

## Chapter 2. Cardiovascular System

For cost information please go to the most recent cost comparison charts

### Key

	<p><b>Red drug</b> see <a href="#">GMMMG RAG list</a>  <i>Click on the symbols to access this list</i></p>
	<p><b>Amber drug</b> see <a href="#">GMMMG RAG list</a>  <i>Click on the symbols to access this list</i></p>
	<p><b>Green drug</b> see <a href="#">GMMMG RAG list</a>  <i>Click on the symbols to access this list</i></p>
	<p>If a medicine is unlicensed this should be highlighted in the template as follows</p> <p style="text-align: right;"><b>Drug name U</b></p>
	<b>Not Recommended</b>
	<b>Over the Counter</b>
<b>Order of Drug Choice</b>	Where there is no preferred 1 <sup>st</sup> line agent provided, the drug choice appears in alphabetical order.

<b>BNF chapter</b>	<b>2. Cardiovascular system</b>	
<b>Section</b>	<b>2.1 Positive inotropic drugs</b>	
<b>Subsection</b>	<b>2.1.1. Cardiac glycosides</b>	
	<p><b>Digoxin</b></p> <ul style="list-style-type: none"> <li>tablets 62.5, 125, 250 micrograms</li> <li>elixir 50 micrograms/mL</li> </ul>	<p><a href="#">NICE CG36: Atrial fibrillation</a></p> <p><a href="#">NICE CG108: Heart failure</a></p>
<b>Additional notes</b>		
Digoxin is not recommended first-line for rate control of atrial fibrillation in ambulant patients.		

<b>BNF chapter</b>	<b>2. Cardiovascular system</b>	
<b>Section</b>	<b>2.2 Diuretics</b>	
<b>Subsection</b>	<b>2.2.1 Thiazides and related diuretics</b>	
<b>First choice</b>	<b>Indapamide</b> <ul style="list-style-type: none"> <li>tablets 2.5mg</li> </ul>	<a href="#">NICE CG127: Hypertension</a>
<b>Alternatives</b>	<b>Bendroflumethiazide</b> <ul style="list-style-type: none"> <li>tablets 2.5mg, 5mg</li> </ul>	
<b>Subsection</b>	<b>2.2.2 Loop diuretics</b>	
<b>First choice</b>	<b>Furosemide</b> <ul style="list-style-type: none"> <li>tablets 20mg, 40mg, 500mg</li> <li>liquid 20mg/5mL, 40mg / 5mL</li> </ul>	
<b>Alternative</b>	<b>Bumetanide</b> <ul style="list-style-type: none"> <li>tablets 1mg, 5mg</li> <li>liquid 1mg/5mL</li> </ul>	
<b>Notes</b>		
<p>Furosemide is the first line choice. Bumetanide can be used as an alternative for patients who have not responded to Furosemide or for patients with severe heart failure. It is thought that Bumetanide may be better absorbed from the oedematous bowel.</p>		
<b>Subsection</b>	<b>2.2.3 Potassium-sparing diuretics</b>	
	<b>Amiloride</b> <ul style="list-style-type: none"> <li>tablets 5mg</li> <li>liquid 5mg/5mL</li> </ul>	<a href="#">NICE CG108: Heart failure</a>
<p>Amiloride may be considered as first choice potassium-sparing diuretic in the absence of heart failure (clinical syndrome or LV systolic dysfunction or both) or hypertension.</p> <p>Careful monitoring for hyperkalaemia and hypovolaemia is required especially for people taking other diuretics and/or ACE inhibitors.</p>		
<b>Subsection</b>	<b>2.2.3 Aldosterone antagonists</b>	
	<b>Spironolactone</b> <ul style="list-style-type: none"> <li>tablets 25mg, 50mg, 100mg</li> <li>suspension 50mg/5mL <b>4</b></li> </ul>	<a href="#">NICE CG108: Heart failure</a> <a href="#">NICE CG127: Hypertension</a>
	<b>Eplerenone</b> <ul style="list-style-type: none"> <li>tablets 25mg, 50mg</li> </ul>	<a href="#">Link to IPNTS recommendation</a> <a href="#">NICE CG48: MI, Secondary Prevention</a> <a href="#">NICE CG108: Heart failure</a>

### Additional notes

Spironolactone may be used for specific indications such as heart failure, ascites, hypertension, nephrotic syndrome, primary hyperaldosteronism.

