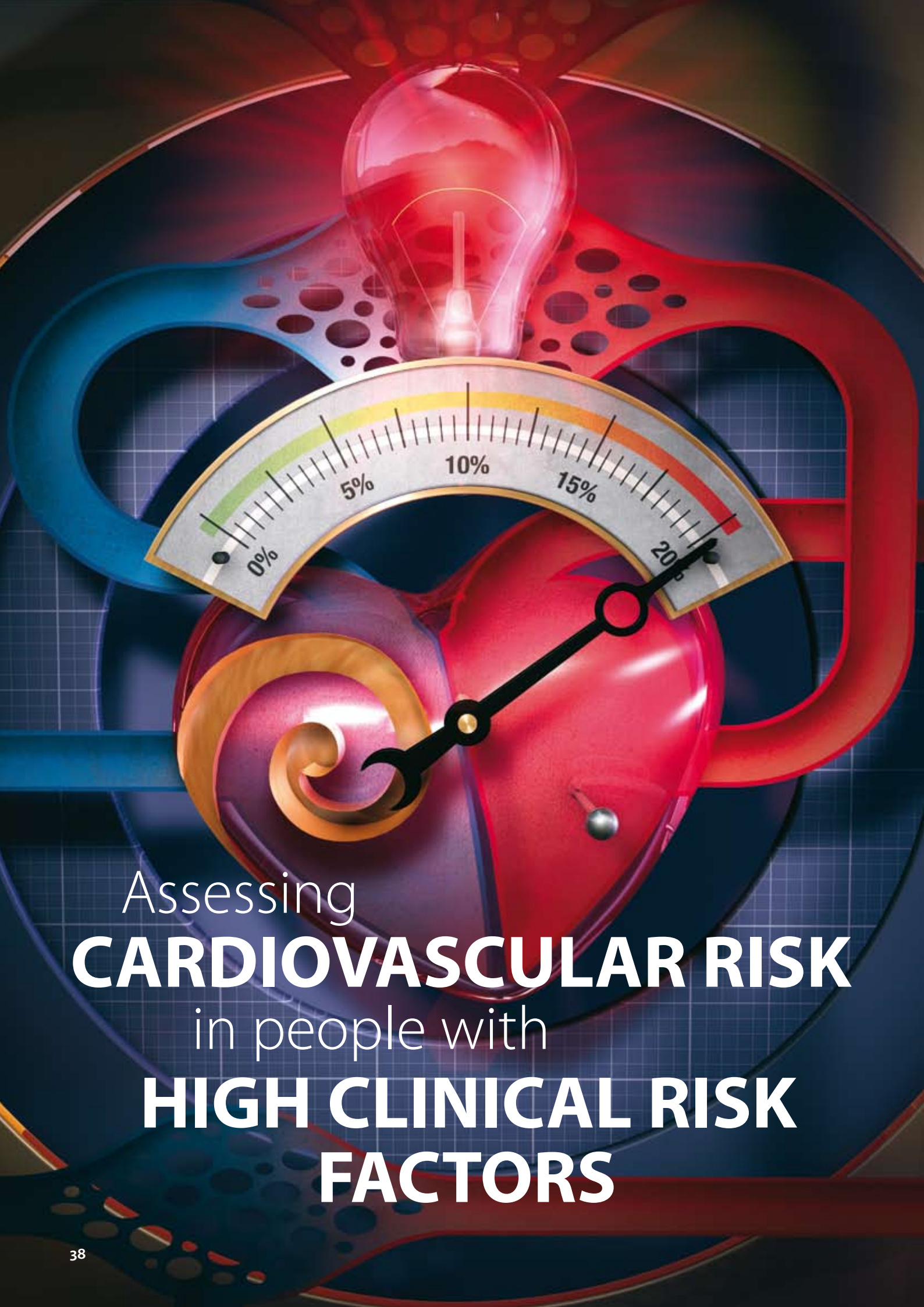

Assessing **CARDIOVASCULAR RISK** in people with **HIGH CLINICAL RISK FACTORS**

Cardiovascular risk assessment tools automatically adjust risk to greater than 20% for people with high risk factors, e.g. a prior cardiovascular event or diabetes with overt nephropathy. This is leading to a blurring of the concept of primary and secondary prevention and in some cases, patients are not receiving the intensive interventions required as the perception is that their risk is always high and cannot be reduced. Although "high risk" people have a permanent risk of at least approximately 20%, many also have modifiable factors which increase their risk well beyond this level, and it is this risk that can be reduced.

Cardiovascular risk and the New Zealand guidelines

A person's cardiovascular risk (i.e. the risk that they will experience a cardiovascular event) is determined by a combination of modifiable and non-modifiable factors. New Zealand cardiovascular risk charts use the Framingham equation to incorporate the most significant of these factors into individualised five-year absolute cardiovascular risk assessments.[1] This approach allows for more accurate stratification of cardiovascular risk than can be achieved using clinical perception alone.[2] It also provides an important opportunity for clinicians to engage with patients over the issue of cardiovascular health.

