DISCLAIMER AND WAIVER OF LIABILITY
Whilst every effort has been made by the Quality in Practice Committee to ensure the accuracy of the information and material contained in this document, errors or omissions may occur in the content. This guidance represents the view of the ICGP which was arrived at after careful consideration of the evidence available at time of publication.

This quality of care may be dependent on the appropriate allocation of resources to practices involved in its delivery. Resource allocation by the state is variable depending on geographical location and individual practice circumstances. There are constraints in following the guidelines where the resources are not available to action certain aspects of the guidelines. Therefore individual healthcare professionals will have to decide whether the standard is achievable within their resources particularly for vulnerable patient groups.

The guide does not however override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of individual patients in consultation with the patient and/or guardian or carer.

Guidelines are not policy documents. Feedback from local faculty and individual members on ease of implementation of these guidelines is welcomed.

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EVIDENCE-BASED MEDICINE
Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.

In this document, you will see that both the level of evidence and the strength of recommendation of particular treatment options are classified using the the European Society of Cardiology (ESC) – recommended method of evaluation (Tables 1 and 2) below.

Table 1: Classes of recommendations

<table>
<thead>
<tr>
<th>CLASSES OF RECOMMENDATIONS</th>
<th>DEFINITION</th>
<th>SUGGESTED WORDING TO USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective</td>
<td>Is recommended/is indicated</td>
</tr>
<tr>
<td>Class II</td>
<td>Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure</td>
<td></td>
</tr>
<tr>
<td>Class IIa</td>
<td>Weight of evidence/opinion is in favour of usefulness/efficacy</td>
<td>Should be considered</td>
</tr>
<tr>
<td>Class IIb</td>
<td>Usefulness/efficacy is less well established by evidence/opinion</td>
<td>May be considered</td>
</tr>
<tr>
<td>Class III</td>
<td>Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases will be harmful</td>
<td>Is not recommended</td>
</tr>
</tbody>
</table>

Table 2: Levels of evidence

<table>
<thead>
<tr>
<th>Level of evidence A</th>
<th>Data derived from multiple randomised clinical trials or meta-analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of evidence B</td>
<td>Data derived from a single randomised clinical trial or large non-randomised studies</td>
</tr>
<tr>
<td>Level of evidence C</td>
<td>Consensus of opinion of the experts and/or small studies, retrospective studies, registries</td>
</tr>
</tbody>
</table>
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1.0 Introduction

1.1 Definition
Cardiovascular disease (CVD) prevention can be defined as a coordinated set of actions, at population and individual level, aimed at eradicating, eliminating or minimising the impact of cardiovascular diseases and their related disability.

1.2 Background
CVD remains the leading cause of premature death worldwide. In Ireland, it accounts for 35% of all deaths and more importantly, 20% of premature deaths (i.e. death in those under 65 years). As most of these patients are followed up in the primary care setting, the general practitioner is ideally situated to carry out screening for and management of CVD risk factors in his or her practice.

This document provides a summary of the 2016 European guidelines on cardiovascular disease prevention in clinical practice which were produced by the Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and by invited experts). The full text of these guidelines is available here.

1.3 Aim of this document
The aim of this document is to give an update of the present knowledge in preventive cardiology for general practitioners.
2.0 CVD Risk Assessment

2.1 When to assess CVD risk
Screening is the identification of unrecognized disease or, in this case, of an unknown increased risk of CVD in individuals without symptoms. Cardiovascular (CV) risk assessment or screening can be done opportunistically or systematically. Opportunistic screening means without a predefined strategy, but is done when the opportunity arises [e.g. when the individual is consulting his or her general practitioner for some other reason]. Systematic screening can be done in the general population as part of a screening programme or in targeted subpopulations, such as subjects with a family history of premature CVD or familial hyperlipidaemia. While the ideal scenario would be for all adults to have their risk assessed, this is not practical in many societies including our own. The recommendations when to do a CV risk assessment are given in Table 1.

Table 1: Recommendations for cardiovascular risk assessment

<table>
<thead>
<tr>
<th>RECOMMENDATIONS</th>
<th>CLASS(^a)</th>
<th>LEVEL(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic CV risk assessment is recommended in individuals at increased CV risk, i.e. with family history of premature CVD, familial hyperlipidaemia, major CV risk factors (such as smoking, high BP, DM or raised lipid levels) or comorbidities increasing CV risk.</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>It is recommended to repeat CV risk assessment every 5 years, and more often for individuals with risk close to thresholds mandating treatment.</td>
<td>II</td>
<td>C</td>
</tr>
<tr>
<td>Systematic CV risk assessment may be considered in men &gt;40 years of age and in women &gt;50 years of age or post-menopausal with no known CV risk factors.</td>
<td>IIb</td>
<td>C</td>
</tr>
<tr>
<td>Systematic CV risk assessment in men &lt;40 years of age and women &lt;50 years with no known CV risk factors is not recommended.</td>
<td>III</td>
<td>C</td>
</tr>
</tbody>
</table>

BP = blood pressure; CV = cardiovascular; CVD = cardiovascular disease; DM = diabetes mellitus
\(^a\)Class of recommendation
\(^b\)Level of evidence

2.2 How to assess CVD risk & CVD risk assessment tools
The key messages regarding assessment of CVD risk can be summarised as follows:
- In apparently healthy persons, CV risk in general is the result of multiple, interacting risk factors. This is the basis for the total CV risk approach to prevention.
- SCORE, which estimates the 10-year risk of fatal CVD, is recommended for risk assessment and can assist in making logical management decisions and may help to avoid both under- and overtreatment. Validated local risk estimation systems are useful alternatives to SCORE.
- Individuals automatically at high to very high CV risk (Table 5) do not need the use of a risk score and require immediate attention to risk factors.
• In younger persons, a low absolute risk may conceal a very high relative risk and use of the relative risk chart or calculation of their “risk age” may help in advising them of the need for intensive preventive efforts.

• While women are at lower CV risk than men, their risk is deferred by 10 years rather than avoided.

• The total risk approach allows flexibility; if perfection cannot be achieved with one risk factor, trying harder with others can still reduce risk.

