Quick reference guide for **health professionals**

Absolute cardiovascular disease **risk** management

This quick reference guide is for use by health professionals for primary prevention of cardiovascular disease (CVD*). It provides a summary of the key steps involved in assessing and managing absolute cardiovascular disease risk. It is based on the Guidelines for the Management of Absolute Cardiovascular Disease Risk (2012)[1] developed by the National Vascular Disease Prevention Alliance (NVDPA) and incorporates the previous Guidelines for the Assessment of Absolute Cardiovascular Disease Risk (2009).[2] Patients with existing CVD are considered to be at high risk and should be managed with appropriate guidance for secondary prevention.

**CVD refers collectively to coronary heart disease, stroke and other vascular disease including peripheral arterial disease and renovascular disease.*

An initiative of the National Vascular Disease Prevention Alliance

Diabetes Australia · Kidney Health Australia · Heart Foundation · strokefoundation

The NVDPA is an alliance of four leading Australian charities: Diabetes Australia, Kidney Health Australia, the National Stroke Foundation and the National Heart Foundation of Australia. The NVDPA was established in 2000 to reduce cardiovascular disease in Australia.

Why use absolute risk?

Assessment of cardiovascular disease risk on the basis of the combined effect of multiple risk factors (absolute CVD risk) is more accurate than the use of individual risk factors, because the cumulative effects of multiple risk factors may be additive or synergistic.[3-5] In Australia, 64% of the adult population have three or more modifiable risk factors.[6] As CVD is largely preventable, an approach focusing on comprehensive risk assessment will enable effective management of identified modifiable risk factors through lifestyle changes and, where needed, pharmacological therapy.

What does absolute risk mean?

Absolute risk is the numerical probability of a CVD event occurring within five years, expressed as a percentage. For example, if your patient's risk is 15%, then you can tell them that 15 out of every 100 people are likely to have a CVD event within the next five years.

What are the management goals?

Decisions regarding management of absolute CVD risk are made according to the individual's absolute risk level. The management goal is to reduce the patient's level of absolute risk. This is achieved by managing several individual risk factors, as the evidence shows that moderate reduction in several risk factors is more effective in reducing overall CVD risk than a major reduction in one factor.[7]

How do I monitor response to treatment?

Monitor your patient's response to treatment by measuring their individual risk factors and adjusting medication or lifestyle advice accordingly.

Grading of recommendations

For ease of use recommendations have been colour coded.

EBR Grade A-D	Evidence-based recommendations. **see page 6 for full description.
CBR	Consensus-based recommendations: developed by the guidelines expert working group when a systematic review of the evidence found either an absence of direct evidence which answered the clinical question or poor quality evidence.
PP	Practice Point: practical guidance to support implementation.

Risk **Assessment** Algorithm

Cardiovascular risk assessment tools provide a measure of a patient's absolute cardiovascular risk. Use the algorithm and the charts on the next pages to calculate absolute risk.

Target group for assessment

- All adults aged 45 years and over without known history of CVD **(EBR Grade B)**
- Aboriginal and Torres Strait Islander peoples aged 35 years or older **(EBR Grade D)**

Consider the following as part of a comprehensive risk assessment: (PP)

Modifiable risk factors

- Smoking status*
- Blood pressure*
- Serum lipids*
- Waist circumference and BMI
- Nutrition
- Physical activity level
- Alcohol intake+

Non-modifiable risk factors

- Age* and sex*
- Family history of premature CVD
- Social history including cultural identity, ethnicity, socioeconomic status and mental health

Related Conditions

- Diabetes*
- Chronic Kidney Disease (albuminuria ± urine protein, eGFR)
- Familial hypercholesterolaemia#
- Evidence of atrial fibrillation (history, examination, electrocardiogram)

Already known to be at increased risk?

