

**SIGN 149 • Risk estimation and the prevention of
cardiovascular disease**

Quick Reference Guide

July 2017

ESTIMATING CARDIOVASCULAR RISK

- R** Individuals with the following risk factors should be considered at high risk of cardiovascular events:
- established cardiovascular disease, or
 - stage 3 or higher chronic kidney disease or micro- or macroalbuminuria, or
 - familial hypercholesterolaemia, or
 - who are over the age of 40 and have diabetes, or
 - who are under the age of 40 and have diabetes, and
 - at least 20 years duration of disease, or
 - target organ damage (eg proteinuria, micro- or macroalbuminuria, proliferative retinopathy or autonomic neuropathy), or
 - significantly elevated cardiovascular risk factors.

R Asymptomatic individuals should be considered at high risk if they are assessed as having a $\geq 20\%$ risk of a first cardiovascular event within ten years.

R Cardiovascular risk assessment should be offered at least once every five years in adults over the age of 40 years with no history of cardiovascular disease, familial hypercholesterolaemia, CKD or diabetes and who are not being treated to reduce blood pressure or lipids.

R Individuals at high cardiovascular risk should be supported to make lifestyle changes and be offered drug therapy, to reduce their absolute risk.

✓ Consider an annual review to discuss lifestyle modification, medicines adherence and address CVD risk factors. Frequency of review may be adapted to the individual.

✓ Other risk factors not included in the CVD risk prediction should be taken into account when assessing and managing a person's overall CVD risk. These may include: ethnicity, body mass index, atrial fibrillation, psychological wellbeing and physical inactivity.

DIET

R Diets low in saturated fats should be recommended to all for the reduction of cardiovascular risk.

✓ All individuals should aim to consume less than 6 g of salt per day.

R Increased fruit and vegetable consumption is recommended for the entire population to reduce cardiovascular risk.

Mediterranean diets are generally characterised as having moderate fat intake (where the main sources of added fat are olive oil and unsalted nuts), being rich in vegetables and fruits and low in red meat (with poultry and fish replacing beef and lamb).

R Adopting a Mediterranean diet pattern supplemented with 30 g extra virgin olive oil or unsalted nuts per day is recommended for adults at high risk of CVD or with established CVD.

✓ Use the Eatwell Guide to help individuals make informed choices around the selection of dietary components and their optimal proportions which conform to Mediterranean diet patterns and support restricting saturated fat, sugars and salt intake.

R Patients, and individuals at risk of cardiovascular disease, who are overweight or obese, should be targeted with interventions designed to reduce weight by at least 3 kg, and to maintain this reduction.

✓ Patients' weight should be measured annually.

PHYSICAL ACTIVITY

Classification of absolute and relative exercise intensity

Intensity	Relative intensity				Absolute intensity	Talk Test
	HR _{max} (%)	VO _{2max} (%)	RPE	METs		
Very light to light	<57–63	<37–45	9–11	1.5<3	Conversation uninhibited	
Moderate	64–76	46–63	12–13	3<6	Conversation possible	
Vigorous	77–95	64–90	14–17	6<9	Conversation harder but possible	
High to maximum	≥96	≥91	≥18	≥9	Conversation difficult to impossible	

Sedentary behaviour is defined as non-sleeping activities in a sitting or reclining posture with energy expenditure ≤ 1.5 METs.

R **Physical activity of at least moderate intensity** (eg breathing faster than normal) **is recommended for the whole population** (unless contraindicated by an individual's condition).

R **Individuals should be advised to minimise the amount of time spent being sedentary** (sitting) **over extended periods.**

✓ All patients, irrespective of health, fitness or activity level, should be encouraged to increase activity levels gradually.

SMOKING

✓ Priority should be given to identifying and supporting young people to help them stop smoking.

✓ Priority should be given to developing programmes and targeting smokers on low incomes to stop smoking, recognising the particular difficulties experienced by this group of smokers.

R **All people who smoke should be advised to stop and offered support to help facilitate this in order to minimise cardiovascular and general health risks.**

R **Varenicline or combination nicotine replacement therapy should be offered alone or as part of a smoking cessation programme to augment professional advice and increase long-term abstinence rates.**

R **Bupropion and single nicotine replacement therapy may also be considered as smoking cessation treatments.**

ALCOHOL

R Patients with or without evidence of cardiovascular disease should be advised to reduce alcohol consumption and that even light to moderate alcohol consumption may increase cardiovascular risk.

✓ When giving advice to patients with coronary heart disease, national health promotion advice should be followed.

