

Lipid modification

Cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease

NICE guideline
Draft for consultation, February 2014

If you wish to comment on this version of the guideline, please be aware that all the supporting information and evidence for the 2014 recommendations is contained in the full version of the 2014 guideline. Evidence for the 2008 recommendations is in the full version of the 2008 guideline.

Please note that this guideline will update and replace recommendations relating to risk assessment and lipids management for type 1 and type 2 diabetes and chronic kidney disease, and statin therapy for people at increased risk of developing cardiovascular disease or those with established cardiovascular disease:

- CG15 Type 1 diabetes [Sections 1.10.1 and 1.10.2](#)
- CG87 Type 2 diabetes [Sections 1.9 and 1.10](#)
- CG73 Chronic kidney disease [Recommendations 1.8.19 and 1.8.20](#)
- TA94 [Statins for the prevention of cardiovascular events](#)

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Introduction

Cardiovascular disease (CVD) describes disease of the heart and blood vessels caused by the process of atherosclerosis. It is the leading cause of death in England and Wales, accounting for almost one-third of deaths¹. In 2010, 180,000 people died from CVD – around 80,000 of these deaths were caused by coronary heart disease and 49,000 were caused by strokes. Of the 180,000 deaths, 46,000 occurred before people were aged 75 years, and 70% of those were in men. Death rates from CVD peaked in the 1970s and 1980s but have more than halved since then. Rates have fallen more rapidly in older age groups compared with younger ones, with an approximately 50% reduction in the 55–64 year age group compared with a 20% reduction in men aged 35–44 years. In spite of evidence that mortality from CVD is falling, morbidity appears to be rising. CVD has significant cost implications and was estimated to cost the NHS in England almost £6,940 million in 2003, rising to £7,880 million in 2010.

CVD shows strong age dependence and predominantly affects people over 50 years. Risk factors for CVD include non-modifiable factors such as age, gender, family history of CVD, ethnic background and modifiable risk factors such as smoking, raised blood pressure and cholesterol. CVD is strongly associated with low income and social deprivation and shows a North–South divide, with higher rates in the north of England.

This guideline includes recommendations on risk assessment for CVD and recommendations on the use of lipid-lowering drugs. The original guideline is updated in part to allow consideration of new evidence on risk assessment tools and to reflect changes in price and availability of generic statins.

NICE has produced guidance on other modifiable risk factors for CVD and this guideline should be used in conjunction with them.

¹ [UK National Statistics](#).

In this update the Guideline Development Group (GDG) recommend the use of non-high density lipoprotein (non-HDL) cholesterol rather than low density lipoprotein (LDL) cholesterol. LDL cholesterol is not directly measured but requires a calculation using a fasting sample and for triglyceride levels to be less than 4.5 mmol/litre, whereas the measurement of non-HDL does not.

Statins are grouped in this guideline as in Appendix B. This grouping was agreed by GDG consensus, informed by analyses in the literature. See the full guideline for a discussion of this grouping.

Drug recommendations

The guideline will assume that prescribers will use a drug's summary of product characteristics to inform decisions made with individual patients.

Patient-centred care

This guideline offers best practice advice on the care of people at risk of CVD.

Patients and healthcare professionals have rights and responsibilities as set out in the [NHS Constitution for England](#) – all NICE guidance is written to reflect these. Treatment and care should take into account individual needs and preferences. Patients should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. Healthcare professionals should follow the [Department of Health's advice on consent](#). If someone does not have the capacity to make decisions, healthcare professionals should follow the [code of practice that accompanies the Mental Capacity Act](#) and the supplementary [code of practice on deprivation of liberty safeguards](#). In Wales, healthcare professionals should follow [advice on consent from the Welsh Government](#).

NICE has produced guidance on the components of good patient experience in adult NHS services. All healthcare professionals should follow the recommendations in [Patient experience in adult NHS services](#).

Strength of recommendations

Some recommendations can be made with more certainty than others. The Guideline Development Group makes a recommendation based on the trade-off between the benefits and harms of an intervention, taking into account the quality of the underpinning evidence. For some interventions, the Guideline Development Group is confident that, given the information it has looked at, most patients would choose the intervention. The wording used in the recommendations in this guideline denotes the certainty with which the recommendation is made (the strength of the recommendation).

For all recommendations, NICE expects that there is discussion with the patient about the risks and benefits of the interventions, and their values and preferences. This discussion aims to help them to reach a fully informed decision (see also 'Patient-centred care').

Interventions that must (or must not) be used

We usually use 'must' or 'must not' only if there is a legal duty to apply the recommendation. Occasionally we use 'must' (or 'must not') if the consequences of not following the recommendation could be extremely serious or potentially life threatening.

Interventions that should (or should not) be used – a 'strong' recommendation

We use 'offer' (and similar words such as 'refer' or 'advise') when we are confident that, for the vast majority of patients, an intervention will do more good than harm, and be cost effective. We use similar forms of words (for example, 'Do not offer...') when we are confident that an intervention will not be of benefit for most patients.

Interventions that could be used

We use 'consider' when we are confident that an intervention will do more good than harm for most patients, and be cost effective, but other options may be similarly cost effective. The choice of intervention, and whether or not to

have the intervention at all, is more likely to depend on the patient's values and preferences than for a strong recommendation, and so the healthcare professional should spend more time considering and discussing the options with the patient.

Recommendation wording in guideline updates

NICE began using this approach to denote the strength of recommendations in guidelines that started development after publication of the 2009 version of 'The guidelines manual' (January 2009). This does not apply to any recommendations shaded in grey and ending [2008] (see 'Update information' box below for details about how recommendations are labelled). In particular, for recommendations labelled [2008], the word 'consider' may not necessarily be used to denote the strength of the recommendation.

Update information

This guidance is an update of NICE Clinical Guideline 67 (published September 2008) and will replace it.

This guideline will update and replace recommendations relating to risk assessment and lipids management for type 1 and type 2 diabetes and chronic kidney disease, and statin therapy for people at increased risk of developing cardiovascular disease or those with established cardiovascular disease:

- CG15 Type 1 diabetes [Sections 1.10.1 and 1.10.2](#)
- CG87 Type 2 diabetes [Sections 1.9 and 1.10](#)
- CG73 Chronic kidney disease [Recommendations 1.8.19 and 1.8.20](#)
- TA94 [Statins for the prevention of cardiovascular events](#)

New recommendations have been added for the risk assessment and treatment of people at risk of CVD.

You are invited to comment on the new and updated recommendations in this guideline. These are marked as **[2014]** if the evidence has been reviewed but no change has been made to the recommendation, or **[new 2014]** if the evidence has been reviewed and the recommendation has been added or updated.

You are also invited to comment on recommendations that NICE proposes to delete from the 2008 guideline, because either the evidence has been reviewed and the recommendations have been updated, or NICE has updated other relevant guidance and has replaced the original recommendations.

Appendix A sets out these recommendations and includes details of replacement recommendations. Where there is no replacement recommendation, an explanation for the proposed deletion is given.

Where recommendations are shaded in grey and end **[2008]**, the evidence has not been reviewed since the original guideline. We will not be able to

accept comments on these recommendations. Yellow shading in these recommendations indicates where wording changes have been made for the purposes of clarification only.

Where recommendations are shaded in grey and end **[2008, amended 2014]**, the evidence has not been reviewed but changes have been made to the recommendation wording that change the meaning (for example, because of equalities duties or a change in the availability of drugs, or incorporated guidance has been updated). These changes are marked with yellow shading, and explanations of the reasons for the changes are given in appendix A for information. We will not be able to accept comments on these recommendations.

The original NICE guideline and supporting documents are available from <http://guidance.nice.org.uk/CG67>.

Key priorities for implementation

The following recommendations have been identified as priorities for implementation.

- For the primary prevention of cardiovascular disease (CVD) in primary care, use a systematic strategy to identify people aged 40–74 who are likely to be at high risk. **[2008] [1.1.1]**
- Use the QRISK2 risk assessment tool to assess CVD risk for the primary prevention of CVD. **[new 2014] [1.1.8]**
- Routinely record ethnicity, body mass index and family history of premature cardiovascular disease in medical records. **[2008] [1.1.14]**
- Before starting lipid modification therapy for the primary prevention of CVD, take at least 1 lipid sample to measure a full lipid profile. This should include measurement of total cholesterol, high-density lipoprotein (HDL) cholesterol, non-HDL cholesterol, and triglyceride concentrations. A fasting sample is not needed. **[new 2014] [1.3.3]**
- Offer high-intensity statin treatment for the primary prevention of CVD to people who have a 10% or greater 10-year risk of developing CVD. Estimate the level of risk using the QRISK2 assessment tool. **[new 2014] [1.3.15]**
- Offer atorvastatin 20 mg for the primary prevention of CVD. **[new 2014] [1.3.16]**
- Start statin treatment in people with established CVD with atorvastatin 80 mg. If any of the following apply use a lower dose of atorvastatin:
 - potential drug interactions
 - risk of adverse effects
 - patient preference. **[new 2014] [1.3.18]**

1 Recommendations

The following guidance is based on the best available evidence. The [full guideline](#) [\[hyperlink to be added for final publication\]](#) gives details of the methods and the evidence used to develop the guidance.

1.1 *Identifying and assessing cardiovascular disease (CVD) risk*

Identifying people for full formal risk assessment

Recommendations in this section will update and replace recommendation 1.10.1.1 from [Type 2 diabetes](#) (NICE clinical guideline 87).

