

# Communicating cardiovascular risk effectively

*Calculating a patient's cardiovascular risk is relatively easy; communicating this to patients in a way that assists their decision making can be challenging. This is because patients and health professionals often think differently about cardiovascular risk. To empower decision making and self-efficacy among patients clinicians can choose to frame information in a variety of different ways.*

## **The importance of calculating cardiovascular risk**

Cardiovascular risk management is central to general practice. The current approach to this involves calculating the patient's cardiovascular risk, helping patients to understand what their risk means, and empowering patients, especially those with high cardiovascular risk, to make changes to reduce their risk. During these discussions if information is not delivered in a way that the patient understands then their ability to make informed decisions that are beneficial to their health is likely to be limited.

### **Calculating cardiovascular risk in New Zealand**

In New Zealand, an equation based on Framingham data is used to calculate combined five-year cardiovascular risk. While this equation is not a perfect predictor of outcomes, it is very good at identifying those patients who are at a higher risk of experiencing a cardiovascular event.<sup>1</sup> The five-year cardiovascular risk combines key factors into an overall risk. This is intended to assist patient understanding, and allows clinicians to have an overview of the patient's health, rather than focusing on individual risk factors. The goal of the health professional is to help the patient to lower their overall cardiovascular risk and to place the patient's cardiovascular risk in the context of other co-morbidities, e.g. chronic obstructive pulmonary disease (COPD).

Many General Practitioners have validated electronic cardiovascular calculators embedded into their decision support tools, e.g. *bestpractice* or Predict, which enable rapid calculation of cardiovascular risk.\* Furthermore, guidelines are relatively clear in the management of individual cardiovascular risk factors. However, increasing a patients understanding of cardiovascular risk and empowering them to use this information to make decisions is arguably the greatest

challenge in the management of cardiovascular health. This is because many people base their assessment of risk on emotions, that will influence their decisions rather than data.<sup>2</sup> The task of communicating risk is further complicated because as many as one in five well-educated people incorrectly interpret basic statistical information.<sup>3</sup>

\* Validated electronic cardiovascular calculators are not available in all regions. The New Zealand Cardiovascular Risk Charts can be used by clinicians in place of electronic calculators. These are available online at [www.health.govt.nz/system/files/documents/publications/090311\\_cvd\\_poster\\_final.pdf](http://www.health.govt.nz/system/files/documents/publications/090311_cvd_poster_final.pdf) or in the New Zealand Primary Care Handbook 2012.

### **Shared decision-making is central to risk management**

Discussions with patients about treatment options for cardiovascular disease are best managed with a shared decision-making approach. This involves the clinician using their knowledge and skills to enable the patient to arrive at a decision which best fits the patient's values and priorities. This process takes many factors into account, including:

- The patient's age, ethnicity, co-morbidities and frailty
- The benefits versus harms of any interventions
- The patient's family/whānau
- Current evidence-based guidelines
- The patient's internal concerns, beliefs, expectations and values
- The health professional's clinical experience
- The patient's occupation, hobbies and commitments
- The patient's socioeconomic and occupational status which may limit their ability to meet the cost of appointments, travel to clinics or take time-off work to attend consultations
- The patient's willingness to consider change at this stage



Patients are more likely to take responsibility for managing their own health if they are actively engaged in treatment decisions and their family/whānau are encouraged to be involved.<sup>4</sup> Being actively involved in self-management means patients are also more likely to be satisfied with their treatment.<sup>4</sup> For shared decision-making to be meaningful patients need to understand the reasons why health professionals are making recommendations. Therefore discussions with patients about cardiovascular risk are crucial. These become even more important when the balance between the advantages and harms of a treatment are finely weighted, e.g. treating patients with statins when their cardiovascular risk is moderate; a strong patient preference for longevity of life or avoidance of adverse effects may be the difference between treating, or not treating.

