What's new in **cardiovascular disease risk assessment and management** for primary care clinicians

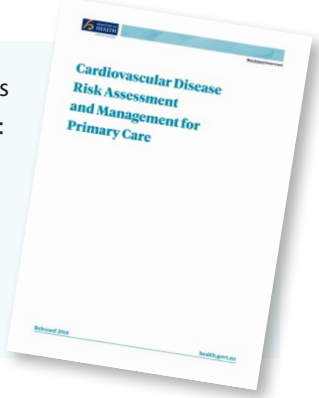
The recently released 2018 Cardiovascular Disease Risk Assessment and Management for Primary Care consensus statement provides updated recommendations for clinicians in primary care. Key changes include revised definitions for high risk, based on pre-existing cardiovascular disease or an equivalent risk factor, changes to the ages at which risk assessment should commence and the addition of serious mental illness as a risk factor. Management recommendations in the consensus statement are based on newly derived risk equations for the New Zealand population. The equations are not currently available for use in practice; however, clinicians in primary care can follow the management recommendations using current methods of risk assessment to identify individuals at low, intermediate and high risk.

KEY PRACTICE POINTS:

- Communicating risk to patients as part of shared decision-making and CVD risk management is recommended
- Start cardiovascular risk assessment earlier in patients of Māori, Pacific or South-Asian ethnicity: at age 30 years for males and age 40 years for females
- Lifestyle recommendations to reduce cardiovascular risk are recommended for everyone
- The 2018 CVD consensus statement recommendations on when to introduce pharmacological treatment can be followed by using existing calculations of low, intermediate and high risk.
- New clinical high risk groups (>15% five-year risk), who require intensive management, include patients with:
  - Congestive heart failure (CHF)
  - Asymptomatic carotid or coronary disease
  - An eGFR < 30 mL/min/1.73m^2 or < 45 mL/min/1.73m^2 in patients with diabetes
- Patients with severe mental illness are considered a high risk group and CVD risk assessment from age 25 years is recommended

This is the first article in a series on the **2018 Cardiovascular Disease Risk Assessment and Management for Primary Care consensus statement**. Key changes in risk assessment and management are highlighted in this article. Additional articles in this series will focus on management recommendations for blood pressure and lipids, and the role of aspirin in primary prevention.

A full copy of the consensus statement is available from: **www.health.govt.nz/publication/cardiovascular-disease-risk-assessment-and-management-primary-care**



New Zealand-based data now informs CVD risk assessment

Cardiovascular risk assessment in New Zealand has, until now, been based on the Framingham cardiovascular risk charts. These were developed in the 1960s and 1970s from the Framingham cohort study in the United States*, and allow clinicians to calculate a patient's future risk of cardiovascular disease by taking into account factors such as blood pressure, cholesterol levels and smoking status. These equations still provide a reasonable approximation of a patient's risk, their limitation, however, is they do not take into account New Zealand's ethnic diversity, and may under- or overestimate risk in some patients. In addition, since the time of the Framingham study, more cardiovascular risk factors have been identified, such as fasting blood glucose levels or HbA_{1c} and renal function.

The PREDICT study is a New Zealand research project which began in 2003 with the aim of deriving cardiovascular risk prediction equations based on local data.† By December 2015, approximately 400,000 patients aged 30–74 years had been assessed. The results of the PREDICT study have been used to develop the NZ Primary Prevention equations,‡ which now form the basis of CVD risk assessment in New Zealand. These equations incorporate more variables than the Framingham equations, in order to improve the accuracy of prediction and therefore help clinicians to provide appropriate targeted care.

The NZ Primary Prevention equations are not yet available for clinicians to use in practice, but the recommendations in the 2018 CVD risk assessment consensus statement based on these equations can be applied now.

* For further information on the Framingham study, see: **www.framinghamheartstudy.org/**

† For further information on the PREDICT study, see: **www.fmhs.auckland.ac.nz/en/soph/about/our-departments/epidemiology-and-biostatistics/research/view-study/research/predict-in-primary-care.html**

‡ Pylypchuk R, Wells S, Kerr A, *et al*. Cardiovascular risk prediction equations in 400 000 primary care patients in New Zealand: a derivation and validation study. Lancet, 2018; 391(10133):1897-907.

