

## 2: Cardiovascular System (7<sup>th</sup> edition see [version history](#))

### 2.1.1 Cardiac glycosides

**Digoxin** - *monitoring<sup>1</sup> required*

The likelihood of toxicity with digoxin increases progressively through the plasma range 1.5-3micrograms/litre. Digitalis toxicity is more likely to occur in the elderly and in patients suffering from hypokalaemia. If toxicity occurs, digoxin should be withdrawn; serious manifestations require urgent specialist management.

### 2.2 Diuretics

#### 2.2.1 Thiazides & related diuretics - *monitoring<sup>1</sup> required*

**Indapamide** - *not m/r preparation*

Bendroflumethiazide (for existing patients and the treatment of oedema only)

Indapamide 2.5mg daily is the current recommended thiazide-like diuretic for treatment of hypertension (NICE [NG136](#)).

Metolazone is initiated on specialist advice from secondary care clinicians prior to continuation in primary care; AMBER G on [SY IMOC TLD](#).

NOTE: Metolazone should only be prescribed by brand Xaqua® as the Xaqua® tablets are not directly interchangeable with other metolazone products due to higher bioavailability, which may differ significantly.

5mg Xaqua® tablet can be halved to make a 2.5mg Xaqua® dose

#### 2.2.2 Loop diuretics – *monitoring<sup>1</sup> required*.

**Furosemide**

Bumetanide

#### 2.2.3 Potassium sparing diuretics and aldosterone antagonists

– *monitoring<sup>1</sup> required*

Amiloride - *maximum dose is 10mg when used with other diuretics.*

- Hypokalaemia can occur with both thiazide and loop diuretics.
- Potassium sparing diuretics may be considered to treat hypokalaemia. Also consider optimising other therapies that may affect potassium levels.
- Increased risk of hyperkalaemia when potassium-sparing diuretics are given with ACEIs / A2RAs, especially in patients with additional risk factors. Stop if patient newly started on ACEI / A2RA due to risk of life-threatening hyperkalaemia. If amiloride is indicated and patient is already on an ACEI / A2RA, start with 2.5mg daily and monitor potassium levels closely.
- Potassium supplements **must not** be given with potassium-sparing diuretics.

#### Aldosterone antagonists

**Spironolactone**

Eplerenone- AMBER on [TLDL](#) for patients intolerant of spironolactone due to gynaecomastia

Finerenone – AMBER on [SY IMOC TLD](#) for use in CKD in Type 2 diabetes.

See NICE [TA877](#) and [SY ICB SCP](#)

- Spironolactone daily improves the prognosis of NYHA grade III-IV heart failure ( NICE [NG106](#)). Start at a low dose in heart failure 25mg once daily, to a maximum of 50mg once daily.
- Potassium supplements **must not** be given with aldosterone antagonists.

## 2.2.4 Potassium sparing diuretics with other diuretics

Fixed dose combination products only recommended for patients with compliance problems or to help reduce tablet load for the purpose of medicines optimisation.

## 2.3 Anti-arrhythmic drugs

### 2.3.1 Management of arrhythmias

For the management of atrial fibrillation, see NICE [NG196](#)

### 2.3.2 Drugs for arrhythmias – *drugs for arrhythmias are hospital-initiation only*

Amiodarone [Amiodarone shared care guideline](#)

[Amiodarone patient passport](#)

## 2.4 Beta-adrenoceptor blocking drugs

**Bisoprolol** *dose titration required in heart failure*

Atenolol

Carvedilol *dose titration required in heart failure*

Labetolol - *for hypertension during pregnancy*

## Target doses for beta-blockers in heart failure

<b>Bisoprolol</b>	10mg once daily. (Increase in 1-2 week intervals)
<b>Carvedilol</b>	25mg twice daily in severe heart failure or weight < 85kg 50mg twice daily if weight > 85kg (Increase in 2 week intervals)
<b>*Nebivolol (in adults ≥ 70yrs old with mild-moderate HF)</b>	10mg once daily. (Increase in 1-2 week intervals)

\*Nebivolol is included in Sheffield guidelines for the [Pharmacological management of chronic heart failure with reduced left ventricular ejection fraction \(HFrEF\) in adults in primary care.](#)

Beta-blockers are step 4 in the management of resistant hypertension (see NICE [NG136](#)). However, they may be considered earlier in the pathway in younger people, particularly: a) those with intolerance or contraindication to ACEIs/A2RAs; b) women of child-bearing potential; c) people with evidence of increased sympathetic drive.