- 1.1.1 For the primary prevention of CVD in primary care, **use** a systematic strategy to identify people aged 40–74 who are likely to be at high risk. **[2008]**
- 1.1.2 **Prioritise** people on the basis of an estimate of their CVD risk before a full formal risk assessment. **Estimate** their CVD risk using CVD risk factors already recorded in primary care electronic medical records. **[2008]**
- 1.1.3 People older than 40 should have their estimate of CVD risk reviewed on an ongoing basis. **[2008]**
- 1.1.4 Prioritise people for a full formal risk assessment if their estimated 10-year risk of CVD is **10%** or more. **[2008, amended 2014]**
- 1.1.5 **Discuss** the process of risk assessment with the person identified as being at risk, including the option of declining any formal risk assessment. **[2008]**
- 1.1.6 **Do not use** opportunistic assessment as the main strategy in primary care to identify CVD risk in unselected people. **[2008]**

Full formal risk assessment

- 1.1.7 Be aware that all CVD risk **assessment** tools can provide only an approximate value for CVD risk. Interpretation of CVD risk scores should always reflect informed clinical judgement. **[2008]**
- 1.1.8 Use the QRISK2 risk assessment tool to assess CVD risk for the primary prevention of CVD. **[new 2014]**
- 1.1.9 Do not use a risk assessment tool to assess CVD risk in people with type 1 diabetes. **[new 2014]**
- 1.1.10 Use the UKPDS risk assessment tool to assess CVD risk in people with type 2 diabetes. **[new 2014]** [This recommendation will update and replace recommendations 1.9.2 and 1.9.3 from [Type 2 diabetes](#) (NICE clinical guideline 87).]
- 1.1.11 Use the QRISK2 risk assessment tool to assess CVD risk in people with stage 1 or 2 chronic kidney disease (CKD), but do not tick the CKD box when making the assessment. **[new 2014]** [This recommendation will update and replace recommendation 1.8.19 from [Chronic kidney disease](#) (NICE clinical guideline 73).]
- 1.1.12 Do not use a risk assessment tool to assess CVD risk in people with CKD stage 3 or greater. **[new 2014]** [This recommendation will update and replace recommendation 1.8.19 from [Chronic kidney disease](#) (NICE clinical guideline 73).]
- 1.1.13 Complete as many fields of the risk assessment tool as possible. **[new 2014]**
- 1.1.14 Routinely **record** ethnicity, body mass index and family history of premature cardiovascular disease in medical records. **[2008]**
- 1.1.15 **Consider** socioeconomic status as an additional factor that contributes to CVD risk. **[2008]**

1.1.16 Do not use a risk assessment tool for people with pre-existing CVD. [2008, amended 2014]

1.1.17 Do not use a risk assessment tool for people who are at high risk of developing CVD because of familial hypercholesterolaemia (see [Familial hypercholesterolaemia](#) [NICE clinical guideline 71]) or other inherited disorders of lipid metabolism. [2008, amended 2014]

1.1.18 When using the risk score to inform drug treatment decisions, particularly if it is near to the threshold for treatment, take into account other factors that:

- may predispose the person to premature CVD and
- may not be included in calculated risk scores. [2008, amended 2014]

1.1.19 Recognise that standard CVD risk scores will underestimate risk in people who have additional risk because of underlying medical conditions or treatments. These groups include:

- people treated for HIV
- people with serious mental health problems
- people taking medicines that can cause dyslipidaemia such as antipsychotic medication, corticosteroids or immunosuppressant drugs
- people with stage 1 or 2 CKD
- people with autoimmune disorders such as systemic lupus erythematosus rheumatoid arthritis and other systemic inflammatory disorders. [2008, amended 2014]

1.1.20 Recognise that CVD risk will be underestimated in people who are already taking antihypertensive or lipid modification therapy, or who have recently stopped smoking. Use clinical judgement to decide on further treatment of risk factors in people who are below the CVD risk threshold for treatment. [2008, amended 2014]

1.1.21 Severe obesity (body mass index greater than 40 kg/m²) increases CVD risk. Take this into account when using risk scores to inform treatment decisions in this group (see [Obesity](#) [NICE clinical guideline 43]). [2008]

1.1.22 Consider people aged 85 or older to be at increased risk of CVD because of age alone, particularly people who smoke or have raised blood pressure. [2008, amended 2014]

Communication about risk assessment and treatment

1.1.23 NICE has produced guidance on the components of good patient experience in adult NHS services. These include recommendations on the communication of risk. Follow the recommendations in [Patient experience in adult NHS services](#) (NICE clinical guidance 138). [new 2014]

1.1.24 Use everyday, jargon-free language to communicate information on risk. If technical terms are used, explain them clearly. [2008]

1.1.25 Set aside adequate time during the consultation to provide information on risk assessment and to allow any questions to be answered. Further consultation may be required. [2008]

1.1.26 Document the discussion relating to the consultation on risk assessment and the person's decision. [2008]

1.1.27 Offer people information about their absolute risk of CVD and about the absolute benefits and harms of an intervention over a 10-year period. This information should be in a form that:

- presents individualised risk and benefit scenarios and
- presents the absolute risk of events numerically and
- uses appropriate diagrams and text.

See the [High cholesterol shared decision making aid](#). [2008]

1.1.28 Encourage the person to reduce their CVD risk by:

- finding out what, if anything, the person has already been told about their CVD risk and how they feel about it
- exploring the person's beliefs about what determines future health (this may affect their attitude to changing risk)
- assessing their readiness to make changes to their lifestyle (diet, physical activity, smoking and alcohol consumption), to undergo investigations and to take long-term medication
- assessing their confidence in making changes to their lifestyle, undergoing investigations and taking medication
- informing them of potential future management based on current evidence and best practice
- involving them in developing a shared management plan
- checking with them that they have understood what has been discussed. [2008]

1.1.29 If the person's CVD risk is at a level where intervention is recommended but they decline the offer of treatment, advise them that their CVD risk should be reassessed again in the future. [2008]

1.2 *Lifestyle modifications for the primary and secondary prevention of CVD*

Cardioprotective diet

1.2.1 Advise people at high risk of or with CVD to eat a diet in which total fat intake is 30% or less of total energy intake, saturated fats are 10% or less of total energy intake, intake of dietary cholesterol is less than 300 mg/day and where possible saturated fats are replaced by mono-unsaturated and polyunsaturated fats. It may be helpful to suggest they look at [NHS Choices](#) for further practical advice. [2014]

1.2.2 For people at high risk of or with CVD:

- Tell them that reducing their saturated fat intake from animal sources also reduces their mono-unsaturated fat levels.

- Advise them to replace their saturated fat intake with olive oil, rapeseed oil or spreads based on these oils.
- Advise them to use olive oil, rapeseed oil or spreads based on these oils in food preparation.

Further information and advice on healthy cooking methods can be found at [NHS Choices](#). **[new 2014]**

1.2.3 Advise people at high risk of or with CVD to do all of the following:

- choose wholegrain varieties of starchy food
- reduce their intake of sugar and food products containing refined sugars including fructose
- eat at least 5 portions of fruit and vegetables per day
- eat at least 2 portions of fish per week, including a portion of oily fish.

Further information and advice can be found at [NHS Choices](#). **[new 2014]**

1.2.4 Advise pregnant women to limit their oily fish to no more than 2 portions per week and to avoid marlin, shark and swordfish. Further information and advice on oily fish consumption can be found at [NHS Choices](#). **[new 2014]**

1.2.5 Take account of a person's individual circumstances, for example, drug therapy, comorbidities and other lifestyle modifications when giving dietary advice. **[new 2014]**

1.2.6 Advise and support people at high risk of or with CVD to achieve a healthy diet in line with [Behaviour change: the principles for effective interventions](#) (NICE public health guidance 6). **[new 2014]**

Physical activity

- 1.2.7 **Advise** people at high risk of or with CVD to take 30 minutes of physical activity a day, of at least moderate intensity, at least 5 days a week, in line with national guidance for the general population. [2008]
- 1.2.8 **Encourage** people who are unable to perform moderate-intensity physical activity at least 5 days a week because of comorbidity, medical conditions or personal circumstances to exercise at their maximum safe capacity. [2008]
- 1.2.9 **Recognise** that recommended types of physical activity include those that can be incorporated into everyday life, such as brisk walking, using stairs and cycling (See [Physical activity guidelines for adults](#)). [2008]
- 1.2.10 **Advise** people that bouts of physical activity of 10 minutes or more accumulated throughout the day are as effective as longer sessions (See '[Physical activity guidelines for adults](#)'). [2008]
- 1.2.11 Advice about physical activity should take into account the person's needs, preferences and circumstances. **Agree** goals and provide the person with written information about the benefits of activity and local opportunities to be active, in line with [Four commonly used methods to increase physical activity](#) (NICE public health guidance 2). [2008]

Combined interventions (diet and physical activity)

- 1.2.12 **Give advice** on diet and physical activity in line with national recommendations (see [NHS Choices](#)). [2008]

Weight management

- 1.2.13 **Offer** people at high risk of or with CVD who are overweight or obese appropriate advice and support to work towards achieving

and maintaining a healthy weight, in line with [Obesity](#) (NICE clinical guideline 43). [2008]

Alcohol consumption

1.2.14 **Be aware that** men should not regularly drink more than 3–4 units a day and women should not regularly drink more than 2–3 units a day. People should avoid binge drinking. Further information can be found at [NHS Choices](#). [2008]

Smoking cessation

1.2.15 **Advise** all people who smoke to stop, in line with [Smoking cessation services](#) (NICE public health guidance 10). [2008]

1.2.16 **Offer** people who want to stop smoking support and advice, and referral to an intensive support service (for example, the NHS Stop Smoking Services). [2008]

1.2.17 If a person is unable or unwilling to accept a referral to an intensive support service, **offer** them pharmacotherapy in line with [Smoking cessation services](#) (NICE public health guidance 10) and [Varenicline for smoking cessation](#) (NICE technology appraisal guidance 123). [2008]

Plant stanols and sterols

1.2.18 Do not advise plant stanols or sterols for the prevention of CVD to any of the following:

- people who are being treated for primary prevention
- people who are being treated for secondary prevention
- people with CKD
- people with type 1 diabetes
- people with type 2 diabetes. [new 2014]

1.3 *Lipid modification therapy for the primary and secondary prevention of CVD*

1.3.1 **Be aware that when deciding on** lipid modification therapy for the **prevention of CVD**, drugs are preferred for which there is evidence in clinical trials of a beneficial effect on CVD morbidity and mortality. **[2008]**

Lipid measurement and referral

Recommendations in this section will update and replace recommendation 1.9.4 from [Type 2 diabetes](#) (NICE clinical guideline 87).