Adults with any of the following conditions do not require absolute CVD risk assessment using the Framingham Risk Equation (FRE) because they are already known to be at clinically determined high risk of CVD: **(EBR Grade D)**

- Diabetes and age >60 years
- Diabetes with microalbuminuria (>20 mcg/min or urinary albumin:creatinine ratio >2.5 mg/mmol for males, >3.5 mg/mmol for females)
- Moderate or severe CKD (persistent proteinuria or estimated glomerular filtration rate (eGFR) <45 mL/min/1.73 m^2)
- A previous diagnosis of familial hypercholesterolaemia
- Systolic blood pressure ≥180 mmHg or diastolic blood pressure ≥110 mmHg
- Serum total cholesterol >7.5 mmol/L
- Aboriginal and Torres Strait Islander adults aged over 74 **(CBR)**

YES

High: greater than 15% risk of CVD within the next five years (includes clinically determined high risk) (PP)

NO

Calculate risk level using FRE **(EBR Grade B)**:

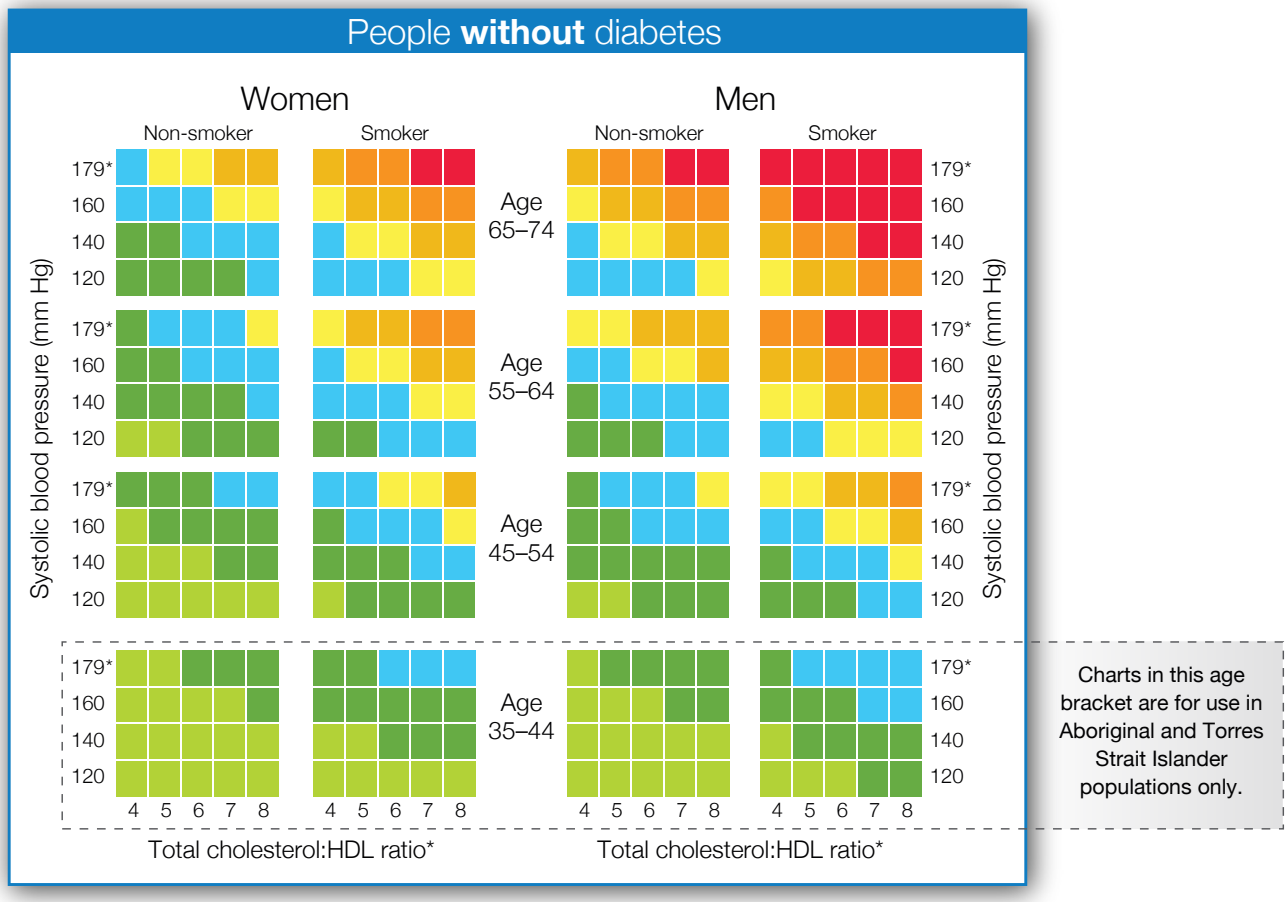
- Australian cardiovascular risk charts
- Web calculator ***www.cvdcheck.org.au***
- Enter age 74 for adults aged 74+ **(CBR)**