Eplerenone is indicated as an adjunct in stable patients with left ventricular dysfunction with evidence of heart failure, following acute myocardial infarction. Therapy should be started within 3-14 days of event.

Eplerenone may be used in the management of chronic heart failure (NYHA stage II).

A maximum of 50mg daily of either Spironolactone or Eplerenone should be used when managing heart failure.

Eplerenone may be used off-license as an alternative to Spironolactone in patients that develop gynaecomastia.

Careful monitoring for hyperkalaemia and hypovolaemia is required especially for people taking other diuretics and/or ACE inhibitors.

Spironolactone is significantly cheaper than Eplerenone.

<b>BNF chapter</b>	<b>2. Cardiovascular system</b>	
<b>Section</b>	<b>2.3 Anti-arrhythmic drugs</b>	
<b>Subsection</b>	<b>2.3.2 Drugs for arrhythmias</b>	
<b>Supraventricular &amp; ventricular arrhythmias</b>	<b>Amiodarone</b> Tablets 100mg, 200mg	<a href="#">Link to amiodarone GMMMG information sheet 2009</a> 
	<b>Flecainide</b> Tablets 50mg, 100mg	<a href="#">NICE CG36: Atrial fibrillation</a>
<b>Supraventricular arrhythmias</b>	<b>Dronedarone</b> tablets 400mg	<a href="#">NICE TA197: Atrial fibrillation -dronedarone</a>
<p><b>Additional notes</b></p> <p>Amiodarone, Flecainide, Dronedarone specialist initiation.</p> <p>Dronedarone should only be initiated as a second line treatment option for atrial fibrillation after:</p> <ul style="list-style-type: none"> <li>• standard NICE first line options are either caution / contraindication / failure and</li> <li>• Amiodarone caution / intolerance in clinically stable patients who do not have NYHA Class III/IV heart failure.</li> </ul> <p>See MHRA drug safety alert for Dronedarone additional monitoring parameters.</p> <p><a href="#">Link to MHRA safety alert</a></p>		

<b>BNF chapter</b>	<b>2. Cardiovascular system</b>	
<b>Section</b>	<b>2.4 Beta-adrenoceptor blocking drugs</b>	
<b>First choice</b>	<p><b>Bisoprolol</b></p> <ul style="list-style-type: none"> <li>tablets 1.25mg, 2.5mg, 3.75mg, 5mg, 7.5mg, 10mg</li> </ul>	<p><a href="#">NICE CG36: Atrial fibrillation</a></p> <p><a href="#">NICE CG108: Heart failure</a></p> <p><a href="#">NICE CG127: Hypertension</a></p> <p><a href="#">NICE CG48: MI, Secondary Prevention</a></p> <p><a href="#">NICE CG126: Stable angina</a></p> <p><a href="#">NICE CG172: Myocardial Infarction - secondary prevention</a></p>
<b>Alternatives</b>	<p><b>Carvedilol</b></p> <ul style="list-style-type: none"> <li>tablets 3.125mg, 6.25mg, 12.5mg, 25mg</li> </ul> <p><b>Nebivolol</b></p> <ul style="list-style-type: none"> <li>tablets 2.5mg, 5mg</li> </ul> <p><b>Atenolol</b></p> <ul style="list-style-type: none"> <li>25mg, 50mg tablets</li> </ul> <p><b>Labetalol</b></p> <ul style="list-style-type: none"> <li>tablets 100mg, 200mg, 400mg</li> </ul>	
<p><b>Additional notes</b></p> <p>Oral Labetalol is used for the management of hypertension in pregnancy (see NICE guidance – Hypertension in pregnancy).</p> <p>Mild-moderate COPD is not a contra-indication to the use of cardio-selective beta-blockers. If the benefit is thought to outweigh the risk then the highly cardio-selective beta-blocker Nebivolol can be considered in patients with severe COPD or asthma. This is usually carried out under specialist initiation with PEFr monitoring in hospital. It can also be tried in patients who develop wheeze with less selective beta-blockers. It is usual to start Nebivolol at 1.25mg and then uptitrate (unfortunately, only 5mg tablets are available, so 1.25mg equates to ¼ of a tablet).</p> <p>Remember to dose optimise beta-blockade as per NICE Heart Failure and STEMI guidance. (Aim for resting HR 50-60).</p> <p>Sotalol is an option for managing life threatening arrhythmias (specialist initiation).</p>		

