



# Consensus statement for the prevention of vascular disease

The National Vascular Disease Prevention Alliance (Diabetes Australia, Kidney Health Australia, National Heart Foundation of Australia, and National Stroke Foundation of Australia).

This consensus statement for the prevention of vascular disease in people over 50 years of age aims to consolidate key messages from a number of evidence based guidelines and studies. It addresses the assessment and principles of management of risk factors for vascular disease, including those developed by Diabetes Australia, Kidney Health Australia, the National Heart Foundation of Australia, and the National Stroke Foundation of Australia. For more detailed information, particularly concerning treatments and levels of evidence to support the recommendations outlined in this statement, refer to the source guidelines and literature (see *References*).

**M**acrovascular disease (coronary heart disease, cerebrovascular disease and peripheral arterial disease) is the commonest cause of death in the Australian community and is associated with considerable morbidity, diminished quality of life and economic burden.

Well recognised risk factors predispose to the development of vascular disease. Recognition and correction of these risk factors can prevent the development of vascular disease and reduce recurrent events in patients with manifest vascular disease.

As many of the risk factors are common across a number of conditions and share common management approaches, Diabetes Australia, Kidney Health Australia, the National Heart Foundation of Australia, and the National Stroke Foundation of Australia have formed an alliance – the National Vascular Disease Prevention Alliance (NVDPA) – to jointly tackle the increasing problem of vascular disease in the Australian community. This statement has been prepared by alliance members.

The consensus statement targets people aged 50 years and over, the population group at greatest risk. However, there are certain other groups, especially indigenous Australians, who manifest vascular disease at a younger age and for whom the prevention

strategies outlined in this statement should be considered under the age of 50 years.

## Recognising those at risk

Individuals at increased risk of vascular disease are listed in *Table 1*. Risk is cumulative and may increase in a multiplicative manner as the number of risk factors increase.

## Assessment of increased risk

Risk of vascular disease can be established through a simple procedure of history and physical examination and readily available laboratory investigations (*Table 2*).

## Diagnosing diabetes

The diagnosis of previously undiagnosed type 2 diabetes is based on the following step-wise approach:

- measure plasma glucose – this should be performed by a laboratory (rather than with a blood glucose meter), preferably on a fasting sample
- the plasma glucose result should be interpreted as follows:
  - less than 5.5 mmol/L – diabetes unlikely
  - 7.0 mmol/L or more fasting, or 11.1 mmol/L or more random – diabetes likely. Repeat plasma glucose mea-

**Table 1. Individuals at increased risk of vascular disease**

<b>Established disease</b>	<b>Biological risk factors</b>	<b>Lifestyle risk factors</b>
Known macrovascular disease	Hypertension	Smoking
Diabetes/IGT/IFG*	Dyslipidaemia	Physical inactivity
Renal insufficiency	Proteinuria	Overweight/obesity
	Atrial fibrillation	Poor nutrition
	Age > 50**	Lower socioeconomic status and psychosocial factors
	Male gender	Excessive alcohol consumption

\* IGT: impaired glucose tolerance IFG: impaired fasting glucose

\*\* Risk occurs at lower age in indigenous Australians

surement on another day unless diagnosis is unequivocal

- between 5.5 and 6.9 mmol/L fasting, or between 5.5 and 11.0 mmol/L random – perform an oral glucose tolerance test.

### Calculating glomerular filtration rate

Early renal insufficiency is a common but poorly recognised condition that precedes overt renal failure. Intervention in the early stages can prevent or delay this progression. The diagnosis of early renal insufficiency is based on the measurement of serum creatinine and the calculation of the glomerular

**Table 2. Assessment of increased risk of vascular disease**

<b>History</b>	<b>Physical examination</b>	<b>Laboratory tests</b>	<b>Other</b>
Symptoms of vascular disease	Blood pressure	Fasting lipids	ECG*
Previous acute events	Body mass index	Fasting plasma glucose (if no known diabetes)	
Smoking	Waist circumference	HbA1c (if known diabetes)	
Alcohol consumption	Atrial fibrillation	Creatinine (and calculate GFR**)	
Physical activity	Proteinuria		
Family history			

\* If previous vascular events, hypertension or suspected atrial fibrillation

\*\* GFR: glomerular filtration rate

Note: Other investigations may be appropriate depending on clinical assessment

Table 3. Vascular disease risk factors: assessment, targets and monitoring interval for those at increased risk