New aspects of CVD risk assessment and management

Changes to the definition of established CVD or a CVD risk equivalent

In patients with pre-existing CVD or a CVD risk equivalent (Table 1), assertive risk management and lifestyle modification is strongly recommended as these patients are at high risk (>15%) of having a cardiovascular event. Using risk equations for these patients is **NOT** necessary.

This includes patients with:

- A prior cardiovascular event, e.g. angina, coronary artery bypass grafting (CABG), myocardial infarction (MI), percutaneous coronary intervention (PCI), peripheral vascular disease (PVD), stroke, transient ischaemic attack (TIA)
- Familial hypercholesterolaemia
- Congestive heart failure (CHF)
- Diabetes with an eGFR < 45 mL/min/1.73m^2
- Stage 4 chronic kidney disease, i.e. eGFR < 30 mL/min/1.73m^2
- Asymptomatic carotid or coronary disease*

* Coronary artery calcium score >400 of plaque identified on carotid ultrasound or CT angiography

Table 1: Changes in the definition of established CVD include:

Risk factor or risk category	Updated 2018 guidance	Previous 2013 guidance
Heart failure	A history of heart failure is now considered to be established CVD	Heart failure was not included in previous risk calculations
Coronary or carotid artery disease	Patients with a diagnosis of asymptomatic carotid disease (including plaque identified on carotid ultrasound) or asymptomatic coronary disease (including coronary artery calcium score > 400) or plaque identified on CT angiography are considered to have an equivalent CVD risk to that of a person with established CVD	Not included in previous guideline
Renal function	Patients with an eGFR < 30 mL/min/1.73m^2 or patients with diabetes and an eGFR < 45 mL/min/1.73m^2 are now considered to have a CVD risk equivalent to those with established CVD	Patients with diabetes with an eGFR ≤ 60 mL/min/1.73m^2 were classified as very high risk and not needing a risk calculation performed

Start CVD risk assessment earlier in some patients

The age at which to begin CVD risk assessment has lowered in some patient groups, and changes have been made to the definition of which patients should have earlier CVD risk assessments due to personal or family risk factors (Table 2).

N.B. The PREDICT study included patients aged 30–74 years, therefore CVD risk assessment is an approximation for people outside of this age range, but still clinically useful.

Risk assessment from age 25 years for people with severe mental illness is now recommended

Individuals with severe mental illness are a high risk group and screening from age 25 years is now recommended. This includes patients with:

- Schizophrenia
- Major depressive disorder
- Bipolar disorder
- Schizoaffective disorder

People with severe mental illness are at increased risk of premature mortality due to cardiovascular disease, in part due to risk factors such as diet and smoking, but also due to the effects of medicines prescribed for the treatment of these conditions.

Using a five-year risk is unchanged

Management recommendations in the 2018 CVD consensus statement are based on the calculation of a patient's five-year risk, which is unchanged from previous recommendations. In many other countries a ten-year risk is used for assessing cardiovascular risk. However, most randomised controlled trials are based on five years or less of treatment; the median follow-up of participants in the PREDICT study, used to derive the NZ Primary Prevention equations, is currently approximately five years. In addition, a patient's risk and how it is managed can change over a ten year period and therefore predicting this far into the future may be less meaningful than using a shorter term for risk assessment.

Table 2: Age at which to begin CVD risk assessment by population group

Patient characteristic	Male	Female	Previous guidance
Without symptoms or known risk factors	45 years	55 years	No change
Māori, Pacific or South-Asian* peoples	30 years	40 years	35 years for males and 45 years for females
Personal risk factors: ■ Smoking ■ Gestational diabetes ■ HbA_{1c} 41–49 mmol/mol ■ BMI ≥ 30 kg/m^2 or waist circumference ≥ 102 cm in males or ≥ 88 cm in females (definition changed†) ■ eGFR < 60 mL/min/1.73m^2 on at least two occasions ■ Atrial fibrillation (new) Family risk factors: ■ Hospitalisation for or death from heart attack or stroke < 50 years in a first-degree relative (definition changed‡) ■ Diabetes in a first-degree relative ■ Familial hypercholesterolaemia (new)	35 years	45 years	No change in age, but changes in personal and family risk factors as indicated
Diabetes type 1 or 2	From diagnosis	From diagnosis	No change
Severe mental illness	25 years	25 years	Not previously included