The recommendation for how to estimate CV risk is given in Table 2

Table 2: Recommendation for how to estimate CV risk

<table>
<thead>
<tr>
<th>RECOMMENDATION</th>
<th>CLASS</th>
<th>LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total CV risk estimation, using a risk estimation system such as SCORE, is recommended for adults &gt;40 years of age, unless they are automatically categorised as being at high-risk or very high-risk based on documented CVD, DM (&gt;40 years of age), kidney disease or highly elevated single risk factor.</td>
<td>I</td>
<td>C</td>
</tr>
</tbody>
</table>

CV = cardiovascular; DM = diabetes mellitus; SCORE = Systematic Coronary Risk Estimation

2.3 SCORE

Risk charts such as SCORE are intended to facilitate risk estimation in apparently healthy persons with no signs of clinical or pre-clinical disease. SCORE assesses CVD risk using five variables; gender, smoking status, age, systolic blood pressure and total cholesterol.

How to use the SCORE risk estimation charts:

Find the correct table for gender, smoking status and age. Within the table, find the cell nearest to the person’s BP and total cholesterol. Risk estimates will need to be adjusted upwards as the person approaches the next age category.
Figure 1: **SCORE chart: 10-year risk of fatal cardiovascular disease (CVD) in countries at low CVD risk including Ireland**

With the decline in CVD mortality in many European regions, Ireland falls into the low-risk category for risk of fatal cardiovascular disease. The SCORE chart for use in Ireland, as given in Figure 1 can be downloaded directly from [here](#).

### 2.4 HeartScore

HeartScore is an electronic CVD risk assessment tool. It replicates SCORE in an electronic format using the same five variables as SCORE (gender, smoking status, age, systolic blood pressure, total cholesterol) with the addition of a sixth variable - HDL.

HeartScore is free to access [here](#).

An example of how to use HeartScore is provided in the following screen shots:
Step 1:
• Enter HeartScore Website via http://www.heartscore.org/Pages/welcome.aspx
• Click “Get started”

Step 2
• Click “Europe low-risk (English)"

With the decline in CVD mortality in many European regions, Ireland now falls into the low-risk category for risk of fatal cardiovascular disease, so click on “Europe low-risk (English)” and follow the steps from there.
Step 3
• Click “Access HeartScore”

Step 4:
• Click “Join Now”
Step 5:
- As an example, a male test patient has been used. This 60 year old male has a systolic blood pressure of 160mmHg, total cholesterol of 6.5 mmol/L, HDL of 1.6 mmol/L and is a smoker.
- Enter patient details
HeartScore results

The total cardiovascular disease risk level, (left bar below) shows you the percentage risk of having a fatal cardiovascular event such as a stroke or heart attack. Based on examination results your total CVD risk is 7%.

However, by becoming aware of your risk factors and taking a few preventive actions you can reach the treatment goals and reduce your risk to 3% as shown by the treatment goal level (right bar below).

Absolute CVD Risk

At present, your risk of dying from a heart attack or a stroke within the next ten years is increased. You can reduce this risk further by becoming aware of your risk factors and by changing your lifestyle.

Your Risk Age: because of your risk factors your risk is similar to an 89 year old person with no risk factors. this is called your ‘risk age’. You can reduce your risk age by reducing your risk factors.
What makes up your risk?
Cardiovascular disease is generally due to a combination of several risk factors. The more risk factors you have, the greater the chance of having a heart attack or stroke. The pie chart below shows you the distribution of your modifiable risk factors and the impact they have on your total CVD risk level.

Contribution of risk factors to total risk

1. Systolic blood pressure (25%)
2. Cholesterol (25%)
3. Smoker (50%)

Personalized health advice
For most people walking 30 minutes per day and eating plenty of vegetables, fruit, cereals and fish helps lower risk.

Smoker
You are noted to be a smoker. If you can stop smoking this would greatly reduce your risk. Many smokers who want to quit find nicotine chewing gum and patches helpful.

Smoking increases your risk of many diseases. It is an extra good reason to quit. If you can manage to stop, you will have halved your risk of a heart attack or stroke. No drug is this good at reducing risk. I will do all that I can to help you.

If you cannot stop just now, please keep thinking about it. As your wish to stop increases, ask for help from your family and friends.

Systolic blood pressure
Your blood pressure is 160 mmHg, and that is above the normal range.
Lower blood pressure levels are associated with reduced risk of cardiovascular disease.
It would be good if your blood pressure was lowered from the present 160 mmHg to a level around 140 mmHg.
You can help to do this by choosing a diet rich in vegetables and fibre and by avoiding excessive intake of salt, animal fat and alcohol.
If you increase your level of physical activity it will also help lower your patient’s blood pressure. In some cases, however, it is necessary to treat a high blood pressure with medicine.
Cholesterol
Your cholesterol is 6.5 mmol/L, and that is above the normal range.

The lower the cholesterol value gets, the lower the risk of cardiovascular disease.

I therefore recommend that your present cholesterol value of 6.5 mmol/L is lowered to a value around 5 mmol/L or less. You can help by eating plenty of fruits and vegetables, cereals and fish and by eating less animal fats.

In some cases, drugs may be needed to reduce a high cholesterol level.

HDL Cholesterol
HOL cholesterol or ‘good cholesterol’ helps protect from heart disease. Exercise helps to push it up

Doctor’s comments
Next appointment: _____________________________________________________

I remain at your disposal for additional personal advice.

With heart healthy regards.

2.5 Relative risk and risk age
A young person with several cardiovascular risk factors (e.g. smoker, high systolic blood pressure, raised total cholesterol) can have a low absolute risk because of his or her age and at the same time be at a high relative risk of developing cardiovascular disease. Risk age illustrates the likely reduction in life expectancy that such a young person will be exposed to if preventive measures are not adopted.

Risk age can be estimated visually using the SCORE chart (Figure 1). For example, a 40 year old male smoker with total cholesterol of 8 mmol/L and a systolic blood pressure of 180 mmHg has a SCORE risk of only 2%, which is a low absolute risk. However, it can be seen from the same SCORE chart that this risk of 2% is the same as that for a man aged 60 year old with an ideal risk profile (non-smoker, total cholesterol of 4 mmol/L and a systolic blood pressure level of 120 mmHg).

Risk age is automatically calculated by HeartScore (see results section “Actual Total CVD Risk Level” above).