Risk factor	How to assess	Who to treat if abnormal	Treatment target	Monitoring interval*
Smoking	History	All	Smoking cessation	Every visit
Nutrition	History	All	Reduced intake of saturated fat Incorporation of fish into at least two meals per week Meals based around vegetables, fruits, legumes and grain based cereal products†	Every visit
Alcohol	History	All	Low risk drinking pattern For those with hypertension 2 standard drinks per day (men) 1 standard drinks per day (women)**	Every visit
Physical activity	History	All	At least 30 minutes of moderate physical activity on most days	Every visit
Overweight/Obesity	Measure weight (kg) and height (m) and calculate BMI or measure waist circumference	All	BMI 18.5–24.9 Waist circumference: men <94 cm women <80 cm	Every 6 months
Hypertension	Measure systolic and diastolic pressure sitting after 5 minutes rest Diagnosis should be based on multiple BP measurements taken on several separate occasions	Dependent on risk assessment	<65 years, or diabetes, or renal insufficiency <130/85 >65 years (and without diabetes or renal insufficiency) <140/90‡	Every visit and at least every 6 months once BP stabilised
Dyslipidaemia	Measure fasting total and HDL cholesterol, triglycerides and calculate LDL cholesterol	Dependent on risk assessment	LDL cholesterol <2.5 mmol/L HDL cholesterol >1.0 mmol/L Triglycerides <2.0 mmol/L	At least every 12 months depending on response to therapy
Diabetes	Measure fasting plasma glucose in people without known diabetes***	All***	In people with known diabetes HbA1c 7%	Every 3–6 months depending on response to therapy
Atrial fibrillation	Assess pulse Confirm with ECG	All	Sinus rhythm and/or treatment with anticoagulants if indicated	Every visit
Proteinuria	Dipstick urine: if positive on two occasions, further quantify and look for the cause†	Treat all with proteinuria >1g/d or diabetes	Prevent/delay deterioration If proteinuria >1 g/day BP <125/75 if tolerated	Every 3 months
Renal insufficiency	Measure serum creatinine Calculate GFR	All	Prevent/delay deterioration	At least every 3 months depending on severity

\* Monitoring interval when risk factor is present

\*\* Refer to NHMRC Australian Alcohol Guidelines, 2001

\*\*\* Refer to the NHMRC diabetes guidelines for a detailed consideration of who and how to screen for undiagnosed diabetes

† In people with diabetes, screen for microalbuminuria

‡ For assistance in developing healthy eating patterns, consider referral to a dietitian

# Note: BP targets may be lower in adults with proteinuria. Refer to source guidelines for further information

filtration rate (GFR) using the Cockcroft-Gault formula. A simple approximation of Cockcroft Gault formula =  $(140 - \text{age}) \times \text{weight (kg)} / (\text{serum creatinine } [\mu\text{mol/L}] \times 0.814)$  for males. For females, multiply the result by 0.85. Normal range is 75–125 mL/minute. A GFR calculator is incorporated into some medical desktop software packages.

## Principles of management

Lifestyle measures such as smoking cessation, weight reduction, improved nutrition, increasing physical activity, and limiting excessive alcohol intake, underpin prevention but are particularly important in people judged to be at increased risk. The 'SNAP' risk factors, relating to Smoking, Nutrition, Alcohol and Physical activity, are the four most preventable contributors to disease in Australia. More information and support on evidence based approaches to lifestyle modification and health professional and consumer resources are available (see *Resources*).

Intervention may be indicated to correct a single risk factor (eg. poorly controlled diabetes, atrial fibrillation, proteinuria). All patients with established vascular disease are at a significantly increased risk of a further event.

Pharmacological intervention is indicated if lifestyle measures do not achieve targets, and in some circumstances there is evidence to support pharmacological intervention as a first line prevention measure in conjunction with lifestyle modification interventions. Assessment of the need for pharmacological intervention (eg. treatment of dyslipidaemia or hypertension) in other 'at risk' individuals without established vascular disease should be based on quantification of the individual's absolute risk of future vascular events and the reduction in this risk which could be anticipated as a result of the intervention. Vascular disease risk factor assessment, targets and monitoring intervals are shown in *Table 3*.

## Determining absolute risk

Several tools for calculating absolute risk and risk reduction are available. These tools take into account the individual's age and sex, presence of comorbidities (eg. smoking, diabetes) and risk factors (eg. lipid levels, blood pressure) to determine the level of risk of death or cardiovascular event over the next 5–10 years.