### Discussing cardiovascular risk with patients

Following a cardiovascular risk assessment all patients should be given the opportunity to discuss their result, regardless of their level of cardiovascular risk.<sup>5</sup> Some patients may appreciate being offered the opportunity to do this with whānau/family being present. The outcomes of this discussion will be influenced by the ability of the health professional to deliver information so that it is understandable to the patient. Health professionals who do this well will naturally adjust the complexity of the discussion and use different tools to explain concepts, as appropriate to the individual patient.

There are no clear recommendations about how risk should be communicated to patients, because each individual will

interpret information differently and each representation of risk carries its own connotations and biases, e.g. absolute versus relative risk.<sup>6</sup> In psychological studies, how risk-related information is presented to patients has been repeatedly shown to influence how risk is perceived, and to a lesser extent this effect has also been demonstrated in clinical encounters.<sup>7</sup> Risk perception is vitally important because it, not clinical assessments, forms the basis for patient decision-making.<sup>8</sup>

### Health professionals and patients may think differently about risk

Health professionals deal with the concept of cardiovascular risk daily. However, explaining this concept to people who are not familiar with it can be challenging because:

1. It is an abstract concept that does not apply to the present, but rather to an unspecified point in time at some stage in the next five years
2. Even those at high five-year risk of a cardiovascular event, e.g. 25%, are still unlikely to experience an event in the next five years, i.e. there is a 75% chance that they will not experience an event

Cardiovascular tools should therefore be used as a prompt for discussions about cardiovascular risk, with clinical expertise helping individual patients understand their risk.

### First define what you mean by cardiovascular event

In New Zealand cardiovascular events are defined as a diagnosis of: myocardial infarction, new angina, ischaemic stroke,

### The morbidity and mortality of cardiovascular disease

Cardiovascular events are the leading cause of mortality in New Zealand, accounting for almost one-third of deaths annually; every 90 minutes one New Zealander dies of coronary artery disease.<sup>11</sup> Stroke is the leading cause of disability among adult New Zealanders; seven out of ten patients that survive a stroke will be disabled long-term.<sup>11</sup>



transient ischaemic attack (TIA), peripheral vascular disease, congestive heart disease or cardiovascular-related death.<sup>9</sup> Depending on the patient's experience and level of health literacy, terms such as stroke, heart attack and cardiovascular disease can mean different things.<sup>10</sup> For example, if a patient has a relative who has had only a minor TIA then they may not be overly concerned about their likelihood of experiencing a similar event. Presenting a balanced and accurate picture of the morbidity and mortality associated with cardiovascular events will help some patients to make informed decisions (see: "The morbidity and mortality of cardiovascular disease", opposite).

### **Distinguishing between modifiable and non-modifiable risk factors**

For patients who are at increased risk of cardiovascular disease due to non-modifiable factors, e.g. age or an early family history of ischaemic heart disease, it is important to acknowledge that these are outside the control of the patient and yet may contribute substantially to their risk.

Conversely, it is important that patients understand there are a number of modifiable risk factors that they can alter to improve their health. A series of interviews with 25 Māori patients in Northland with ischaemic heart disease, found that Māori patients were often aware of family histories of cardiovascular disease and that there was a genetic component to cardiovascular risk.<sup>12</sup> However, it was also found that these patients had less of an understanding of the impact of lifestyle factors on cardiovascular risk.<sup>12</sup> This small study shows the need to explore patients' awareness of the factors that contribute to their cardiovascular risk.

### **Present risk as statements rather than probabilities**

Presenting risks as frequency statements, rather than single event probabilities, has been shown to reduce the likelihood of information being misunderstood.<sup>13</sup> For example, if the patient has a five-year cardiovascular risk of 15%, then it is more useful to tell them that 15 out of 100 patients like them will experience a cardiovascular event over the next five years. Doing this removes the potential for confusion over reference classes.<sup>13</sup> For example, some patients may think that a 15% risk of a cardiovascular event refers to a 15% heart attack, which they may perceive as a mild or small heart attack, while other patients may think there is a 15% chance they will have a heart attack every day, and become highly anxious.