<b>BNF chapter</b>	<b>2. Cardiovascular system</b>	
<b>Section</b>	<b>2.5 Hypertension and heart failure</b>	
<b>Subsection</b>	<b>2.5.1 Vasodilator antihypertensive drugs</b>	
<b>First choice</b>	<b>Hydralazine</b> <ul style="list-style-type: none"> <li>tablets 25mg, 50mg</li> </ul>	<a href="#">NICE CG108: Heart failure</a>
<b>Additional notes</b>		
Hydralazine may be used in combination with long acting nitrates in patients with heart failure who are still symptomatic despite the optimal therapy with ACE inhibitor and beta blocker or when an ACE inhibitors and ARBs are contra-indicated or not tolerated.		
<b>Subsection</b>	<b>2.5.2 Centrally acting antihypertensive drugs</b>	
	<b>Methyldopa</b> <ul style="list-style-type: none"> <li>tablets 125mg, 250mg, 500mg</li> </ul> <b>Moxonidine</b> <ul style="list-style-type: none"> <li>tablets 200, 300, 400 micrograms</li> </ul>	<a href="#">NICE CG107: Hypertension in pregnancy</a>
<b>Additional notes</b>		
Methyldopa is used in the management of hypertension in pregnancy.		
Moxonidine are considered last-line management options for resistant hypertension. Specialist initiation only.		
<b>Subsection</b>	<b>2.5.4 Alpha-adrenoreceptor blocking drugs</b>	
	<b>Doxazosin</b> <ul style="list-style-type: none"> <li>tablets 1mg, 2mg, 4mg</li> </ul>	<a href="#">NICE CG127: Hypertension</a>
<b>Additional notes</b>		
Doxazosin is a fourth-line hypertension management option.		
<b>Subsection</b>	<b>2.5.5 Drugs affecting the renin-angiotensin system</b>	
	<b>2.5.5.1 Angiotensin-converting enzyme inhibitor</b>	
<b>First choice</b>	<b>Ramipril</b> <ul style="list-style-type: none"> <li>capsules 1.25mg, 2.5mg, 5mg, 10mg</li> </ul>	<a href="#">NICE CG108: Heart failure</a>
<b>Alternatives</b>	<b>Perindopril erbumine</b> <ul style="list-style-type: none"> <li>tablets 2mg, 4mg, 8mg</li> </ul> <b>Lisinopril</b> <ul style="list-style-type: none"> <li>tablets 2.5mg, 5mg, 10mg, 20mg</li> </ul> <b>Enalapril</b> <ul style="list-style-type: none"> <li>tablets 2.5mg, 5mg, 10mg, 20mg</li> </ul>	<a href="#">NICE CG127: Hypertension</a> <a href="#">NICE CG48: MI, Secondary Prevention</a> <a href="#">NICE CG172: Myocardial Infarction - secondary prevention</a> PCT hypertension guidelines

