

## Prevention of cardiovascular disease: an evidence-based clinical aid\*

PATIENT RISK CATEGORY						
High risk						Low risk <sup>§</sup>
TREATABLE RISK FACTORS	Clinically evident coronary heart disease ■ Previous AMI <sup>†</sup> ■ Chronic stable angina	Clinically evident cerebrovascular disease <b>Peripheral vascular disease</b>	Diabetes <sup>‡</sup> <sup>1</sup>	Renal disease	Other risks <sup>§</sup> including ■ Familial hypercholesterolaemia ■ Low levels of HDL cholesterol	
<b>Smoking</b>	All smokers should be provided with an active cessation program + medication assistance, if appropriate.					
<b>Physical inactivity Obesity</b>	Diet low in saturated fat; increased physical activity (3 x 10 minutes daily); limit excessive alcohol consumption. Target body mass index (BMI) < 25 kg/m <sup>2</sup> ; waist < 80 cm for women and < 94 cm for men; waist:hip ratio < 1. <sup>2,3</sup>					
<b>Normal BP (&lt;140/90 mmHg)</b> <sup>3</sup>	ACE inhibitor (ramipril, titrate to 10 mg) <sup>¶</sup> <sup>4</sup>	ACE inhibitor (ramipril, titrate to 10 mg) <sup>¶</sup> <sup>4</sup> Perindopril 4 mg + indapamide 2.5 mg (cerebrovascular disease) <sup>25</sup>	BP < 130/85 <sup>5</sup> Observation, with repeated measurements annually <sup>2,3,5</sup>	BP < 130/85 <sup>5</sup> Observation, with repeated measurements 6 monthly <sup>2,3,5</sup>	Observation, with repeated measurements annually <sup>2,3,5</sup>	Observation, with repeated measurements every 5 years if < 60 years, every 2 years if > 60 years <sup>2,3,5</sup>
<b>High BP (≥140/90 mmHg)</b> <sup>3</sup>	BP > 130/85 <sup>5</sup> ACE inhibitor (ramipril, titrate to 10 mg) <sup>¶</sup> <sup>4</sup> ACE inhibitor <sup>¶</sup> <sup>4,6,7,8,9,10,11</sup> Non-ISA b-blocker <sup>†</sup> <sup>5,12,13,14,15</sup> Calcium channel blocker <sup>5,11,12,16,17</sup> Diuretic (thiazide) <sup>5,11,12</sup>	ACE inhibitor (ramipril, titrate to 10 mg) <sup>¶</sup> <sup>4</sup> b-Blocker <sup>5,12,26,27</sup> Diuretic (thiazide) <sup>5,12,26,27</sup> Perindopril 4 mg + indapamide 2.5 mg (cerebrovascular disease) <sup>25</sup>	BP > 130/85 <sup>5</sup> ACE inhibitor <sup>§</sup> <sup>28,29</sup> (ramipril, titrate to 10 mg) <sup>¶</sup> <sup>4</sup> b-Blocker <sup>**</sup> <sup>5,12</sup> Calcium channel blocker (2nd-line therapy to ACE inhibitor) <sup>5,12,16,17,30,31</sup> Diuretic (thiazide) <sup>**</sup> <sup>5,12</sup>	BP > 130/85 <sup>5</sup> ACE inhibitor <sup>¶</sup> <sup>4,23,34,35</sup> b-Blocker <sup>5,12</sup> Calcium channel blocker (used with an ACE inhibitor) <sup>30</sup> Diuretic (thiazide) <sup>5,12</sup>	ACE inhibitor <sup>3,5,11,12</sup> b-Blocker <sup>3,5,12</sup> Calcium channel blocker (2nd-line therapy) <sup>5,11,12,16,17</sup> Diuretic (thiazide) <sup>5,11,12</sup>	Drug therapy if: ■ Systolic BP > 180 or diastolic BP > 100 <sup>2</sup> ■ Systolic BP > 160 and age > 60 years <sup>36</sup> ■ BP > 140/90 with end-organ damage and/or subclinical disease (microalbuminuria, ST/T wave changes on ECG, left ventricular hypertrophy, retinopathy) <sup>2,5,12</sup>
<b>Dyslipidaemia</b>	TC > 3.5 mmol/L Simvastatin 40 mg <sup>21</sup> TC > 4.0 mmol/L Pravastatin 40 mg <sup>3,18,19</sup> or Low HDL-C/high TG Fibrate (gemfibrozil) <sup>22</sup>	TC > 3.5 mmol/L Simvastatin 40 mg <sup>21</sup> TC > 4.0 mmol/L Pravastatin 40 mg <sup>3,18,19</sup> or Low HDL-C/high TG Fibrate (gemfibrozil) <sup>22</sup>	TC > 3.5 mmol/L Simvastatin 40 mg <sup>21</sup> TC > 5.0 mmol/L Statin <sup>3,18,19</sup> Low HDL-C/high TG Fibrate (gemfibrozil) <sup>22</sup> ACE inhibitor (ramipril, titrate to 10 mg) <sup>¶</sup> <sup>4</sup>	TC > 5.0 mmol/L Statin <sup>3</sup> Low HDL-C/high TG Fibrate (gemfibrozil) <sup>3</sup>	TC > 5.0 mmol/L Statin <sup>3</sup> Low HDL-C/high TG Fibrate (gemfibrozil) <sup>3</sup>	TC > 6.5 mmol/L Statin, if lifestyle changes ineffective <sup>3</sup> TC > 7.5 mmol/L Consider diagnosis of familial hypercholesterolaemia; also secondary causes, other risk factors, and low HDL-C/high TG levels

