliefs

Participants saw real benefit in trying to match the ethnicity of the health provider to the patient.

" ...the benefit of the health practitioner having the same, coming from the same ethnicity, cultural values and beliefs is, is a real benefit". F3

"Because I'm half Samoan, half Tokelauan, I, I understand their mannerisms...". F3

A lack of conviction around the benefits of behavioural change, as opposed to pharmacological management was articulated by some general practitioners.

"I personally feel I could spend a lot of time on these patients, (those at high risk), but the actual outcome would be possibly minimum". F3

"...if you were to look at the whole issue that we've got here in terms of constraint of time and volume of people and complexity of problems, whether our focus should be, for instance, to get all the high risk cardiovascular people who see us on a statin, 'cause that will give us the best outcome long term, or spend hours, and hours and hours doing diet and exercise, where we don't get anywhere". F3

The fundamental role of the doctor, in treating the sick, was seen to impact on their commitment to preventive medicine.

"So as a doctor my first priority is actually to treat the illness...and when I'm treating illness, my first priority is to treat the most urgent illness first. I've got different priorities to a nurse". F3

4.2.3. The general practice

The patient's medical home was the area where a wide range of issues were identified. The sub categories that emerged from reading the text data were implementation planning, time, workload, roles and responsibilities and strategies implemented to improve cardiovascular risk management.

Implementation planning

The need to provide training prior to launching a CVRA and management programme at practice level, consideration of how the programme will be rolled out and ensuring the infrastructure was in place, were issues voiced across all focus groups.

"We also had our own sessions here, like, three or four times with X to, try and teach us how to do it on the computer and everything with the patient". F3

"Initial cardiovascular risk assessment screening opportunistic only". F1

"There's a really good care pathway that was set up when, before we started this, which was, you know, the free G.P. visit, ...the dietician visit, the Green Prescription. And it's really good". F2

"Main thing is having a system. It's the computer programme and the training and the nurse service and the diabetes nurse and the free visits and the computer recalls and the audits and Maori and Pacific outreach. There's a system/package". F2

Time

The issue of time in relation to behaviour change was a consistent issue voiced by participants.

"...you can give an immunisation and, well, you know, apart from running around a few they don't wanna have it done, it's, it's given, but for a behaviour change, that takes time and it doesn't just happen in one session". F3

"I often think finding space or time to deal with it is often the most difficult challenge, because it is about efficiency of time, and we're all busy all the time". F3

Views around whether or not electronic decision support saved time or added to the time taken to complete the consult was mixed.

"... the time available, and the time you actually get through the form... that takes all the, most of the time allocated to actually filling that form so to do anything extra is a bit of a challenge at times". F2

"...it's useful, 'cause it's faster...and then we talk to the patient afterwards for quite a while, cause we've got these cards that we use for low, medium and high risk". F3

Workload

The workload generated by identifying individuals at high cardiovascular risk and then having to work with that person to manage their risk, was identified as a significant issue, especially when considered in association with the case-mix of the population enrolled at a practice.

"This is only like a lot of other general practices, so that, so to say that there's a 1 to, whatever the G.P. ratio's meant to be, 1 to 1200, a population like this just doesn't work. It's, it's ludicrous. Because the workload per patient, and you add this on top is it's high, is so much greater than most populations out there. ...that's one of the big, big problems that's underestimated. It's not reflected in funding. It's not reflected in capacity, in terms of funding for staff...". F3

"...this generates work on top of a lot of other things. It's just another thing that goes into an already busy full day". F3

"One of the things we, we've noticed is that it's all very well to identify these people, but we, we had a bit of a bottleneck". F2

Other issues identified that impact on a health professional's workload included:

- Lack of access to allied health professionals to assist with the provision of support to patients at high risk

- The current administrative load placed on clinical staff.

Roles and responsibilities

Clear understanding of the roles and responsibilities of general practitioners and practice nurses certainly seemed to assist with the process of care in the general practices visited. The general practitioners articulated the view that practice nurses were far better equipped to oversee lifestyle change issues.

"...very often the scenario will be that we've said right you're in a risk group, would you like your cholesterol checked. We explain the process, and we say take the form for fasting bloods and then come back to the nurses specifically for a cardiovascular, which we branded, 'A healthy heart check'.". F2

"The doctors are more involved in risk assessment; the practice nurses are more concerned with the lifestyle management". F1

"I think there is something to say for a role of flagging people and... then passing them across to the nurse for their half hour appointments to go in more detail is surely always going to be more effective than us, (doctors), saying quickly yes you've got to do this, this and this". F2

Analysis of the text data suggested that the presence of a practice champion was important in ensuring the system worked.

"'...cause X is always harassing us ... to chart it, (smoking status), to make sure it's in there...getting very clear about where to put stuff and to make sure it's entered so we're tracking how much the, target group have been, had their smoking recorded and screening.." F3

Overall, in relation to the general practice, participants spoke of specific strategies that had been implemented in their practice to improve the management of individuals at high cardiovascular risk. Auditing of data was one specific strategy mentioned.

"Auditing what we've already found...looking at people we've already identified at being high risk...because the next question is, of course, are they getting the treatment according to the guidelines"? F2

Another specific strategy was the greater use of IT.

"We use computer generated reminders, (for staff) and text2 remind recalls (for patients)". F1

The use of a continuous quality improvement approach to the programme was also mentioned.

"The use of staff quality meetings to monitor performance and CQI". F1

"Clinical governance to assist interpreting audit data and CQI". F1

Making the CVRAs free was mentioned as a key strategy.

"...for a cardiovascular, which we've branded "A Healthy Heart Check", and it's free so it's a bit of a selling point".F2

Two practices mentioned that risk management appointments were also free.

"...then the nurses offer follow up cardiovascular risk visit to the doctor,...which is also free". F2

"Normally we don't charge for follow up visits". F3

It was evident to the researcher that practice champions were present within all three focus groups and their presence clearly had an impact on the general practice team.

When asked what would make cardiovascular high risk management easier, participants provided a variety of suggestions related to the practice environment. The following are some of the suggestions:

"Everybody doing the same thing. There is a consistency amongst what the doctors are doing, what the nurses are doing, what the nurses were saying, what the doctors are following up with. That the doctors are following systems". F2

"More in-house education on a regular basis, just so that we're all on the same page". F2

"The Heart Foundation thing, in the waiting room. You could have a couple of terminals set up in the waiting room, and people could, while their waiting for the doctors...". F2

"Co-location of allied health professionals within general practice". F1

"More time, yep, 30 minute appointments and spend more time with them to find out the problem". F3

4.2.4. The health system

Issues within the health system were present at Ministry of Health and DHB levels. At the DHB level, the key issues raised were associated with funding and contracting. The funding of preventive health care was not viewed as a priority for DHBs, leaving PHOs and their member practices vulnerable to funding decisions made at DHB level.

"Our perception is the, the District Health Board, for example, are more interested in hospital medicine, that's what they're about, and primary health care, particularly prevention is an option, optional extra. It's an add on, a phenomenon we've noticed is lots of praise and approval from the powers that be, but no money to back it up". F2

Concern was also expressed in relation to the running of "pilots" with short term funding tagged to them.