<p><b>Additional notes</b></p> <p>Prescribers are reminded that Perindopril should be prescribed generically. Perindopril arginine (Coversyl Arginine®) is not dose equivalent and is not included in the formulary.</p> <p>In heart failure and post-MI, it is important that ACE inhibitors are titrated up to their target dose (or maximum tolerated), as advised by NICE.</p>		
<p><b>2.5.5.2 Angiotensin-II receptor antagonists (ARB)</b></p>		
<p><b>First choice</b></p>	<p><b>Losartan</b></p> <ul style="list-style-type: none"> <li>• tablets 12.5mg, 25mg, 50mg, 100mg</li> </ul> <p><b>Candesartan</b></p> <ul style="list-style-type: none"> <li>• tablets 2mg, 4mg, 8mg, 16mg, 32mg</li> </ul>	<p><a href="#">NICE CG127: Hypertension</a></p> <p><a href="#">NICE CG108: Heart failure</a></p> <p><a href="#">NICE CG48: MI, Secondary Prevention</a></p>
<p><b>Alternatives</b></p>	<p><b>Irbesartan</b> (renal patients).</p> <ul style="list-style-type: none"> <li>• tablets 75mg, 150mg, 300mg</li> </ul> <p><b>Valsartan</b> (post-myocardial infarction)</p> <ul style="list-style-type: none"> <li>• capsules 40mg, 80mg, 160mg</li> </ul>	
<p><b>Additional notes</b></p> <p>Angiotensin-II receptor antagonists are more expensive than ACE inhibitors. Angiotensin-II receptor antagonists should be reserved only for those patients who suffer from unacceptable side effects using ACE inhibitors. However if patients have suffered angioedema with an ACE inhibitor then an ARB is not recommended.</p> <p>In heart failure, it is important that ARBs are titrated up to their target dose (or maximum tolerated) as advised by NICE.</p>		
<p><b>Subsection</b></p>	<p><b>Renin inhibitors</b></p>	
	<p><b>Aliskiren</b></p> <ul style="list-style-type: none"> <li>• 150mg, 300mg tablet</li> </ul>	<p><a href="#">Link to IPNTS recommendation</a></p> <p><a href="#">Link to March 2012 Drug Safety Update</a></p>
<p><b>Additional notes</b></p> <p><b>Specialist initiation.</b> Fourth-line agent after considering alpha blockers, potassium sparing diuretics or aldosterone antagonists.</p> <p>The combination of Aliskiren (Rasilez) with angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARBs) has been associated with serious adverse cardiovascular and renal outcomes in a recent large clinical trial (ALTITUDE).</p> <p>This combination is now contraindicated in: diabetic patients (type I or type II); and non-diabetic patients with an estimated glomerular filtration rate (eGFR) &lt;60 mL/min per 1.73 m<sup>2</sup></p> <p>In all other patient groups, Aliskiren in combination with an ACE inhibitor or an ARB is not recommended.</p> <p>Any use of Aliskiren (either as monotherapy or in combination with other medicines) is no longer recommended in any patient with severe renal impairment: eGFR &lt;30 mL/min per 1.73 m<sup>2</sup>.</p>		

<b>BNF chapter</b>	<b>2. Cardiovascular system</b>	
<b>Section</b>	<b>2.6 Nitrates, calcium-channel blockers, and potassium channel activators</b>	
<b>Subsection</b>	<b>2.6.1 Nitrates</b>	
	<p><b>Glyceryl trinitrate</b></p> <ul style="list-style-type: none"> <li>spray 400 micrograms</li> <li>buccal tablets 2mg</li> </ul> <p><b>Isosorbide mononitrate</b></p> <ul style="list-style-type: none"> <li>modified release tablets 60mg</li> </ul> <p>Branded generics are available. Follow local guidance.</p>	<p><a href="#">NICE CG108: Heart failure</a></p> <p><a href="#">NICE CG126: Stable angina</a></p>
<b>Subsection</b>	<b>2.6.2 Calcium-channel inhibitors</b>	
<b>First choice</b>	<p><b>Amlodipine</b></p> <ul style="list-style-type: none"> <li>tablets 5mg, 10mg</li> </ul>	<p><a href="#">NICE CG127: Hypertension</a></p> <p><a href="#">NICE CG108: Heart failure</a></p> <p><a href="#">NICE CG126: Stable angina</a></p>
<b>Alternatives</b>	<p><b>Diltiazem</b> (angina)</p> <ul style="list-style-type: none"> <li>modified release tablets 60mg</li> <li>once-a-day preparation – 120mg, 180mg, 200mg, 240mg, 300mg</li> </ul> <p><b>Verapamil</b> (rate controlled atrial fibrillation)</p> <ul style="list-style-type: none"> <li>tablets 40mg, 80mg, 120mg, 160mg</li> <li>modified release tablets/capsules 120mg, 180mg, 240mg</li> </ul>	<p><a href="#">NICE CG48: MI, Secondary Prevention</a></p> <p><a href="#">NICE CG36: Atrial fibrillation</a></p> <p><a href="#">NICE CG126: Stable angina</a></p>
<p><b>Additional notes</b></p> <p>Specify the brand when prescribing a Diltiazem preparation (excluding 60 mg tablet) or modified release Nifedipine.</p>		
<b>Subsection</b>	<b>2.6.3 Other anti-anginal drugs</b>	
	<p><b>Ivabradine</b></p> <ul style="list-style-type: none"> <li>tablets 5mg, 7.5mg</li> </ul> <p><b>Nicorandil</b></p> <ul style="list-style-type: none"> <li>tablets 10mg, 20mg</li> </ul> <p><b>Ranolazine</b></p> <ul style="list-style-type: none"> <li>tablets 375mg, 500mg, 750mg</li> </ul>	<p><a href="#">NICE TA 267: ivabradine</a></p> <p><b>G<sub>n</sub></b> (Heart Failure – specialist initiation)</p> <p><a href="#">NICE CG126: Stable angina</a></p>
<p><b>Additional notes</b></p> <p>Ivabradine should only be initiated in people with New York Heart Association class II to IV stable chronic heart failure with systolic dysfunction who are in sinus rhythm with a heart rate of 75 beats per minute or more, with a left ventricular ejection fraction of 35% or less AND who have been stable for 4 weeks on optimised standard therapy with ACE inhibitors, beta-blockers and aldosterone antagonists (or when beta-blockers are contra-indicated or not tolerated).</p>		