A relative risk chart (Figure 2) is a useful tool for estimating relative risk. This can be helpful in identifying and counselling young persons with several cardiovascular risk factors (e.g. smoker, high systolic blood pressure, raised total cholesterol) of the need for lifestyle change, when absolute risk levels are low. For example, it can be demonstrated using the relative risk chart below, that a person in the top right-hand box who is a smoker with a total cholesterol of 8 mmol/L and a systolic blood pressure of 180, has a risk that is 12 times higher than a person in the bottom left-hand box with an ideal risk factor profile (i.e. non-smoker, total cholesterol of 4 mmol/L and systolic blood pressure 120 mmHg).
2.6 CVD risk categories

Individuals at highest risk gain most from preventive efforts, and this guides the priorities for management of CV risk factors. The CV risk categories are given in Table 5. Please note that the terms “SCORE” and “HeartScore” are interchangeable in Table 5.

Table 5: Cardiovascular risk categories

<table>
<thead>
<tr>
<th>SCORE</th>
<th>Subjects with any of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY HIGH-RISK</td>
<td>Documented CVD, clinical or unequivocal on imaging. Documented clinical CVD includes previous AMI, ACS, coronary revascularisation and other arterial revascularisation procedures, stroke and TIA, aortic aneurysm and PAD. Unequivocally documented CVD on imaging includes significant plaque on coronary angiography or carotid ultrasound. It does NOT include some increase in continuous imaging parameters such as intima-media thickness of the carotid artery.</td>
</tr>
<tr>
<td></td>
<td>DM with target organ damage such as proteinuria or with a major risk factor such as smoking or marked hypercholesterolaemia or marked hypertension.</td>
</tr>
<tr>
<td></td>
<td>Severe CKD (GFR &lt;30mL/min/1.73m²).</td>
</tr>
<tr>
<td></td>
<td>A calculated SCORE ≥10%</td>
</tr>
<tr>
<td>HIGH-RISK</td>
<td>Markedly elevated single risk factor, in particular cholesterol &gt;8mmol/L (&gt;310mg/dL) (e.g. in familial hypercholesterolaemia) or BP ≥180/110mmHg.</td>
</tr>
<tr>
<td></td>
<td>Most other people with DM (with the exception of young people with type I DM and without major risk factors that may be at low or moderate risk).</td>
</tr>
<tr>
<td></td>
<td>Moderate CKD (GFR 30–59mL/min/1.73m²).</td>
</tr>
<tr>
<td></td>
<td>A calculated SCORE ≥5% and &lt;10%.</td>
</tr>
<tr>
<td>MODERATE RISK</td>
<td>SCORE is ≥1% and &lt;5% at 10 years. Many middle-aged subjects belong in this category.</td>
</tr>
<tr>
<td>LOW-RISK</td>
<td>SCORE &lt;1%</td>
</tr>
</tbody>
</table>

ACS = acute coronary syndrome; AMI = acute myocardial infarction; BP = blood pressure; CKD = chronic kidney disease; DM = diabetes mellitus; GFR = glomerular filtration rate; PAD = peripheral artery disease; SCORE = systematic coronary risk estimation; TIA = transient ischaemic attack.
Other risk assessment recommendations:

The key messages regarding other risk assessment recommendations can be summarised as follows:

- Family history of premature CVD in first-degree relatives, before 55 years of age in men and 65 years of age in women, increases the risk of CVD.
- Several genetic markers are associated with an increased risk of CVD, but their use in clinical practice is not recommended.

The recommendations for assessment of family history/ (epi)genetics are given in Table 6.

**Table 6: Recommendations for assessment of family history/ (epi)genetics**

<table>
<thead>
<tr>
<th>RECOMMENDATIONS</th>
<th>CLASS</th>
<th>LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of family history of premature CVD (defined as a fatal or non-fatal CVD event or/and established diagnosis of CVD in first degree males relatives before 55 years of female relatives before 65 years) is recommended as part of cardiovascular risk assessment.</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>The generalised use of DNA-based tests for CVD risk assessment is not recommended.</td>
<td>III</td>
<td>B</td>
</tr>
</tbody>
</table>

*CVD = cardiovascular disease*  
*Class of recommendation*  
*Level of evidence*
3.0 Management of CVD Risk

Risk factor goals and target levels for important CV risk factors are presented in Table 7.

Table 7: Risk factor goals and target levels for important CV risk factors

<table>
<thead>
<tr>
<th>Smoking</th>
<th>No exposure to tobacco in any form.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet</td>
<td>Low in saturated fat with a focus on wholegrain products, vegetables, fruit and fish.</td>
</tr>
<tr>
<td>Physical activity</td>
<td>At least 150 minutes a week of moderate aerobic PA (30 minutes for 5 days/week) or 75 minutes a week of vigorous aerobic PA (15 minutes for 5 days/week) or a combination thereof.</td>
</tr>
<tr>
<td>Body weight</td>
<td>BMI 20–25 kg/m². Waist circumference &lt;94 cm (men) or &lt;80 cm (women).</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>&lt;140/90 mmHg³</td>
</tr>
<tr>
<td>Lipids¹</td>
<td>Very high-risk: &lt;1.8 mmol/L (&lt;70 mg/dL), or a reduction of at least 50% if the baseline is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL)²</td>
</tr>
<tr>
<td>LDL-C is the primary target</td>
<td>High-risk: &lt;2.6 mmol/L (100 and 200 mg/dL), or a reduction of at least 50% if the baseline is between 2.6 and 5.1 mmol/L (100 and 200 mg/dL).</td>
</tr>
<tr>
<td>HDL-C</td>
<td>No target but &gt;1.0 mmol/L (&gt;40 mg/dL) in men and &gt;1.2 mmol/L (&gt;45 mg/dL) in women indicate lower risk.</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>No target but &lt;1.7 mmol/L (&lt;150 mg/dL) indicates lower risk and higher levels indicate a need to look at other risk factors.</td>
</tr>
<tr>
<td>Diabetes</td>
<td>HbA1c &lt;7% (&lt;53 mmol/mol)</td>
</tr>
</tbody>
</table>

BMI = body mass index; HbA1c = glycated haemoglobin; HDL-C = high-density lipoprotein cholesterol; LDL-C = low density lipoprotein cholesterol.

¹Blood pressure <140/90 mmHg is the general target. The target can be higher in frail elderly, or lower in most patients with DM (see chapter 3.a.8) and in some (very) high-risk patients without DM who can tolerate multiple blood pressure lowering drugs (see chapter 3.a.9).