- Men and women are advised not to drink regularly more than 14 units per week to keep health risks from drinking alcohol to a low level.
- If you do drink as much as 14 units per week, it is best to spread this evenly over three days or more. If you have one or two heavy drinking sessions, you increase your risks of death from long-term illnesses and from accidents and injuries.
- The risk of developing a range of illnesses (including, for example, cancers of the mouth, throat and breast) increases with any amount you drink on a regular basis.
- If you wish to cut down the amount you're drinking, a good way to help achieve this is to have several drink-free days each week.

ANTIPLATELET THERAPY

Antiplatelet agents for people with established cardiovascular disease

R Individuals with established atherosclerotic disease should be treated with 75 mg aspirin daily.

R Individuals with a history of stroke or transient ischaemic attack and who are in sinus rhythm should be considered for treatment with clopidogrel 75 mg daily or combination of low dose aspirin (75–300 mg daily) and dipyridamole (200 mg twice daily) to prevent stroke recurrence and other vascular events.

Antiplatelet agents for people without established cardiovascular disease

R Aspirin is not recommended for primary prevention of cardiovascular disease.

Antiplatelet agents for people with diabetes

R Aspirin is not routinely recommended in people with diabetes who do not have a diagnosis of cardiovascular disease.

LIPID LOWERING

- ✓ A lipid profile taken to assess cardiovascular risk should include total cholesterol, HDL cholesterol and triglycerides and should not be taken at the time of intercurrent illness.

Statin therapy for individuals without cardiovascular disease

R Adults who are assessed as being at high cardiovascular risk, but with no established CVD, should be offered treatment with atorvastatin 20 mg/day following an informed discussion of risks and benefits between the individual and their responsible clinician. In those already taking an alternative regimen due to reported intolerance with atorvastatin, there is no need to change their current regimen.

- ✓ In individuals without established cardiovascular disease, lifestyle measures to reduce cholesterol levels should be encouraged, irrespective of the need for pharmacological treatment.

- ✓ Secondary causes of dyslipidaemia should be considered and excluded before commencing lipid-lowering drug therapy.

Statin therapy for individuals with established cardiovascular disease

R All patients with established atherosclerotic cardiovascular disease should be offered intensive statin therapy with atorvastatin 80 mg/day following an informed discussion of risks and benefits between the individual and responsible clinician.

- ✓ Consider a lower dose of atorvastatin in patients at increased risk of adverse effects or drug-drug interactions.

- ✓ For individuals commenced on statin therapy it would be appropriate to repeat lipid measurements and if there has been a reduction in non-HDL cholesterol of less than 1 mmol/l or 40% to check adherence to medication and lifestyle changes.

Safety of statin therapy

- ✓ Simvastatin 80 mg should not be offered for primary or secondary prevention of CVD due to the risk of myopathy. Any patients currently on this regimen may continue on it if they have been stable for at least one year.
- ✓ Statins should not be prescribed with gemfibrozil.
- ✓ Patients who are using medications that influence cytochrome P450 metabolism should avoid concomitant use of atorvastatin or simvastatin. In such cases, pravastatin or rosuvastatin are acceptable alternative lipid-lowering therapies.
- ✓ Statins should not be offered to:
 - patients with active liver disease or persistently abnormal liver function tests, or
 - women who are pregnant, likely to be pregnant or breastfeeding.

Reported intolerance to statin therapy

- R** Patients who report statin intolerance may be rechallenged, if willing, initially with the same dose of the same statin unless they have significant creatine kinase elevation.
- R** If reported statin intolerance persists, patients should be offered an alternative statin.

Lipid lowering for special groups

- R** Individuals with familial hypercholesterolaemia should be offered statin therapy regardless of their calculated cardiovascular risk and may be considered for combination therapy with ezetimibe where LDL cholesterol-lowering is inadequate on maximally-tolerated statin therapy, or for monotherapy where statins are contraindicated.
- R** Individuals with heterozygous familial hypercholesterolaemia and elevated LDL cholesterol despite statin monotherapy or statin/ezetimibe combination therapy should be considered for a PCSK9 inhibitor.
- R** Patients with CKD stage 3 and above, or with micro- or macroalbuminuria, who are not on dialysis should be offered statin therapy.

OTHER LIPID-LOWERING AGENTS

R Ezetimibe and bile acid sequestrant therapy should only be considered for primary prevention in patients at elevated CVD risk in whom statin therapy is contraindicated, and in patients with familial hypercholesterolaemia.

