

### BLOOD PRESSURE (BP) MEASUREMENT

All adults over 40 years of age should have BP measured every 5 years. Ambulatory BP monitoring (ABPM) should be used to confirm hypertension in all patients identified at risk of stage 1 and 2 hypertension with standardised clinic BP measurement. Home BP monitoring for 4-7 days is an alternative for patients who are unable to use ABPM.

**Stage 1 Hypertension** Clinic BP is  $\geq 140/90^*$  and confirmed by subsequent ABPM daytime average  $\geq 135/85$

**Stage 2 Hypertension** Clinic BP is  $\geq 160/100^*$  and confirmed by subsequent ABPM daytime average  $\geq 150/95$

**Severe Hypertension** Clinic systolic BP is  $\geq 180^*$  or clinic diastolic BP  $\geq 110^*$

\* Based on several readings to prevent over-diagnosis

### ASSESSMENT

A full assessment is necessary in patients with confirmed hypertension. This will focus on *potential* and *secondary causes*, *alcohol*, other *vascular risk factors* and evidence of *end organ damage*.

- History – vascular disease, drugs, family, lifestyle
- Examination – arrhythmias, heart failure, fundoscopy
- Urine strip test – blood, protein, glucose
- Electrolytes, creatinine & eGFR
- Blood glucose ([click here for more information on the diagnostic work-up for diabetes](#))
- ECG
- Cholesterol and HDL

**Estimation of Cardiovascular Disease (CVD) Risk:** Modern management is focussed on assessing 10-year CVD risk. This can be calculated using the [CVD Risk Chart](#) (select CVD ASSIGN) or [QRISK2](#).

### MANAGEMENT

**Lifestyle measures** may help (i) to reduce BP and (ii) to improve CVD risk factor profile.

- Weight – aim for BMI 20 – 25
- Alcohol – safe weekly limits ( $\leq 14$  units in men & women)
- Diet –  $\downarrow$  salt,  $\downarrow$  saturated fat,  $\uparrow$  fruit,  $\uparrow$  vegetables,  $\uparrow$  oily fish
- Exercise – ideally 30+ minutes 3 times per week
- Smoking – cessation vital to  $\downarrow$  overall CVD risk  
nicotine replacement therapy may help

### DRUG TREATMENT THRESHOLDS

**Severe Hypertension or confirmed Stage 2 Hypertension**  
Treat

**Stage 1 Hypertension**  
Treat if:  
Target organ damage/ disease  
Diabetes mellitus  
10-year CVD risk  $>20\%$

**Stage 1 Hypertension that does not meet above criteria or BP  $<140/90$**   
Reassess in 3-5 years

Annual assessment in those requiring treatment is recommended. Clinic BP that remains  $\geq 140/90$ mmHg for those  $<80$  years and  $\geq 150/90$ mmHg for those  $>80$  years is regarded as the threshold for progression to the next stage of treatment. ABPM should be considered for monitoring patients who have confirmed White Coat Hypertension at time of diagnosis. Treatment of elderly patients with hypertension is a judgement based on frailty and benefit from treatment in relation to reduction of stroke risk and heart failure.

### Reasons to Consider Specialist Referral

- Secondary hypertension possible (young patients less than 30 years of age, failure to achieve targets on 3 drugs, hypokalaemia, abnormal renal function)
- Pregnancy
- Multiple drug side effects
- Complicated risk assessment
- Established vascular disease
- Resistant hypertension

**Criteria for Admission (hypertensive emergencies):** No pathognomic BP value. Diagnosis made by presence of severe hypertension *and* evidence of acute/accelerated target organ damage *e.g.* CNS, cardiac, renal impairment or hypertensive retinopathy (haemorrhages, exudates or papilloedema).

Further local advice is available from: [WGH.CardiovascRiskAdvice@luht.scot.nhs.uk](mailto:WGH.CardiovascRiskAdvice@luht.scot.nhs.uk)

### DRUG CHOICE

Most patients will require more than 1 drug. Reduction of BP is the key determinant of benefit, not the specific drugs used to achieve it. The following algorithm provides a logical guide to escalate treatment but should be modified according to circumstance:

- Step 1** Amlodipine if  $>55$  or black patients of any age (lisinopril if  $<55$ )
- Step 2** Amlodipine and lisinopril
- Step 3** Add thiazide diuretic
- Step 4** Consider referral for specialist advice *or* add spironolactone if serum K<sup>+</sup> is  $\leq 4.5$ ; if serum K<sup>+</sup> is  $\geq 4.5$  [high-dose thiazide diuretic](#) should be pursued. If this is not tolerated consider doxazosin *or* a  $\beta$ -blocker (atenolol or bisoprolol)
- Step 5** Referral for specialist advice

### Brief notes

Angiotensin II receptor blockers (ARB; candesartan or losartan) are reserved for ACEi intolerant patients or black patients. Indications for particular drugs include: ACEi/ARB for impaired LV function, post MI and diabetic nephropathy;  $\beta$  blockers post-MI and in patients with angina (bisoprolol or carvedilol specifically in patients with impaired LV function); thiazide diuretics in those at risk of heart failure.

### Other drugs to consider

- **Aspirin 75mg** - if vascular disease is present.
- **Statins** – atorvastatin 20mg for primary prevention, atorvastatin 40-80mg for secondary prevention. If vascular disease is present *or* diabetes *or* high CVD risk ( $>20\%$  over 10 year), target TC  $<5.0$  or 25% $\downarrow$ . If patient is prescribed amlodipine, diltiazem, verapamil or amiodarone, max. dose atorvastatin 20-40mg.
- **NSAIDs** - stop where possible.

### Further Information

NICE Guidelines for Hypertension [www.nice.org.uk](http://www.nice.org.uk)  
British and Irish Hypertension Society [www.bhsoc.org](http://www.bhsoc.org)  
Information regarding validated home BP monitors is available from [here](#)  
Lothian Lipid Guidelines [here](#)