²Non-HDL-C is a reasonable and practical alternative target because it does not require fasting. Non-HDL-C secondary targets of <2.6, <3.3 and <3.8 mmol/L (<100, <130 and <145 mg/dL) are recommended for very high, high and low to moderate risk subjects, respectively. See section 3a.7.10 for more details.

³A view was expressed that primary care physicians might prefer a single general LDL-C goal of 2.6 mmol/L (100mg/dL). While accepting the simplicity of this approach and that it could be useful in some settings, there is better scientific support for the three targets matched to level of risk.

³This is a general recommendation for those at very high-risk. It should be noted that he evidence for patients with CKD is less strong.

3.1 Behaviour change

The 2016 guidelines emphasise that cognitive behavioural methods are effective in supporting persons in adopting a healthy lifestyle. ‘Lifestyle’ is usually based on long-standing behavioural patterns that are maintained by social environment. Individual and environmental factors impede the ability to adopt a healthy...
lifestyle, as does complex or confusing advice from caregivers. Friendly and positive interaction enhances an individual’s ability to cope with illness and adhere to recommended lifestyle changes (‘empowerment’). It is important to explore each patient’s experiences, thoughts, worries, previous knowledge and circumstances of everyday life. Individualized counselling is the basis for motivation and commitment. Decision-making should be shared between the caregiver and patient (including also the individual’s spouse and family). Use of the principles of effective communication (Table 8) will facilitate treatment and prevention of CVD.

**Table 8: Principles of effective communication to facilitate behavioural change**

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Spend enough time with the individual to create a therapeutic relationship — even a few more minutes can make a difference.</td>
</tr>
<tr>
<td>2.</td>
<td>Acknowledge the individual’s personal view of his/her disease and contributing factors.</td>
</tr>
<tr>
<td>4.</td>
<td>Speak to the individual in his/her own language and be supportive of every improvement in lifestyle.</td>
</tr>
<tr>
<td>5.</td>
<td>Ask questions to check that the individual has understood the advice and has any support he or she requires to follow it.</td>
</tr>
<tr>
<td>6.</td>
<td>Acknowledge that changing life-long habits can be difficult and that sustained gradual change is often more permanent than a rapid change.</td>
</tr>
<tr>
<td>7.</td>
<td>Accept that individuals may need support for a long time and that repeated efforts to encourage and maintain lifestyle change may be necessary in many individuals.</td>
</tr>
<tr>
<td>8.</td>
<td>Make sure that all health professionals involved provide consistent information.</td>
</tr>
</tbody>
</table>

General practitioners will also find that the ‘ten strategic steps’ listed in Table 9 will enhance counselling of behavioural change. These are very similar to the advice given in Modified World Health Organization (WHO) smoking cessation algorithm (see next section).

**Table 9: Ten strategic steps to facilitate behaviour change**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Develop a therapeutic alliance.</td>
</tr>
<tr>
<td>2.</td>
<td>Counsel all individuals at risk of or with manifest cardiovascular disease.</td>
</tr>
<tr>
<td>3.</td>
<td>Assist individuals to understand the relationship between their behaviour and health.</td>
</tr>
<tr>
<td>4.</td>
<td>Help individuals assess the barriers to behaviour change.</td>
</tr>
<tr>
<td>5.</td>
<td>Gain commitments from individuals to own their behaviour change.</td>
</tr>
<tr>
<td>6.</td>
<td>Involve individuals in identifying and selecting the risk factors to change.</td>
</tr>
<tr>
<td>7.</td>
<td>Use a combination of strategies including reinforcement of the individual’s: capacity for change.</td>
</tr>
<tr>
<td>8.</td>
<td>Design a lifestyle-modification plan.</td>
</tr>
<tr>
<td>9.</td>
<td>Involve other healthcare staff whenever possible.</td>
</tr>
<tr>
<td>10.</td>
<td>Monitor progress through follow-up contact.</td>
</tr>
</tbody>
</table>
3.2 Smoking

The key messages regarding smoking and CVD prevention can be summarised as follows:

- Stopping smoking is the most cost-effective strategy for CVD prevention.
- There is a strong evidence base for brief interventions with advice to stop smoking, all types of nicotine replacement therapy (NRT), bupropion, varenicline and greater effectiveness of drugs in combination, except for NRT plus varenicline. The most effective are brief interventions plus assistance with stopping using drug therapy and follow-up support.
- Electronic cigarettes (e-cigarettes) may help in smoking cessation but should be covered by the same marketing restrictions as cigarettes.
- Passive secondary smoking carries significant risk, with the need to protect non-smokers.

Assessing whether the person is willing to try to quit, brief reiteration of the cardiovascular and other health hazards, and agreeing on a specific plan with a follow-up arrangement are the decisive first steps of the brief initial advice in clinical practice (Figure 3).

**Figure 3: Modified World Health Organization (WHO) smoking cessation algorithm**

<table>
<thead>
<tr>
<th>A1: ASK</th>
<th><strong>Do you use tobacco?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NO</strong></td>
<td>Reinforce message that tobacco increases risk of heart disease.</td>
</tr>
<tr>
<td><strong>YES</strong></td>
<td>Advise to quit in a clear, strong and personalised manner. “Tobacco use increases the risk of developing a heart attack and/or stroke. Quitting tobacco use is the most important thing you can do to protect your heart and health. You have to quit now.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A2: ADVISE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you willing to make a quit attempt now?</td>
</tr>
<tr>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>Assist in preparing a quitting plan</td>
</tr>
<tr>
<td>• Set quit date</td>
</tr>
<tr>
<td>• Inform family and friends</td>
</tr>
<tr>
<td>• Ask for their support</td>
</tr>
<tr>
<td>• Remove cigarettes/tobacco</td>
</tr>
<tr>
<td>• Remove objects/articles that prompt you to smoke</td>
</tr>
<tr>
<td>• Arrange follow-up visit*</td>
</tr>
<tr>
<td><strong>No</strong></td>
</tr>
<tr>
<td>Provide information on health hazards of tobacco and give leaflet to the patient</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A3: ASSESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At follow-up visit</strong></td>
</tr>
<tr>
<td>• Congratulate success and reinforce</td>
</tr>
<tr>
<td>• If patient has relapsed consider more intensive follow-up and support from family</td>
</tr>
</tbody>
</table>

*Ideally second follow-up visit is recommended within the same month and every month thereafter for four months and evaluation after one year. If not feasible, reinforce counselling whenever the patient is seen for blood pressure monitoring.