Table 1: Cardiovascular risk factors and cardiovascular risk over time for a 61-year-old, European male with a myocardial infarction

Risk factor	Presentation	6 month follow-up	1 year follow-up
Smoker	Yes	Recently quit	No
Blood pressure	165/98	145/90	130/80
Total cholesterol	6.7	5.2	4.3
Triglycerides	2.1	1.7	1.4
HDL cholesterol	0.86	0.95	1.1
LDL cholesterol	4.9	2.7	1.9
Total chol/HDL ratio	7.8	5.5	3.9
Risk assessment			
Framingham risk (progress to target)	33%	22%	8%
Actual persisting clinical risk	>20%	>20%	>20%

Assessing people with a high clinical risk

In New Zealand, it is recommended that five-year cardiovascular risk should guide treatment decisions for variables such as blood pressure and lipid levels. However, in very high risk groups, the five-year risk is assumed to be above 20% for life, and the use of risk charts is not advised. This applies to people with a clinical history of:[1]

- Previous cardiovascular events: angina, coronary artery bypass grafting, ischaemic stroke, myocardial infarction, percutaneous coronary intervention, peripheral vascular disease, transient ischaemic attack
- Some genetic lipid disorders: familial hypercholesterolaemia, familial combined dyslipidaemia, familial defective apolipoprotein B and genetically very low HDL levels (some types)
- Diabetes with overt nephropathy
- Diabetes with other renal disease causing renal impairment

There may be a misconception that cardiovascular risk in these patients cannot be reduced, resulting in less aggressive treatment of risk factors. Although people in high risk groups have a cardiovascular risk of at least 20%, Framingham study-based tools can still play an important role in conveying the potential reduction of risk that improved risk factor management can provide to individuals, as well as in assessing progress made towards target levels. Emphasising this benefit to patients is likely to improve compliance with treatment.[3, 4, 5]

For example, Table 1 (previous page) shows risk calculation for a 61-year-old, European male, who has had a myocardial infarction and is followed up for one year.

In Table 1, the use of the Framingham study-based cardiovascular risk equation is helpful in conveying the potential benefit of risk factor management. The high cardiovascular risk at presentation illustrates the severity of the situation and the decreasing risk, as targets are approached, provides tangible progress and further motivation for the patient.

The Heart Foundation provides an online "heart forecast" tool, designed for health professionals to use with patients to demonstrate their current and future risk. Although this tool is not strictly designed for use in people at high risk, e.g. prior cardiovascular event, this is still a tangible way to show a patient how their risk changes when lifestyle factors change. The tool is available from: **www.heartfoundation.org.nz** Keyword search = heart forecast.

Modifying risk in people with cardiovascular disease

People who have had a prior cardiovascular event have a risk level approximately 20% higher than those with no prior event, however, this risk increases progressively with poor risk factor control.[5] Having a prior cardiovascular event significantly increases the risk of having another event and it is this group of patients who gain the most from preventative interventions. A New Zealand study found that in a group of over 35, 000 primary care patients, 10% had a prior cardiovascular event, but this group accounted for approximately 40% of the cardiovascular events among the cohort.[5]

Individual risk factors such as lipid profile, blood pressure and smoking status should be used as treatment targets for people with known cardiovascular disease.[1] These factors should be assessed every three to six months.[1] Intensive lifestyle changes that improve physical fitness and promote weight reduction should also be recommended.[1]

Treating to target

Most patients who have had a prior cardiovascular event will have had medicines initiated in secondary care. The role of the primary care team is to ensure that the patient is concordant with their medicines, to adjust doses as required and to recommend lifestyle changes to reduce cardiovascular risk. As a rule, the greater an individual's cardiovascular risk, the more aggressive the treatment should be.[1]

Statin treatment is recommended first-line for dyslipidaemia.[1] In some cases, a fibrate may be considered in combination with a statin, e.g. in people with high triglyceride levels or low HDL-cholesterol levels. Table 2 shows the New Zealand cardiovascular guidelines optimal lipid targets for people with known cardiovascular disease, diabetes or a cardiovascular risk calculated to be over 15%.

For further information see: "An update on statins", BPJ 30 (Aug, 2010).

Antihypertensive medicines are indicated for all patients with an average blood pressure ≥ 170/100 mm Hg. The recommended blood pressure targets are:[1, 6]

- < 140/85 mm Hg for people without clinical cardiovascular disease
- < 130/80 mm Hg for people with diabetes or cardiovascular disease
- < 125/75 mm Hg if estimated kidney protein loss is

Table 2: Lipid targets for people with known CVD, adapted from NZGG (2011)[1]

Lipids	
LDL cholesterol*	< 2.0 mmol/L
HDL cholesterol	≥ 1.0 mmol/L
Total cholesterol (TC)	< 4.0 mmol/L
TC : HDL ratio	< 4.0
Triglycerides	< 1.7 mmol/L

*LDL cholesterol is the primary lipid indicator for management of cardiovascular risk

greater than 1 g in 24 hours (i.e. urine protein/creatinine >100 mg/mmol or urine albumin/creatinine > 70 mg/mmol)

Glycaemic control in people with type 2 diabetes is important for preventing microvascular complications, e.g. retinopathy, nephropathy, neuropathy. Macrovascular complications, e.g. coronary artery disease, stroke and peripheral vascular disease, may also be reduced if glycaemic control begins early,[7] along with management of other risk factors. Some research has found that the macrovascular benefits provided by metformin are independent of its blood glucose lowering effect,[8] however, evidence is inconclusive at this stage.