## **Negotiating risk reduction with patients**

The overarching principle of cardiovascular risk management is that those at higher risk have the greatest potential to gain from interventions. However, many patients struggle with this principle because some of the factors that contribute to cardiovascular mortality are insidious and asymptomatic, e.g. hypertension. From the patient's perspective it may seem logical to take a medicine to treat a symptom such as pain, however, they may be significantly more reluctant to take a pill everyday for dyslipidaemia if "I am feeling fine." Converting patients from a "how I feel" approach, to a more prognostic "how long will I live" view of their own health is frequently reported to be one of the greatest challenges in working alongside patients with long-term conditions.<sup>14</sup> This task is made more difficult by the fact that many interventions also involve the risk of symptomatic adverse effects, e.g. myalgia associated with statin use. However, for a trusting relationship to continue to evolve between patient and clinician the possibility of adverse effects of treatment should always be mentioned when discussing the pros and cons of treatment options. Explaining to patients that they are unlikely to feel an elevated blood pressure unless it is extreme is a simple way to begin conversations about risk factors that may be hidden to the patient. During consultations avoid descriptive terms, e.g. high-risk, which may have different meanings for different people and provide numeric examples with a consistent denominator where possible.<sup>2</sup>

### **Present a variety of treatment options to patients**

When "making recommendations" it is easy for health professionals to narrowly suggest one course of action as outlined in a guideline, rather than helping patients see all of the options that are available. A wider perspective gives patients a number of options to consider, and for some, a sense of empowerment. When discussing the options available, the status quo, i.e. no change, is also a possibility. This "options approach" fits well with the process of informed consent, where patients are entitled to the risks and benefits of all reasonable options of care.

### **Patients may need time to consider their options**

Many patients will be at the contemplative stage of change, and need time to think before deciding whether to begin a particular cardiovascular risk reduction treatment. This may involve discussion with family/whānau, or require more than one consultation with a health professional.


Remember that, for many patients, beginning long-term treatment for a chronic condition is a negative milestone in

## The “Your Heart Forecast” tool

In 2008 the “Your Heart Forecast” tool was developed to support cardiovascular risk communication and this tool has now largely replaced the 2003 cardiovascular risk charts.<sup>5</sup> The “Your Heart Forecast” tool is designed to help health professionals explain to patients what their cardiovascular risk means. It provides a visual story for patients in four stages:<sup>19</sup>

1. First, the patient is provided with their current cardiovascular risk, i.e. you are here
2. The patient’s cardiovascular risk is then compared to a peer with ideal modifiable risk factor control
3. The patient is then shown what will happen if they continue without making any changes in their life, i.e. their heart forecast
4. Finally, the patient is shown what would happen to their future risk if they made changes to their lifestyle

There is currently no patient outcome data available to assess the effectiveness of “Your Heart Forecast”, although a questionnaire of 47 health professionals showed that the tool improved clinicians understanding of cardiovascular risk and increased their confidence in explaining cardiovascular risk to patients.<sup>19</sup>


 The “Your Heart Forecast” online tool is available within New Zealand from: [www.heartfoundation.org.nz](http://www.heartfoundation.org.nz)



their life. Furthermore, the daily process of “taking pills” reminds them that they have a long-term medical condition. Denial and avoidance of “pill taking” can therefore be understood as natural human reactions in this context. Encouraging patients to think of pills as a positive step, helping them to live long enough to see grandchildren marry (or another goal that is important to them), may help to change this mindset.

## Consider individual risk factors when deciding on the order of interventions

It is easier for a patient to achieve a clinically significant reduction in a risk factor that is very high than it is for one that is mildly abnormal.<sup>5</sup> Patients need to understand this when choosing between treatment options. For example, smoking cessation is likely to be of increased importance to a patient with elevated risk who has respiratory symptoms due to COPD. Lifestyle interventions can be presented as an alternative to medicines, e.g. “if you managed to lose a few kilograms by September I don’t think there would be a need for you to start taking pills for hypertension.” It will also often be necessary to treat multiple risk factors simultaneously.<sup>5</sup> Regardless of what level of cardiovascular risk a patient has they should be encouraged to exercise regularly, for example 30 minutes on most days.