"Short term contracts to run pilots, which just as you are gaining some traction the contract runs out, funding ceases and the programme falls over". F1

In relation to issues related to the Ministry of Health, there were two key topics which emerged; funding issues and lack of leadership. In relation to funding, the concerns were around the lack of significant funding to support initiatives in primary health care to address cardiovascular risk management, funding not based on population need and a lack of finance to improve capacity to cope.

> *"Ministry talks a lot about prevention of illness and disease, but they just don't fund it. It's expected to happen". F2*

> *"In an area like this which has very high needs that there doesn't seem to be any differential funding to cope with expectations". F3*

> *"...so with the whole, like, long term conditions, chronic conditions... and then the whole preventive healthcare, more and more stuff's being expected, but there isn't a commensurate shift of funding out to the primary health". F3*

The other key factor related to funding was how funding drives priorities in primary health care.

> *"...if I am blunt about it, guided by where we get funding from. Care Plus gives us funding. Diabetic Project gives us funding. Immunisation gives us funding". F3*

Participants expressed concern regarding a deficiency of strong leadership by the Ministry in relation to chronic conditions and heart health.

> *"And then across New Zealand there's lots of different chronic disease strategies. I've seen three changes in long term, chronic disease long term condition strategies across, at a government level. And there's no consistency going down the line about how we should work within those strategies or how we should treat, you know, like cardiovascular disease". F2*

More direct communication with the primary care sector was considered one way of addressing the perceived lack of leadership from the Ministry of Health.

4.2.5. Summary

The focus groups provided a wealth of themes and sub-themes around the barriers and facilitators to optimal cardiovascular risk management.

The domain which generated the greatest discussion was the self management domain. Overall the barriers related to patients characteristics, circumstances and perceptions as well as health professionals knowledge and skills and values and beliefs. Facilitators of self management corresponded with many of the themes that emerged from the literature, however the use of health professionals of the same ethnicity, home visits for high needs clients and involvement of the

whanau/family were themes not discussed in the current literature in relation to this topic.

The delivery system design domain was also abundant with themes. Two of the three barriers identified concurred with the literature, (lack of time and access to allied health professionals), the third barrier (the workload generated) however, was an issue identified by participants. The facilitators discussed by participants at the focus groups were themes mentioned in the literature.

More barriers were alluded to in regard to the health system overall, than emerged from the literature, particularly in regards to lack of leadership at a Ministry and DHB level around cardiovascular risk assessment and management. It was generally felt that DHBs were more focused on the personal health of inpatients than the health of their population overall.

Interestingly, analysis of the text data from the focus groups did not reveal any major commentary around community resources; this in itself is potentially note worthy.

To assist with the promotion of good management of cardiovascular risk in primary care, the barriers identified by primary health care staff in the focus groups need to be addressed and the facilitators identified need to be adopted in order to realise the huge potential benefits that effective risk management can produce.

The key themes illustrated by the quotes above can be related to the domains of the CCM, as illustrated in table fourteen below.

Table 15: Themes and sub themes from text data analysis embedded into the Chronic Care Model

Health system organisation	Self management	Delivery system design	Decision support	Clinical information systems	Community resources
Barriers					
Lack of leadership from the Ministry of Health	Communication and motivating behaviour change	Time	Poor functioning electronic decision support tools		
Short term & inadequate funding	Patient circumstances, characteristics & perceptions	Lack of access to allied health			
Lack of direction & focus on CVR management by the District Health Board	Health providers values & beliefs	Workload generated by risk assessments			
Lack of targeted funding to drive activity in primary health care	Lack of access to appropriate resources				
Facilitators					
Funding driven by population need, complexity of practice population	Communication and motivating behaviour change	Implementation planning	Use of computer generated reminders	Using data for quality improvement purposes	
Capacity within primary care matches expectations	Use of interactive decision aids	Clarity around roles & responsibilities and work as a team	Text messaging to patients		
	Involvement of whanau	Integration of services for ease of access to allied health	Resources that convey messages simply		
	Matching health provider ethnicity to patient's ethnicity	Practice champions	Electronic decision support to assist with the process		
	Home visits for high needs clients		Education and training		
	Incentivising behaviour change				
	Primary health care's longitudinal relationship with patients				
	Addressing broader determinants of health				

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Chapter Five: Discussion

New Zealand mortality statistics from 2006-2007 show CVD including coronary heart disease, other diseases of the heart and circulatory system and cerebrovasular disease remains the leading cause of death in New Zealand.[254] Since the late 1960's the there has been a declining trend in age adjusted cardiovascular mortality.[2] However, it has been predicted that the trend is about to reverse, with the actual number of New Zealanders presenting with CVD increasing. This is due to the rise in the number of people with obesity and Type 2 diabetes, as well as the growth in the aged sector of society.[2] Empirical studies have established that prior to the majority of diagnoses of CVD, there is a period of time defined by the presence of modifiable risk factors which are measurable.[16 21 22] In 2003, guidelines[6] were published which sought to provide guidance to primary health care concerning the management of individuals at risk of a cardiac event. These have since recently been updated.[71] Multiple New Zealand studies however, indicate that the advice contained within the guidelines has not been wholly followed.[44 56 57 69] To the author's knowledge, no other published New Zealand study has sought to establish the possible reasons why primary health care has not been able to fully embrace the advice contained in the guideline. The rationale for this study was to provide a context to the established evidence practice gap illustrated by the results of the published New Zealand literature, by investigating the views of those working in the area.

5.1. Focus group findings

5.1.1. Focus group characteristics

This study utilised a qualitative approach and text data was collected from focus groups. As previously stated, three focus groups took place with a total of 29 health professionals taking part. All but one of the participant's was either a general practitioner or practice nurse. For the findings of this study to be considered relevant, it is essential that the participants mirror, to some degree, their collegial counterparts throughout New Zealand.

The majority of general practitioner participants were female. This level of representation is in line with the increasing feminisation of the New Zealand medical workforce,[255] however it differs from the gender distribution of the Royal New Zealand College of General Practitioners.[256] All practice nurses who

participated in the focus groups were female, a result very similar to the findings from the 2001 survey of the primary health care workforce.[257]

In this study, there was a high representation of Maori general practitioners at the focus groups, compared to the results of the recent survey by Pande, M.[256] Due to small numbers comparisons are however not appropriate. No Pacific Island general practitioners took part in the focus groups. The percentage that identified as New Zealand European (36%) was lower than the findings of the 2007 Royal New Zealand College of General Practitioner survey where 61% identified as New Zealand European.[256] Thirty six percent of general practitioners who participated in the focus group identified in the "Other" category. This result is similar to the findings in the recent survey conducted by Pande[256] where 34% of those that responded to the survey were from overseas, either the UK, South Africa, Australia or the Indian sub continent; virtually mirroring the origins of those in the focus groups. The high number of general practitioners from overseas in the focus groups may potentially be due to the location of two of the focus groups, however it is also indicative of New Zealand's reliance on overseas trained doctors, with 40% of doctors within the workforce being trained overseas.[258]

The percentage of practice nurses who identified as Maori in the focus groups was higher than the findings from the 2001 survey of the primary health care and community nursing workforce,[257] however due to low numbers it is not appropriate to compare findings. There was a high number of Pacific Island practice nurses who participated in the focus groups, 36%, compared to the results of the 2001 survey, where only 1.3% of respondents identified as Pacific Island. This result is due to the location of one of the focus in an area with a high Pacific Island population. The percentage of practice nurses who identified as New Zealand European in this study was lower than the findings of the 2001 survey but the percentage of practice nurses who identified as Asian was higher.