1.3.2 **Measure** both total and high-density lipoprotein (HDL) cholesterol to achieve the best estimate of CVD risk. **[2008]**

1.3.3 Before starting lipid modification therapy for the primary prevention of CVD, take at least 1 lipid sample to measure a full lipid profile. This should include measurement of total cholesterol, HDL cholesterol, non-HDL cholesterol, and triglyceride concentrations. A fasting sample is not needed. **[new 2014]**

1.3.4 Use the clinical findings, lipid profile and family history to judge the likelihood of a familial lipid disorder rather than the use of strict lipid cut-off values alone. **[new 2014]**

1.3.5 Exclude possible common secondary causes of dyslipidaemia (such as excess alcohol, uncontrolled diabetes, hypothyroidism, liver disease and nephrotic syndrome) before referring for specialist review. **[new 2014]**

1.3.6 Consider the possibility of familial hypercholesterolaemia and investigate in [Familial hypercholesterolaemia](#) (NICE clinical guideline 71) if they have:

- total cholesterol more than 7.5 mmol/litre **and**
- a family history of premature coronary heart disease. **[new 2014]**

1.3.7 Arrange for specialist assessment of people with a total cholesterol concentration of more than 9.0 mmol/litre or a non-HDL cholesterol concentration of more than 7.5 mmol/litre even in the absence of a first-degree family history of premature coronary heart disease.

[new 2014]

1.3.8 Refer for urgent specialist review if a person has a triglyceride concentration of more than 20 mmol/litre that is not a result of excess alcohol or poor glycaemic control. **[new 2014]**

1.3.9 In people with a triglyceride concentration between 10 and 20 mmol/litre:

- repeat the triglyceride measurement with a fasting test (after an interval of 5 days, but within 2 weeks)
- review for potential secondary causes of hyperlipidaemia **and**
- seek specialist advice if the triglyceride concentration remains elevated. **[new 2014]**

1.3.10 In people with a triglyceride concentration between 4.5 and 9.9 mmol/litre:

- be aware that the CVD risk is underestimated by risk assessment tools **and**
- optimise the management of other CVD risk factors present **and**
- seek specialist advice if non-HDL cholesterol concentration is more than 7.5 mmol/litre. **[new 2014]**

Statins for the prevention of CVD

Recommendations in this section will update and replace those in [Statins for the prevention of cardiovascular events](#) in patients at increased risk of developing cardiovascular disease or those with established cardiovascular disease (NICE technology appraisal guidance 94) for prevention of cardiovascular events].

- 1.3.11 The decision whether to start statin therapy should be made after an informed discussion between the responsible clinician and the person about the risks and benefits of statin treatment, taking into account additional factors such as comorbidities, potential benefits from lifestyle interventions, patient preference and life expectancy. **[2014]**
- 1.3.12 Before starting statin treatment perform baseline blood tests and clinical assessment, and treat comorbidities and secondary causes of dyslipidaemia. Include all of the following in the assessment:
- smoking status
 - alcohol consumption
 - blood pressure (see [Hypertension](#), NICE clinical guideline 127)
 - body mass index or other measure of obesity (see [Obesity](#), NICE clinical guideline 43)
 - total cholesterol, non-HDL cholesterol, HDL cholesterol and triglycerides
 - HbA1c
 - renal function and estimated glomerular filtration rate
 - transaminase level (alanine aminotransferase or aspartate aminotransferase)
 - thyroid-stimulating hormone (TSH). **[new 2014]**

Primary prevention

- 1.3.13 Before offering **statin treatment** for primary prevention, **optimise** the management of all other modifiable CVD risk factors if possible. **[2014]**
- 1.3.14 If statin treatment is appropriate for primary prevention, offer it as soon as practicable after risk assessment. **[2014]**
- 1.3.15 Offer high-intensity statin treatment for the primary prevention of CVD to people who have a 10% or greater 10-year risk of

developing CVD. Estimate the level of risk using the QRISK2 assessment tool. **[new 2014]**

1.3.16 Offer atorvastatin 20mg for the primary prevention of CVD. **[new 2014]**

1.3.17 Consider atorvastatin 20 mg for people older than 85 years because they are likely to benefit from statin treatment. Assessment and treatment should be guided by the benefits and risks of treatment, informed preference and any comorbidities that may make treatment inappropriate. **[new 2014]**

People with established CVD

1.3.18 Start statin treatment in people with established CVD with atorvastatin 80 mg. If any of the following apply use a lower dose of atorvastatin:

- potential drug interactions
- risk of adverse effects
- patient preference. **[new 2014]**

1.3.19 Do not delay statin treatment in secondary prevention to manage modifiable risk factors. **[2014]**

1.3.20 If a person has acute coronary syndrome, do not delay statin treatment. Take a lipid sample on admission and about 3 months after the start of treatment. **[2014]**

Primary prevention for people with type 1 diabetes

Recommendations in this section will update and replace recommendations 1.10.1.5, 1.10.2.4, 1.10.2.5 and 1.10.2.7 from [Type 1 diabetes](#) (NICE clinical guideline 15).

1.3.21 Offer high-intensity statin treatment for the primary prevention of CVD to people with type 1 diabetes. **[new 2014]**

- 1.3.22 When offering statin treatment for the prevention of CVD to people with type 1 diabetes, start with atorvastatin 20mg. **[new 2014]**

Primary prevention for people with type 2 diabetes

Recommendations in this section will update and replace recommendations 1.10.1.2, 1.10.1.3, and 1.10.1.5 from [Type 2 diabetes](#) (NICE clinical guideline 87).

- 1.3.23 Offer high-intensity statin treatment for the primary prevention of CVD to people with type 2 diabetes who have a 10% or greater 10-year risk of developing CVD. Estimate the level of risk using the UKPDS assessment tool. **[new 2014]**
- 1.3.24 When offering statin treatment for the prevention of CVD to people with type 2 diabetes, start with atorvastatin 80mg. If any of the following apply use a lower dose of atorvastatin:
- potential drug interactions
 - risk of adverse effects
 - patient preference. **[new 2014]**

People with CKD

Recommendations in this section will update and replace recommendations 1.8.19 and 18.20 from [Chronic kidney disease](#) (NICE clinical guideline 73).

- 1.3.25 In people with stage 1 or stage 2 CKD treat as primary prevention and initiate treatment with atorvastatin 20 mg if there is no evidence of CVD and more than 10% CVD risk on assessment with QRISK2. **[new 2014]**
- 1.3.26 In people with stage 1 or stage 2 CKD and evidence of CVD, start treatment with atorvastatin 20 mg and increase dose if a greater than 40% reduction in non-HDL cholesterol is not achieved. **[new 2014]**

1.3.27 In people with stage 3 CKD start high-intensity statin treatment with atorvastatin 20 mg. Increase the dose if a reduction in non-HDL cholesterol of greater than 40% is not achieved. **[new 2014]**

1.3.28 In people with CKD stage 4 or greater start treatment with atorvastatin 20 mg and agree the use of higher doses with a renal specialist. **[new 2014]**

Follow-up of people initiated on statin treatment

1.3.29 Measure cholesterol, HDL cholesterol and non-HDL cholesterol in people who have been started on high-intensity statin treatment after 3 months of treatment and aim for a greater than 40% reduction in non-HDL cholesterol.

If a greater than 40% reduction in non-HDL cholesterol is not achieved:

- discuss adherence and timing of dose (take at night)
- optimise adherence to diet and lifestyle measures
- consider increasing dose if started on less than atorvastatin 80 mg and person is judged to be at higher risk because of comorbidities, risk score or using clinical judgement. **[new 2014]**

1.3.30 If a person is not able to tolerate a high-intensity statin aim to treat with the maximum tolerated dose. **[new 2014]**

1.3.31 Tell the person that any statin at any dose reduces CVD risk. If someone reports adverse effects when taking high-intensity statins discuss the following possible strategies with them:

- stopping the statin and trying again when the symptoms have resolved to check if the symptoms are related to the statin
- reducing the dose within the same intensity group
- changing the statin to a lower intensity group. **[new 2014]**

- 1.3.32 Seek specialist advice about options for treating people at high risk of CVD such as those with established CVD, CKD, type 1 diabetes, type 2 diabetes or genetic dyslipidaemias who are intolerant to 3 statins. Advice can be sought for example, by telephone, virtual clinic or referral. **[new 2014]**
- 1.3.33 Discuss with patients who are stable on a low- or middle-intensity statin the benefits of changing to a high-intensity statin when they have a medication review. **[new 2014]**
- 1.3.34 Use the proportion of people taking high intensity statins for secondary prevention rather than cholesterol levels to audit statin treatment in populations with established CVD. **[new 2014]**

Adherence to statin therapy

- 1.3.35 Do not offer coenzyme Q₁₀ or vitamin D to increase adherence to statin treatment. **[new 2014]**

Advice and monitoring for adverse effects

- 1.3.36 Advise people who are being treated with a statin:
- that other drugs, some foods (for example, grapefruit juice) and some supplements may interfere with statins **and**
 - to always consult the patient information leaflet, a pharmacist or prescriber for advice when starting other drugs or thinking about supplements. **[new 2014]**
- 1.3.37 Remind the person to restart the statin if they stopped taking it because of drug interactions or to treat intercurrent illnesses. **[new 2014]**
- 1.3.38 Before offering a statin, ask the person if they have had persistent generalised unexplained muscle pain, whether associated or not with previous lipid-lowering therapy, and if present, measure creatine kinase levels. If these are elevated start statin treatment at a lower dose. **[new 2014]**

- 1.3.39 **Advise** people who are being treated with a statin to seek medical advice if they develop muscle symptoms (pain, tenderness or weakness). If this occurs, **measure** creatine kinase. **[2008]**
- 1.3.40 If people report muscle pain while taking a statin, explore other possible causes of myalgia and raised creatine kinase if they have previously tolerated statin therapy for more than 3 months. **[new 2014]**
- 1.3.41 **Do not measure** creatine kinase levels in asymptomatic people who are being treated with a statin. **[2008]**
- 1.3.42 **Measure** baseline liver transaminase enzymes (**alanine aminotransferase or aspartate aminotransferase**) before starting a statin. **Measure** liver transaminase (**alanine aminotransferase or aspartate aminotransferase**) within 3 months of starting treatment and at 12 months, but not again unless clinically indicated. **[2008, amended 2014]**
- 1.3.43 **Do not** routinely **exclude** from statin therapy people who have liver transaminases levels that are raised but are less than 3 times the upper limit of normal. **[2008]**
- 1.3.44 Do not stop statins because of an increase in blood glucose level or HbA_{1c} (See the recommendations on assessing for risk of diabetes mellitus in [Preventing type 2 diabetes](#) [NICE public health guidance 38]). **[new 2014]**
- 1.3.45 Statins are contraindicated in pregnancy. Advise women of childbearing potential of the potential teratogenic risk of statins and consider stopping treatment if pregnancy is a possibility. **[new 2014]** [This recommendation will update and replace recommendation 1.10.1.7 from [Type 2 diabetes](#) (NICE clinical guideline 87).]