 **Best Practice Tip:** Visit our Facebook page ([www.facebook.com/bpacnz](http://www.facebook.com/bpacnz)) to comment on an excellent nine minute summary on the multiple benefits of exercise (also appropriate for patients to view): [www.youtube.com/watch?v=aUalnS6HIGo](http://www.youtube.com/watch?v=aUalnS6HIGo)

## Graphical presentation improves understanding of risk


When presented with information about risk and probabilities people often pay more attention to the number of times an event happens (the numerator) and less attention to the number of opportunities it had to happen (the denominator).<sup>15</sup> This effect is referred to as denominator neglect.<sup>15</sup> A graphical representation is one way to overcome denominator neglect. A large systematic review of multiple studies found that the use of graphical presentations of information relating to health risks resulted in increased patient understanding and satisfaction.<sup>16</sup>

It is well established that graphical tools are more effective at conveying the benefits of cardiovascular interventions.<sup>17</sup> In a study of 100 patients in Auckland with a history of cardiovascular disease presented with information about a hypothetical medicine, the majority of patients who expressed a preference for how information was presented, preferred

to have it displayed graphically.<sup>18</sup> Relative risk was the next most preferred method of presentation, although presenting information in this form may be considered coercive (see opposite).<sup>18</sup> Interestingly, stating the number needed to treat (NNT) was the least preferred method of presentation. This suggests that while NNT may be a useful method of expression for clinicians, it may be less so for patients. NNT has also been found to decrease patient understanding of risk in other studies.<sup>16</sup>

**The New Zealand Heart Foundation has provided two graphical online tools**, one for health professionals (see: The “Your Heart Forecast” tool) and one for the general public. Both tools are designed to communicate, rather than calculate, cardiovascular risk.\* The “Know Your Numbers” tool is available to all people and is intended for use without the support of a health professional. This tool does not include the physical effects of inactivity in its calculation, although it does recommend exercising on most days for 30 minutes.

\* When calculating a patient’s five-year cardiovascular risk it is important to use a validated decision-support tool, or the New Zealand Cardiovascular Risk Charts.

 The “Know Your Numbers” tool is available from: [www.knowyournumbers.co.nz/](http://www.knowyournumbers.co.nz/)

### Present absolute risk rather than relative risk

It has been shown that when patients are presented with information in the form of absolute risk they have an increased understanding, but are less likely to take action to reduce their risk based on this information.<sup>16</sup> Presenting the benefits of a cardiovascular intervention in terms of relative risk reduction is often more motivating for patients, but information presented solely in this manner can be easily misinterpreted,<sup>2</sup> raising the issue of informed consent.<sup>7, 13, 18</sup> Increasingly, it is being recommended that risk reduction should be presented in absolute terms, where possible.<sup>2, 20</sup> An example of the way that information about absolute risk reduction could be conveyed to a patient with a five-year cardiovascular risk of 20% who smokes would be: “If 100 people like you stopped smoking, then every five years there would be at least five fewer CVD events among these people.” However, clinical experience and patient knowledge will ultimately decide the preferred method of presenting information about cardiovascular risk to a patient. Checking with the patient that they have understood the intended meaning of the example is recommended whatever method of explanation is chosen.

\* Presuming quitting smoking would reduce the patient’s five-year cardiovascular risk by 5%



**Figure 1:** Graphic representation of a five-year cardiovascular risk of 20% and how the benefit of a reduction of risk to 15% may be explained to a patient, adapted from Paling, 2003,<sup>2</sup> available from [www.bmj.com/content/327/7417/745](http://www.bmj.com/content/327/7417/745)

## Framing affects perception

Framing refers to presenting logically equivalent information in different ways. This is an important concept when discussing cardiovascular risk with patients because although survival and mortality figures for a condition or procedure will be logically equivalent, e.g. 95% survival and 5% mortality, presenting only one or the other may result in markedly different results when patients are asked to make a treatment decision. A meta-analysis of four studies found that respondents were 1.5 times more likely to choose surgery over other treatments when surgery efficacy was framed in positive terms (percent survival), compared to negative framing (percent mortality).<sup>21</sup> It is recommended that when treatment effects are discussed with patients that health professionals express the information in more than one way, in order to present a balanced view and facilitate patients making informed decisions.<sup>21</sup> When discussing a possible lifestyle intervention with a patient a balanced framing of the benefits would be, "If you give up smoking you could live an extra five years and be much less likely to be disabled by a stroke like your uncle was." The benefits versus risks of starting a medicine could be presented by saying, "This medicine has a good chance of lowering your cholesterol, making you healthier, and helping you live several years longer. A small number of people may also experience side effects like the muscle aches we talked about before."