The majority of general practitioner participants were over 45 years of age. This finding is similar to the 2007 membership survey of the Royal New Zealand College of General Practitioners.[256] Twenty nine percent of practice nurses identified in this study as being between 55 and 64 years old. In the 2001 survey,[257] 19.6% of respondents were over 55 years of age. This finding is indicative of the ageing of the New Zealand health care workforce.[259]

Seventy one percent of the general practitioners, who participated in the focus groups, had been qualified for ten years or more. A study by Pullon, S.,[260] found

that 78% of respondents had been in general practice for ten years or more, suggesting they had been qualified for this time or longer. Of the practice nurse participants, 21% had been qualified between five and nine years, similar to the results of the 2001 survey of primary health care nurses.[257] Of focus group participants however, 21% indicated they been qualified for greater than 30 years. This finding is much higher than the respondents to the 2001 survey where only five percent specified they had been qualified for that length of time. Again, the higher percentage of participants who had been qualified for a long period of time may possibly be linked to the increasing age of the workforce and the fact that the 2001 survey[257] data may no longer reflect the makeup of the practice nursing workforce.

Overall there was a level of similarity between the focus group participants and their counterparts. A significant difference however existed in relation to the ethnic makeup of focus group participants compared to their national counterparts. This can probably be linked to the location of two of the three focus groups. One of these was in a Maori led urban PHO and the other in an area of high need.

5.2. Comparison of findings with existing literature

The analysis of the text data from the focus groups is strongly linked to the evidence contained in the literature reviewed. The self management domain notably contained significantly more facilitator linked themes from the text data analysis, than emerged from the literature. The significance of the delivery system design remained, albeit with variation in the themes. The health system domain took on more significance for focus group participants, while the decision support domain reduced in importance. Of interest is the absence of identified barriers and facilitators linked to the community resource domain.

There were barriers and facilitators highlighted in the literature that resonated with the participants of the focus groups. Participants however, discussed other barriers and facilitators, not present in the current literature which impacted on their ability to ensure optimal management of those at high cardiovascular risk. The findings from this study will be presented using the domains of the CCM as a framework and the order of discussion will be as follows: self management, delivery system design, health system organisation, decision support, clinical information systems and community resources.

5.2.1. Self management

The self management domain of the CCM was one of two dominant areas in relation to the range of identified barriers and facilitators. There was remarkable consistency across the literature and the text data in relation to the barriers to optimal cardiovascular risk management.

Many facets of communication were viewed as a barrier to self management. The issue of conveying cardiovascular risk levels to patients was considered a barrier both in the literature and by focus group participants. The literature identified that general practitioners can feel that explaining cardiovascular risk to be not only challenging, but also time consuming.[145] Focus group participants were particularly concerned with their ability to convey the concept of absolute risk, a concept some of them even struggle to fully understand. In addition a 15% risk over five years was not considered to sound particularly serious, which participants felt compounded the task of trying to motivate individuals to consider changing their lifestyle to reduce their risk. Focus group participants felt that this issue was particularly challenging when dealing with individuals who are economically disadvantaged, as they cope with life on a day to day basis. Portraying risk over a five year time span can be inconsequential to them. The literature however, endorses the five year risk time frame as preferable to a ten year time frame used in some countries.[150] Many individuals at high cardiovascular risk are asymptomatic and this was identified by both the literature[142] and focus group participants as a factor which made motivating behaviour change challenging.

Focus group participants indicated they found promoting the concept of self management or self responsibility as complex and that patients frequently expected to receive a pill to make them better. Engaging individuals in the process of self care is challenging and it is a process of ongoing connection and re-connection.[261] It is not a process that occurs in one visit. It would appear that conceptually, self management was better understood by the practice nurses. One nurse illustrated the need to connect and re-connect very well by acknowledging the following, *"...and all that work you've done in the past is actually quite helpful"*. The need to connect and re-connect with individuals to enhance their self management skills is well aligned to primary health care due to the longitudinal relationship it has with its patients. This very point was highlighted by participants as a factor which enabled optimal cardiovascular risk management.

Patient's circumstances, characteristics and perceptions were all identified as influencing self management ability. The issue of Maori and Pacific Peoples having more fatalistic attitude, was raised as a challenge. This was not identified in the original literature review as a barrier, however it is an acknowledged challenge when working with Maori[262] and Pacific People who do place significant belief in the "will of God".[263] For both Maori and Pacific Peoples therefore, it is not only important that the health professional comprehends what the individual understands about the health issue of concern, but that the health professionals establishes what the individual's beliefs regarding the factors causing the health issues are.[263] A Maori/Pacific outreach nurse spoke of the benefit of including whanau/family in consultations with Maori at high cardiovascular risk, as they were critical to the process of supporting and encouraging their whanau member to make positive lifestyle changes. She also discussed the advantages of being able to visit Maori and Pacific families in their own home as it provided her with a real insight into the challenges they faced. Real value was also noted by participants, of health professional being the same ethnicity, where possible, as the patient. Not only could this remove language barriers but it meant that the health professional had a real understanding of the patient's values and beliefs.

Many participants spoke of the challenges associated with changing the lifestyle behaviours of people who come from significantly disadvantaged sectors of the community. This challenge was also acknowledged in the literature.[159] [160] Participants identified the need to, "*change the non-medical stuff*", as the key to making it easier for this patient group to self manage. For instance, removing the G.S.T. on healthy foodstuffs, while increasing the tax on cigarettes and improving the overall environment in which disadvantaged people live, by reducing the number of fast food outlets and making it safer for people to go walking, were two examples of possible changes. The option of incentivising behaviour change was mentioned at one of the focus groups and in the literature.[206] This is a new idea but recently the Australian Medical Association declared that it should be on the reform agenda. A blended model of incentives to the general practitioner/practice and the patient to achieve health targets was discussed at their recent conference.[264] In the UK, several cities including London, Birmingham and Manchester have, or are about to, explore the use of "card programmes". These allow the individual to collect points for making health choices that are then redeemable for "healthy products",[265] similar to loyalty card programmes already operated by most large retail outlets. It would appear Manchester with its Points4Life programme has made the most progress with the concept. Available information on this idea was limited. It does

however recognise the enormous influence the wider environment has on people's health, compared to the health service per se. Monitoring outcomes of such overseas programmes may produce useful guidance for New Zealand.

The issue of health literacy was highlighted in the literature as an area of concern as it impacts on how well people understand health messages and their ability to participate in decisions related to their health care.[138] Focus group participants frequently commented that they felt many of the resources produced to assist them in providing information to clients were too complex and of little use. The lack of culturally appropriate resources was another area of concern. The National Heart Foundation's original flip charts developed to assist practice nurses with the process of risk assessment and management, were considered of use initially. It was felt that they helped practice nurses evolve their "*patter*". Functionally, they were considered cumbersome and at all three focus groups, participants commented on the absence of any training by the organisation on the use of this resource. This could have influenced the way they were utilised in primary care. The new interactive aid, "Your Heart Forecast", however, was deemed *"really helpful"*, at explaining risk and motivating people. It would appear to have been well received with only one person expressing concern that some of her patients might not understand the graphs.