Fibrates for preventing CVD

The recommendation in this section will update and replace recommendations 1.10.2.3 and 1.10.2.4 from [Type 2 diabetes](#) (NICE clinical guideline 87) and recommendations 1.10.2.5 and 1.10.2.6 from [Type 1 diabetes](#) (NICE clinical guideline 15).

1.3.46 Do not routinely offer fibrates for the prevention of CVD to any of the following:

- people who are being treated for primary prevention
- people who are being treated for secondary prevention
- people with CKD
- people with type 1 diabetes
- people with type 2 diabetes. **[new 2014]**

Nicotinic acid for preventing CVD

The recommendation in this section will update and replace recommendation 1.10.3.1 from [Type 2 diabetes](#) (NICE clinical guideline 87).

1.3.47 Do not offer nicotinic acid (niacin) for the prevention of CVD to any of the following:

- people who are being treated for primary prevention
- people who are being treated for secondary prevention
- people with CKD
- people with type 1 diabetes
- people with type 2 diabetes. **[new 2014]**

Bile acid sequestrants (anion exchange resins) for preventing CVD

1.3.48 Do not offer a bile acid sequestrant (anion exchange resin) for the prevention of CVD to any of the following:

- people who are being treated for primary prevention
- people who are being treated for secondary prevention
- people with CKD

- people with type 1 diabetes
- people with type 2 diabetes. **[new 2014]**

Omega-3 fatty acid compounds for preventing CVD

Recommendations in this section will update and replace recommendations 1.10.4.1 and 1.10.4.2 from [Type 2 diabetes](#) (NICE clinical guideline 87).

1.3.49 Do not offer omega-3 fatty acid compounds for the prevention of CVD to any of the following:

- people who are being treated for primary prevention
- people who are being treated for secondary prevention
- people with CKD
- people with type 1 diabetes
- people with type 2 diabetes. **[new 2014]**

1.3.50 Tell people that there is no evidence that omega-3 fatty acid compounds help to prevent CVD. **[new 2014]**

Combination therapy for preventing CVD

1.3.51 Do not offer the combination of a bile acid sequestrant (anion exchange resin), fibrate, nicotinic acid or omega-3 fatty acid compound with a statin for the prevention of CVD. **[new 2014]**

Ezetimibe

1.3.52 People with primary hypercholesterolaemia should be considered for ezetimibe treatment in line with [Ezetimibe for the treatment of primary \(heterozygous-familial and non-familial\) hypercholesterolaemia](#) (NICE technology appraisal guidance 132). **[2008]**

2 Research recommendations

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future. The Guideline Development Group's full set of research recommendations is detailed in the full guideline.

2.1 *Simplifying risk assessment*

What is the effectiveness of age alone and other routinely available risk factors compared with the formal structured multi-factorial risk assessment to identify people at high risk of developing CVD?

Why this is important

Current risk assessment tools rely on a complex set of data derived from demographic, lifestyle, physiological and biochemical parameters. The principal determinant of CVD risk is age, and this may be sufficient to identify high-risk populations. However, focusing on age alone may result in people being missed who are at higher risk as a result of other factors that do not require access to intensive resources, such as smoking status, family history and deprivation. It is important therefore to assess age against validated simplified and complex CVD risk tools in prediction of people at high risk.

2.2 *Cost effectiveness using individual patient-level data*

What is the improvement in the cost-effectiveness metrics for statin therapy in reducing CVD that can be obtained when using a complete individual patient-based outcomes meta-analysis data set compared with using published outcomes data?

Why this is important

This guideline development process uses published summary data from trials in a meta-analysis to inform the clinical efficacy of statins. This use of aggregate data has limitations. The use of individual patient data would allow use of time to event statistics and allow investigation of interaction with

baseline risk. Such an approach can be used to validate the current approach and would provide useful information on limitations of use of summary data.

2.3 *Statin therapy in older people*

What is the effectiveness of statin therapy in older people?

Why this is important

The UK population is ageing and atherosclerosis is an age-associated process. Few trials assessing cardiovascular outcomes have recruited many people aged over 80 years yet the important effect of age on CVD risk suggests that all patients in this group should be offered statin therapy. However, there is no evidence to validate the CVD benefits and side effects of statin therapy in this age group. Controversy also exists about the efficacy of statins in preventing or promoting other chronic diseases of ageing such as dementia, Parkinson's disease, or age-related macular degeneration.

2.4 *Lipid modification therapy in people with type 1 diabetes*

What is the effectiveness of statins and/or other LDL-cholesterol-lowering treatment in patients with type 1 diabetes?

Why this is important

Patients with type 1 diabetes have increased CVD risk derived from age, gender, glycaemia, blood pressure, renal function and lipid levels as identified in epidemiological studies. No trial has investigated the efficacy of statin therapy or other LDL-cholesterol-lowering therapies in people with type 1 diabetes.

2.5 *Comparative effectiveness and risks of alternative doses of atorvastatin*

What is the clinical effectiveness and rate of adverse events of statin therapy using atorvastatin 20 mg per day compared with atorvastatin 40 mg per day and atorvastatin 80 mg per day in adults without established CVD?

Why this is important

This guideline has established that atorvastatin 20 mg is clinically and cost effective for the primary prevention of CVD and should be recommended for those at 10% risk of cardiovascular events as assessed using the QRISK2 calculator. However, this analysis looked at the effectiveness of treatment shown by 'high-intensity' statins as a group, as it was not possible to establish the relative effectiveness of atorvastatin 20 mg, 40 mg and 80 mg using trial data. Trial data with clinical outcomes exists for atorvastatin 80 mg against atorvastatin 10 mg only. The rates of adverse events resulting from different doses of atorvastatin in routine clinical practice are also uncertain and would need to be considered in combination with effectiveness in assessing the relative costs and benefits of different doses of atorvastatin.

3 Other information

3.1 *Scope and how this guideline was developed*

NICE guidelines are developed in accordance with a [scope](#) that defines what the guideline will and will not cover.

How this guideline was developed

NICE commissioned the National Clinical Guideline Centre to develop this guideline. The Centre established a Guideline Development Group (see section 4), which reviewed the evidence and developed the recommendations.

The methods and processes for developing NICE clinical guidelines are described in [The guidelines manual](#).

3.2 Related NICE guidance

Details are correct at the time of consultation on the guideline (February 2014). Further information is available on [the NICE website](#).

Published

General

- [Patient experience in adult NHS services](#). NICE clinical guidance 138 (2012).
- [Medicines adherence](#). NICE clinical guidance 76 (2009).

Condition-specific

- [Myocardial infarction: secondary prevention](#). NICE clinical guideline 172 (2013).
- [Myocardial infarction with ST-segment elevation](#). NICE clinical guideline 167 (2013).
- [Lower limb peripheral arterial disease](#). NICE clinical guideline 147 (2012).
- [Preventing type 2 diabetes - risk identification and interventions for individuals at high risk](#). NICE public health guidance 38 (2012).
- [Hypertension: clinical management of primary hypertension in adults](#). NICE clinical guideline 127 (2011).
- [Familial hypercholesterolaemia: identification and management of familial hypercholesterolaemia](#). NICE clinical guideline 71 (2008).
- [Type 2 diabetes - newer agents \(partial update of CG66\)](#). NICE clinical guideline 87 (2009).
- [Reducing the rate of premature deaths from cardiovascular disease and other smoking-related diseases: finding and supporting those most at risk and improving access to services](#). NICE public health guidance 15 (2008).

- [Smoking cessation services in primary care, pharmacies, local authorities and workplaces, particularly for manual working groups, pregnant women and hard to reach communities](#). NICE public health guidance 10 (2008).
- [Ezetimibe for the treatment of primary \(heterozygous-familial and non-familial\) hypercholesterolaemia](#). NICE technology appraisal guidance 132 (2007).
- [Varenicline for smoking cessation](#). NICE technology appraisal guidance 123 (2007).
- [Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children](#). NICE clinical guideline 43 (2006). [Statins for the prevention of cardiovascular events](#). NICE technology appraisal guidance 94 (2006).
- [Four commonly used methods to increase physical activity: brief interventions in primary care, exercise referral schemes, pedometers and community-based exercise programmes for walking and cycling](#). NICE public health intervention guidance 2 (2006).
- [Brief interventions and referral for smoking cessation in primary care and other settings](#). [NICE public health intervention guidance 1](#) (2006).

Under development

NICE is developing the following guidance (details available from [the NICE website](#)):

- Chronic kidney disease (update). NICE clinical guideline. Publication expected July 2014.
- Type 1 diabetes (update). NICE clinical guideline. Publication expected August 2015.
- Type 2 diabetes (update). NICE clinical guideline. Publication expected August 2015.