## Present benefits from short to long-term

The degree to which people are motivated by short and long-term benefits varies, and for some patients short-term gains are more important than long-term benefits.<sup>14</sup> This may partially explain why some patients persist with behaviour that they know is doing them long-term harm. For example, the damage caused by smoking one cigarette may appear to be negligible to the smoker, however, the pleasure of smoking one cigarette may be perceived as being substantial. By framing the benefits of an intervention as both short-term and long-term, health professionals are likely to broaden the appeal of the message to patients. For example, "if you quit smoking today":

- Within two days food will smell and taste better
- Within three months your circulation will improve and that leg pain may go away
- After a year you will be able to afford to go on holiday
- Ten years from now you will be more likely to see your grandchildren

## Set S.M.A.R.T targets

Cardiovascular risk reduction is dependent on patients understanding their risk and wanting to reduce it; a journey

that is unique for every patient. A suggested format for interventions to be presented in is:

- **Specific** – a specific target would be "I'm going to walk 30 minutes each day during lunch", rather than: "I'm going to exercise more"
- **Measurable** – this allows everyone to know if it has been achieved or not
- **Achievable** – unrealistic targets will cause patients to lose motivation. Modest targets, e.g. 500 g of weight loss a week, are achievable and are more likely to increase patient confidence
- **Recorded** – patients are more likely to respond positively when they can measure their progress towards a future goal
- **Time bound** – goals are more likely to be achieved if they are bound to an agreed time-frame, e.g. by their daughter's wedding

Writing down goals and sharing them with others is likely to make them more concrete and may mean the patient has a greater chance of achieving them.

## Tailor interventions to the patient's lifestyle

Cardiovascular interventions should aim to improve aspects of life that are important to the patient and their family/whānau. Health professionals who have a longstanding and trusting relationship with patients and their family/whānau are likely to understand some of the personal motivators for engaging patients with cardiovascular interventions. Asking patients "what makes you smile?" is a good way to find out what they enjoy, and this answer can be used as a focus for interventions. For example, a patient with children may be motivated to exercise by playing with their children in the park or coaching one of their sport teams. This patient-centred model of care seeks to find common ground with clinical priorities and the individual patient's beliefs, goals and expectations (see: "Using the Te Whare Tapa Whā framework", opposite).

In situations where there is not a longstanding relationship, or where patients are unwilling to consider lifestyle change or treatment, i.e. they are at a pre-contemplative stage of change, the clinician still needs to respect the patient's decision-making autonomy, and work to maintain a trusting therapeutic relationship.

## Check what the patient is taking away from the discussion

It is important not to overwhelm patients with information.<sup>10</sup> An "Ask, tell, ask" approach, or a "chunk and check" approach to



consultations means that information is presented to patients at a controlled rate, with pauses to confirm comprehension and agreement. A discussion about a cardiovascular risk factor can be started with a question like, “Why do you think your blood pressure might be up?” Asking a patient what they will tell their family/whānau is a simple way to check what message the patient is taking away at the end of the consultation. It also emphasises the benefit of including the patient’s family in their management plan. Information that is written down and can be taken away or accessed via the internet means the patient is able to review the material on their own or with family/whānau to improve understanding.

Before the end of the consultation, ask the patient to suggest a reasonable timeframe for the next consultation, e.g. “When would you like to catch up again?”. Active management can be reserved for patients at higher risk, or who have difficulties attending consultations. More frequent consultations that are

focused on specific issues may be more beneficial than longer appointments where multiple issues are addressed.