Most currently available risk assessment tools are based on the Framingham study

which may not be totally applicable to the current Australian population. The issue of how best to estimate absolute risk remains unresolved. At this time, equations such as those from the Framingham study are best applied by 'recalibration' according to local risk factor distributions and incidence rates. Further development of an acceptable tool for assessing absolute risk will be a key part of the future work of the NVDPA. In the meantime, it is suggested that the Framingham based risk assessment tools give a reasonable approximation and should be used for the general Australian population.

Another challenge is the presentation of these tools in a manner applicable for routine use in clinical practice. Some of these risk assessment tools are presented as a chart while others have been developed as dedicated computer programs. The most widely used chart based risk assessment tools are the:

- New Zealand risk assessment chart ([www.nzgg.org.nz](http://www.nzgg.org.nz))
- Joint European Societies coronary risk chart, and
- absolute risk assessment ([www.absoluterisk.com](http://www.absoluterisk.com)).

The point at which to intervene may require clinical judgment. Examples are:

- guidelines promoted for use in Australia recommend lipid lowering therapy be considered for those with an absolute risk of a cerebrovascular event of 10–15% or more in the next 5 years, and
- the Joint European Working Groups recommend intervention if the calculated risk of coronary heart disease exceeds 20% over the next 10 years.

## Broad aspects of pharmacological intervention

### Hypertension

Any agent(s) that effectively lowers blood pressure will reduce morbidity and mortality, and drugs from any of the five major classes of antihypertensives (low dose thiazide diuretics, beta blockers, angiotensin converting enzyme (ACE) inhibitors, calcium channel blockers and angiotensin 2 receptor antagonists) are suitable for initiation and maintenance of antihypertensive therapy. However, there are situations in which specific agents are preferred (eg. ACE inhibitors and angiotensin 2 receptor antagonists in people with proteinuria).

Most patients will require more than one agent to achieve target blood pressure. In the event that target blood pressure is not achieved, any lowering of blood pressure can reduce vascular risk. The choice of antihypertensive agent is often influenced by comorbidities.

### Dyslipidaemia

Generally HMG CoA reductase inhibitors are the agents of choice for treatment of dyslipidaemia. Fibrates may be preferred in those with elevated triglycerides and a low HDL cholesterol and a relatively normal total cholesterol. Any improvement in lipid profile can reduce vascular risk, even if targets cannot be achieved.

### Diabetes

Overweight people with type 2 diabetes are usually commenced on metformin, unless contraindicated. If side effects develop or target diabetes control is not achieved, other therapeutic options include sulphonylureas,

acarbose, glitazones and insulin. Many people require combination therapy. Any improvement in diabetes control will reduce vascular risk, even if targets cannot be achieved.

### Atrial fibrillation

Management aims to identify and treat the underlying cause, control the ventricular rate, possibly restore and maintain sinus rhythm, and minimise the risk of stroke. All patients with chronic or intermittent atrial fibrillation should be considered for oral anticoagulant therapy, and the decision based on the balance between the risks of thromboembolism and bleeding. The risk of stroke is increased in those with previous systemic embolism, increasing age, and in the presence of heart failure, left ventricular dysfunction or left atrium enlargement. Warfarin reduces the risk of stroke by about two-thirds and aspirin by about one-fifth. The risk of anticoagulant associated haemorrhage increases with serious concomitant disease that predisposes to bleeding, and with poorly controlled hypertension and poorly controlled anticoagulation.

### Proteinuria

Proteinuria is a significant independent predictor of progression of renal failure, of vascular disease and of cardiovascular and all cause mortality. Certain antihypertensives, in particular ACE inhibitors and angiotensin 2 receptor antagonists, are antiproteinuric, and their protective effect against progression of renal failure is proportional to the degree of proteinuria and to the degree of its reduction with therapy.

### Aspirin

The value of aspirin therapy in patients with known vascular disease is well established. Its role in primary prevention requires individual assessment of both the risks and benefits. It is often recommended in people with diabetes and in those at high absolute risk of coronary heart disease where no absolute contraindications exist.

### Resources

For more detailed information and support, refer to the following:

Diabetes Australia: [www.diabetesaustralia.com.au](http://www.diabetesaustralia.com.au)

Helpline: 1300 136 588

Kidney Health Australia: [www.kidney.org.au](http://www.kidney.org.au)

Infoline: 1800 682 531

National Heart Foundation of Australia: [www.heartfoundation.com.au](http://www.heartfoundation.com.au)

Heartline: 1300 362 787

National Stroke Foundation of Australia: [www.strokefoundation.com.au](http://www.strokefoundation.com.au)

Infoline: 1800 787 653

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