See [NICE NG133](#) for place in management of hypertension in pregnancy.

Beta-blockers should not normally be co-prescribed with verapamil or diltiazem. Please see [BNF](#) or individual [SPCs](#) for advice on cautions and contraindications.

## 2.5 Hypertension and heart failure

Primary hypertension adults, including Type 2 diabetes: see NICE [NG136](#) and [NICE Visual summary for hypertension diagnosis and treatment](#)

Type 1 diabetes: see blood pressure management NICE [NG17](#)

Chronic kidney disease: see blood pressure control NICE [NG203](#)

Pregnancy: see NICE [NG133](#) and [visual summaries](#)

Chronic heart failure: [NICE NG106](#)

Sheffield prescribing guidelines –

[Pharmacological management of chronic heart failure with reduced left ventricular ejection fraction \(HFrEF\) in adults in primary care](#)

2.5.1 Vasodilator antihypertensive drugs  
 Hydralazine – *specialist initiation required in heart failure*  
 Treatment of pulmonary hypertension – specialist prescribing only

2.5.2 Centrally acting antihypertensive drugs  
 Methyldopa – *for hypertension during pregnancy (monitoring<sup>1</sup> required)*

Side-effects are minimised if the daily dose is kept below 1g; avoid in active liver disease.

2.5.4 Alpha-adrenoceptor blocking drugs  
 Doxazosin (**do not prescribe modified release formulations**)  
 See also [chapter 7](#) section 7.4.1 for prescribing in benign prostatic hyperplasia (BPH)

Hypertension- recommended as an option only in Step 4 for the management of resistant hypertension (NICE [NG136](#)). Use with caution in patients with heart failure.

2.5.5 Drugs affecting the renin-angiotensin system

Avoid use in pregnancy [MHRA alert](#).

2.5.5.1 Angiotensin converting enzyme inhibitors (ACEIs)  
 - *monitoring<sup>1</sup> required*  
**Ramipril**  
 Enalapril  
 Lisinopril

2.5.5.2 Angiotensin-II receptor antagonists (A2RAs) - *monitoring<sup>1</sup> required*  
**Losartan**  
 Candesartan  
 Valsartan - *licensed for use post-MI in patients with left ventricular systolic dysfunction (LVSD); target dose 160mg bd*  
 Sacubitril with valsartan (Entresto®) - AMBER on [TLDL](#) *specialist initiation required* for treating symptomatic chronic heart failure with reduced ejection fraction. See [NICE TA388](#) and [Sheffield HFrEF](#) guidelines

Start with a low dose. Ensure correct dose titration in heart failure and post-myocardial infarction

**Target doses for ACE Inhibitors & Angiotensin II Receptor Antagonists**

	<b>Enalapril</b>	<b>Lisinopril</b>	<b>Ramipril</b>	<b>Losartan</b>	<b>Candesartan</b>
<b>Heart Failure</b>	10-20mg twice daily	35mg once daily	10mg daily	150 mg daily*	32 mg daily
<b>Post-Myocardial Infarction</b>	not licensed	BP-dependent. See BNF for details	5mg twice a day	not licensed	not licensed

\*Note: dose of losartan beyond 100 mg per day is associated with excess hyperkalaemia and renal impairment

6.1.2.3 Sodium glucose co-transporter inhibitors (SGLT2 inhibitors)  
**Heart failure** with reduced ejection fraction (HFrEF) and heart failure with preserved ejection fraction (HFpEF) or mildly reduced ejection fraction (HFmrEF):

AMBER on the [TLDL](#) - specialist initiation required for treating symptomatic chronic heart failure in line with NICE [TA679](#), [TA773](#) (HFrEF) and [TA902,TA929](#) (HFpEF/HFmrEF).