* South-Asian peoples = Afghani, Bangladeshi, Indian (including Fijian Indian), Nepalese, Pakistani, Sri Lankan, Tibetan
† Previous waist circumference thresholds were ≥ 100 cm in males or ≥ 90 cm in females
‡ Previously defined as coronary heart disease or ischaemic stroke before age 55 years in a male first degree relative or before age 65 years in a female first degree relative

Use existing risk assessment methods and thresholds to guide management for patients at low, intermediate and high risk

The management of cardiovascular risk in the 2018 CVD consensus statement is based on revised thresholds for when to consider pharmacological treatment. These thresholds, in turn are based on calculations with the new risk equations which are not yet available in clinical practice. Clinicians can classify patients as low, intermediate or high risk using existing Framingham-based equations, and follow the appropriate management recommendations for the same risk category in the 2018 CVD consensus statement (Table 3).

Repeating assessments

Cardiovascular risk changes with time. Repeat assessments should be conducted to ensure the approach to managing cardiovascular risk agreed to by patients and clinicians remains the most appropriate. Annual reviews are recommended for people at high risk or people at intermediate risk managed with pharmacological treatments.

For patients not on pharmacological management, the recommended interval for repeat assessments is determined by the patient's underlying cardiovascular risk.

For patients with severe mental illness, CVD risk assessment should be performed every two years, unless their risk is ≥ 15%, in which case they should be performed annually.

Recommended interval for repeat CVD risk assessment:

- Risk < 3% – ten years
- Risk 3–9% – five years
- Risk 10–14% – two years
- Risk ≥ 15% – one year
- Risk 5–15% and prescribed pharmacological interventions – one year
- Severe mental illness – two years (or one year if risk ≥ 15%)

Shared decision-making and communicating risk

Incorporate additional clinical information based on your knowledge of the patient

Calculating cardiovascular risk is central to any CVD prevention strategy, the CVD risk assessment, however, requires clinical judgement and knowledge of the individual patient to determine if the calculated result is likely to under- or over-estimate risk. For example, patients who are morbidly obese or

Table 3: The pharmacological management of cardiovascular risk based on the 2018 CVD consensus statement

Risk category			Recommended management
	New thresholds (based on NZ Primary Prevention equations)	Old thresholds (based on Framingham equations)	
Low risk	< 5%	< 10%	Cardiovascular medicines are not generally recommended as this is believed to be the point below at which the harms of treatment are likely to exceed the benefits of treatment. It is estimated that approximately three-quarters of the population will have a five-year cardiovascular risk < 5% using the new equations.
Intermediate risk	5–15%	10–20%	The benefits and risks of blood-pressure and lipid-lowering medicines should be discussed and initiation of treatment considered, particularly for those with a risk at the higher end of this spectrum.
High risk	≥ 15%	≥ 20%	Blood pressure and lipid-lowering medicines are recommended. Aspirin for primary prevention of CVD should be considered for patients who are aged under 70 years. In general, patients with a high CVD risk should be managed in the same way as patients with established CVD.

have other exacerbating factors, such as an unhealthy lifestyle or using antipsychotic medicines for a serious mental illness, are likely to have a higher risk than that calculated.

Explain the five-year cardiovascular risk to patients

A key concept to convey to patients is that cardiovascular risk is a continuum; meaning everyone has some risk, but some have more than others. Consider a patient's level of health literacy when discussing their CVD risk and management options. Patients need to be presented with information in a way that allows them to understand their cardiovascular risk and the potential effects of lifestyle or pharmacological interventions, in order to actively participate in shared decision-making. Allow sufficient opportunities for the patient to ask questions and ensure that they have understood the information in the way it was meant to be conveyed. Consider various ways in which risk and interventions can be explained or depicted, e.g. visual aids.

For further information on communicating cardiovascular risk, see: **www.bpac.org.nz/bpj/2014/september/cvrisk.aspx**

Different patients, different decisions

Discussions about cardiovascular health need to take into account that patients with similar estimations of cardiovascular risk may use the same information to make different decisions. Consider the following points when making recommendations to patients:

- The patient's overall health, e.g. co-morbidities, frailty and life-expectancy
- The benefits, harms and cost-effectiveness of the various management options
- The patient's preferences regarding treatment options

Further information

The Heart Foundation has developed a resource page for health professionals for cardiovascular disease risk assessment and management, see: **www.heartfoundation.org.nz/professionals/health-professionals/cvd-consensus-summary**

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This article is available online at:
www.bpac.org.nz/2018/cvd.aspx