Taken with permission from WHO CVD risk management package.
General practitioners will find the patient information leaflet “Just be smoke free” from the Irish Cancer Society to be especially useful. This leaflet has the telephone number of the National Smokers Quitline (1800 201 203) on the back page and can be downloaded [here](#).

The HSE/NCCP smoking cessation algorithm below is also useful and can be accessed [here](#).

---

### 30 second Stop Smoking Advice

**ASK**
- ASK every patient about tobacco use at every healthcare contact, including on hospital admission and recent smoking status.

**ADVISE**
- “Quitting is the single best thing you can do to improve your health. We need to do two things – give you support and start you on medication. With medication and support you are up to 4 times more likely to be successful.”

**ACT**
- **PRESCRIBE**
  - The first few days and weeks after you quit can be the hardest. Many people will go back to smoking unless they get extra help. You will now get the medication and support to help you.” (see prescribing information on page 2).

**REFERRAL**
- “I would also like you to call the HSE Quit Team 1800 201 203 www.quit.ie, which is a free service. They will give you tips on dealing with cravings, withdrawal symptoms, smoking medications and help in shaping a plan. You have to do it now.”

### Prescribing for Tobacco Dependence

Tobacco use remains the leading preventable cause of illness and death in our society. Smokers who quit reduce their risk of many diseases, including cardiovascular disease, respiratory disease and cancer. Quitting increases life expectancy. Some smokers make many attempts to quit before they succeed.

---

**TREATMENT**

### Nicotine Replacement Therapy (NRT)*
- **PATCH**
- **LOZENGES**
- **INHALER**
- **MOUTH SPRAY**

**Varenicline (Champix)**
- **PATCH + INHALER**
- **PATCH + LOZENGES**
- **PATCH + MOUTH SPRAY**

**Bupropion (Zyban)**
- **PATCH + INHALER**
- **PATCH + MOUTH SPRAY**
- **PATCH + LOZENGES**

**COMBINATION NRT**
- A combination of patches and a lozenge is effective in smoking cessation. These two products are complementary and should be considered in the standard treatment.

**GET STARTED**
- **BEFORE STARTING NRT**
- **GET STARTED 1-14 DAYS AFTER STARTING VARENICLINE**
- **GET STARTED 7-10 DAYS AFTER STARTING BUPROPION**

**KEY MESSAGES**
- This is the most effective medication; quit rate is triple placebo.
- Resistant to relapse.
- There is no evidence that combining NRT with Varenicline improves success rates.

---

*For comprehensive information on these medications consult your prescribing manual.

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3.3 Nutrition

The key messages regarding nutrition and CVD prevention can be summarised as follows:

- Dietary habits influence the risk of CVD and other chronic diseases such as cancer.
- Energy intake should be limited to the amount of energy needed to maintain (or obtain) a healthy weight, that is, a BMI ≥20.0 but <25.0 kg/m².
- In general, when following the rules for a healthy diet, no dietary supplements are needed.

Dietary habits influence CV risk, either through an effect on risk factors such as cholesterol, BP, body weight and diabetes, or through other effects. A diet low in saturated fat with a focus on wholegrain products, vegetables, fruit and fish is recommended (see Table 10).

### Table 10: Healthy diet characteristics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Saturated fatty acids to account for &lt;10% of total energy intake, through replacement by polyunsaturated fatty acids.</td>
</tr>
<tr>
<td>2.</td>
<td>Trans unsaturated fatty acids: as little as possible, preferably no intake from processed food, and &lt;1% of total energy intake from natural origin.</td>
</tr>
<tr>
<td>3.</td>
<td>&lt;5g of salt per day.</td>
</tr>
<tr>
<td>4.</td>
<td>30–45g of fibre per day, preferably from wholegrain products.</td>
</tr>
<tr>
<td>5.</td>
<td>≥200g of fruit per day (2–3 servings).</td>
</tr>
<tr>
<td>6.</td>
<td>≥200g of vegetables per day (2–3 servings).</td>
</tr>
<tr>
<td>7.</td>
<td>Fish 1–2 times per week. one of which to be oily fish.</td>
</tr>
<tr>
<td>8.</td>
<td>30g unsalted nuts per day.</td>
</tr>
<tr>
<td>9.</td>
<td>Consumption of alcoholic beverages should be limited to 2 glasses per day (20 g/d of alcohol) for men and 1 glass per day (10g/d of alcohol) for women.</td>
</tr>
<tr>
<td>10.</td>
<td>Sugar-sweetened soft drinks and alcoholic beverages consumption must be discouraged.</td>
</tr>
</tbody>
</table>

General practitioners and practice nurses will find the patient information leaflet “HEALTHY EATING to reduce your risk of heart disease and stroke” published by the Irish Heart Foundation to be especially useful. This can be downloaded [here](#).

3.4 Physical activity

The key messages regarding physical activity (PA) and CVD prevention can be summarised as follows:

- Regular PA is a mainstay of CV prevention; participation decreases all-cause and CV mortality.
- PA increases fitness and improves mental health.
- Sedentary people should be encouraged to start light-intensity aerobic PA.
It is recommended for healthy adults of all ages to perform at least 150 minutes a week of moderate intensity or 75 minutes a week of vigorous intensity aerobic PA or an equivalent combination thereof. A classification of physical activity intensity and examples of absolute and relative intensity levels are given in Table 11.

**Table 11: Classification of physical activity intensity and examples of absolute and relative intensity levels**

<table>
<thead>
<tr>
<th>Intensity</th>
<th>MET</th>
<th>Examples</th>
<th>%HRmax</th>
<th>RPE (Borg scale score)</th>
<th>Talk Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>1.1–2.9</td>
<td>Walking &lt;4.7 km/h, light household work.</td>
<td>50–63</td>
<td>10–11</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>3–5.9</td>
<td>Walking briskly (4.8-6.5 km/h). slow cycling (15 km/h), painting/decorating, vacuuming, gardening (mowing lawn), golf (pulling clubs in trolley). tennis (doubles), ballroom dancing, water aerobics.</td>
<td>64–76</td>
<td>12–13</td>
<td>Breathing is faster but compatible with speaking full sentences.</td>
</tr>
<tr>
<td>Vigorous</td>
<td>≥6</td>
<td>Race-walking, jogging or running. bicycling &gt;15km/h, heavy gardening (continuous digging or hoeing), swimming laps, tennis (single).</td>
<td>77–93</td>
<td>14–16</td>
<td>Breathing very hard, incompatible with carrying on a conversation comfortably.</td>
</tr>
</tbody>
</table>

**MET (metabolic equivalent)** is estimated as the energy cost of a given activity divided by resting energy expenditure. 1 MET = 3.5 mL O₂ kg⁻¹ min⁻¹ oxygen consumption (VO₂).

