Hypertension in adults: diagnosis and management

Consultation on draft guideline - Stakeholder comments table
08/03/19 to 23/04/19

Comments forms with attachments such as research articles, letters or leaflets cannot be accepted.

Organisation name	Document	Page No	Line No	Comments Please insert each new comment in a new row	Developer's response Please respond to each comment
Aortic Dissection Awareness UK and Ireland	Guideline	General	General	Our comments are directed at expanding the guidelines to enable stratification of patients with aortic disease who require tight control of blood pressure. We do not seek to change the guidelines to provide for comprehensive monitoring and treatment of those with aortic disease in for example a normal clinical setting such as General Practice. Instead, we seek to have the guidelines recognise that aortopathies are a serious co-morbidity and hence should include sufficient information to allow for such patients to be stratified separately and not treated according to the same procedures laid out for the more common hypertensive morbidities.	Thank you for your comment. Comorbidities and secondary causes of hypertension were out of the scope of this guideline, so we cannot make the changes you suggest. NICE guidance on abdominal aortic aneurysm is also currently in development.
Aortic Dissection Awareness UK and Ireland	Guideline	p.5.... to p.7....	....line 22 to ....line 3	Whilst the new guideline is mainly targeted at detection and control of hypertension with, for example, atherosclerotic origins and concomitant risks, the criterion of 140/90 mm Hg as a threshold for treatment is likely to be too high for patients with aortic disease. Some discussion on this is necessary. Hypertension is a major direct cause of or contributor to aortic aneurysm growth, aortic dissection and rupture: https://academic.oup.com/eurheartj/article/39/9/739/3904550 (Bossone et al 2018, AAS – an update) https://www.sciencedirect.com/science/article/pii/S073510971502464X (IRAD, Long Term Trends in AD, 2015) https://academic.oup.com/eurheartj/article/35/41/2873/407693 (ESC 2014 Guidelines) https://www.ahajournals.org/doi/full/10.1161/CIR.0b013e3181d47d48 (ACCF/AHA 2010 Guidelines) http://www.onlinejacc.org/content/1/2_Part_1/533.abstract (Spittell, 1983)	Thank you for your comment. Comorbidities and secondary causes of hypertension were out of the scope of this guideline. NICE guidance on abdominal aortic aneurysm is also currently in development..

				However, a clear guideline single maximum BP figure for those with aortic disease has not existed until recently. Many Guidelines, including the ESC (2014) and ACCF/AHA (2010) (above) advise or imply "strict" control of blood pressure, yet are clearer about numerical BP recommendations for immediate post-dissection management and for medical management of dissection (typically Type B) than they are for long-term preventive management of aneurysms. ESC states "*In chronic conditions, blood pressure should be controlled below 140/90 mm Hg ... An ideal treatment would be the one that reverses the formation of an aneurysm.*" ACCF/AHA state in section "*14. Recommendation for Medical Treatment of Patients With Thoracic Aortic Diseases*" "*14.1. Recommendations for Blood Pressure Control* *Class I* *1. Antihypertensive therapy should be administered to hypertensive patients with thoracic aortic diseases to achieve a goal of less than 140/90 mm Hg (patients without diabetes) or less than 130/80 mm Hg (patients with diabetes or chronic renal disease)* ***to reduce the risk of stroke, myocardial infarction, heart failure, and cardiovascular death***" And under *"Class IIa :* *1. For patients with thoracic aortic aneurysm, it is reasonable to reduce blood pressure with beta blockers and angiotensin-converting enzyme inhibitors or angiotensin receptor blockers* ***to the lowest point patients can tolerate without adverse effects****."* (our emphases). A more recent update (Bossone et al., above) indicates that after an Acute Aortic Syndrome event, "*Meticulous blood pressure (<120/80mmHg) ... remain[s a] key target for medical therapy*."	