The literature raised the issue of the limited exposure general practitioners and practice nurses have in using techniques known to support effective behaviour change.[16] Amongst the focus group participants there was acknowledgement of the importance of communication and techniques to promote behaviour change. There was a difference in the level of training related to effective behaviour change techniques, especially between the general practitioners who had been trained for many years and their younger counterparts. Nonetheless, there was overall minimal discussion regarding the various approaches that can assist a health professional promote successful behaviour change with a patient. The only approach mentioned was motivational interviewing. There was no mention of assessment of readiness to change, collaborative goal setting or the "5A's" framework.[192] Potentially, this lack of awareness and knowledge of effective techniques will affect the health professionals ability to engage with the patient in a meaningfully manner and could influence the success of the patient's attempt at a behaviour change. This could then lead to a frustrating cycle for both patient and health professional where multiple attempts at changing risky lifestyle behaviours fail. This in turn could have an effect on how the health professional rates the potential impact of CVRA and

management in relation to the health of the individual in front of them and that of their enrolled population.

The values and beliefs of health professionals influence their approach and commitment to CVRA and management in their day-to-day work. General practitioners in particular, voiced concerns related to the time the consult can take with some patients at high cardiovascular risk and they were concerned that the time spent might have only a minimal impact. There was a desire to know what would be the most medically and cost effective approach for primary health care; spend time facilitating behaviour change with patients or ensuring that all high risk individuals are on a statin. The answer is that these two approaches actually are complementary as discussed in the guidelines.[6 71] What is really required are changes to the way primary health care functions and a review of the roles and responsibilities of team members.

5.2.2. Delivery system design

There was a high level of concordance with the themes that emerged from the literature and the views of focus group participants in relation to the barriers to delivery system design.

The issue of time constraints was a key theme. Multiple papers[16 142 172] referred to the issue of lack of time as a key barrier to general practice effectively managing those at high cardiovascular risk. A focus group participant provided a useful comparison of two health promoting initiatives. In relation to the first, immunisation, the health provider gives an immunisation and knows it is given in the current session; the second, supporting an individual to make changes to their lifestyle, is an activity that usually requires more than one session to achieve the desired behaviour change. The ongoing nature of behaviour change drives one of the other barriers highlighted by the focus group participants; that of the workload generated by the assessments when a person is identified as high risk. This barrier, not identified in the relevant literature, was alluded to in a paper by Wells, et al.,[8] when they estimated the distribution of cardiovascular risk in New Zealanders. In the paper they concluded that *"...management of CVD risk in New Zealanders with raised CVD risk will be a major undertaking for health care services"*

The main strategy to resolving the tyranny of the "fifteen minute consult" provided by the literature, was the use of a team approach to CVRA and management, where all members of the practice team are utilised effectively as opposed to a doctor centric model.[195 207] Focus group participants appeared to have a sound understanding of the need for clarity around roles and

responsibilities of team members. General practitioners freely articulated that the nurses had a significant role in providing behaviour change support for patients at high cardiovascular risk. Recognition of the nurses' role in cardiovascular risk management has already been reported in two New Zealand papers.[216][266]

The idea of group visits/shared medical appointments[208] was another option suggested in the literature to address time constraints. While participants thought that conceptually the idea could work, the acute demands of general practice appeared to be uppermost in people's minds and their main concern was the fact that it would mean seconding a nurse away from some other area of the practice.

The notion of a patient completing their own risk assessment while waiting for their appointment was a strategy discussed in the literature[145]. When discussed at the focus groups, it was met with a positive response. Participants thought the idea had merit and suggested the use of computer terminals in waiting rooms that were linked to "Your Heart Forecast". This approach aligns with the process used in the Finnish Diabetes Risk Score, FINDRISC.[267] The literature highlights the potential benefits of this approach:

- It can increase the patient's awareness and promote discussion in the consult;
- Save time;
- Promote self management skills.[145]

The lack of access to allied health professionals was a theme that went across both the literature and the focus groups. Limited access to specialist support staff is a recognised barrier to cardiovascular risk management.[133] Focus group participants considered the lack of access to allied health professionals within primary care as an impediment to promoting self management of cardiovascular risk factors. The future development of "Integrated Family Health Centres" will perhaps provide a solution to the lack of access to allied health professionals in the primary health care sector. Co-location of health providers of different disciplines should make it easier for patients to see multiple services in one location. A key challenge however, will be to ensure coordination of appointments within a single patient visit.

In the literature, cost especially in relation to preventive health care, was identified as a significant barrier.[137] In comparison, no reference was made to cost as a barrier by focus group participants. This is probably due to the fact

that in two of the three focus groups, participants mentioned that follow up visits at their practices were free, therefore removing this barrier to access to preventive health care for patients.

Focus group participants acknowledged the role of a practice champion in driving changes and ensuring what needed to happen, such as training, happened. Effective leadership is recognised as one of the essential precursors for successful team work to occur.[169] Team work itself is pivotal to the provision of a system that provides optimal cardiovascular risk management.

5.2.3. Health system organisation

Lack of leadership at the macro level was a theme that emerged from both the literature and the focus groups. While the Assessment and Management of Cardiovascular Risk Guidelines were launched in 2003,[6] the Ministry of Health took six years to place emphasis on the importance of risk assessment by including it as one of the clinical indicators measured and incentivised by the PPP.[127] This is a step in the right direction, particularly with the higher payment for CVRAs than for most other indicators. However it is fair to say that undertaking a risk assessment is not the main consumer of time linked to the process. Managing those identified at high cardiovascular risk is, and to date there has been no extra funding linked to this facet of the process. Another consideration related to the PPP, is that currently it is only measuring and reporting the coverage of CVRA. There is a need to move on to measuring and reporting on changes in risk, such as lipid levels for those with previous CVRA > 15% and the consideration of incentivising this.

A clear issue for participants in the focus groups was the perceived low level of funding in primary health care linked to complexity of the enrolled population. This was a definite issue for practices located in areas of high need. Currently primary health care funding streams linked to socioeconomic status are health promotion and services to improve access funding.[268] Some practices in these areas get additional funding from the very low cost access stream.[268] Potentially some of these patients may meet the criteria for Care Plus funding,[187] however this would not be universally applicable. The dialogue in the focus groups suggested that they did not see the combination of capitation funding and patient fee for services charges as sufficient to enable them to support patients to effectively manage their high levels of cardiovascular risk. This was particularly evident for those many high needs patients who are the very populations with strong, documented evidence of poor levels of heart health.[46] Participants in the focus groups also considered the current funding of primary

health care inadequate for them to increase their capacity to cope with the additional workload associated with effectively managing a patient identified as high cardiovascular risk. This includes a review after three to six months of impact of lifestyle advice, quarterly review of medications and yearly reassessment.[6 71] Ideally, the individual would also be receiving support for and monitoring, of lifestyle modification on an ongoing basis, perhaps via the use of other technologies.[200]

At the focus groups, the issue of funding driving care within the sector was raised as a barrier to cardiovascular risk management. For example, practices currently get funded for carrying out a Diabetes Annual Review,[132] as private businesses this funding is key. No such driver exists to promote review of patients who are at high cardiovascular risk. So while the literature identified a lack of incentives linked to preventive care as a barrier[59 133-135] and evidence points to the provision of such incentives as improving the provision of preventive health care and disease management,[269] incentives can have negative spin offs, such as driving aspects of care at practice level, to the detriment of other groups of patients with other needs.