**RPE: rating of perceived exertion (20 value Borg score).**

**%HRmax, percentage of measured or estimated maximum heart rate (220-age).**

General practitioners and practice nurses will find the patient information leaflet “BE ACTIVE and reduce your risk of heart disease and stroke” published by the Irish Heart Foundation to be especially useful. This can be downloaded [here](#).

### 3.5 Weight reduction

The key messages regarding body weight and CVD prevention can be summarised as follows:

- Both overweight and obesity are associated with an increased risk of CVD death and all-cause mortality. All-cause mortality is lowest with a BMI of 20–25 kg/m² (in those <60 years of age); further weight reduction cannot be considered protective against CVD.
- Healthy weight in the elderly is higher than in the young and middle-aged.
- Achieving and maintaining a healthy weight has a favourable effect on metabolic risk factors (BP, blood lipids, glucose tolerance) and lowers CV risk.
BMI [weight (kg)/height (m²)] can be measured easily and is used extensively to define categories of body weight. In addition to the amount of body fat, its distribution is important. Body fat stored in the abdomen carries a higher risk than subcutaneous fat. The optimal level for measurement of waist circumference is midway from the lower rib margin to the anterior superior iliac crest, in the standing position. The WHO thresholds for waist circumference are the most widely accepted in Europe. Based on these thresholds, two action levels are recommended:

i. waist circumference ≥94 cm in men and ≥80 cm in women represents the threshold at which no further weight should be gained and

ii. waist circumference ≥102 cm in men and ≥88 cm in women represents the threshold at which weight reduction should be advised.

General practitioners and practice nurses will find the patient information leaflet “LOSE WEIGHT to reduce your risk of heart disease and stroke” published by the Irish Heart Foundation to be especially useful. This can be downloaded here.

3.6 Hypertension

The key messages regarding elevated BP and CVD prevention can be summarised as follows:

• Elevated BP is a major risk factor for coronary artery disease, heart failure, cerebrovascular disease, peripheral vascular disease, chronic kidney disease and atrial fibrillation.

• The decision to start BP-lowering treatment depends on the BP level and total CV risk.

• Benefits of treatment are mainly driven by BP reduction per se, not by drug type.

• Combination treatment is needed to control BP in most patients.

Emphasis is given on the importance of out-of-office measurement in the management of untreated and treated hypertensive patients in the 2016 guidelines. However, from the point of view of using out-of-office blood pressure in everyday general practice, most doctors will continue to find the 2011 National Collaborating Centre for Chronic Conditions (NICE) guideline on hypertension entitled Hypertension: clinical management of primary hypertension in adults helpful. This can be assessed here. The following is a short summary of this guideline.
**Blood pressure targets (non-diabetic patients)**

**Clinic blood pressure measurement (CBPM):**
- People aged **under 80 years**: <140/90 mmHg
- People aged **over 80 years**: <150/90 mmHg

**Daytime average ambulatory blood pressure measurement (ABPM) or home blood pressure measurement (HBPM) during the person’s usual waking hours**
- People aged **under 80 years**: <135/85 mmHg
- People aged **over 80 years**: <145/85 mmHg

**Measurement of blood pressure**

While blood pressure measurement in the clinic remains an important component of risk assessment, the NICE Guideline places a special emphasis to the role of out-of-office BP as assessed by ABPM or HBPM in the diagnosis of hypertension.

The first step in the diagnosis of hypertension remains the measurement of blood pressure in the clinic setting. Blood pressure should be measured in both arms initially and if the difference in readings between arms is more than 20 mmHg on repeated measurement, the arm with the higher readings should be used for all subsequent blood pressure recordings. If CBPM is 140/90 mmHg or higher, a second measurement should be taken during the consultation and if the second measurement is substantially different from the first, a third measurement should be taken and the lower of the last two measurements used as the clinic blood pressure. The diagnosis of severe hypertension is based solely on a clinic systolic blood pressure of 180 mmHg or higher, or clinic diastolic blood pressure of 110 mmHg or higher. This group should be started on antihypertensive drug treatment without waiting for the results of out-of-office BP.

Out-of-office BP measurement is now recommended for the diagnosis of hypertension in all patients where the clinic blood pressure is 140/90 mmHg or higher. In the case of ABPM, at least two measurements per hour taken during the person’s usual waking hours e.g. between 08:00 and 22:00 are recommended. The average value of at least 14 such measurements is taken as the ABPM level for diagnosis.

When ABPM is not available or is not acceptable to the patient, HBPM can be used. Care should be taken to ensure that for each blood pressure recording, two consecutive measurements are taken, at least 1 minute apart with the person seated. Blood pressure should be recorded twice daily, ideally in the morning and evening for at least 4 days, (ideally for 7 days). Measurements taken on the first day are discarded and the average value of all the remaining measurements is used for the diagnosis of hypertension.

The role of out-of-office BP measurement in the diagnosis of hypertension from the NICE guideline is summarised in Figure 4.
Figure 4: Care pathway for hypertension

Clinic blood pressure $\leq 140/90$ mmHg
**Normotensive**

Clinic blood pressure $\geq 140/90$ mmHg

Clinic blood pressure $\geq 180/110$ mmHg

*If accelerated hypertension*\(^3\)
*or suspected phaeochromocytoma*\(^4\)

Refer same day for specialist care

Consider starting antihypertensive drug treatment immediately

Offer ABPM\(^5\) (or HBPM\(^6\) if ABPM is declined or not tolerated)

Offer to assess cardiovascular risk and target organ damage

ABPM/HBPM $< 135/85$ mmHg
**Normotensive**

ABPM/HBPM $< 135/85$ mmHg
**Stage 1 hypertension**

ABPM/HBPM $\geq 150/95$ mmHg
**Stage 2 hypertension**

If target organ damage present

Offer antihypertensive drug treatment

If younger than 40 years

Consider specialist referral

Offer antihypertensive drug treatment

Offer patient education and interventions to support adherence to treatment

Offer annual review of care

If evidence of target organ damage

Consider alternative causes for target organ damage

Offer to check blood pressure at least every 5 years

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\(^3\) Signs of papilloedema or retinal haemorrhage.