### What matters to the patient – not what is the matter with the patient

Some patients may be reluctant to initiate a medicine, e.g. statins, once they have an increased understanding of the benefits versus risks of treatment. Sometimes it is necessary for health professionals to accept that most human decisions are made on an emotional basis.<sup>2</sup> Patients usually know that aspects of their lifestyle are unhealthy. By assessing patient readiness to change, the clinician may strengthen their relationship with the patient, so they are better placed to enable them to make healthier decisions about their lives at a later date. As one experienced diabetes educator said “I may know what is best for another person’s health, but I am ignorant and arrogant if I think I know what is best for another person’s life.”<sup>14</sup>

## Using the Te Whare Tapa Whā framework

Te Whare Tapa Whā is a conceptual framework developed as a way to view Māori well-being in a broad context. Over time Te Whare Tapa Whā has become a basis for developing health practice from national policy to models of service delivery. The four realms of this framework are centred on taha wairua (the spiritual side), taha hinengaro (thoughts and feelings), taha tinana (the physical side), and taha whānau (family).

Te Whare Tapa Whā encourages health professionals to consider not only the physical person and their conditions, but also the other elements of the framework when consulting with patients. It is seen as being a way to both enhance the relationship between the patient and the health professional,

and to support health outcomes. By linking the benefits of an intervention to the ability of a patient to participate fully in all aspects of their life, from personal to community, the patient is encouraged not to think of medicines in isolation. An example of describing cardiovascular risk management using the four elements of Te Whare Tapa Whā is shown in Table 1.

Health professionals need to have a good understanding of a patient, including their whānau, beliefs, education and values in order to use the Te Whare Tapa Whā framework effectively. Asking patients what they see as being important in their life and talking about their priorities allows health professionals to gain a wider knowledge about patients they are consulting with.

**Table 1:** Engaging patients in cardiovascular risk management using the Te Whare Tapa Whā framework

Wairua (Spiritual)	Hinengaro (Psychological)	Tinana (Physical)	Whānau (Family)
Improved health provides a sense of well-being or happiness that is likely to be noticed by whānau	Improved cardiovascular management provides greater confidence in health and reduces anxiety	Improved cardiovascular health means participation in, and enjoyment from, a wider range of physical activities	Knowledge that family members are likely to live longer provides a sense of security for the whānau



# The “how to” of cardiovascular risk assessment

The current recommendation for the age at which patients should first be offered a cardiovascular risk assessment depends on a variety of unmodifiable and modifiable risk factors (Table 2).

Calculations of cardiovascular risk using Framingham-based equations for patients outside the age range of 35 – 75\* years are less accurate, but may still be useful for the purposes of shared decision-making.<sup>5</sup> This includes:<sup>5</sup>

- Patients with a HDL < 0.7 mmol/L - because there is a risk they have a genetic lipid disorder
- Patients with known familial dyslipidaemias or suspected genetic lipid disorders
- Patients with type 1 diabetes, type 2 diabetes with microalbuminuria or type 2 diabetes for longer than ten years

\* In patients aged under 35 years their risk level should be calculated as if they are were aged 35 years.<sup>5</sup>

## What should be recorded when performing a cardiovascular risk assessment?

The recommended information required to perform a five-year cardiovascular assessment is listed in Table 3.

If the patient’s total cholesterol (TC) or total cholesterol:high-density cholesterol (TC:HDL-C) ratio is above 8 mmol/L then the test should be repeated, and a fasting lipid test considered if the patient has never had their lipid levels measured before.<sup>5</sup> It is acceptable to use blood pressure and non-fasting TC, HDL-C and HbA<sub>1c</sub> that have been recorded in the previous five years for cardiovascular risk assessment, if the patient’s circumstances have not significantly changed.<sup>5</sup> The clinical importance of a current cardiovascular risk assessment rises as the patient’s cardiovascular risk increases.<sup>5</sup> Following an assessment the recommended risk factor monitoring period is

**Table 2:** The recommended age in years to begin cardiovascular risk assessments in patients without cardiovascular disease, adapted from Cardiovascular Disease Risk Assessment, 2013.<sup>5</sup>