				Despite the lack of a clear single figure, the new NICE Guideline needs to be clear that hypertensive patients with aortic disease must be stratified according to different criteria, with detection, referral and monitoring appropriately. These patients would include those with e.g.: Abdominal Aortic Aneurysms detected via standard screening programmes, known Thoracic Aortic Aneurysm or Ectasia, known connective tissue disorders (Marfan Syndrome, Ehlers-Danlos Syndrome, Loeys-Dietz Syndrome), other known genetic risk factors for aortic disease (currently 30 known genetic mutations are implicated https://www.ncbi.nlm.nih.gov/pubmed/30079932), and finally, survivors of aortic events (whether surgically or medically managed). Management of hypertensive patients with aortic disease must recognise that hypertension is a significant risk factor for a sudden catastrophic vascular event, especially when syndromic or genetic factors are present, and that the risk of such an event is directly linked to high blood pressure in the short-term, unlike the generally longer-term risks associated with hypertension such as stroke, heart attack and end-organ damage. Therefore the detection, treatment and monitoring of hypertension in such patients must be immediate, aggressive and effective. For these patients, we would suggest a threshold BP value of 120/80 mm Hg, above which therapy is instituted, in agreement with Bossone et al., for both the preventive phase and any post-event patient. The balance of considerations such as risk of falling vs. the benefit of treatment is altered by the potentially catastrophic outcomes of hypertension with aortic disease. Basically, aortic disease requires special recognition.	
Aortic Dissection Awareness UK and Ireland	Guideline	p.7.... to p.8....	.....line 20 To ....line 15 (=sect 1.3)	While this section is greyed out and not available for comment, it seems to us to be a key section requiring expansion to include aortopathies under “cardiovascular risk”. Similarly, CG181 needs to be expanded to include aortopathies, possibly also NG56.	Thank you for your comment. This section (1.3 on assessing cardiovascular risk and target organ damage) was not prioritised as an area to update within the guideline and therefore the original recommendations remain. We are therefore unable to make the changes you suggest.
Aortic	Guideline	p.9....	....line 14	Current best practice is for patients with known or suspected aortic	Thank you for your comment. Comorbidities and secondary

Dissection Awareness UK and Ireland		to p.18....	to ....line 2	disease to be managed in a highly pro-active manner, such as those covered under section 1.5, same-day specialist review. The need is more urgent than the process described in section 1.4 would yield. Perhaps a short extra section 1.6 could cover this issue, with cross-references from various sections in 1.4.x.? Specific paragraphs where an opportunity exists to signpost patients with aortic disease to a different pathway include 1.4.10 to 1.4.14, 1.4.19, 1.4.20, 1.4.22. Similarly, graduated therapy as described in p.13 line 23 to p.17 line 10 may still be relevant, but better would be a treatment regime initiated urgently and effectively, probably by a specialist BP clinic, and followed up similarly.	causes of hypertension were out of the scope of this guideline. Due to this, we are unable to make the changes you suggest. NICE guidance on abdominal aortic aneurysm is also currently in development.
Aortic Dissection Awareness UK and Ireland	Guideline	5	15-21	There is evidence that a significant difference in BP between arms (>20mm Hg systolic) can be an indicator of aortic dissection or intramural haematoma, either undiagnosed (noting that aortic dissection does not always present with pain), or known, chronic, and medically-managed. See https://www.ncbi.nlm.nih.gov/pubmed/30021832. (There are also, of course, other reasons for unbalanced arm BPs). The Guideline should indicate what is an acceptable difference in BP between arms and indicate a pathway for further investigation if this is exceeded.	Thank you for your comment. Recommendation 1.2.1 highlights that a difference of 15 mmHg between arms requires additional measurements to confirm diagnosis. The committee agreed that a 15 mmHg difference between arms was in line with recent evidence to suggest that a smaller difference between arms is associated with cardiovascular events (Tochikubo et al. 2003). This was not the focus of the review question and therefore this study was not included within the review, but the rationale section for this recommendation highlights that this difference between arms could indicate an increased risk of cardiovascular events or vascular damage and therefore we think that your query is already covered in the guideline.
Aortic Dissection Awareness UK and Ireland	Guideline	General	General	As further background information it should be recognised that whilst aortic aneurysms have traditionally been assessed against prophylactic intervention diameter, hypertension is equally serious in an aorta of “normal” dimensions. Many dissections occur at a diameter well below the “standard” diameter of 5.5 cm or 5.0 cm for Marfans, hence aggressive blood pressure control is necessary regardless of aortic monitoring status. https://www.ahajournals.org/doi/abs/10.1161/CIRCULATIONAHA.107.702720, https://www.jtcvs.org/article/S0022-5223(18)32822-8/fulltext	Thank you for your comment. Comorbidities and secondary causes of hypertension were out of the scope of this guideline. Due to this, we are unable to make recommendations specifically for aortic dissection. NICE guidance on abdominal aortic aneurysm is also currently in development.
Blood Pressure UK (formally	guideline	General	General	**General** Our general feedback is in agreement with Bart’s and the London stakeholders, with specific points of note pertaining to our patient-led association, Blood Pressure UK, below.	Thank you for your comment, we have responded to the issues you have raised below.