A review of primary health care funding to ensure that the funding was linked to the complexity of the enrolled population, was seen as an option for improving cardiovascular risk management by focus group participants. There is a dearth of evidence around appropriate funding of preventive health care within the primary health care sector and the evidence that does exist is inconclusive.[187] This area will therefore remain open for debate and review. However, in these times of financial constraints, there is a need for primary health care to assimilate new aspects of the care it provides into "usual care" without each new aspect requiring additional funding. For example, when general practice commenced doing cervical smears, this was incorporated as business as usual, without requiring a funding stream.

5.2.4. Decision support

Decision support, electronic or otherwise, was not associated with as many barriers by focus group participants, compared to the number that emerged from the literature. While guidelines themselves were associated with significant barriers in the literature,[16 135 175] no discussion, positive or negative occurred during the focus groups in relation to the cardiovascular risk management guidelines.[6 71] They appear to be well accepted as providing appropriate advice for good care.

The tools primary health care uses to risk assess individuals were not a focus of this study and comments around electronic decision support were not a chief theme within the text data. Focus group participants were divided on the topic of whether they saved time or took more time. However, it is worth mentioning that unsurprisingly, there were feelings of frustration when the systems did not work. In busy primary health care settings, the smooth workings of these systems is pivotal to effective risk assessment, which in turn is vital for determining effective risk management. Vendors of these products need to ensure that once the system is installed in a practice, follow up support is provided in a timely manner.

Other barriers that emerged from the literature such as the cost of electronic decision support systems, their compatibility with patient management systems and computer literacy of the users[176] [177] were not mentioned as barriers in the focus groups.

The facilitators for effective decision support identified by focus group participants bore no resemblance to those identified in the literature. The literature reviewed which was pertinent to this area, focused on electronic clinical decision support.[224] While the use of electronic decision support in relation to promoting the process of risk assessment and management was mentioned by the focus groups, its role in effective risk management was not discussed.

Participants mentioned the use of computer generated reminders to improve their practice's management of individuals at high cardiovascular risk. This approach is linked to strong evidence supportive of the use of computer generated reminders in relation to adult preventive health care.[270] Ensuring equitable care for disadvantaged groups can be enhanced using computer generated reminders as well.[270]

Participants also discussed the use of decision support for their patients. One practice used text messaging to clients to remind them of appointments. Missed medical appointments are a key issue for a general practice.[271] Failure to keep appointments affects practice revenues and decreases access to care for other patients.[271] Missed appointments are common in people from low socioeconomic groups.[271] The practice that used text messaging as a reminder system for their patients was located in an area of high deprivation. The use of this widely available technology is a prime example of how a common technology can assist primary health care in ensuring patients either attend

their appointments or allow the practice to fill the appointment with another patient.

The need for patient decision support tools that conveyed messages simply was another theme that emerged from the focus groups and links to increasing concerns regarding low levels of health literacy which were present in the literature. People with low levels of health literacy are less likely to utilise disease prevention programmes, such as screening programmes.[149] This makes it imperative that promotion of programmes such as CVRA uses simple messages and that the resources developed to support those at high cardiovascular risk, convey strategies for reducing risk in basic terms.

5.2.5. Clinical information systems

No barriers to the use of clinical information systems, such as registries to monitor enrolled patient populations and the use of electronic prompts to assist with planning patient visits, were identified by the participants of the focus groups. This could indicate that all participants were satisfied with the systems in use in their respective practices. This is positive as poor clinical information systems have been identified as a barrier to delivering appropriate care.[160] However, clinical information systems are only as good as the information entered into them. While no mention of barriers to their use emerged from the focus groups, there was comment on the role of the practice champion in one location. The comment suggested that practice members needed reminding (*"...cause X is always harassing us...to chart it, (smoking status*) to record lifestyle behaviours. The poor recording of risk factors into clinical information systems is established as a key issue in the literature.[69] [183] [184] Non-recording or mis-recording of clinical information impacts on the potential of the clinical information system to support appropriate care. There is a lack of literature related to factors which facilitate the establishment and ongoing use of clinical information systems in primary health care. There was no mention in the focus groups of factors which facilitate their establishment or use either. A systematic review[230] focusing on the implementation of electronic medical records as opposed to clinical information systems per se, pointed to the importance of planning prior to, during and after implementation, if the initiative was to be successful. During the post implementation phase the authors draw attention to the importance of audit and feedback to show to the users the difference the new system is making.[230]

The role of audit and feedback of clinical data for quality improvement purposes was mentioned on more than one occasion within the focus groups.

Focus group participants spoke of reviewing the data to ensure that those identified at risk, were receiving the correct treatment according to guideline recommendations. The data was reflected on at different levels, within staff meetings and at clinical governance meetings. This point highlights two positive aspects. Firstly, practice staff were involved in reflecting on their practice and peer comparison is an aspect of quality improvement. Evidence in the literature review spoke of the importance of team working but of the lack of shared learning opportunities which are known to enhance teamwork.[169] The fact that the practices where focus group participants were drawn from, make time for meetings and use this time as a shared learning opportunity is encouraging.

Secondly, the mention of the use of clinical governance affirms the use of these committees within primary health care. Their role is to take a broader, more systems perspective as opposed to an individual patient perspective and in this way, they monitor issues such as equity of care and outcomes. Both approaches enhance quality care. Although there was limited discussion in the focus groups related to clinical information systems, the dialogue that did occur suggests that the participant's practices are using information from these systems constructively.

5.2.6. Community resources

The lack of significant comment from focus group participants around access to and use of community resources was a surprise. There are many possible explanations including participants not articulating any significant barriers or facilitators as they did not perceive these to exist; that during the focus groups the facilitator did not ask the right questions to obtain this information from participants or that it could be indicative of the poor linkage between primary health care and community resources generally.[163]

It might be expected that if the practices were actively utilising community resources and found this a useful adjunct to their provision of self management support, that they would have mentioned this more.

There is very little evidence regarding the role of community resources and disease prevention.[119] Previous research has identified the process of linking patients to community resources to assist with the facilitation of behaviour change, problematical.[185] However, notable agencies such as the Robert Wood Johnson Foundation have established that combining clinical efforts with community support, to be a more effective strategy for supporting patients to make lifestyle changes.[232] The literature review located a study which looked at

the role of a community health educator liaison (CHERL).[234] The role of the CHERL was to act as a broker between the practice, the patient and the available community resources. In view of the lack of infrastructure between primary health care, community resources, the cited lack of confidence of primary health care professionals in the services provided by community resources,[186] as well as their frustration at not receiving feedback from the community programmes regarding their patient's progress,[234] consideration of the establishment of such roles has merit. The position potentially could sit within a PHO and service multiple practices.