<b>Proteinuria/ microalbuminuria</b>	<p>Check for diabetes or other causes</p> <p>If evident:</p> <p>ACE inhibitor (cardiovascular and renal risk reduction) (ramipril, titrate to 10 mg)<sup>¶ 4</sup></p> <p>ACE inhibitor (renal risk reduction)<sup>23,24</sup></p>	<p>Check for diabetes or other causes</p> <p>If evident:</p> <p>ACE inhibitor (cardiovascular and renal risk reduction) (ramipril, titrate to 10 mg)<sup>¶ 4</sup></p> <p>ACE inhibitor (renal risk reduction)<sup>23,24</sup></p>	<p>ACE inhibitor (cardiovascular and renal risk reduction) (ramipril, titrate to 10 mg)<sup>¶ 4</sup></p> <p>ACE inhibitor or irbesartan 300 mg (renal risk reduction)<sup>30,32,33</sup></p>	<p>Check for diabetes or other causes</p> <p>If &gt; 1 g proteinuria:</p> <p>ACE inhibitor<sup>4,23,34,35</sup></p> <p>Observation, with repeated measurements 6 monthly, if positive</p>	<p>Check for diabetes or other causes</p> <p>If evident:</p> <p>ACE inhibitor<sup>23,32</sup></p> <p>Observation, with repeated measurements annually, if positive</p>	<p>Check for diabetes or other causes, as may represent a high-risk group</p> <p>Observation, with repeated measurements annually, if positive</p>
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<b>OTHER INTERVENTIONS</b>						
<b>Antiplatelet therapies</b>	<p>Aspirin 75 mg for all patients at high risk of cardiovascular disease.<sup>37,38</sup> Ensure that blood pressure is controlled to minimise risk of haemorrhagic stroke.<sup>39,40</sup></p> <p>Alternative or additional antiplatelet therapy if aspirin not tolerated, or recurrent coronary heart disease/cerebrovascular disease events occur (dipyridamole, aspirin/dipyridamole, clopidogrel)<sup>20,41,42</sup></p>					
<b>Anticoagulation</b>	<p>Consider in patients with paroxysmal atrial fibrillation; chronic atrial fibrillation; prior thromboembolic event; proteinuria &gt; 3 g/day;<sup>43</sup> large anterior myocardial infarction; left ventricular aneurysm; intracardiac thrombus; or severe congestive cardiac failure</p>					

<p><b>Reference key</b></p> <p>■ Evidence from meta-analyses or Cochrane Collaboration reviews.</p> <p>■ Evidence from meta-analyses or Cochrane Collaboration reviews extrapolated to the subgroup.</p> <p>■ Supported by Australian or international guidelines or peer published opinion.</p> <p>Specific references are given when there is evidence from meta-analyses or Cochrane Collaboration reviews relating to that particular patient subgroup. When evidence relating to a specific subgroup is not available, general evidence is extrapolated to the subgroup, or references to guidelines or supporting documentation are given.</p>	<p>AMI = acute myocardial infarction</p> <p>ACE inhibitor = angiotensin-converting enzyme inhibitor</p> <p>BP = blood pressure</p> <p>ECG = electrocardiogram</p> <p>non-ISA = non-intrinsic sympathomimetic activity</p> <p>TC = total cholesterol</p> <p>HDL-C = high-density lipoprotein cholesterol</p> <p>TG = triglycerides</p>
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\* *Prevention of cardiovascular disease: an evidence-based clinical aid* is intended as a guide for the management of vascular disease, integrating current local and international guidelines and clinical trial data. It should only be used in conjunction with the most recent published guidelines. Therapeutic choices are listed in alphabetical order and not by treatment priority, as this may differ for individual patients. Thresholds are referenced to current guidelines and indicate the level for commencement of therapy. Targets that should be aimed for by applying the recommended intervention are not given.

† Hypertensive and normotensive patients after AMI should receive non-ISA β-blockers.<sup>13,14,15</sup> There is evidence that, for patients who cannot take β-blockers, non-dihydropyridine calcium channel blockers may be beneficial.<sup>44,45,46</sup>

‡ Fasting blood sugar (≥ 8 h after consumption of food) ≥ 7.0 mm/L or non-fasting, ≥ 11.1 mmol/L.<sup>1</sup> These blood sugar levels suggest the possibility of diabetes; however, single estimations between 5.5 mmol/L and 11.1 mmol/L require confirmation and/or a glucose tolerance test to confirm the diagnosis of diabetes. Routine management of diabetes will include attention to diet ± oral hypoglycaemic agents or insulin. Evidence that intensive glycaemic control will reduce macrovascular events is limited.

§ A patient's risk level is assessed using tools such as the Framingham calculator <<http://www.nhlbi.nih.gov/about/framingham/riskabs.htm>>. Family history may also modify assessment of a patient's risk. In addition, there is strong evidence of an independent and causal association between depression, social isolation and the prognosis of coronary heart disease, with the impact of these psychosocial factors being of a similar order to conventional risk factors such as smoking. It is therefore crucial that these factors are considered during individual coronary heart disease risk assessment. In circumstances in which a patient is in more than one risk category, a hierarchical approach (left to right) should be adopted.

¶ See titration schedule in the HOPE study.

\*\* May interfere with diabetic control.

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