A HbA_{1c} level of 50 – 55 mmol/mol is recommended, or a target as individually agreed.[7] When setting an HbA_{1c} target, it is important to consider the age of the patient, their motivation, and the risks and consequences of hypoglycaemia and potential weight gain if treatment is intensified.[7] In younger people, tighter glycaemic control should be considered due to an increased lifetime risk of experiencing diabetes related complications.[7]

For further information see: "HbA_{1c} targets in people with type 2 diabetes" BPJ 30 (Aug, 2010).

Lifestyle interventions

After a cardiovascular event, motivational interviewing ("Motivational interviewing", BPJ 17, Oct, 2009) can be used to establish goals for lifestyle changes that are in keeping with a person's readiness to improve their health.[1] Involving the patient's family (whānau) in this conversation, with patient consent, can also be beneficial. Many general practices have

The PHO Performance Programme

The PHO Performance Programme aims to improve health outcomes and reduce disparities for all people using primary care health services in New Zealand. Financial payments are used as incentives to improve PHO performance as measured against indicators. Ischaemic CVD detection and CVD risk assessment are two of the seven funded indicators for chronic conditions in New Zealand.

The target for ischaemic CVD is for 90% of enrolled people aged between 30 – 79 year with ischaemic CVD to have been identified and coded in their patient notes.[12] The denominator (i.e. what the results are compared against) is calculated by adjusting the national prevalence of ischaemic CVD to account for the age, gender and ethnicity of individual PHO populations.[12]

The target for CVD risk assessment is for 80% of enrolled and eligible people to have had their CVD risk assessed and recorded in their patient notes within the last five years.[12] The denominator for this indicator is the number of enrolled people in the PHO who are eligible for a CVD risk assessment:[12]

- Māori, Pacific and Indian subcontinent males aged 35 – 74 years
- Māori, Pacific and Indian subcontinent females aged 45 – 74 years
- Males of all other ethnicities aged 45 – 74 years
- Females of all other ethnicities aged 55 – 74 years

For further information see: "Ischaemic cardiovascular disease", BPJ 36 (Jun, 2011) and "Cardiovascular disease risk assessment", BPJ 37 (Aug, 2011).

nurse-led clinics that allow time to assist with education around lifestyle interventions.

Physical activity is essential for people at high risk of a cardiovascular event, however, advice should be tailored to individual circumstances. In general:

- The recommended activity level for an adult is at least 30 minutes of moderate to vigorous activity per day, e.g. brisk walking
- Exercise-based cardiac rehabilitation can reduce mortality by one fifth to one third[9]
- People with CVD should include five minutes of warm-up and cool-down in their exercise sessions[10]
- Vigorous physical activity, e.g. aerobics, fast cycling, running or swimming, is not recommended for people with impaired left ventricular function, severe coronary artery disease, recent myocardial infarction, significant ventricular arrhythmias or stenotic valve disease[1]
- Following angina, coronary artery bypass grafting, myocardial infarction or percutaneous coronary intervention, patients should be referred to a cardiac rehabilitation programme[1]

Smoking cessation is strongly encouraged in any person who continues to smoke after a cardiovascular event. The following general advice applies:

- Nicotine replacement therapy (NRT) approximately doubles a smoker's chance of quitting,[1] bupropion also approximately doubles a smoker's chance of quitting and varenicline (available under Special Authority) approximately triples this chance
- NRT can be safely used by people with cardiovascular disease, however, in the acute phase following myocardial infarction or stroke, oral NRT should be prescribed in preference to patches as nicotine levels can be reduced more rapidly if an adverse event occurs[1]
- Bupropion can be safely used in people with cardiovascular disease
- People with established cardiovascular disease using varenicline may have a slightly increased risk of experiencing a cardiovascular event, however, the risk is likely to be greater if they remain a smoker.[1] Varenicline has also been associated, in rare cases, with neuropsychiatric adverse effects.
- Nortriptyline is effective for smoking cessation, but it is contraindicated in the acute phase following myocardial infarction, as it can affect cardiac conductivity[11]

Best practice tip: Through discussion, find out what motivates or interests your patient, to improve their health; such as children (tamariki), grand children (mokopuna), family (whānau), pets, gardening or bowls. Encourage patients to have support – take a friend, find a "buddy" who wants to quit smoking as well. Consider establishing a buddy system through the general practice clinic.

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