<b>Subsection</b>	<b>2.6.4 Peripheral vasodilators and related drugs</b>	
	<p><b>Naftidrofuryl</b></p> <ul style="list-style-type: none"> <li>capsules 100mg</li> </ul>	<p><a href="#">NICE TA223: Peripheral arterial disease - naftidrofuryl oxalate</a></p>
<p><b>Additional notes</b></p> <p>Naftidrofuryl is an option for the treatment of intermittent claudication in people with peripheral arterial disease for whom vasodilator therapy is considered appropriate after taking into account other treatment options.</p>		

<b>BNF chapter</b>	<b>2. Cardiovascular system</b>	
<b>Section</b>	<b>2.8 Anticoagulants</b>	
<b>Subsection</b>	<b>2.8.1 Parenteral anticoagulants</b>	
	Choice of low molecular heparin as per local policies for prophylaxis and treatment of venous thromboembolism.	<a href="#">NICE CG144: Venous Thromboembolism</a> 
<b>Additional notes</b>		
Monitor full blood count and potassium levels regularly.		
<b>Hirudins:</b> Bivalirudin in combination with aspirin and clopidogrel is an option for the treatment of adults with STEMI undergoing primary percutaneous coronary intervention. <a href="#">NICE TA230: MI (persistent ST-segment elevation) - bivalirudin</a>		
<b>Subsection</b>	<b>2.8.2 Oral anticoagulants</b>	
<b>First choice</b>	<p><b>Apixaban▼</b></p> <ul style="list-style-type: none"> <li>tablets 2.5mg, 5mg</li> </ul> <p><b>Dabigatran</b></p> <ul style="list-style-type: none"> <li>capsules 75mg, 110mg, 150mg</li> </ul> <p><b>Rivaroxaban▼</b></p> <ul style="list-style-type: none"> <li>tablets 10mg, 15mg, 20mg</li> </ul> <p><b>Warfarin</b></p> <ul style="list-style-type: none"> <li>tablets 1mg, 3mg, 5mg</li> </ul>	<p><a href="#">Drug Safety Update 2013</a></p> <p><a href="#">NICE TA245: Venous thromboembolism - apixaban (hip and knee surgery)</a> <a href="#">NICE TA275: stroke and systemic embolism (prevention, non-valvular atrial fibrillation) - apixaban</a></p> <p><a href="#">Link to IPNTS recommendation</a> <a href="#">MHRA Drug Safety Advice</a> <a href="#">NICE CG144: Venous Thromboembolism</a> <a href="#">NICE TA157: Dabigatran prophylaxis</a> <a href="#">NICE TA249: Dabigatran - atrial fibrillation</a></p> <p><a href="#">Link to IPNTS recommendation</a> <a href="#">NICE CG144: Venous Thromboembolism</a> <a href="#">NICE TA256: Rivaroxaban - atrial fibrillation</a> <a href="#">NICE TA261: rivaroxaban DVT</a> <a href="#">NICE TA170: Rivaroxaban prophylaxis</a> <a href="#">NICE TA 287: PE and recurrent VTE- rivaroxaban</a></p>
<b>Alternatives</b>	<b>Acenocoumarol</b> (Sinthrome®)	
	<ul style="list-style-type: none"> <li>tablets 1mg</li> </ul>	
<b>Additional notes</b>		
Restrictions on supply of different strengths of Warfarin will vary according to local policy.		
Choice of oral anticoagulant for orthopaedic thromboprophylaxis; apixaban, dabigatran, or rivaroxaban dependant on local protocol. Total supply made from hospital.		
For stroke prevention associated with atrial fibrillation, apixaban, dabigatran, rivaroxaban or warfarin may be considered in select patient groups – See <a href="#">GMMMG / GMCCSN treatment algorithms for NOACs</a> and <a href="#">GMCSU Anticoagulant Prescribing Decision Aid</a> .		