4 The Guideline Development Group, National Collaborating Centre and NICE project team

The Guideline Development Group members listed are those for the 2014 update. For the composition of the previous Guideline Development Group, see the full guideline.

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Appendix A: Recommendations from NICE clinical guideline CG67 (2008) that have been deleted or changed

Recommendations to be deleted

The table shows recommendations from 2008 that NICE proposes deleting in the 2014 update. The right-hand column gives the replacement recommendation, or explains the reason for the deletion if there is no replacement recommendation

Recommendation in 2008 guideline	Comment
1.1.8 Risk equations should be used to assess CVD risk.	Replaced by: 1.1.8 Use the QRISK2 risk assessment tool to assess CVD risk for the primary prevention of CVD. [new 2014] 1.1.9 Do not use a risk assessment tool to assess CVD risk in people with type 1 diabetes. [new 2014] 1.1.10 Use the UKPDS risk assessment tool to assess CVD risk in people with type 2 diabetes. [new 2014] 1.1.11 Use the QRISK2 risk assessment tool to assess CVD risk in people with stage 1 or 2 chronic kidney disease (CKD), but do not tick the CKD box when making the assessment. [new 2014] 1.1.12 Do not use a risk assessment tool to assess CVD risk in people with CKD stage 3 or greater. [new 2014] 1.1.13 Complete as many fields of the risk assessment tool as possible. [new 2014]
1.1.9 The following variables should be used for formal estimation of CVD risk with the Framingham 1991 equations: - age - sex - systolic blood pressure (mean of previous two systolic readings) - total cholesterol - HDL cholesterol - smoking status	These recommendations relates specifically to the use or modification of the Framingham risk equation. In February 2010 NICE Guidance Executive agreed to withdraw the recommendation that the Framingham risk equation should be the equation of choice for assessment of CVD risk, but agreed that it should be considered as one of the possible equations to use. In 2014, these recommendations are replaced by:

<p>- presence of left ventricular hypertrophy.</p> <p>1.1.12 Healthcare professionals should be aware that Framingham 1991 risk equations may overestimate risk in UK populations.</p> <p>1.1.15 The estimated CVD risk should be increased by a factor of 1.5 in people with a first-degree relative with a history of premature CHD (age at onset younger than 55 in fathers, sons or brothers or younger than 65 in mothers, daughters or sisters).</p> <p>1.1.16 The estimated CVD risk should be increased by a factor of between 1.5 and 2.0 if more than one first-degree relative has a history of premature CHD.</p> <p>1.1.17 The estimated CVD risk for men with a South Asian background should be increased by a factor of 1.4.</p>	<p>1.1.8 to 1.1.13 as above</p>
<p>1.1.24 Before starting lipid modification therapy for primary prevention, people should have at least one fasting lipid sample taken to measure total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides.</p>	<p>Replaced by:</p> <p>1.3.3 Before starting lipid modification therapy for the primary prevention of CVD, take at least 1 lipid sample to measure a full lipid profile. This should include measurement of total cholesterol, HDL cholesterol, non-HDL cholesterol, and triglyceride concentrations. A fasting sample is not needed. [new 2014]</p>
<p>1.1.25 People in whom familial hypercholesterolaemia or other monogenic disorders are suspected because of a combination of clinical findings, lipid profiles and family history of premature CHD should be considered for further investigation and specialist review</p>	<p>Replaced by:</p> <p>1.3.4 Use the clinical findings, lipid profile and family history to judge the likelihood of a familial lipid disorder rather than the use of strict lipid cut-off values alone. [new 2014]</p>
<p>1.1.26 People with severe hyperlipidaemia should be considered for further investigation and/or specialist</p>	<p>Replaced by:</p> <p>1.3.5 Exclude possible common secondary causes of dyslipidaemia (such as excess alcohol, uncontrolled diabetes, hypothyroidism, liver disease and nephrotic syndrome) before referring for specialist review. [new 2014]</p> <p>1.3.6 Consider the possibility of familial hypercholesterolaemia and investigate as described in Familial hypercholesterolaemia (NICE clinical</p>

	<p>guideline 71) if they have:</p> <ul style="list-style-type: none"> - total cholesterol more than 7.5 mmol/litre and - a family history of premature coronary heart disease. [new 2014] <p>1.3.7 Arrange for specialist assessment of people with a total cholesterol concentration of more than 9.0 mmol/litre or a non-HDL cholesterol concentration of more than 7.5 mmol/litre even in the absence of a first-degree family history of premature coronary heart disease. [new 2014]</p> <p>1.3.8 Refer for urgent specialist review if a person has a triglyceride concentration of more than 20 mmol/litre that is not a result of excess alcohol or poor glycaemic control. [new 2014]</p> <p>1.3.9 In people with a triglyceride concentration between 10 and 20 mmol/litre:</p> <ul style="list-style-type: none"> - repeat the triglyceride measurement with a fasting test (after an interval of 5 days, but within 2 weeks) - review for potential secondary causes of hyperlipidaemia and - seek specialist advice if the triglyceride concentration remains elevated. [new 2014] <p>1.3.10 In people with a triglyceride concentration between 4.5 and 9.9 mmol/litre:</p> <ul style="list-style-type: none"> - be aware that the CVD risk is underestimated by risk assessment tools and - optimise the management of other CVD risk factors present and - seek specialist advice if non-HDL cholesterol concentration is more than 7.5 mmol/litre. [new 2014]
<p>1.2.6 People should be informed that CVD risk equations can only provide an estimate of risk. However, the likelihood of misclassification is reduced as the estimated CVD risk increases above the threshold of 20% risk over 10 years.</p>	<p>Deleted as threshold of 20% not relevant for lipid modification following evidence review for statin efficacy.</p>
<p>1.3.2 People at high risk of or with CVD should be advised to eat at least five portions of fruit and vegetables per day, in line with national guidance for the general population. Examples of what constitutes a portion can be found at</p>	<p>Replaced by:</p> <p>1.2.3 Advise people at high risk of or with CVD to do all of the following:</p> <ul style="list-style-type: none"> - choose wholegrain varieties of starchy food

<p>NHS Choices.</p> <p>1.3.3 People at high risk of or with CVD should be advised to consume at least two portions of fish per week, including a portion of oily fish. Further information and advice on healthy cooking methods can be found at NHS Choices.</p>	<ul style="list-style-type: none"> - reduce their intake of sugar and food products containing refined sugars including fructose - eat at least 5 portions of fruit and vegetables per day - eat at least 2 portions of fish per week, including a portion of oily fish. <p>Further information and advice on can be found at NHS Choices. [new 2014]</p> <p>And by:</p> <p>1.2.2 For people at high risk of or with CVD:</p> <ul style="list-style-type: none"> - Tell them that reducing their saturated fat intake from animal sources also reduces their monounsaturated fat levels. - Advise them to replace their saturated fat intake with olive oil, rapeseed oil or spreads based on these oils. - Advise them to use olive oil, rapeseed oil or spreads based on these oils in food preparation. <p>Further information and advice on healthy cooking methods can be found at NHS Choices. [new 2014]</p>
<p>1.3.4 Pregnant women should be advised to limit their oily fish to no more than two portions per week. Further information and advice on oily fish consumption can be found at NHS Choices</p>	<p>Replaced by:</p> <p>1.2.4 Advise pregnant women to limit their oily fish to no more than 2 portions per week and to avoid marlin, shark and swordfish. Further information and advice on oily fish consumption can be found at NHS Choices [new 2014].</p>
<p>1.3.5 People should not routinely be recommended to take omega-3 fatty acid supplements for the primary prevention of CVD.</p>	<p>Replaced by:</p> <p>1.3.49 Do not offer omega-3 fatty acid compounds for the prevention of CVD to any of the following:</p> <ul style="list-style-type: none"> - people who are being treated for primary prevention - people who are being treated for secondary prevention - people with CKD - people with type 1 diabetes - people with type 2 diabetes. [new 2014] <p>And by:</p> <p>1.3.47 Tell people that there is no evidence that omega-3 fatty acid compounds help to prevent CVD. [new 2014]</p>

<p>1.3.6 People should not routinely be recommended to take plant sterols and stanols for the primary prevention of CVD.</p>	<p>Replaced by: 1.2.18 Do not advise plant stanols or sterols for the prevention of CVD to any of the following: - people who are being treated for primary prevention - people who are being treated for secondary prevention - people with CKD - people with type 1 diabetes - people with type 2 diabetes. [new 2014]</p>
<p>1.4.2 Before offering lipid modification therapy for primary prevention, all other modifiable CVD risk factors should be considered and their management optimised if possible. Baseline blood tests and clinical assessment should be performed, and comorbidities and secondary causes of dyslipidaemia should be treated. Assessment should include: smoking status alcohol consumption blood pressure (see 'Hypertension', NICE clinical guideline 34) body mass index or other measure of obesity (see 'Obesity', NICE clinical guideline 43) fasting total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides (if fasting levels are not already available) fasting blood glucose renal function liver function (transaminases) thyroid-stimulating hormone (TSH) if dyslipidaemia is present</p>	<p>Replaced by: 1.3.12 before starting statin treatment perform baseline blood tests and clinical assessment, and treat comorbidities and secondary causes of dyslipidaemia. Include all of the following in the assessment:</p> <ul style="list-style-type: none"> • smoking status • alcohol consumption • blood pressure (see Hypertension, NICE clinical guideline 127) • body mass index or other measure of obesity (see Obesity. NICE clinical guideline 43) • total cholesterol, non-HDL cholesterol, HDL cholesterol and triglycerides • HbA1c • renal function and estimate glomerular filtration rate • transaminase level (alanine aminotransferase or aspartate aminotransferase) • thyroid-stimulating hormone (TSH) [2008, amended 2014] <p>1.3.13 Before offering statin treatment for primary prevention, optimise the management of all other modifiable CVD risk factors, if possible [2008]</p> <p>1.3.19 Do not delay statin treatment in</p>