5.3. Strengths and limitations

A strength of this study was the attention taken to include participants from diverse primary care practice settings. Care was taken to encourage participation by both general practitioners and practice nurses and the approach appears to have been successful in this regard. Participants were from diverse cultures and from a wide age range, with variation in length of time since qualifying. While all the practice nurses were female, the general practitioner gender split was almost even, with just under 50% of the general practitioners being male. The sample was similar in some demographics to recent workforce estimates and while their counterpart's views may differ, they can as a sample, be considered reasonably representative of their peers. The main difference was related to the ethnicity of general practitioners and practice nurses and this may have resulted in a greater emphasis on managing high needs patients. Ultimately, this benefits the study as it provides the sector with key insights into not only the challenges of working with this patient group but the multiple solutions identified by primary care staff for addressing these issues in the current primary health care environment. Substantial effort was undertaken to guard against bias and to make certain that all relevant papers were included in the literature review.

The transcripts from the focus groups were circulated to both the researchers' supervisors so they were able to discuss and challenge, if required, the themes developed by the researcher.

While the researcher endeavoured to seek participants from a range of primary care practice settings, the one obvious omission was from a practice where the PHO does not actively promote CVRA. While a PHO who met this criterion was approached, they were not wholly receptive to being part of the study and once they had decided that "perhaps they could", the timeframe for the thesis was not amenable to including them.

Focus group participants had pre-existing relationships which may have been affected by patterns of leadership so some participants may have been reluctant to speak openly at the focus groups. However it was made clear to all participants that they could e-mail the researcher with comments after the focus group if they desired or feedback once they had received a copy of the transcript.

This study was exploratory and so has limitations intrinsic to such research, such as, the findings are not necessarily definitive. However, the choice of methodological approach was appropriate for the purpose of the study in that it provided the author useful insights regarding the barriers and enablers to cardiovascular risk management in primary health care.

5.4. Summary

The findings that emerged following the analysis of the text data were remarkably convergent with those in the literature. This gave validity to the findings of this study, in the sense that they are backed by evidence. However, some key differences were evident.

Overall, the differences were associated with facilitators of optimal cardiovascular risk management. Essentially facilitators were linked to three domain areas; self management, delivery system design and decision support. The sub themes that emerged across these domains were reflective of two key attributes. Firstly, participants acknowledged the significant role patients, their family/ whanau and the environment play in achieving good health outcomes; secondly, they reflected a positive understanding by participants of the primary health care sector and the intrinsic assets it possesses to promote optimal management of cardiovascular risk.

5.5 Conclusion

In this study the researcher sought to investigate the possible reasons for the evidence-practice gap related to effective cardiovascular risk management, provide a context for the current situation and identify potential facilitators to improve the status. This qualitative study identified the perspectives of New Zealand primary health care professionals regarding the issues surrounding the management of patients at high cardiovascular risk. The drivers of sub-optimal management, some of which were not identified in the current literature were elucidated and solutions highlighted. The findings resulted in a hierarchy of inter-related themes emerging. The barriers and solutions within each category

have the potential to impact not only on their specific category, but all the inter-related categories.

This study has clarified the barriers to optimal management of cardiovascular risk both within and outside the control of general practice. By corollary, some solutions can be addressed within practices but others require the support and influence of other agencies. The potential gains of optimal cardiovascular risk management include improved life expectancy, prevention of significant morbidity, and avoidance of expensive acute hospital admissions and interventions. To achieve the vision of the primary health care strategy in relation to population health, primary care needs to be effectively supported by the key players tasked with addressing the relevant recommendations below.

5.6. Recommendations

The recommendations are distilled by reflecting on both the text data and the information derived from the literature review. While the recommendations are aimed at assisting patients and their health providers to manage high cardiovascular risk, they are grouped according to the hierarchy of themes that emerged from the analysis of data.

Patient level:

- The National Heart Foundation needs to promote the importance of the CVRA to the public more effectively, so that most New Zealanders know the importance of a CVRA and at what stage of life they should be asking their general practice for an assessment;

- My Heart Forecast received significant praise from health professionals who had used it. The National Heart Foundation needs to ensure this interactive decision aid is rolled out promptly to all general practices and that staff are taught:

  - How to use it;

  - The theory underpinning it.

- The National Heart Foundation should consider the development of a resource to accompany My Heart Forecast, which can assist primary health care staff provide effective self management support for those at high cardiovascular risk;

- The messages and format of resources need to be simpler as low levels of health literacy are a significant challenge, particularly in those population groups more likely to have high cardiovascular risk.

- **Primary health care providers**:

  - Staff need to be provided with education to improve their understanding of behavioural change techniques which in turn would enhance their self efficacy in providing effective self management support. The literature strongly supports the use of the 5A's framework.

- **General practice**

  - Individual general practices should have a doctor and nurse "champion", associated with the programme. Their role could include the following:

    - Monitoring of data feedback from the PHO;

    - Relaying and consideration of the information at practice meetings;

    - Development and implementation of new approaches to the delivery of CVRA and management if results are not reflecting guideline recommendations.

  - Co-location of allied health, such as dieticians, physiotherapists, green prescription coordinators and smoking cessation counsellors within general practice. The benefit of this would be twofold:

    - Enhancement of the primary health care inter-disciplinary team

    - Improve ease of access for patients to these health professionals

  - Practices need to clearly identify and develop the roles and responsibilities of the practice team in relation to CVRA and management;

- o Practices need to consider the use of technology such as the telephone, text messaging and e-mails in relation to providing reminders re appointments and support for behaviour change;

- o In practices that serve a high Maori, Pacific Island, other ethnic cultural groups or people from areas of high deprivation, the practice should consider the use of a health navigator to assist them with patients from these population groups especially if practice staff are mainly New Zealand European;

- o Organisations who develop resources to assist primary health care staff share information with patients need to endeavour to ensure messages, especially dietary messages, can transcend cultures as these are of more use in general practice;

- o PHO Clinical Managers need to engage with primary health care teams to support and encourage them to review data related to CVRA and management and consider the following:

  - Percentage of eligible people who have had a risk assessment;

  - Completeness of lifestyle behaviour data, such as smoking status;

  - Medical management of those at high cardiovascular risk;

  - Whether appropriate behaviour change supports/interventions have been utilised to assist those at high cardiovascular risk to make lifestyle changes;

  - Follow up data of those at high cardiovascular risk in relation to intermediate health outcomes.

- o PHOs need to assist in the development of collaborative networks between primary care and appropriate community programmes which can assist primary care by providing support for people at high cardiovascular risk.

- **Health system**

  - o The PHO Performance Programme needs to move from only incentivising the proportion of the eligible population who have

been screened to also incentivise good management of those at high cardiovascular risk;

- o At a national level the health sector needs to advocate strongly for policies which facilitate healthy lifestyle choices. These could include the removal of G.S.T. on healthy foodstuffs, and increased taxation on tobacco and foods high in saturated fat or those that are calorie dense. With the increased focus on raising the profile and role of primary health care within the health sector, those at a national level need to ensure that DHBs are fully engaged with and supportive of the role of primary and preventive health care in relation to their local populations.

Final word

Almost a century ago Thomas Edison said:

> "The doctor of the future will give not medicine but will interest his patients in the care of the human frame, in diet and in the cause and prevention of disease".