Dapagliflozin 10mg daily  
Empagliflozin 10mg daily

See [Dapagliflozin and empagliflozin in HFrEF: guidance for primary care](#)

#### **Chronic kidney disease (CKD):**

Green on the [TLDL](#) for management of CKD. See NICE [TA775](#), [TA942](#)

Dapagliflozin 10mg daily  
Empagliflozin 10mg daily

See [Sheffield CKD management in adults: a guideline for primary care \(under review finerenone\)](#)

2.6 Nitrates, calcium-channel blockers, and other antianginal drugs  
(See Stable angina: Management NICE [CG126](#) and Sheffield [stable angina treatment algorithm](#))

#### 2.6.1 Nitrates

**Glyceryl trinitrate spray – CFC Free**

**Isosorbide mononitrate (ISMN) MR 60mg tabs (Chemydur® 60XL) –**  
*Chemydur® 60XL may be halved to give a 30mg dose*

MR formulations should only be given **once daily** and used in this way do not produce tolerance.

#### 2.6.2 Calcium channel blockers – dihydropyridines

*BNF recommends branded prescribing for modified release preparations*

##### **Amlodipine**

Nifedipine MR – twice daily (Adipine® MR)

Nifedipine XL – once daily: (Coracten XL®)

- *nifedipine for hypertension in pregnancy as per NICE [NG133](#)*

##### Calcium channel blockers – rate limiting

*BNF recommends branded prescribing for modified release preparations*

**Diltiazem** Twice daily: (Angitil SR® caps)

Once daily: (Slozem® caps)

Verapamil \***Securon SR® (240mg)** or Half Securon SR® (120mg) - if modified release required

\*Securon SR® is scored and can be halved without affecting the slow-release profile of the drug, in line with the SPC. It is therefore more cost effective to use Securon SR® when prescribing 120mg doses compared with using Half Securon®.

Verapamil or diltiazem should not normally be co-prescribed with a beta-blocker and are contra-indicated with ivabradine. Please see current [BNF](#) or individual [SPCs](#) for advice on cautions and contraindications.

#### 2.6.3 Other antianginal drugs

**Nicorandil** – second line due to the risks of ulcer complications [MHRA alert](#)

Ivabradine – AMBER on [TLDL](#) for: managing stable angina in people over 18yrs old (NICE [CG126](#) and [Sheffield stable angina treatment algorithm](#)); and treating chronic heart failure (NICE [TA267](#) and [Sheffield HFrEF](#) guidelines); [MHRA alert – monitor for bradycardia](#).

Ranolazine- AMBER on TLDL for: managing stable angina in people who are

intolerant to other therapies, [Sheffield stable angina treatment algorithm](#).

2.6.4 Peripheral Vasodilators and related drugs  
(See NICE [TA223](#) for place in therapy)  
Naftidrofuryl oxalate

Cilostazol, pentoxifylline, and inositol nicotinate are not recommended for the treatment of intermittent claudication in patients with peripheral arterial disease; patients currently receiving these treatments should have the option to continue until they and their clinician consider it appropriate to stop (NICE [TA223](#)).

2.8 Anticoagulants and protamine

2.8.1 Parenteral anticoagulants

Dalteparin sodium in accordance with the [Shared Care Protocol](#)

2.8.2 Oral anticoagulants - *monitoring<sup>1</sup> essential.*

**DOACs are recommended in preference to warfarin for stroke prevention in atrial fibrillation (SPAF)\* see NICE [NG196](#)**

Apixaban

Edoxaban

Rivaroxaban

Dabigatran

Warfarin tabs 1mg (brown), 3mg (blue)

Counsel patients regarding initiation of new anticoagulant. For AF patients see Sheffield [SPAF guideline](#) page 7.

Local agreement does **not** support the prescribing of warfarin 0.5mg or 5mg tablets.