	secondary prevention to manage modifiable risk factors [date]
1.4.3 Statin therapy is recommended as part of the management strategy for the primary prevention of CVD for adults who have a 20% or greater 10-year risk of developing CVD. This level of risk should be estimated using an appropriate risk calculator, or by clinical assessment for people for whom an appropriate risk calculator is not available or appropriate (for example, older people, people with diabetes or people in high-risk ethnic groups).	Replaced by: 1.3.15 Offer high-intensity statin treatment for the primary prevention of CVD to people who have a 10% or greater 10-year risk of developing CVD. Estimate the level of risk using the QRISK2 assessment tool. [new 2014].
1.4.4 The decision whether to initiate statin therapy should be made after an informed discussion between the responsible clinician and the person about the risks and benefits of statin treatment, taking into account additional factors such as comorbidities and life expectancy.	Replaced by: 1.3.11 The decision whether to start statin therapy should be made after an informed discussion between the responsible clinician and the person about the risks and benefits of statin treatment, taking into account additional factors such as comorbidities, potential benefits from lifestyle interventions, patient preference and life expectancy. [2014]
1.4.6 When the decision has been made to prescribe a statin, it is recommended that therapy should usually be initiated with a drug with a low acquisition cost (taking into account required daily dose and product price per dose).	Deleted as no longer relevant given cost effectiveness of using different statins.
1.4.7 Treatment for the primary prevention of CVD should be initiated with simvastatin 40 mg. If there are potential drug interactions, or simvastatin 40 mg is contraindicated, a lower dose or alternative preparation such as pravastatin may be chosen.	Replaced by: 1.3.16 Offer atorvastatin 20mg for the primary prevention of CVD. [new 2014]
1.4.8 Higher intensity statins should not routinely be offered to people for the primary prevention of CVD.	Replaced by: 1.3.33 Discuss with patients who are stable on a low- or middle-intensity statin the benefits of changing to a high-intensity statin when they have a medication review. [new 2014]
1.4.9 A target for total or LDL cholesterol is not recommended for people who are treated with a statin for primary	Deleted as no longer relevant given cost effectiveness of using different statins.

prevention of CVD.	
1.4.10 Once a person has been started on a statin for primary prevention, repeat lipid measurement is unnecessary. Clinical judgement and patient preference should guide the review of drug therapy and whether to review the lipid profile.	Deleted as no longer relevant given cost effectiveness of using different statins.
1.4.11 Fibrates should not routinely be offered for the primary prevention of CVD. If statins are not tolerated, fibrates may be considered.	Replaced by: 1.3.46 Do not routinely offer fibrates for the prevention of CVD to any of the following: - people who are being treated for primary prevention - people who are being treated for secondary prevention - people with CKD - people with type 1 diabetes - people with type 2 diabetes. [new 2014]
1.4.12 Nicotinic acid should not be offered for the primary prevention of CVD.	Replaced by: 1.3.47 Do not offer nicotinic acid (niacin) for the prevention of CVD to any of the following: - people who are being treated for primary prevention - people who are being treated for secondary prevention - people with CKD - people with type 1 diabetes - people with type 2 diabetes. [new 2014]
1.4.13 Anion exchange resins should not routinely be offered for the primary prevention of CVD. If statins are not tolerated, an anion exchange resin may be considered.	Replaced by: 1.3.48 Do not offer a bile acid sequestrant (anion exchange resin) for the prevention of CVD to any of the following: - people who are being treated for primary prevention - people who are being treated for secondary prevention - people with CKD - people with type 1 diabetes - people with type 2 diabetes. [new 2014]
1.4.15 The combination of an anion exchange resin, fibrate or nicotinic acid with a statin should not be offered for the primary prevention of CVD. 1.4.16 The combination of a fish oil supplement with a statin should not be	Replaced by: 1.3.51 Do not offer the combination of a bile acid sequestrant (anion exchange resin), fibrate, nicotinic acid or omega-3 fatty acid compound with a statin for the prevention of CVD. [new 2014]

offered for the primary prevention of CVD.	
<p>1.4.17 For secondary prevention, lipid modification therapy should be offered and should not be delayed by management of modifiable risk factors. Blood tests and clinical assessment should be performed, and comorbidities and secondary causes of dyslipidaemia should be treated. Assessment should include:</p> <ul style="list-style-type: none"> - smoking status - alcohol consumption - blood pressure (see 'Hypertension', NICE clinical guideline 34) - body mass index or other measure of obesity (see 'Obesity', NICE clinical guideline 43) - fasting total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides (if fasting levels are not already available) - fasting blood glucose - renal function - liver function (transaminases) - thyroid-stimulating hormone (TSH) if dyslipidaemia is present. 	<p>Replaced by:</p> <p>1.3.19 Do not delay statin treatment in secondary prevention to manage modifiable risk factors.</p>
<p>1.4.19 Statin therapy is recommended for adults with clinical evidence of CVD.</p>	<p>Replaced by:</p> <p>1.3.18 Start statin treatment in people with established CVD with atorvastatin 80 mg. If any of the following apply use a lower dose of atorvastatin:</p> <ul style="list-style-type: none"> • potential drug interactions • risk of adverse effects • patient preference. [new 2014]
<p>1.4.21 When the decision has been made to prescribe a statin, it is recommended that therapy should usually be initiated with a drug with a low acquisition cost (taking into account required daily dose and product price per dose).</p>	<p>Deleted as no longer relevant given cost effectiveness of using different statins.</p>
<p>1.4.22 People with acute coronary syndrome should be treated with a higher intensity statin. Any decision to offer a higher intensity statin should take into</p>	<p>Replaced by:</p> <p>1.3.20 If a person has acute coronary syndrome, do not delay statin treatment until the results of blood lipid levels are</p>

account the patient's informed preference, comorbidities, multiple drug therapy, and the benefits and risks of treatment.	available. Take a lipid sample on admission and about 3 months after the start of treatment. [new 2014]
1.4.23 Treatment for the secondary prevention of CVD should be initiated with simvastatin 40 mg. If there are potential drug interactions, or simvastatin 40 mg is contraindicated, a lower dose or alternative preparation such as pravastatin may be chosen.	Replaced by: 1.3.18 Start statin treatment in people with established CVD, type 1 diabetes or type 2 diabetes with atorvastatin 80 mg. If any of the following apply use a lower dose of atorvastatin: - potential drug interactions - risk of adverse effects - comorbidities - patient preference. [new 2014]
1.4.24 In people taking statins for secondary prevention, consider increasing to simvastatin 80 mg or a drug of similar efficacy and acquisition cost if a total cholesterol of less than 4 mmol/litre or an LDL cholesterol of less than 2 mmol/litre is not attained. Any decision to offer a higher intensity statin should take into account informed preference, comorbidities, multiple drug therapy, and the benefit and risks of treatment.	Replaced by: 1.3.18 Start statin treatment in people with established CVD with atorvastatin 80 mg. If any of the following apply use a lower dose of atorvastatin: - potential drug interactions - risk of adverse effects - comorbidities - patient preference. [new 2014]
1.4.25 An 'audit' level of total cholesterol of 5 mmol/litre should be used to assess progress in populations or groups of people with CVD, in recognition that more than a half of patients will not achieve a total cholesterol of less than 4 mmol/litre or an LDL cholesterol of less than 2 mmol/litre.	Replaced by: 1.3.34 Use the proportion of people taking high intensity statins for secondary prevention rather than cholesterol levels to audit statin treatment in populations with established CVD. . [new 2014]
1.4.26 Fibrates may be considered for secondary prevention in people with CVD who are not able to tolerate statins.	Replaced by: 1.3.46 Do not routinely offer fibrates for the prevention of CVD to any of the following: - people who are being treated for primary prevention - people who are being treated for secondary prevention - people with CKD - people with type 1 diabetes - people with type 2 diabetes. [new 2014]
1.4.27 Nicotinic acid may be considered for secondary prevention in people with CVD who are not able to tolerate statins.	Replaced by: 1.3.47 Do not offer nicotinic acid (niacin) for the prevention of CVD to any of the following: - people who are being treated for primary prevention - people who are being treated for

	<p>secondary prevention</p> <ul style="list-style-type: none"> - people with CKD - people with type 1 diabetes - people with type 2 diabetes. [new 2014]
<p>1.4.28 Anion exchange resins may be considered for secondary prevention in people with CVD who are not able to tolerate statins.</p>	<p>Replaced by:</p> <p>1.3.48 Do not offer a bile acid sequestrant (anion exchange resin) for the prevention of CVD to any of the following:</p> <ul style="list-style-type: none"> - people who are being treated for primary prevention - people who are being treated for secondary prevention - people with CKD - people with type 1 diabetes - people with type 2 diabetes. [new 2014]
<p>1.4.30 If a person taking a statin starts taking additional drugs, or needs treatment for a concomitant illness that interferes with metabolic pathways or increases the propensity for drug and food interactions, consider reducing the dose of the statin, or temporarily or permanently stopping it.</p>	<p>Replaced by:</p> <p>1.3.36 Advise people who are being treated with a statin:</p> <ul style="list-style-type: none"> - that other drugs, some foods (for example, grapefruit juice) and some supplements may interfere with statins and - to always consult the patient information leaflet, a pharmacist or prescriber for advice when starting other drugs or thinking about supplements. [new 2014]
<p>1.4.35 If a person develops an unexplained peripheral neuropathy, statins should be discontinued and specialist advice sought.</p>	<p>Deleted as GDG did not consider peripheral neuropathy is now considered an adverse event associated with statin treatment</p>

Amended recommendation wording (change to meaning)

This section will be retained in the final published NICE guideline, but the other parts of the appendix will be deleted after the guideline consultation. The lead editor will make the necessary changes.

Recommendations are labelled **[2008, amended 2014]** if the evidence has not been reviewed but changes have been made to the recommendation wording (indicated by highlighted text) that change the meaning.