<b>BNF chapter</b>	<b>2. Cardiovascular system</b>	
<b>Section</b>	<b>2.9 Antiplatelet drugs</b>	
<b>First choice</b>	<p><b>Aspirin</b></p> <ul style="list-style-type: none"> <li>dispersible tablets 75mg, 300mg</li> </ul> <p><b>Clopidogrel</b></p> <ul style="list-style-type: none"> <li>tablets 75mg</li> </ul> <p><b>Asasantin Retard®</b></p> <ul style="list-style-type: none"> <li>modified release (MR) capsules, aspirin 25mg plus dipyridamole 200mg</li> </ul>	<p><a href="#">NICE Unstable angina &amp; NSTEMI, Stroke, STEMI, AF, hypertension in pregnancy</a></p> <p><a href="#">NICE CG172: Myocardial Infarction - secondary prevention</a></p> <p><a href="#">Link to GMMMG recommendation</a></p> <p><a href="#">Link to IPNTS recommendation</a></p> <p><a href="#">NICE TA210: Clopidogrel / dipyridamole MR prophylaxis</a></p>
<b>Alternatives</b>	<p><b>Ticagrelor</b></p> <ul style="list-style-type: none"> <li>tablets 90mg</li> </ul> <p><b>Prasugrel – in-line with specialist initiation</b></p> <ul style="list-style-type: none"> <li>tablets 5mg, 10mg</li> </ul>	<p><a href="#">NICE TA236: Ticagrelor for ACS</a></p> <p><a href="#">Link to IPNTS recommendation</a></p> <p><a href="#">Link to GMMMG/cardiac network algorithm</a></p>
<p><b>Additional notes</b></p> <p>Low-dose Aspirin prophylaxis should not routinely be initiated for primary prevention.</p> <p>Enteric-coated Aspirin tablets are not recommended. There is no convincing evidence that at a daily dose of 75 mg using enteric-coated rather than soluble Aspirin reduces the risk of gastrointestinal bleeding. (Ref: <i>Drug Ther Bull Jan 1997 p7-8</i>)</p> <p><a href="#">MHRA Drug Safety Update 2013</a>: reports of acquired haemophilia have been received in association with clopidogrel. This very rare but serious condition may be missed due to the established risk of bleeding associated with clopidogrel treatment</p> <p><a href="#">MHRA Drug Safety update 2014</a>: when prasugrel is used in patients with unstable angina or non-STEMI, with coronary angiography done within 48 hours after admission, the loading dose should only be given at the time of PCI to minimise the risk of bleeding.</p> <p><b>Recommendations on prevention of occlusive vascular events</b></p> <p><b>Ischaemic stroke</b></p> <ul style="list-style-type: none"> <li>◆ <b>First-line</b> - give Clopidogrel monotherapy.</li> <li>◆ Give dipyridamole MR + Aspirin <b>ONLY</b> if: <ul style="list-style-type: none"> <li>➢ Clopidogrel is contraindicated (CI) or not tolerated, <b>OR</b></li> <li>➢ to continue treatment in patients already receiving this combination.</li> </ul> </li> <li>◆ Give dipyridamole MR monotherapy <b>ONLY</b> if Aspirin <b>AND</b> Clopidogrel are CI or not tolerated.</li> </ul>		

**TIA**

- ◆ **First-line** - give dipyridamole MR + Aspirin.
- ◆ Give dipyridamole MR monotherapy **ONLY** if Aspirin is CI or not tolerated.
- ◆ Clopidogrel is not recommended for people who have had a TIA as it does not have UK marketing authorisation for this indication.

**PAD or multivascular disease**

- ◆ **First-line** - give Clopidogrel monotherapy.

**MI**

Following initial acute management according to [NICE CG94: Unstable angina and NSTEMI](#) or [NICE CG48: MI, Secondary Prevention](#) :

- ◆ **First-line** - give Aspirin monotherapy.
- ◆ Give Clopidogrel monotherapy **ONLY** if Aspirin is CI or not tolerated.

Although not discussed in this NICE guideline, Aspirin monotherapy would only be used if dipyridamole and/or Clopidogrel are contraindicated or not tolerated.

**Dual anti-platelet therapy** (Aspirin plus Clopidogrel or Ticagrelor or Prasugrel) should be prescribed for up to 12 months after an acute MI (Usually 12 months will be recommended). Occasionally, consultant cardiologists may recommend a longer period of therapy (possibly lifelong/indefinitely) having taken account the risks and benefits at an individual patient level. This will usually be after a complex coronary stenting procedure or after recurrent events despite optimal therapy.