\(^4\) Labile or postural hypotension, headache, palpitations, pallor and diaphoresis.

\(^5\) Ambulatory blood pressure monitoring.

\(^6\) Home blood pressure monitoring.
As can be seen from Figure 4, stage 1 hypertension is present when the clinic blood pressure is 140/90 mmHg or higher and subsequent ABPM daytime average (or HBPM average) blood pressure is 135/85 mmHg or higher. Stage 2 hypertension is present when clinic blood pressure is 160/100 mmHg or higher and subsequent ABPM daytime average (or HBPM average) blood pressure is 150/95 mmHg or higher.

**Initiating treatment**

According to the new guideline, antihypertensive drug treatment is offered to people of any age with stage 2 hypertension, i.e. CBPM 160/100 mmHg or higher and subsequent ABPM daytime average (or HBPM average) blood pressure is 150/95 mmHg or higher.

In those with stage 1 hypertension, antihypertensive drug treatment is recommended for people aged less than 80 years who have one or more of the following:

- target organ damage e.g. left ventricular hypertrophy, hypertensive retinopathy
- established cardiovascular disease e.g. ischaemic heart disease or cerebrovascular disease.
- renal disease e.g. chronic kidney disease stage 1 to 5 as diagnosed on eGFR.
- diabetes (See Section 3.6)
- a 10-year cardiovascular risk equivalent to 20% or greater, (Joint British Societies Cardiovascular Disease Risk Assessment Charts) which would be equivalent to a 10 year risk of fatal CVD of 5% or greater using HeartScore.

Because risk assessments can underestimate the lifetime risk of cardiovascular events in people aged under 40 years with stage 1 hypertension and no evidence of target organ damage, cardiovascular disease, renal disease or diabetes, it is recommended that specialist evaluation of secondary causes of hypertension and a more detailed assessment of potential target organ damage should be arranged.

Antihypertensive drug treatment - The by now familiar “A (B) CD” algorithm from previous versions of the NICE guideline on hypertension has been simplified to an “AC” algorithm (see Figure 5).

**Figure 5: Summary of antihypertensive drug treatment**

![Figure 5](image-url)
1 If an ACE inhibitor is prescribed and is not tolerated (e.g. because of cough), a low-cost ARB should be offered.

2 For second line therapy, a CCB should be offered, but a thiazide-like diuretic can be considered if a CCB is not tolerated or if the patient has oedema, evidence of heart failure or a high-risk of heart failure.

3 A low dose of spironolactone can also be considered.

4 Alternatively, a higher dose of a thiazide-like diuretic can also be considered.

5 An alpha-blocker or beta-blocker should be considered if further diuretic therapy is not tolerated, is contraindicated or is ineffective.

The NICE guideline also makes a number of general recommendations on drug treatment.

- Non-proprietary drugs taken only once a day should be offered if possible.
- People aged over 80 years should be offered the same antihypertensive drug treatment as people aged 55–80 years, taking into account any comorbidities.
- Angiotensin-converting enzyme (ACE) inhibitors and angiotensin II receptor blockers (ARBs) should not be combined.
- If treatment with a diuretic is being started, or changed, a thiazide-like diuretic, such as chlortalidone (12.5–25.0 mg once daily) or indapamide (1.5 mg modified-release once daily or 2.5 mg once daily) is recommended in preference to a conventional thiazide diuretic such as bendroflumethiazide or hydrochlorothiazide. However, those whose blood pressure is stable and well controlled on treatment with bendroflumethiazide or hydrochlorothiazide can continue treatment with same.
- Beta-blockers are not preferred in step 1. However, they may be considered for younger people if ACE inhibitors and ARBs are contraindicated or not tolerated or there is evidence of increased sympathetic drive, and for women of child-bearing potential.
- For black people of African or Caribbean family origin, consider an ARB in preference to an ACE inhibitor, in combination with a CCB for step 2 treatment.
- If a beta-blocker was used in step 1, add a CCB rather than a thiazide-type diuretic for step 2, to reduce the risk of developing diabetes.
- Regard clinic blood pressure that remains at 140/90 mmHg or higher after step 3 treatment with optimal or best tolerated doses as resistant hypertension.
- For step 4 treatment, further diuretic therapy with low-dose (25 mg once daily) spironolactone if blood potassium level is 4.5 mmol/l or lower can be considered. Particular caution should be exercised in people with a reduced eGFR, because of increased risk of hyperkalaemia. Where blood potassium levels are higher than 4.5 mmol/l, a higher-dose thiazide-like diuretic should be offered. Sodium and potassium and renal function should be checked within 1 month and repeated as required thereafter.
- If further diuretic therapy is not tolerated, or is contraindicated or ineffective, consider an alpha- or beta-blocker. However, if blood pressure remains uncontrolled with optimal or maximum tolerated doses of four drugs, expert advice should be obtained.
Monitoring response to treatment

CBPM should be used to monitor the response to treatment. However, for people identified as having a ‘white-coat effect’ (defined as a discrepancy of more than 20/10 mmHg between clinic and average daytime ABPM or average HBPM measurements at time of diagnosis), ABPM or HBPM should be considered as an adjunct to CBPM to monitor the response to treatment. This should be done annually initially and the frequency thereafter can be determined by the response to treatment.

General practitioners and practice nurses will find the patient information leaflet “MANAGE YOUR BLOOD PRESSURE and reduce your risk of heart disease and stroke” published by the Irish Heart Foundation to be especially useful. This can be downloaded here:

3.7 Lipids

The key messages regarding lipid levels and CVD prevention can be summarised as follows:

- Elevated levels of plasma LDL-C are causal to atherosclerosis.
- Reduction of LDL-C decreases CV events.
- Low HDL-C is associated with increased CV risk, but manoeuvres to increase HDL-C have not been associated with a decreased CV risk.
- Lifestyle and dietary changes are recommended for all.
- Total CV risk should guide the intensity of the intervention.
- Total cholesterol and HDL-C are adequately measured on nonfasting samples, thus allowing non-HDL-C to be derived.