\*Choice of DOAC for SPAF should be in line with [SY DOAC position statement](#); clinicians should use the best value DOAC that is clinically appropriate for the patient; see Sheffield [SPAF guideline](#) for further information.

Sheffield guidelines:

[Anticoagulation for stroke prevention in atrial fibrillation \(SPAF\)](#)

[Calculating renal function for patients prescribed DOACs in primary care](#)

[Anticoagulant monitoring service SOP](#)

2.9 Antiplatelet drugs

Sheffield guidelines:

[Sheffield guidelines for the use of antiplatelets in the prevention and treatment of cardiovascular disease](#)

[Sheffield primary care guidelines for stroke and transient ischaemic attack](#)

Dispersible Aspirin – e/c aspirin NOT recommended

Clopidogrel

Dipyridamole – M/R capsules 200mg

Prasugrel - AMBER on TLDL

Ticagrelor - AMBER on TLDL

Duration of treatment will depend on the indication-**avoid** unnecessary continuation.

Other anti-thrombotic drugs

Rivaroxaban 2.5mg- AMBER on [TLDL](#)

2.11 Antifibrinolytic drugs & haemostatics

Tranexamic acid tabs – *use mainly for menorrhagia*

## 2.12 Lipid-regulating drugs

See NICE Cardiovascular disease: risk assessment and reduction, including lipid modification [NG238](#)

SY guidelines for [lipid optimisation in the primary and secondary prevention](#).  
See also the [raised triglycerides flow chart](#) for recommendations on managing people with raised triglycerides.

Statins - *monitoring<sup>1</sup> required*.

### **Atorvastatin**

Rosuvastatin tablets- do not prescribe capsules

Simvastatin

Pravastatin

Safety issues around the prescribing of simvastatin 80 mg tablets are detailed here:  
<https://www.gov.uk/drug-safety-update/simvastatin-increased-risk-of-myopathy-at-high-dose-80-mg>

### Cholesterol absorption inhibitors

Ezetimibe

Bempedoic acid 180mg/ezetimibe 10mg (Nustendi® ▼)

Bempedoic acid (Nilemdo®) – AMBER on [TLDL](#)

Fibrates - AMBER on [TLDL](#) *monitoring<sup>1</sup> required*.

Bezafibrate MR

Fenofibrate

Fibrates are classified as amber on the TDL and should not be initiated by GPs Bezafibrate and fenofibrate are formulary choices, ciprofibrate is non-formulary and costly.

Inclisiran (Leqvio® ▼)

### Omega-3 fatty acid compounds

Icosapent ethyl (Vazkepa® ▼) - AMBER on [TLDL](#)

Omega-3 fatty acid capsules are amber on [TLDL](#) in the management of hypertriglyceridaemia to prevent acute pancreatitis. They are not recommended for use in the primary and secondary prevention of cardiovascular events, except for icosapent ethyl which is approved for the secondary prevention of cardiovascular disease (NICE [TA805](#)). See the BLACK section of the [TLDL](#).

### PCSK-9 inhibitors

Alirocumab (Paluent®) - RED on [TLDL](#)

Evolocumab (Repatha SureClick®) - RED on [TLDL](#)

Patients with familial hypercholesterolemia (see NICE [CG71](#)) need to be on agents to reduce their LDL cholesterol by at least 50%; this may include agents not in the formulary.

<sup>1</sup>where monitoring is recommended / required please refer to the:  
Common Blood Monitoring Schedules

<b>Version History</b>			
<b>Version</b>	<b>Author</b>	<b>Date</b>	<b>Changes</b>
7 <sup>th</sup> edition		Sep 2023	Date approved by APG: 21 September 2023 Review date: September 2026
7 <sup>th</sup> edition		Sep 2024	Updates to sections: 2.2.1; 2.2.3; 6.1.2.3; 2.8.2, 2.12 Approved by FSG under delegated authority of APG: 3 September 2024 Review date: September 2026
7 <sup>th</sup> edition	Shameila Afsar-Baig	Jan 2026	Links within formulary chapter updated.