Patient group	Males (years)	Females (years)
Patients without symptoms or known risk factors	45	55
Māori, Pacific or Indo-Asian patients*	35	45
Patients with known cardiovascular risk factors or at high risk of developing diabetes	35	45
Family history of: <ul style="list-style-type: none"> <li>■ Diabetes in a first-degree relative</li> <li>■ Premature coronary heart disease or ischaemic stroke in a first-degree relative (father or brother &lt; 55 years, mother or sister &lt; 65 years)</li> </ul>	35	45
Personal history: <ul style="list-style-type: none"> <li>■ Current smoker, or have quit smoking in the past 12 months</li> <li>■ Gestational diabetes or polycystic ovary syndrome</li> <li>■ Blood pressure ≥ 160/95 mmHg or TC:HDL ≥ 7</li> <li>■ HbA<sub>1c</sub> 41 – 49 mmol/mol</li> <li>■ BMI ≥ 30 or truncal obesity ≥ 100 cm in men or ≥ 90 cm in women</li> <li>■ eGFR &lt; 60 mL/min/1.73m<sup>2</sup></li> </ul>	35	45
Patients with type 1 or type 2 diabetes	Annually from diagnosis	Annually from diagnosis

\*Indo-Asian peoples include: Indian, including Fijian Indian, Sri Lankan, Afghani, Bangladeshi, Nepalese, Pakistani and Tibetan


determined by the individual patient's level of cardiovascular risk:<sup>5</sup>

- For patients with established cardiovascular disease initially at three months, then as clinically indicated
- For patients with a cardiovascular risk greater than 20%, annually, or as clinically indicated
- For patients with a cardiovascular risk from 10 – 20% as clinically indicated with a more intensive focus on patients with a higher combined risk. If the patient is not taking medicines to reduce their risk then offer reassessment at one year, for patients with a risk from 15 – 20%, and every two years for patients with a risk from 10 – 15%.
- For patients with a cardiovascular risk of less than 10% offer a further assessment in five to ten years

#### Cardiovascular risk is adjusted for some patient groups

The following patient groups will have 5% automatically added to their cardiovascular risk by the calculator as current Framingham-based estimates will tend to underestimate their cardiovascular risk:<sup>5</sup>

- Māori, Pacific or Indo-Asian peoples
- Patients with diabetes and microalbuminuria or persistent proteinuria, or diabetes for longer than ten years, or with HbA<sub>1c</sub> consistently ≥ 64 mmol/L
- Family history of premature coronary heart disease or ischaemic stroke in a first-degree relative

 A new cardiovascular disease risk assessment equation based on New Zealand data is anticipated to be available later in 2014.

**Table 3:** The recommended information to be recorded when performing a cardiovascular risk assessment, adapted from Cardiovascular Disease Risk Assessment, 2013.<sup>5</sup>

Category	Record
<b>Patient characteristics</b>	<ul style="list-style-type: none"> <li>■ Age</li> <li>■ Gender</li> <li>■ Ethnicity</li> <li>■ Smoking status</li> </ul>
<b>Family history</b>	<ul style="list-style-type: none"> <li>■ Type 2 diabetes</li> <li>■ Premature coronary heart disease or ischaemic stroke in a first-degree relative (father or brother &lt; 55 years, mother or sister &lt; 65 years)</li> <li>■ Genetic lipid disorder</li> </ul>
<b>Medical history</b>	<ul style="list-style-type: none"> <li>■ Diabetes</li> <li>■ History of cardiovascular disease</li> <li>■ Renal impairment</li> <li>■ Atrial fibrillation</li> <li>■ Genetic lipid disorder</li> </ul>
<b>Medical history</b>	<ul style="list-style-type: none"> <li>■ One sitting blood pressure for the purposes of risk assessment, if not above 160/95 mmHg, otherwise the average of two</li> <li>■ BMI and waist circumference</li> <li>■ HbA<sub>1c</sub></li> <li>■ Non-fasting lipid profile</li> </ul>

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