R Ezetimibe and bile acid sequestrant therapy should be considered for secondary prevention in combination with maximum tolerated statin therapy if LDL cholesterol is considered to be inadequately controlled.

R Fibrates are not routinely recommended for primary or secondary prevention of cardiovascular disease.

✓ Individuals with:

- CVD or who are at high cardiovascular risk, and
- marked hypertriglyceridaemia, and
- low HDL cholesterol level

should be considered for treatment with a fibrate.

R Nicotinic acid is not recommended for cardiovascular risk reduction in any group.

R PCSK9 inhibitors should be considered in patients at high risk of vascular events with cholesterol levels remaining above target levels despite other tolerated lipid-lowering therapy.

BLOOD PRESSURE LOWERING

✓ All individuals with a persistent clinic blood pressure $\geq 140/90$ mm Hg or a family history of hypertension should receive lifestyle advice to help reduce their blood pressure and CVD risk. Lifestyle advice should continue even when drug therapy is initiated.

Blood pressure thresholds for individuals with symptomatic cardiovascular disease

R Individuals with clinical evidence of cardiovascular disease and sustained clinic systolic blood pressure >140 mm Hg systolic and/or diastolic blood pressure >90 mm Hg should be offered blood pressure-lowering drug therapy.

R Individuals who have had a haemorrhagic or ischaemic stroke, or TIA should be offered blood pressure-lowering medication, even when their baseline blood pressure is at a level that would be considered conventionally normotensive, to reduce the risk of recurrence.

Blood pressure thresholds for individuals without symptomatic cardiovascular disease

R Individuals at high cardiovascular risk, but without established CVD, and sustained clinic systolic blood pressure >140 mm Hg systolic and/or diastolic blood pressure >90 mm Hg should be offered blood pressure-lowering treatment.

✓ Individuals with hypertension whose ten-year risk of a first CVD event is below the threshold for consideration of pharmacological therapy should continue with lifestyle strategies and have their blood pressure and total CVD risk reassessed every one to five years, depending on clinical circumstances.

R Individuals with clinic blood pressure greater than 160 mm Hg systolic or 100 mm Hg diastolic should be offered antihypertensive treatment and specific lifestyle advice to lower their blood pressure and risk of cardiovascular disease.

Blood pressure thresholds for specific groups at high cardiovascular risk

R Individuals with diabetes should be offered blood pressure-lowering treatment if the baseline clinic systolic pressure is >140 mm Hg, to prevent mortality, macrovascular events, and progression of nephropathy and retinopathy.

R Individuals with diabetes should be considered for blood pressure-lowering treatment, even if the systolic clinic blood pressure is <140 mm Hg, to reduce the risk of stroke, progression of retinopathy and albuminuria. At this level of blood pressure, treatment should be targeted at patients thought to be at greatest risk of those complications.

R All people with stage 3 or higher chronic kidney disease, or micro- or macroalbuminuria should be offered blood pressure-lowering treatment.

R All patients on dialysis should be offered blood pressure-lowering treatment.

Target values for blood pressure lowering

R Individuals with uncomplicated hypertension should be supported to achieve a BP target of <140/90 mm Hg (clinic measurement).

R For individuals with established CVD and diabetes, chronic renal disease or target organ damage a lower blood pressure target of <135/85 mm Hg (clinic measurement) should be considered.

R Lowering BP below 130/80 mm Hg is not routinely recommended as this brings limited additional benefits and causes significant adverse effects.

✓ These target figures are a general guide, and may be adapted in the light of medicines tolerance, and in particular in the frail or elderly, who may be more susceptible to adverse effects of treatment. In such patients, more modest reductions in blood pressure may still be beneficial.

PSYCHOLOGICAL ISSUES

R Depression, anxiety and social isolation or lack of quality social support are risk factors for the development and prognosis of cardiovascular disease and should be taken into account when assessing individual risk.

R Psychological treatments for patients with mood and anxiety disorders and comorbid cardiovascular disease should be considered.

R Pharmacological treatment with SSRIs in patients with depression and coronary heart disease should be considered, although caution should be taken over patients receiving polypharmacy in whom bleeding risk may be increased.

This Quick Reference Guide provides a summary of the main recommendations in **SIGN 149 Risk estimation and the prevention of cardiovascular disease**

Recommendations **R** are worded to indicate the strength of the supporting evidence. Good practice points ✓ are provided where the guideline development group wishes to highlight specific aspects of accepted clinical practice.

Details of the evidence supporting these recommendations can be found in the full guideline, available on the SIGN website: www.sign.ac.uk

This QRG is also available as part of the SIGN Guidelines app.