Recommendation in 2008 guideline	Recommendation in current guideline	Reason for change
1.1.4 People should be	1.1.4 Prioritise people for a	The threshold for

Recommendation in 2008 guideline	Recommendation in current guideline	Reason for change
<p>prioritised for a full formal risk assessment if their estimated 10-year risk of CVD is 20% or more.</p>	<p>full formal risk assessment if their estimated 10-year risk of CVD is 10% or more. [2008, amended 2014]</p>	<p>treatment has been changed from 20% to 10% further the new health economics results. 'People should be prioritised' has been amended to: 'Prioritise people' in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.1.13 When using the risk score to inform drug treatment decisions, particularly if it is near to the threshold of 20%, healthcare professionals should consider other factors that:</p> <ul style="list-style-type: none"> - may predispose the person to premature CVD, and - may not be included in calculated risk scores. 	<p>1.1.18 When using the risk score to inform drug treatment decisions, particularly if it is near to the threshold for treatment take into account other factors that:</p> <ul style="list-style-type: none"> - may predispose the person to premature CVD and - may not be included in calculated risk scores. [2008, amended 2014] 	<p>The threshold for treatment has been changed further the new health economics results. 'healthcare professionals should consider' has been amended to: 'take into account' in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.1.10 Risk equations should not be used for people with pre-existing:</p> <ul style="list-style-type: none"> - CHD or angina - stroke or transient ischaemic attack - peripheral vascular disease. 	<p>1.1.16 Do not use a risk assessment tool for people with pre-existing CVD. [2008, amended 2014]</p>	<p>The GDG made this recommendation more general to include all CV diseases. 'should not be used' Has been amended to 'do not use' in line with current NICE style for recommendations in clinical guidelines</p>
<p>1.1.11 Risk equations should not be used for people who are already considered at high risk of CVD because of:</p> <ul style="list-style-type: none"> - familial hypercholesterolaemia or 	<p>Replaced by: 1.1.17 Do not use risk assessment tools for people who are at high risk of developing CVD because of familial</p>	<p>The bullet point about type 2 diabetes has been deleted because the GDG made separate specific</p>

Recommendation in 2008 guideline	Recommendation in current guideline	Reason for change
<p>other monogenic disorders of lipid metabolism</p> <p>- diabetes, see 'Type 2 diabetes: the management of type 2 diabetes (update)' (NICE clinical guideline 66).</p>	<p>hypercholesterolaemia (see Familial hypercholesterolaemia [NICE clinical guideline 71]) or other inherited disorders of lipid metabolism. [2008, amended 2014]</p>	<p>recommendations for this subgroup.</p> <p>'should not be used'</p> <p>Has been amended to</p> <p>'do not use'</p> <p>in line with current NICE style for recommendations in clinical guidelines</p>
<p>1.1.20 CVD risk may be underestimated in people who are already taking antihypertensive or lipid modification therapy, or who have recently stopped smoking. Clinical judgement should be used to decide on further treatment of risk factors in people who are below the 20% CVD risk threshold.</p>	<p>1.1.20 Recognise that CVD risk will be underestimated in people who are already taking antihypertensive or lipid modification therapy, or who have recently stopped smoking. Use clinical judgement to decide on further treatment of risk factors in people who are below the CVD risk threshold for treatment. [2008, amended 2014]</p>	<p>'Clinical judgement should be used' has been amended to:</p> <p>'Use clinical judgement'</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p> <p>The threshold for treatment has been changed further the new health economics results.</p>
<p>1.1.21 CVD risk scores may not be appropriate as a way of assessing risk in people who are at increased CVD risk because of underlying medical conditions or treatments. These include people treated for HIV or with antipsychotic medication, people with chronic kidney disease and people with autoimmune disorders such as systemic lupus erythematosus (SLE) and rheumatoid arthritis.</p>	<p>1.1.19 Recognise that standard CVD risk scores will underestimate risk in people who have additional risk because of underlying medical conditions or treatments. These groups include:</p> <ul style="list-style-type: none"> - people treated for HIV - people with serious mental health problems - people taking medicines that can cause dyslipidaemia such as antipsychotic medication, corticosteroids or immunosuppressant drugs - people with stage 1 or 2 CKD - people with autoimmune disorders such as systemic lupus erythematosus, rheumatoid arthritis and 	<p>The list of underlying medical conditions had been updated.</p>

Recommendation in 2008 guideline	Recommendation in current guideline	Reason for change
	other systemic inflammatory disorders. [2008, amended 2014]	
<p>1.1.22 People aged 75 or older should be considered at increased risk of CVD, particularly people who smoke or have raised blood pressure. They are likely to benefit from statin treatment. Assessment and treatment should be guided by the benefits and risks of treatment, informed preference and comorbidities that may make treatment inappropriate.</p>	<p>1.1.22 Consider people aged 85 or older to be at increased risk of CVD because of age alone, particularly people who smoke or have raised blood pressure. [2008, amended 2014]</p>	<p>'should be considered' has been amended to: 'consider' in line with current NICE style for recommendations in clinical guidelines.</p> <p>The age value has been changed to 85, as this is the upper limit of the QRISK2 assessment tools.</p> <p>The part on treatment has been deleted, as recommendations on treatment are listed in section 1.3.</p>
<p>1.4.2 Before offering lipid modification therapy for primary prevention, all other modifiable CVD risk factors should be considered and their management optimised if possible. Baseline blood tests and clinical assessment should be performed, and comorbidities and secondary causes of dyslipidaemia should be treated.</p> <p>Assessment should include:</p> <ul style="list-style-type: none"> - smoking status - alcohol consumption - blood pressure (see 'Hypertension', NICE clinical guideline 34) - body mass index or other measure of obesity (see 'Obesity', NICE clinical guideline 43) - fasting total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides (if 	<p>1.3.14 Before offering statin treatment for primary prevention, optimise the management of all other modifiable CVD risk factors if possible. Perform baseline blood tests and clinical assessment, and treat comorbidities and secondary causes of dyslipidaemia. Include all of the following in the assessment:</p> <ul style="list-style-type: none"> - smoking status - alcohol consumption - blood pressure (see Hypertension, NICE clinical guideline 127) - body mass index or other measure of obesity (see Obesity, NICE clinical guideline 43) - total cholesterol, non-HDL cholesterol, HDL cholesterol and triglycerides - HbA1c 	<p>The wording of the recommendation has been changed to make it active.</p> <p>The list of comorbidities and secondary causes of dyslipidaemia had been updated.</p> <p>The GDG considered that a fasting sample is not necessary if non-HDL cholesterol is measured.</p>

Recommendation in 2008 guideline	Recommendation in current guideline	Reason for change
<ul style="list-style-type: none"> - fasting levels are not already available) - fasting blood glucose - renal function - liver function (transaminases) - thyroid-stimulating hormone (TSH) if dyslipidaemia is present. 	<ul style="list-style-type: none"> - renal function and estimated glomerular filtration rate - transaminase level (alanine aminotransferase or aspartate aminotransferase) - thyroid-stimulating hormone (TSH). [2008, amended 2014] 	
<p>1.4.4 The decision whether to initiate statin therapy should be made after an informed discussion between the responsible clinician and the person about the risks and benefits of statin treatment, taking into account additional factors such as comorbidities and life expectancy</p>	<p>1.3.11 The decision whether to start statin therapy should be made after an informed discussion between the responsible clinician and the person about the risks and benefits of statin treatment, taking into account additional factors such as comorbidities, potential benefits from lifestyle interventions, patient preference and life expectancy.</p>	
<p>1.4.18 If a person has acute coronary syndrome, statin treatment should not be delayed until lipid levels are available. A fasting lipid sample should be taken about 3 months after the start of treatment.</p>	<p>1.3.20 If a person has acute coronary syndrome, do not delay statin treatment until the results of blood lipid levels are available. Take a lipid sample on admission and about 3 months after the start of treatment. [2008, amended 2014]</p>	<p>The wording of the recommendation has been changed to make it active.</p> <p>The GDG considered that a fasting sample is not necessary if non-HDL cholesterol is measured (see recommendation 1.3.14).</p> <p>The GDG wished to highlight the importance of taking a lipid sample also on admission.</p>

Changes to recommendation wording for clarification only (no change to meaning)

Recommendation numbers in current guideline	Comment
1.1.1 For the primary prevention of CVD in primary care, use a systematic strategy to identify people aged 40-74 who are likely to be at high risk [2008]	‘A systematic strategy should be used’ has been replaced by ‘use a systematic strategy’ in line with current NICE style for recommendations in clinical guidelines.
1.1.2 Prioritise people on the basis of an estimate of their CVD risk before a full formal risk assessment. Estimate their CVD risk using CVD risk factors already recorded in primary care electronic medical records. [2008]	‘People should be prioritised’ has been amended to: ‘Prioritise people’ And ‘Their CVD risk should be estimated’ has been amended to: ‘Estimate their CVD risk’ in line with current NICE style for recommendations in clinical guidelines.
1.1.5 Discuss the process of risk assessment with the person identified as being at risk, including the option of declining any formal risk assessment. [2008]	‘Healthcare professionals should discuss the process’ has been amended to: ‘Discuss the process’ in line with current NICE style for recommendations in clinical guidelines.
1.1.6 Do not use opportunistic assessment as the main strategy in primary care to identify CVD risk in unselected people. [2008]	‘Opportunistic assessment should not be the main strategy’ has been amended to: ‘Do not use opportunistic assessment as the main strategy’ in line with current NICE style for recommendations in clinical guidelines.
1.1.7 Be aware that all CVD risk assessment tools can provide only an approximate value for CVD risk. Interpretation of CVD risk scores should always reflect informed clinical judgement. [2008]	‘Healthcare professionals should always be aware’ has been amended to: ‘Be aware’ And ‘CVD risk estimation tools’ has been amended to: ‘CVD risk assessment tools’ in line with current NICE style for recommendations in clinical guidelines.
1.1.14 Routinely record ethnicity, body mass index and family history of premature cardiovascular disease in medical records. [2008].	‘should be routinely recorded’ has been amended to: ‘Routinely record’ in line with current NICE style for recommendations in clinical guidelines.
1.1.15 Consider socioeconomic status as an additional factor that contributes to CVD risk. [2008]	‘Socioeconomic status should be considered’