Moderate: 10-15% risk of CVD within the next five years (PP)

Low: Less than 10% risk of CVD within the next five years (PP)

* Risk parameters that are included in the absolute risk calculator, based on the Framingham Risk Equation (FRE)
+ Alcohol is a risk factor for elevated blood pressure, stroke and cardiomyopathy (see NHMRC Guidelines to reduce health risks from drinking alcohol [2009]).
# Refer to National Heart Foundation of Australia's information sheet *Familial Hypercholesterolaemia: Information for doctors*.
BMI: body mass index. eGFR: estimated glomerular filtration rate.

Australian cardiovascular **risk charts**



* In accordance with Australian guidelines, patients with systolic blood pressure ≥180 mm Hg, or a total cholesterol of >7.5 mmol/L, should be considered at clinically determined high absolute risk of CVD.

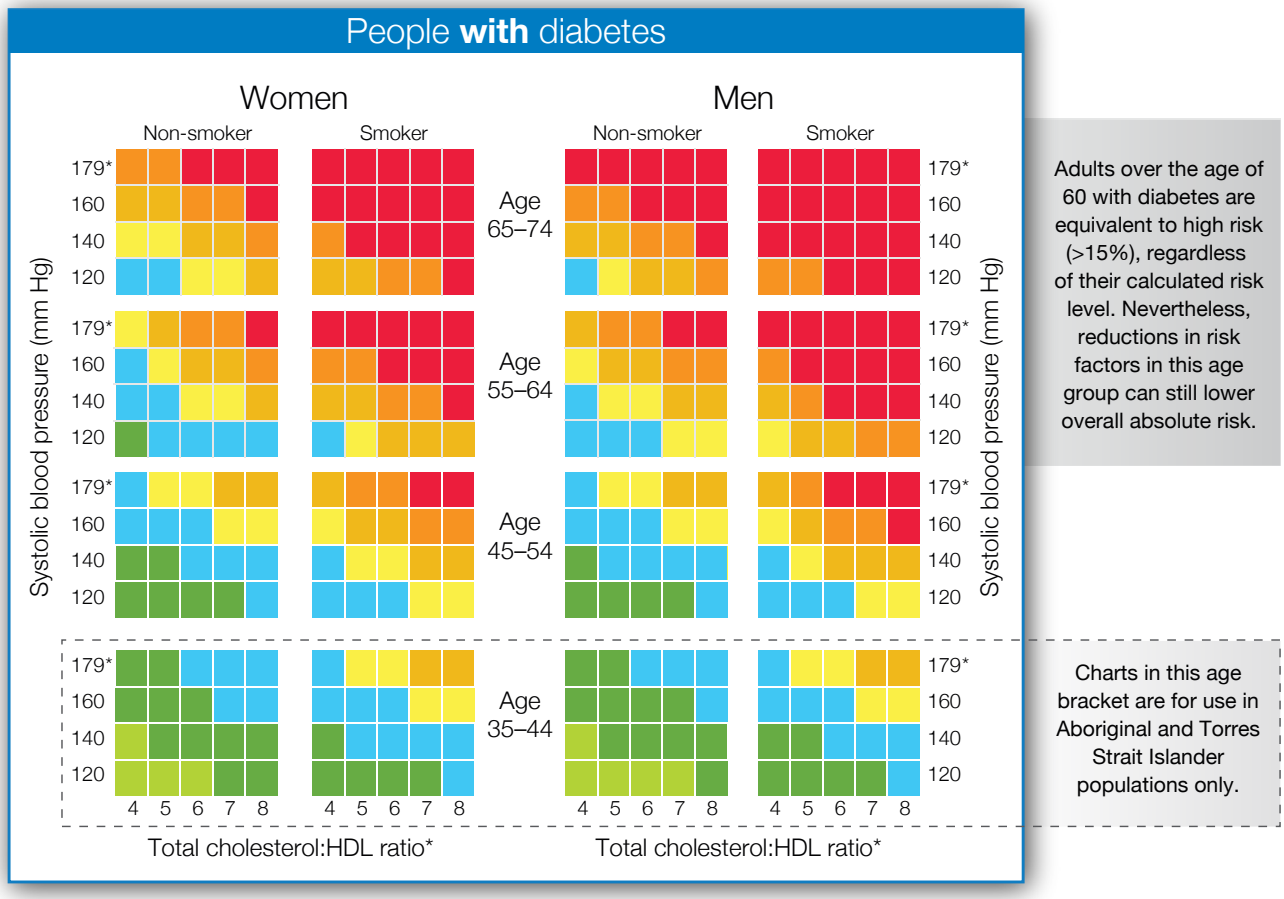
Risk level for 5-year cardiovascular (CVD) risk