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Appendices

Appendix One: Demographic Information

1. **Professional Group (please tick appropriate box):**

   General Practitioner☐; Practice Nurse ☐

2. **Which ethnic group do you belong to? Tick the box or boxes that apply to you**

   Maori ☐   New Zealand European ☐
   Pacific Islander ☐   Asian ☐
   MELAA* ☐   Other: please specify

*Is Middle Eastern/Latin American/African

3. **Age; (please tick appropriate box)**

   25-34yrs   ☐
   35-44yrs   ☐
   45-54yrs   ☐
   55-64yrs   ☐
   65+yrs   ☐

4. **Gender; (please tick appropriate box)**

   Female   ☐
   Male   ☐

5. **Years since qualifying; (please tick appropriate box)**

   5-9yrs   ☐
   10-14yrs   ☐
   15-19yrs   ☐
   20-24yrs   ☐
   25-29yrs   ☐
   30+yrs   ☐

Appendix Two: Focus group plan

Agenda

- Welcome
- Review of agenda
  - Review goal of the meeting
    - to explore the facilitators, challenges and barriers to the management of individuals identified as being of high cardiovascular risk. The reason why I wish to explore this area is that WHO have estimated that 80% of all CVDs could be prevented if the population followed a healthy diet, engaged in adequate levels of physical activity and ceased smoking.
  - Review of ground rules – these will be displayed on a flip chart throughout the meeting.

    - Only one person talks at a time.
    - No right or wrong answers, only differing points of view which are all valuable
    - Confidentiality is assured. "What is shared in the room stays in the room."
    - It is important for us to hear all sides of an issue so please feel free to share your point of view even if it differs from what others have said.

Participants will be asked if they would like to add any other ground rules prior to the meeting commencing.

  - Introductions (will be aiming for 6-8 participants at each focus group)

- Table of Questions and areas to explore

Questions	Areas identified in the literature
Prior to implementing CVRA at your practice were you provided with any training? Please could you tell me more about that?	Need to explore the following issues from the literature Was it was interdisciplinary, GP, practice nurse, practice manager?
Could you explain briefly to me how you identify individuals at high cardiovascular risk?	Need to explore the following issues from the literature Tease out if risk tables are used, if the guidelines are mentioned or if they use electronic or hardcopy decision support
What are the challenges in communicating their level of risk to individuals?	Need to explore the following issues from the literature Explore if they use any resources to assist the process Explore what happens when an individual's level of risk does not correspond with what the individual perceives is their risk. This can result in either ambivalence if the individual perceives their risk as low or demand for medication if they perceive their risk as high but it is actually low
If you were to think back to the last person you saw who was high risk can you count up how many risk factors they	Question designed to elucidate if clustering of risk factors is the norm

had and show me by a finger count?	
What are the challenges of working with a person with multiple risk factors?	Need to explore the following issues from the literature Does it feel overwhelming? How do they manage when the individual doesn't want to prioritise the same risk factor as they do? What if the individual's expectation of how they will be managed is not the same as the health professionals? Do they ever feel that differing priorities and expectations may impinge on their relationship with the patient?
What are the patient characteristics that make your job difficult in regard to multiple behaviour modification and compliance with lifelong medication?	Need to explore the following issues from the literature Patient's perception of risk differs from health professional Differing beliefs and values related to health due to different ethnocultural affiliation from health professional Lack of awareness of risk factors Ambivalence regarding lifestyle change Low level of functional health literacy Economic constraints Low self efficacy Competing priorities Geographical location of patient – some environments are challenging
What is it about the current primary health care system that makes the management of	Need to explore the following issues from the literature Time constraints

those at high cardiovascular risk difficult?	Limited access to allied health professionals such as community dieticians and exercise specialists Workload Pressures to address other patient issues The fifteen minute consult Lack of specific resources around multiple risk factor modification Concerns around patient compliance
What strategies does your PHO have in place to support the embedding cardiovascular risk management?	Need to explore the following strategies from the literature Interdisciplinary educational meetings Outreach visits by the clinical programme manager to assist with issues at practice level Provision of regular reports on numbers assessed, level of risk and appropriate management of those at high risk Financial incentives Facilitation of PDSA cycles to guide quality improvement
Can you describe specific training you as a health professional have received at any time in your career which you feels helps you to manage individuals at high cardiovascular risk?	Need to explore the following strategies from the literature Brief intervention counselling Readiness to change model training Motivational interviewing training Cognitive behavioural theory training Specific clinical information regarding cardiovascular risks and evidence based strategies for addressing them Use of the 5A's framework during consults Role of shared decision making, goal setting and action planning

Could you describe to me any changes to your practice systems that have been implemented to improve the management of those individuals at high cardiovascular risk?	Need to explore the following from the literature Instigation of all or any of the components of the chronic care model – improving community linkages, computer generated reminders embedded in IT systems, provision of self management support, revision of roles – nurse led clinics, clinical champion
If you were in charge and you had carte blanche please describe one change you would make to make the management of those at high cardiovascular risk easier	Need to explore the following solutions from the literature A more coordinated approach to health care Referring to health educator who acts as a broker for community organisations and groups who can support the individual, Use of the 5A's framework Use of internet support for follow up Community clinics – similar to cardiac rehab but for primary prevention.

Wrap up – review purpose of the focus group and ask if anything has been missed, give thanks and close

Appendix Three: Letter to Primary Health Organisations

Address of PHO

Date 30th July 2009

Dear/Tena koe

My name is Fiona Doolan-Noble and I am currently enrolled with the University of Otago undertaking my Master's thesis in Primary Health Care. My thesis is examining the facilitators and barriers to the effective management of those identified as being at high cardiovascular risk. Ethics approval has been given and the study is funded by the Capital Cardiovascular Trust. The co-supervisors for the study are Dr. Jocelyn Tracey and Associate Professor Stewart Mann.

I have selected to use focus groups to explore the issue and am writing to you in the hope that you will be agreeable to me holding a focus group within your Primary Health Organisation. Focus group participants will be general practitioners and practice nurses involved in cardiovascular risk management. Your Primary Health Organisation was selected after a sampling frame was developed to ensure that focus groups took place in a variety of Primary Health Organisations – large/small, urban/provincial, Maori provider/mainstream provider, and GP centric/community centric. Other variables considered in the sampling frame included the type of decision support in use and the length of time a cardiovascular risk assessment programme has been in place.

I anticipate the focus groups will last between and one and one half hours. Ideally I would like to have between 6-10 participants in each group, split evenly between general practitioners and practice nurses. Participants will be provided with light refreshments and a koha, ($50 petrol vouchers), for their time. I am flexible regarding the best time of day to hold the focus group, lunch time or after work, and will be guided by yourself regarding this and the best venue to use in your locality.

I have enclosed a copy of the participants information sheet and consent form for your information. Please do not hesitate to contact myself or either of my co-supervisors, (listed below), if you want any further information regarding this study. Please send your response either by e-mail (e-address below), or in the stamp addressed envelope included with this letter.

- Fiona Doolan-Noble, fionadn@xtra.co.nz or 021 372 328
- Dr. Jocelyn Tracey, jocelyn.tracey@phocusonhealth.co.nz or 0272468230
- Associate Professor Stewart Mann, stewart.mann@otago.ac.nz or 0274465256

Kind regards
Fiona Doolan-Noble

Appendix Four: Participant Information Sheet

You are invited to take part in a research study as part of a Master's thesis. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss with others if you wish. Please ask if there is anything that is not clear or if you would like more information.

Who will conduct the research?

Fiona Doolan-Noble, Master's student at the Department of Primary Health Care and General Practice, University of Otago, Wellington.

