Hypertension, antihypertensive drugs and risk of COVID-19

Hypertension has been widely reported (along with age, diabetes and cardiac disease) to predict poor outcome in COVID-19 infection. However, this is based on unadjusted observational data and it remains unclear to what extent the association between hypertension and risk is simply a reflection of the increasing prevalence of hypertension with increasing age (a very powerful predictor of poor outcome).

There has also been widespread publicity about possible increased risk of poor outcomes in COVID-19 patients taking ACE inhibitors and ARBs. However, current data (including a large Italian cohort) do not suggest any excess risk in patients taking these antihypertensive drugs. Current recommendations are that patients taking these drugs should continue to do so.

Until more is known, maintaining good control of hypertension and other cardiovascular risk factors at this time seems like a prudent thing to do.

Remote blood pressure (BP) monitoring

Many patient own a home monitor but they are rarely used systematically. In the current situation for these patients hypertension management can reasonably be based on home readings.

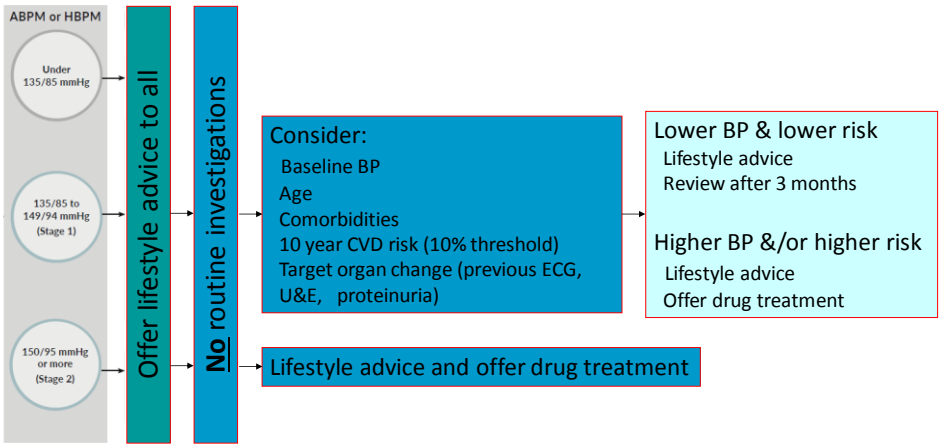
Home measurements should ideally be made in the following way (based on 2019 NICE guidelines):

- Use an independently validated upper arm model with the correct sized cuff. Alternative cuff sizes can be bought from manufacturers or online. Wrist monitors are generally not recommended.
- Record BP twice daily (ideally in the morning and evening) for at least 4, ideally 7, days.
- On each occasion, the patient should be seated with their back supported and feet flat on the floor and should rest for several minutes before the first reading.
- Take at least 2 measurements on each occasion, at least 1minute apart.
- Discard the first day's measurements and use average of all remaining readings as the current BP.

Hypertension diagnosis, management and antihypertensive drugs

See the revised diagnosis and treatment algorithms (Figures 1 & 2) adapted from 2019 NICE guidelines.

Figure 1: adapted hypertension diagnosis and management algorithm



Lifestyle

Patients should be encouraged to continue usual lifestyle recommendations as far as possible despite the current restrictions. These particularly include losing/maintaining an ideal body weight, salt restriction, eating at least 5 portions of fruit & vegetables daily and taking regular aerobic exercise).

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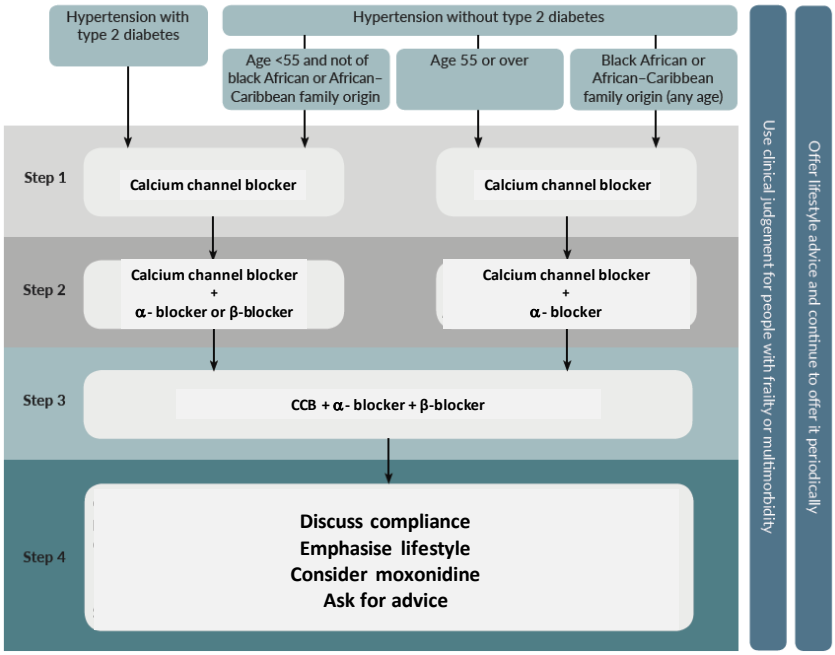
Drugs

Given current restricted access to blood tests, in the short term it is prudent to avoid adding new, or changing doses of, drugs that require monitoring where possible (e.g. ACE inhibitors, ARBs & diuretics, including spironolactone) and to use drugs that don't require the same level of monitoring (e.g. CCBs, α-blockers, β-blockers, moxonidine). See treatment algorithm (Figure 2) and Table for possible drugs.

Figure 2: adapted choice of antihypertensive drugs



Remind patients of the need for good compliance with treatment as it is becoming increasingly clear that this is a (and probably the) most common cause of apparent 'resistant' hypertension.

Target BP

Based on current NICE guidelines, target average home BP should generally be <135/85 mmHg in most patients with a higher target for the very elderly and lower for some groups (e.g. CKD, type 1 diabetes).

Table: possible drug choices

Drug class & examples	Dose range	Notes
CCBs (dihydropyridine)		**More effective than non-DHP**
Amlodipine	5-10 mg	Oedema very dose dependent SE
Felodipine	2.5-10 mg	Try small doses if intolerant of usual starting dose
Nifedipine	10-90 mg	Avoid capsular nifedipine; use MR/LA/XL
Lacidipine	2-6 mg	
Lercanidipine	10-20 mg	
CCBs (non-dihydropyridine)	Up to 360 mg	**Less effective than DHP CCBs**
Diltiazem	Up to 480 mg	Use long-acting preparations
Verapamil		Avoid combination with β-blockers
α-blockers		MR version (max dose 8 mg) is less potent than IR version
Doxazosin	2-16 mg	Don't use >1 (beware tamsulosin for BPH symptoms)
		Risk of postural hypotension & stress/urge incontinence
β-blockers	Up to 10 mg	Avoid in asthmatics
Bisoprolol		Don't combine with non-DHP CCBs
Centrally-acting	200-600 mcg	
Moxonidine		
Other drugs		
Nitrates		Includes GTN patch
Hydralazine		

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