High risk	Moderate risk	Low risk
≥30%	10–15%	5–9%
25–29%		< 5%
20–24%		
16–19%		

How to use the risk charts

1. Identify the chart relating to the person's sex, diabetes status, smoking history and age. The charts should be used for all adults aged 45 years or over (and all Aboriginal and Torres Strait Islander adults aged 35 - 74 years) without known history of CVD and not already known to be at clinically determined high risk.
2. Within the chart choose the cell nearest to the person's age, systolic blood pressure (SBP) and total cholesterol (TC):HDL ratio. For example, the lower left cell contains all non-smokers without diabetes who are 34-44 years and have a TC:HDL ratio of less than 4.5 and a SBP of less than 130 mmHg.
3. The colour of the cell that the person falls into provides their five year absolute cardiovascular risk level (see legend above for risk category). People who fall exactly on a threshold between cells are placed in the cell indicating higher risk.

Australian cardiovascular **risk charts**



* In accordance with Australian guidelines, patients with systolic blood pressure ≥180 mm Hg, or a total cholesterol of >7.5 mmol/L, should be considered at clinically determined high absolute risk of CVD.

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25–29%		<5%
20–24%		
16–19%		

Notes: The risk charts include values for SBP alone as this is the most informative of conventionally measured blood pressure parameters for cardiovascular risk.

For specific groups, additional guidance includes:
The Framingham Risk Equation has not been validated for all population groups, the assessment score should be interpreted with caution in the following groups:

- The Framingham Risk Equation may **underestimate CVD risk** in Aboriginal and Torres Strait Islander peoples (EBR Grade D); adults with diabetes aged between 45 and 60 years (EBR Grade C); adults aged over 74 years (CBR) however, available evidence suggests that this approach will provide an estimate of minimum cardiovascular risk.
- The Framingham Risk Equation is likely to **underestimate CVD risk** in adults with socioeconomic deprivation (an independent risk factor for cardiovascular disease) (PP) or depression (PP).
- The predictive value of the Framingham Risk Equation **has not been specifically assessed** in adults who are overweight or obese (EBR Grade D).
- The **increased risk of cardiovascular events and all-cause mortality**, in addition to thromboembolic disease including stroke, should be taken into account for adults with atrial fibrillation (particularly those aged over 65 years) (PP).

Charts are based on the NVDPA's *Guidelines for the assessment of absolute cardiovascular disease risk* and adapted with permission from New Zealand Guidelines Group. New Zealand Cardiovascular Guidelines Handbook: A Summary Resource for Primary Care Practitioners. Second edition. Wellington, NZ: 2009. www.nzgg.org.nz

Risk **management** summary table

Use the table below to develop a management plan for your patients.