A course length for Clopidogrel must be indicated on any communication with primary care.

Early discontinuation of anti-platelets must be avoided especially in patients who have had intra-coronary stents, without prior discussion with cardiologists.

In severe dyspepsia, low dose Aspirin should be initiated with gastro-protection (Omeprazole). Should the severe dyspepsia continue despite gastroprotection, substitute with Clopidogrel 75mg daily.

Concomitant use of Clopidogrel and Omeprazole or Esomeprazole is discouraged unless considered essential. Consider Lansoprazole in patients who are taking Clopidogrel. Other gastrointestinal therapy such as H2 blockers (except cimetidine) or antacids may be suitable in some patients

Refer to [MHRA Drug Safety Update April 2010](#) regarding interactions with Clopidogrel.

<b>Section</b>	<b>2.10.2 Fibrinolytic drugs</b>
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Thrombolytic drugs: [NICE TA47: Glycoprotein IIb/IIIa inhibitors \(partially updated by CG94\)](#), [NICE TA52: Myocardial infarction – thrombolysis](#), [NICE TA264: Stroke \(acute, ischaemic\) - alteplase](#) are recommended for use in accordance with local care pathways and following NICE guidance: [NICE CG94: Unstable angina and NSTEMI](#)

<b>BNF chapter</b>	<b>2. Cardiovascular system</b>	
<b>Section</b>	<b>2.12 Lipid regulating drugs</b>	
<b>Statins</b> <b>First line</b>	<b>Simvastatin</b> <ul style="list-style-type: none"> <li>tablets 20mg, 40mg</li> </ul>	<a href="#">NICE CG48: MI, Secondary Prevention</a> <a href="#">NICE TA94: Statins</a> <a href="#">NICE CG67: Lipid-modification</a> <a href="#">NICE CG71: Familial hypercholesterolaemia</a> <a href="#">NICE CG172: Myocardial Infarction - secondary prevention</a>
<b>Statin</b> <b>Alternatives</b>	<b>Pravastatin</b> <ul style="list-style-type: none"> <li>tablets 40mg</li> </ul> <b>Atorvastatin</b> <ul style="list-style-type: none"> <li>tablets 10mg, 20mg, 40mg, 80mg</li> </ul>	<a href="#">NICE CG71: Familial hypercholesterolaemia</a>
<p><b>Additional notes</b></p> <p>Simvastatin is first-line choice for primary and secondary prevention of cardiovascular disease.</p> <p>Atorvastatin 80mg may be used for the management of ACS.</p> <p><a href="#">MHRA has updated advice on drug interactions and contraindications for simvastatin</a> and a <a href="#">Safer Medicines Update for statins</a> is available from the RDTIC</p> <p>If intolerance is a problem, this should be managed by dose reduction or the use of an alternative statin (consider hydrophilic statin such as pravastatin) in preference to commencing alternative lipid lowering agents such as ezetimibe.</p>		
<b>Other lipid lowering agents</b>	<b>Colestyramine</b> <ul style="list-style-type: none"> <li>powder 4g sachet</li> </ul> <b>Ezetimibe</b> <ul style="list-style-type: none"> <li>tablets 10mg</li> </ul> <b>Omacor<sup>®</sup></b> <ul style="list-style-type: none"> <li>capsules 1g</li> </ul>	<a href="#">NICE CG67: Lipid-modification</a>  <a href="#">NICE CG71: Familial hypercholesterolaemia</a>
<b>Fibrates</b>	<b>Fenofibrate</b> <ul style="list-style-type: none"> <li>capsules 67mg, 200mg, 267mg</li> <li>tablets 160mg</li> </ul> <p>Fenofibrate: Fenofibrate has similar efficacy to bezafibrate in the reduction of triglycerides and is more potent than in terms of LDL reduction and HDL elevation.</p>	<a href="#">NICE CG66 (87): Diabetes mellitus Type II</a> <a href="#">NICE CG48: MI, Secondary Prevention</a> <a href="#">NICE CG71: Familial hypercholesterolaemia</a>
<p><b>Additional notes</b></p> <p>See local guidelines for lipid lowering policy. Omacor<sup>®</sup> may be considered for lipid specialist initiation only (see IPNTS). This supersedes GMMMG lipid modification guidance on GMMMG website.</p>		