Lipid targets have changed in the 2016 guidelines. An LDL-C level of 1.8 mmol/L remains the recommended goal for prevention of recurrent CV events in very-high-risk subjects, such as patients in Heartwatch (the National Programme in General Practice for the Secondary Prevention of Cardiovascular Disease in Ireland). In addition, however, a treatment goal of an LDL-C reduction of at least 50% is also recommended if the baseline LDL-C level is 1.8 to 3.5 mmol/L. Similarly, while an LDL-C of 2.6 mmol/L remains the treatment goal for high-risk patients, a treatment goal of an LDL-C reduction of at least 50% is also recommended in this group if the baseline LDL-C level is 2.6 to 5.1 mmol/L. This makes the 2016 guidelines somewhat similar to the 2013 American College of Cardiology/American Heart Association Blood Cholesterol Guidelines which have abandoned target levels and instead recommend a 50% reduction in baseline for high-risk patients and 30–50% reduction in baseline for moderate risk patients. The baseline measurement refers to the LDL-C level before the decision to treat is taken.

Note also that while an HDL-C level less than 1.0 mmol/L in men and less than 1.2 mmol/L in women may be regarded as a marker of increased risk no actual
target is specified. Physical activity and other lifestyle factors, rather than drug treatment, remain an important means of increasing HDL-C levels.

Similarly, while hypertriglyceridaemia is a significant independent CVD risk factor, the association is weaker than for hypercholesterolaemia. The risk is associated more strongly with moderate than with very severe hypertriglyceridaemia (levels greater than 10 mmol/l), which is a risk factor for pancreatitis. There are, however, no randomized trials to provide sufficient evidence to derive target levels for triglycerides. At present, fasting triglycerides greater than 1.7 mmol/L continue to be considered a marker of increased risk, but concentrations ≤1.7 mmol/L are not evidence-based target levels for therapy.

The 2016 guidelines emphasise that the benefit of cholesterol-lowering therapy depends on initial levels of risk: the higher the risk, the greater the benefit in absolute risk reduction as stated in the current European Society of Cardiology and the European Atherosclerosis Society Task Force guidelines for the management of dyslipidaemias (see Table 12).

**Table 12: Possible intervention strategies as a function of total cardiovascular risk and low-density lipoprotein cholesterol**

<table>
<thead>
<tr>
<th>Total CV risk (SCORE) %</th>
<th>LDL-C levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100 mg/dL &lt;1.8 mmol/L</td>
<td>&lt;70 mg/dL 1.8 to &lt;2.6 mmol/L</td>
</tr>
<tr>
<td>&lt;1</td>
<td>Lifestyle advice</td>
</tr>
<tr>
<td>Class*/Level ^b</td>
<td>I/C</td>
</tr>
<tr>
<td>2 to &lt;5</td>
<td>Lifestyle advice</td>
</tr>
<tr>
<td>Class*/Level ^b</td>
<td>I/C</td>
</tr>
<tr>
<td>≥5 to ≤10 or high-risk</td>
<td>Lifestyle advice</td>
</tr>
<tr>
<td>Class*/Level ^b</td>
<td>IIa/A</td>
</tr>
<tr>
<td>≥10 or very high-risk</td>
<td>Lifestyle advice, consider drug</td>
</tr>
<tr>
<td>Class*/Level ^b</td>
<td>IIa/A</td>
</tr>
</tbody>
</table>

Please find notes overleaf.
CV = cardiovascular; LDL-C = low-density lipoprotein cholesterol; SCORE = Systematic Coronary Risk Estimation.

aClass of recommendation.
bLevel of evidence.

Guidance on the use of drug treatment must be interpreted in light of the physician’s judgement and knowledge with regards to his or her Individual patient. Note that risk stratification is not applicable in familial hypercholesterolaemia, where drug treatment is recommended, and that, in this table, drug treatment may be considered as risks lower than the generic treatment thresholds indicated in paragraph 2.3.5. Thus treatment may occasionally be considered in moderate risk (1–5%) individuals, provided that patients are well-informed of the limited absolute risk reduction, and high numbers needed to treat. In higher risk (5–10%), drug therapy is associated with somewhat larger absolute benefits, and should at least be considered. Drug therapy is strongly advised in those at very high-risk (≥10%). If baseline LDL-C in this category is already below the target level or 1.8 mmol/L, benefit of statin therapy initiation is less certain, but may still be present.

General practitioners and practice nurses will find the patient information leaflet “A HEALTHY CHOLESTEROL to reduce your risk of heart disease and stroke” published by the Irish Heart Foundation to be especially useful. This can be downloaded here:

### 3.8 Diabetes

The key messages regarding diabetes and CVD prevention can be summarised as follows:

- The multifactorial approach is very important in patients with type 2 diabetes.
- Lifestyle management to aid weight control by sustainable dietary changes and increased physical activity levels should be central in the management of patients with type 2 diabetes.
- Intensive management of hyperglycaemia reduces the risk of microvascular complications and, to a lesser extent, the risk of CVD. However, targets should be relaxed in the elderly, frail, those with long-duration DM and those with existing CVD.
- Intensive treatment of BP in diabetes, with a target of 140 mmHg systolic for the majority, reduces the risk of macrovascular and microvascular outcomes. A lower SBP target of 130 mmHg further lessens the risks for stroke, retinopathy and albuminuria and should be applied to selected patients.
- Lipid lowering is a key mechanism to lower CVD risk in both type 2 and type 1 diabetes. All patients >40 years of age and selected younger patients at elevated risk are recommended for statin therapy.
- In diabetes patients with existing CVD, the use of a sodium-glucose co-transporter-2 (SGLT2) inhibitor substantially lessened CVD and total mortality and heart failure hospitalisation without major adverse effects. SGLT2 inhibitors should be considered early in the course of diabetes management in such patients.
- Recent evidence points to sizeable reductions in CVD mortality in diabetes patients via improvements in risk factor management, although the increasing worldwide diabetes prevalence will create major challenges. More should be done to prevent diabetes.
People with diabetes are on average at double the risk of CVD. Except for glucose management, prevention of CVD follows the same general principles as for people without diabetes. Achieving low BP levels and low LDL-C and total cholesterol concentrations is particularly important. Many treatment targets are more stringent for patients with diabetes. Typically, patients with type 2 diabetes have multiple CVD risk factors, each requiring treatment according to existing guidelines.

General practitioners and practice nurses will find the “Diabetes Type 2 Quick Reference Guide” published earlier this year by the ICGP to be especially useful. This can be downloaded at: www.icgp.ie/QIPDiabetesType2.
References