Who will supervise the research?

This piece of research is co-supervised by:

Dr. Jocelyn Tracey, Department of Primary Health Care and General Practice, University of Otago, Wellington

Associate Professor Stewart Mann, Department of Medicine, University of Otago, Wellington

Title of the Research

An exploratory study of the facilitators and barriers to the optimal management of individuals at high cardiovascular risk in primary health care

What is the aim of the research?

This exploratory study will consider how those at high risk of cardiovascular disease (CVD) are managed in primary health care, and what changes could be made that would enhance management?

The study objectives are:

1. To explore how those found to be at high risk of a cardiovascular event are managed in primary care
2. To determine what facilitates and hinders CVD risk management at practice level in the current primary health care environment in New Zealand.
3. To establish how providers would like to enhance the current management of those at high risk

Why have I been chosen?

You have been chosen as a primary health care professional working for PHO X to be part of the focus group taking place in this region.

What would I be asked to do if I took part?

You will be invited to attend a focus group which will last for between 1 – 1 ½ hours. The moderator will follow an interview schedule and members of the focus group will be asked to respond to the questions put to the group.

What happens to the data collected

The conversation will be electronically recorded, transcribed and analysed using standard qualitative methodology. Transcripts will initially be kept in password protected files on the researcher's computer and then in a secure archive at Wellington School of Medicine for ten years following completion of the research after which time they will be destroyed by a university approved destruction service.

How is confidentiality maintained?

Participants taking part in the focus groups will be asked to keep the discourse confidential. All data will be anonymised and individual participants will not be able to be identified. All focus groups will be allocated a code letter so comments will not be able to be traced back to a focus group within a particular PHO.

What happens if I do not want to take part or if I change my mind?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time without giving a reason and without detriment to yourself.

Will I be paid for participating in the research?

A koha will be provided to all participants.

What is the duration of the research?

It is estimated that the focus groups will last between 1 – 1 ½ hours.

Where will the research be conducted?

In the venue your PHO usually uses for CME meetings or a suitable community location.

Will the outcomes of the research be published?

It is anticipated that the outcome of the research will be published and presented in a variety of modes. The first and primary outcome of the research is for:

- A hard copy of the written thesis will be deposited as part of the University of Otago Library collections held in the Medical Library of the University of Otago, Wellington.

Other modes of dissemination of the research results include the following:

- Hard copy of written thesis presented to the funding organisation, Capital Cardiovascular Research Trust

- Hard copy of thesis and or summary of thesis to be presented to each PHO who took part in the study

- Summary of thesis to all participants of the focus groups

- Paper to be written and submitted to an appropriate peer reviewed journal

- Article to be written for the newsletter of PHO's that participated in the study

- Oral presentations at Primary Health Care Conferences in New Zealand and Australia

- Web page document for the Department of Primary Health Care, School of Medicine and Health Sciences, University of Otago, Wellington, web page

- Findings will be shared with students undertaking post-graduate study if invited

Who is organising and funding the research?

- Fiona Doolan-Noble is organising the research as part of her Master's thesis in Primary Health Care. Funding for the research has been provided by the Capital Cardiovascular Research Trust

Who has reviewed the proposal?

The research proposal has been reviewed and approved by the Department of Primary Health Care and General Practice, University of Otago, Wellington.

Complaints

If you have any queries about the research you would prefer to raise with someone other than the student researcher, you should contact either of the co-supervisors. Contact details for the co-supervisors are:

- Dr. Jocelyn Tracey: jocelyn.tracey@phocusonhealth.co.nz; 0272468230
- Associate Professor Stewart Mann: stewart.mann@otago.ac.nz; 0274465256

Contact for further information

Fiona Doolan-Noble

5 Cave Terrace, Redcliffs, Christchurch

Cell-phone: 021 372 328

E-mail: fionadn@xtra.co.nz

Thank you for considering being part of this research study. If you take part in the study you will be provided with a copy of this participant information sheet and a copy of your signed consent form.

Appendix Five: Consent form

Department of Primary Health Care and General Practice
School of Medicine and Health Sciences
University of Otago
Wellington

An exploratory study of the facilitators and barriers to the optimal management of individuals at high cardiovascular risk in primary health care

Focus Group Participant Consent Form

➡ I have read and understood the Information Sheet provided for focus group participants taking part in this exploratory study designed to look at how those at high cardiovascular risk are managed in primary health care.

➡ I have had the opportunity to have the details of the study explained to me.

➡ Any questions I have had have been answered to my satisfaction

➡ I understand that I am participating in a focus group interview and that while my identity will be known to other group members we are each agreeing to keep information and identities confidential

➡ I understand that all information and identities will be kept confidential in written reports, in all published documents and by other parties involved in the research

➡ I understand that the focus group transcripts will initially be kept in password protected files on the researcher's computer and then in a secure archive at Wellington School of Medicine for ten years following completion of the research after which time they will be destroyed.

➡ I understand that taking part in this study is voluntary and that I may withdraw at any time

I understand that I may ask further questions at any time and I know who to contact to do so.

I..(Full Name) hereby consent to take part in this study

Signature:

....Date:...

.....

Project explained by: ....

Project role:...

Signature:

....Date:...

.....

Researcher: Fiona Doolan-Noble, 021 372 328 or fionadn@xtra.co.nz

High Risk Card
15% Plus
Heart

Heart Check – High Risk
1 in 5 Chance of
Heart Attack within the next 5 years!

Eat: To Help Your Heart!
Lots of Fruit and vegetables
Lots of fish
Lots of wholegrain bread and beans
Take fat off meat, skin off chicken

Walk: To Help Your Heart!
Walk for 30 minutes a day

Eat Less: To Help Your Heart!
Less take-away food –
McDonald's, KFC, Fish and Chips

Smoke Less: To Help Your Heart!
Cut down – less is better

Medication: To Help Your Heart!
Reduce your chance of a heart attack by
taking your medication

Have a Change of Heart:
From **Red** to **Orange** to **Green!!**

Moderate Risk Card
10% Plus

Heart

Heart Check – Moderate Risk
1 in 10 Chance of
Heart Attack within the next 5 years!

Eat: To Help Your Heart!

Lots of Fruit and vegetables
Lots of fish
Lots of wholegrain bread and beans
Take fat off meat, skin off chicken

Walk: To Help Your Heart!

Walk for 30 minutes a day

Eat Less: To Help Your Heart!

Less take-away food –
McDonald's, KFC, Fish and Chips

Smoke Less: To Help Your Heart!

Cut down – less is better!

Medication: To Help Your Heart!

To reduce your chance of a heart attack
you may need medication

Have a Change of Heart:
From Orange to Green!!

Left card (front):

Low Risk Card

5% Plus

Heart

Right card (back):

Heart Check – Low Risk
1 in 20 Chance of
Heart Attack within the next 5 years!

Eat: To Help Your Heart!

Lots of Fruit and vegetables
Lots of fish
Lots of wholegrain bread and beans
Take fat off meat, skin off chicken

Walk: To Help Your Heart!

Walk for 30 minutes a day

Eat Less: To Help Your Heart!

Less take-away food
McDonald's, KFC, Fish and Chips

Smoke Less: To Help Your Heart!

Cut down – less is better!

Congratulations
GREEN FOR LIFE!