CVD risk	Lifestyle	Pharmacotherapy	Targets	Monitoring
HIGH RISK Clinically determined or calculated using FRE as >15% absolute risk of CVD events over 5 years	Frequent and sustained specific advice and support regarding diet and physical activity. Appropriate advice, support and pharmacotherapy for smoking cessation. Advice given simultaneously with BP and lipid lowering drug treatment.	Treat simultaneously with lipid lowering and BP lowering unless contraindicated or clinically inappropriate. Aspirin not routinely recommended. Consider withdrawal of therapy for people who make profound lifestyle changes.	BP: ≤140/90 mmHg in general or people with CKD; ≤130/80 mmHg in all people with diabetes; ≤130/80 mmHg if micro or macro albuminuria (UACR > 2.5 mg/mmol in men and >3.5 mg/mmol in women). Lipids: TC <4.0 mmol/L; HDL-C ≥1.0 mmol/L; LDL-C <2.0 mmol/L; Non HDL-C <2.5 mmol/L; TG <2.0 mmol/L. Lifestyle: Smoking cessation (if smoker); consume diet rich in vegetables and fruit, low in salt and saturated and trans fats; at least 30 mins physical activity on most or preferably every day of the week; limit alcohol intake.	Review response 6-12 weekly until sufficient improvement or maximum tolerated dose achieved. Adjust medication as required. Review of absolute risk according to clinical context.
MODERATE RISK Calculated using FRE as 10-15% absolute risk of CVD events over 5 years	Appropriate, specific advice and support regarding diet and physical activity. Appropriate advice, support and pharmacotherapy for smoking cessation. Lifestyle advice given in preference to drug therapy.	Not routinely recommended. Consider BP lowering and/or lipid lowering in addition to lifestyle advice if 3-6 months of lifestyle intervention does not reduce risk or: • BP persistently ≥160/100 mmHg • Family history of premature CVD • Specific population where the FRE underestimates risk e.g. A&TSI peoples, South Asian, Maori and Pacific Islander, Middle Eastern. Consider withdrawal of therapy for people who make profound lifestyle changes.		Review response 6-12 weekly until sufficient improvement or maximum tolerated dose achieved. Adjust medication as required. Review absolute risk every 6–12 months.
LOW RISK Calculated using FRE as <10% absolute risk of CVD events over 5 years	Brief, general lifestyle advice regarding diet and physical activity. Appropriate advice, support and pharmacotherapy for smoking cessation.	Not routinely recommended. Consider BP lowering therapy in addition to specific lifestyle advice if BP persistently ≥160/100 mmHg. Consider withdrawal of therapy for people who make profound lifestyle changes.		Review response 6-12 weekly until sufficient improvement or maximum tolerated dose achieved. Adjust medication as required. Review absolute risk every 2 years. Blood test results within 5 years can be used.

A&TSI: Aboriginal and Torres Strait Islander peoples; BP: blood pressure; CKD: Chronic Kidney Disease; CVD: cardiovascular disease; DBP: diastolic blood pressure; FRE: Framingham Risk Equation; HDL-C: high density lipoprotein cholesterol; LDL-C: low density lipoprotein cholesterol; SBP: systolic blood pressure; TC: total cholesterol; TG: Triglycerides; UACR: urinary albumin:creatinine ratio.

Lifestyle advice

People at all risk levels can make improvements to their health and reduce their risk of CVD by making lifestyle changes. The table below gives guidance on the basic lifestyle advice. For more detailed advice refer to the relevant guidelines.

Lifestyle factor	Advice
Diet	Consume a varied diet rich in vegetables, fruits, wholegrain cereals, lean meat, poultry, fish, eggs, nuts and seeds, legumes and beans, and low-fat dairy products. See Dietary Guidelines for all Australians.
Fats	Limit foods containing saturated and trans fats.
Salt	Limit salt to <6g/day (approximately 2300 mg sodium).
Alcohol	Limit alcohol intake to ≤2 standard drinks per day. See Australian Guidelines to reduce health risks from drinking alcohol (2009).
Physical activity	At least 30 minutes moderate intensity physical activity on most or preferably every day of the week.
Weight	Limit energy intake to maintain a healthy weight. Ideal weight should be BMI <25 kg/m^2 and waist circumference <94 cm in men (<90 cm in Asian men) or <80 cm in women (including Asian women).[8]
Smoking	Stop smoking using counselling and, if required, nicotine replacement therapy or other medication.

** **NHMRC Evidence-based recommendations:**

Grade A: Body of evidence can be trusted to guide practice

Grade B: Body of evidence can be trusted to guide practice in most situations.

Grade C: Body of evidence provides some support for recommendation(s) but care should be taken in its application.

Grade D: Body of evidence is weak and recommendation must be applied with caution.