	<p>has been amended to: 'Consider socioeconomic status as an additional factor' in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.1.21 Severe obesity (body mass index greater than 40 kg/m²) increases CVD risk. Take this into account when using risk scores to inform treatment decisions in this group (see Obesity [NICE clinical guideline 43]). [2008]</p>	<p>'affects' has been amended to: 'increases' to clarify the direction of the effect And 'should be considered' has been amended to: 'Take this into account' in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.1.24 Use everyday, jargon-free language to communicate information on risk. If technical terms are used, explain them clearly. [2008]</p>	<p>'Healthcare professionals should use' has been amended to: 'Use' And 'should be clearly explained' has been amended to: 'explain them clearly' in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.1.25 Set aside adequate time during the consultation to provide information on risk assessment and to allow any questions to be answered. Further consultation may be required. [2008]</p>	<p>'Adequate time should be set aside' has been amended to: 'Set aside adequate time' in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.1.26 Document the discussion relating to the consultation on risk assessment and the person's decision. [2008]</p>	<p>'The discussion should be documented' has been amended to: 'Document the discussion' in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.1.27 Offer people information about their absolute risk of CVD and about the absolute benefits and harms of an intervention over a 10-year period. This information should be in a form that:</p> <ul style="list-style-type: none"> - presents individualised risk and benefit scenarios and - presents the absolute risk of events numerically and - uses appropriate diagrams and text. <p>See the High cholesterol shared decision making aid [2008]</p>	<p>'People should be offered information' has been amended to: 'Offer people information' in line with current NICE style for recommendations in clinical guidelines.</p> <p>The web-link has also been updated</p>
<p>1.1.28 Encourage the person to reduce their CVD risk by:</p> <ul style="list-style-type: none"> - find out what, if anything, the person has already been told about their 	<p>'In order to encourage the person to participate in reducing their CVD risk, the healthcare professional should:'</p>

<p>CVD risk and how they feel about it</p> <ul style="list-style-type: none"> - explore the person's beliefs about what determines future health (this may affect their attitude to changing risk) - assess their readiness to make changes to their lifestyle (diet, physical activity, smoking and alcohol consumption), to undergo investigations and to take long-term medication - assess their confidence in making changes to their lifestyle, undergoing investigations and taking medication - inform them of potential future management based on current evidence and best practice - involve them in developing a shared management plan - check with them that they have understood what has been discussed. [2008] 	<p>has been amended to:</p> <p>'Encourage the person to reduce their CVD risk by:'</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.1.29 If the person's CVD risk is at a level where intervention is recommended but they decline the offer of treatment, advise them that their CVD risk should be reassessed again in the future. [2008]</p>	<p>'risk is considered to be at a level' has been amended to:</p> <p>'risk is at a level'</p> <p>And 'they should be advised' has been amended to:</p> <p>'advise them'</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.2.1 Advise people at high risk of or with CVD to eat a diet in which total fat intake is 30% or less of total energy intake, saturated fats are 10% or less of total energy intake, intake of dietary cholesterol is less than 300 mg/day and where possible saturated fats are replaced by monounsaturated and polyunsaturated fats. It may be helpful to suggest they look at NHS Choices for further practical advice. [2014]</p>	<p>'People at high risk of or with CVD should be advised'</p> <p>has been amended to:</p> <p>'Advise people at high risk of or with CVD'</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.2.7 Advise people at high risk of or with CVD to take 30 minutes of physical activity a day, of at least moderate intensity, at least 5 days a week, in line with national guidance for the general population. [2008]</p>	<p>'People should be advised'</p> <p>has been amended to:</p> <p>'Advise people'</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.2.8 Encourage people who are unable to perform moderate-intensity physical activity at least 5 days a</p>	<p>'People should be encouraged'</p> <p>has been amended to:</p> <p>'Encourage people'</p>

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<p>week because of comorbidity, medical conditions or personal circumstances to exercise at their maximum safe capacity. [2008]</p>	<p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.2.9 Recognise that recommended types of physical activity include those that can be incorporated into everyday life, such as brisk walking, using stairs and cycling (See 'Physical activity guidelines for adults'). [2008]</p>	<p>'Recommended' has been amended to: 'Recognise that recommended' in line with current NICE style for recommendations in clinical guidelines. The web-link has also been updated.</p>
<p>1.2.10 Advise people that bouts of physical activity of 10 minutes or more accumulated throughout the day are as effective as longer sessions (See 'Physical activity guidelines for adults'). [2008]</p>	<p>'People should be advised' has been amended to: 'Advise people' in line with current NICE style for recommendations in clinical guidelines. The web-link has also been updated.</p>
<p>1.2.11 Advice about physical activity should take into account the person's needs, preferences and circumstances. Agree goals and provide the person with written information about the benefits of activity and local opportunities to be active, in line with Four commonly used methods to increase physical activity (NICE public health guidance 2). [2008]</p>	<p>'Goals should be agreed and the person should be provided' has been amended to: 'Agree goals and provide the person' in line with current NICE style for recommendations in clinical guidelines. The web-link has also been updated.</p>
<p>1.2.12 Give advice on diet and physical activity in line with national recommendations (see NHS Choices). [2008]</p>	<p>'advice should be given' has been amended to: 'Give advice' in line with current NICE style for recommendations in clinical guidelines. The web-link has also been updated.</p>
<p>1.2.13 Offer people at high risk of or with CVD who are overweight or obese appropriate advice and support to work towards achieving and maintaining a healthy weight, in line with Obesity (NICE clinical guideline 43). [2008]</p>	<p>'People should be offered' has been amended to: 'Offer people' in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.2.14 Be aware that men should not regularly drink more than 3–4 units a day and women should not regularly drink more than 2–3 units a day. People should avoid binge drinking. Further information can be found at NHS Choices. [2008]</p>	<p>'Alcohol consumption for men should be limited to up to 3–4 units a day. For women, alcohol consumption should be limited to up to 2–3 units a day.' has been amended to: 'Be aware that men should not regularly drink more than 3–4 units a day and women</p>

	<p>should not regularly drink more than 2–3 units a day.’</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.2.15 Advise all people who smoke to stop, in line with Smoking cessation services (NICE public health guidance 10). [2008]</p>	<p>‘People should be advised’ has been amended to: ‘Advise people’</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.2.16 Offer people who want to stop smoking support and advice, and referral to an intensive support service (for example, the NHS Stop Smoking Services). [2008]</p>	<p>‘People should be offered’ has been amended to: ‘Offer people’</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.2.17 If a person is unable or unwilling to accept a referral to an intensive support service, offer them pharmacotherapy in line with Smoking cessation services (NICE public health guidance 10) and Varenicline for smoking cessation (NICE technology appraisal guidance 123). [2008]</p>	<p>‘they should be offered’ has been amended to: ‘Offer them’</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.3.1 Be aware that when deciding on lipid modification therapy for the prevention of CVD, drugs are preferred for which there is evidence in clinical trials of a beneficial effect on CVD morbidity and mortality. [2008]</p>	<p>‘When considering lipid modification therapy in primary and secondary prevention’ has been amended to: ‘Be aware that when deciding on lipid modification therapy for the prevention of CVD’</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.3.2 Measure both total and high-density lipoprotein (HDL) cholesterol to achieve the best estimate of CVD risk. [2008].</p>	<p>‘should be measured’ has been amended to: ‘Measure’</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.3.39 Advise people who are being treated with a statin to seek medical advice if they develop muscle symptoms (pain, tenderness or weakness). If this occurs, measure creatine kinase. [2008]</p>	<p>‘People should be advised’ has been amended to: ‘Advise people’</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.3.41 Do not measure creatine kinase levels in asymptomatic people who are being treated with a statin [2008].</p>	<p>‘should not be routinely monitored’ has been amended to: ‘Do not measure’</p> <p>in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.3.42 Measure baseline liver transaminase enzymes (alanine aminotransferase or aspartate</p>	<p>‘should be measured’ has been amended to:</p>

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<p>aminotransferase) before starting a statin. Measure liver transaminase (alanine aminotransferase or aspartate aminotransferase) within 3 months of starting treatment and at 12 months, but not again unless clinically indicated. [2008]</p>	<p>'measure' in line with current NICE style for recommendations in clinical guidelines.</p>
<p>1.3.43 Do not routinely exclude from statin therapy people who have liver transaminases levels that are raised but are less than 3 times the upper limit of normal. [2008]</p>	<p>'should not be routinely excluded' has been amended to: 'Do not routinely exclude' in line with current NICE style for recommendations in clinical guidelines.</p>

Appendix B: Grouping of statins

For the purpose of this guideline, statins are grouped into 3 different intensity categories according to the percentage reduction in low-density lipoprotein cholesterol (see table 1). This grouping was agreed by GDG consensus, informed by analyses in the literature. See the full guideline for a discussion of this grouping.

Table 1 Grouping of statins used in this guideline

Dose (mg/day)	5	10	20	40	80
Fluvastatin	10% ¹	15% ¹	21% ²	27% ²	33% ³
Pravastatin	15% ¹	20% ²	24% ²	29% ²	33% ¹
Simvastatin	23% ¹	27% ²	32% ³	37% ³	42% ⁴
Atorvastatin	31% ¹	37% ³	43% ⁴	49% ⁴	55% ⁴
Rosuvastatin	38% ³	43% ⁴	48% ⁴	53% ⁴	58% ¹
¹ Not available in the UK. ² 20%–30%: low intensity. ³ 31%–40%: medium intensity. ⁴ Above 40%: high intensity.					

The information used to make the table is from Law (2003) BMJ 326:1423.