

Blood Pressure Control – Pharmacotherapy

Pharmacotherapy

Medication type/classifications	Advantages of this medication	Potential side effects and/or notes of caution when choosing this medication
First line therapy - ACE Inhibitors (ACEI) Vasodilators	Effective blood pressure lowering agents Reno-protective effect Reduce cardiovascular morbidity and mortality Long term data available for its efficacy	Cough (switch to ARB) Angioedema Hyperkalaemia If prescribing in patients with renal failure – check U&E 2 weeks after starting Caution in patients with renal artery stenosis Teratogenic – do not use in patients planning pregnancy
First line therapy - Angiotensin Receptor Blockers (ARB) Vasodilators	Effective blood pressure lowering agents Reno-protective effect Reduce cardiovascular morbidity and mortality Long term data available for its efficacy	Hyperkalaemia If prescribing in patients with renal failure – check U&E 2 weeks after starting Caution in patients with renal artery stenosis
Second line therapy – Calcium Channel Blocker Vasodilators	Effective blood pressure lowering agents Reduce cardiovascular morbidity and mortality Long term data available for its efficacy	Leg oedema Constipation
Second line therapy – Diuretic therapy (thiazide diuretic) Diuretic Natriuresis	Effective blood pressure lowering agents Reduce cardiovascular morbidity and mortality Long term data available for its efficacy	Hyponatraemia Dehydration Gout Hyperkalaemia Avoid high dose thiazide diuretics such as bendrofluazide 5mg as this dose is associated with hyperglycaemia Caution in elderly patients with low BMI – increased risk of hyponatraemia
Third Line Therapy* Beta- Blockers	Effective blood pressure lowering agents	Bradycardia Fatigue

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Reduce heart rate Reduce myocardial contractility <i>*Cardio-selective beta blockers should be used</i>	Reduce cardiovascular morbidity and mortality Long term data available for its efficacy <i>*Beta-blockers should be used as first line BP agents in patients with co-existing angina</i>	Cold peripheries Dizziness
Fourth Line Therapy Aldosterone antagonist e.g. eplerenone or spironolactone Diuretic Block the action of aldosterone	Lowers blood pressure	Hyperkalaemia Dehydration Hyponatraemia Gynaecomastia with spironolactone only Caution: high risk of hyperkalaemia if used in combination with ACEI or ARB
Fourth Line Therapy – Alpha Blocker e.g, doxazosin XL Vasodilator	Lower Blood Pressure Safe to prescribe in renal failure	Dizziness Postural hypotension Increased urinary frequency

Source: National Diabetes Working Group

Notes re Treatment of Hypertension:

- The renin antagonist (alsikerin) has recently been associated with a high risk of hyperkalaemia and increased risk of non-fatal stroke in patients with diabetes and so is currently not recommended as a routine blood pressure treatment for patients with type 2 diabetes.
- Combination treatment of an ACEI and ARB is associated with a high risk of hyperkalaemia and increased risk of renal dysfunction and therefore combination therapy of an ACEI or ARB should be used with caution and under the supervision of a specialist.
- In patients of Afro-Caribbean descent first line treatment for Blood Pressure is an ACEI in combination with a Calcium Channel Blocker or a thiazide diuretic (do not use an ACEI on its own)
- Patients with type 2 diabetes frequently have refractory or resistant hypertension despite the use of 3 or 4 blood pressure agents. If this is the case with a patient then seek expert advice from a consultant endocrinologist as per national model of care.

The following are treatment algorithms to help guide you in the medication management of Blood Pressure in Type 2 diabetes. All treatment should again be given in conjunction with advice on diet, reduced alcohol intake, exercise and weight loss where appropriate.

Treatment of Patients with High Blood Pressure and Type 2 Diabetes