Blood pressure lowering therapy

In **general**

Consider treatable secondary causes of raised blood pressure before commencing drug therapy **(PP)**

In adults aged over 74 years, use clinical judgement to consider benefits and risks of treatment, co-morbidities and values before initiating therapy **(PP)**

Start drug therapy with any one of the following: **(EBR Grade A)**

- ACE inhibitor
- Angiotensin receptor blocker
- Calcium channel blocker
- Low-dose thiazide or thiazide-like diuretic

If monotherapy does not sufficiently reduce blood pressure add a second agent from a different class **(EBR Grade A)**

If dual therapy at higher doses does not sufficiently reduce blood pressure add a third agent **(PP)**

If blood pressure is not responding to pharmacotherapy, reassess for non-adherence; undiagnosed secondary causes for raised blood pressure; hypertensive effects of other drugs; treatment resistance due to sleep apnoea; undisclosed use of alcohol or recreational drugs; unrecognised high salt intake (particularly in patients taking ACE inhibitors or angiotensin receptor blockers); “white coat” raised blood pressure; technical factors affecting measurement; volume overload, especially with CKD **(PP)**

If combination therapy does not sufficiently reduce blood pressure, consider specialist advice **(PP)**

Avoid the following combinations: **(PP)**

- Potassium-sparing diuretic plus either ACE inhibitor or angiotensin receptor blocker
- Beta blocker plus verapamil

In those with **diabetes**

Blood pressure lowering therapy in people with diabetes should preferentially include one of the following: **(EBR Grade A)**

- ACE inhibitor
- Angiotensin receptor blocker

If monotherapy does not sufficiently reduce blood pressure add one of the following:

- Calcium channel blocker **(EBR Grade B)**
- Low-dose thiazide or thiazide-like diuretic **(EBR Grade C)**

In those with **chronic kidney disease**

Blood pressure lowering therapy in people with CKD should begin with one of the following: **(EBR Grade A)**

- ACE inhibitor
- Angiotensin receptor blocker

Lipid lowering therapy

In **general**

Consider treatable secondary causes of raised blood lipids before commencing drug therapy **(PP)**

In adults aged over 74 years, use clinical judgement to consider benefits and risks of treatment, co-morbidities and values before initiating therapy **(PP)**

Use statins as first line therapy **(EBR Grade A)**

If LDL-C levels are not sufficiently reduced on maximally tolerated doses of statin, add one or more of the following:

- Ezetimibe **(EBR Grade C)**
- Bile acid binding resin **(EBR Grade D)**
- Nicotinic acid **(EBR Grade D)**

For those **intolerant to statins**

Use one or more of the following:

- Ezetimibe **(EBR Grade D)**
- Bile acid binding resin **(EBR Grade D)**
- Nicotinic acid **(EBR Grade D)**

For **raised triglycerides**

Consider treatment with one of the following:

- Fenofibrate (especially if HDL is below target) **(EBR Grade C)**
- Nicotinic acid **(EBR Grade C)**
- Fish oil **(EBR Grade C)**

References

1. National Vascular Disease Prevention Alliance. Guidelines for the Management of Absolute Cardiovascular Disease Risk 2012.
2. National Vascular Disease Prevention Alliance. Guidelines for the Assessment of Absolute Cardiovascular Disease Risk 2009.
3. Anderson KM, Odell PM, Wilson PW, Kannel WB. Cardiovascular disease risk profiles. Am Heart J. 1991 Jan;121(1 Pt 2):293-8.
4. Jackson R, Lawes CM, Bennett DA, Milne RJ, Rodgers A. Treatment with drugs to lower blood pressure and blood cholesterol based on an individual's absolute cardiovascular risk. Lancet. 2005 Jan 29-Feb 4;365(9457):434-41.
5. Kannel WB. Some lessons in cardiovascular epidemiology from Framingham. Am J Cardiol. 1976 Feb;37(2):269-82.
6. Australian Institute of Health and Welfare 2011. Health determinants, the key to preventing chronic disease. Cat No. PHE 157. Canberra: AIHW.
7. Tonkin A, Barter P, Best J, Boyden A, Furler J, Hossack K, et al. National Heart Foundation of Australia and the Cardiac Society of Australia and New Zealand: position statement on lipid management, 2005. Heart Lung Circ. 2005 Dec;14(4):275-91.
8. World Health Organisation. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. WHO Tech Rep Ser 2000;894(3):i-xii.

An initiative of the National Vascular Disease Prevention Alliance

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Links to the full **Guidelines for the Management of Absolute Cardiovascular Disease Risk** can be found at:

www.diabetesaustralia.com.au
www.kidney.org.au
www.heartfoundation.org.au
www.strokefoundation.com.au

www.cvdcheck.org.au

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