Blood Pressure Association)					
Blood Pressure UK (formally Blood Pressure Association)	Guideline	7	1.2.10	**Page 7** **1.2.10 If hypertension is not diagnosed, measure the person's clinic blood pressure at least every 5 years subsequently, and consider measuring it more frequently if the person's clinic blood pressure is close to 140/90 mmHg. [2011]** This statement lacks specificity and is therefore unhelpful for patients. Blood Pressure UK recommend that it is amended to: If hypertension is not diagnosed, measure the person's clinic blood pressure at least every 5 years subsequently, **and measure it annually** if the person's clinic blood pressure is close to 140/90 mmHg. [2011]	Thank you for your comment. Monitoring frequency was was not prioritised as an area to update within the guideline and therefore the original recommendations remain. We are therefore unable to make the changes you suggest.. Recommendation 1.4.23, which was not updated during this update, does however recommend that an annual review should be provided for people with hypertension and so we think your suggestion is already covered in the guideline.
Blood Pressure UK (formally Blood Pressure Association)	Guideline	9	1.4.5	**Page 9** **1.4.5 Encourage people to keep their dietary sodium intake low by reducing sodium salt, as this can reduce blood pressure. [2004, amended 2019]** Blood Pressure UK and Consensus Action on Salt and Health **do not agree** with the amendment to ***1.4 Treating and monitoring hypertension*** as stated within the guidance: From - **1.4.6**: Encourage people to keep their dietary sodium intake low, either **by reducing or substituting sodium salt**, as this can reduce blood pressure. To - **1.4.5**: Encourage people to keep their dietary sodium intake low **by reducing sodium salt**, as this can reduce blood pressure. The evidence clearly shows that the use of potassium-based salt substitutes is safe and an effective means of reducing population salt intake. The Scientific Advisory Committee on Nutrition (SACN), in collaboration with the Committee on Toxicity (COT), were tasked with reviewing the evidence on the impact of potassium-based salt substitutes on health and published their report in 2017 which states: • At a population level, the potential benefits of using potassium-based sodium replacers to help reduce sodium in foods outweigh the potential risks. • The beneficial effects at an individual level are likely to be small in size but will impact a large proportion of the population. (https://www.gov.uk/government/publications/sacn-cot-statements-on-potassium-based-sodium-,	Thank you for your comment. The use of salt substitutes was removed from the guideline due to concerns about the risks of this intervention, particularly in terms of possible interactions with antihypertensive medications, due to risks of hyperkalaemia. Following stakeholder comments regarding this we have reverted to the previous wording (retaining the option of substituting sodium salt) but have added a footnote to explain the contraindications of potassium alternatives.

				replacers). The outcome was conclusive – the benefits to population health outweigh the potential negatives. Furthermore, the US Food and Drug Administration classify salt substitutes as 'generally regarded as safe' (GRAS) meaning food manufacturers can add the substitutes to food within good manufacturing practice (cGMP) (FDA, 2017). The evidence linking a high salt intake to blood pressure is overwhelming. However the UK population currently eat a third more salt than the recommended maximum of 6g salt per day, despite years of work to reformulate food with less salt, and to educate consumers on the dangers of salt. https://www.gov.uk/government/news/new-phe-data-on-salt-consumption-levels. It is clear there is significant work still to be done to reach the daily maximum salt target. Many people are unaware of the sources of salt in the diet, or even how much salt they are eating, which makes it difficult to reduce consumption. In addition, potassium intakes are lower than recommended, which is associated with increased risk of hypertension, cardiovascular disease, kidney stones and osteoporosis. Increasing potassium intakes may lead to reduced blood pressure and a decreased risk of associated health conditions (https://www.who.int/nutrition/publications/guidelines/potassium_intake_printversion.pdf) The UK population are not purchasing less salt and are mistakenly choosing premium salts in the mistaken belief that they are healthier. AC Nielsen figures obtained on recent salt sales across the total salt market (table/cooking salt, sea salt, rock salt, reduced sodium salt) show consumer habits pertaining to discretionary salt use: • Volume split: ○ Table/cooking salt @ 77% ○ Sea Salt @ 16% ○ Rock Salt @ 4% ○ Reduced sodium salt @ 3% • Total weight of salt sold Mar '18 – Mar '19 is the same as Mar '15-Mar '16 therefore no overall reduction (circa. 21.4k tonnes per annum) • Volume of sea and rocks salts sold continue to rise, showing people are switching from table/cooking salt to more premium products. Giving up sodium salt altogether is not an achievable lifestyle option for most people, even those who have been diagnosed as stage 1 or 2	

				hypertension. We do not actively encourage people to add salt of any kind to their food, as all salts maintain a preference for salty foods. However the use of salt replacers (particularly potassium-based salt replacers) could help those with diagnosed stage 1 or 2 hypertension, who have been advised to reduce their sodium intake, are keen to do so, but not prepared or able to give up sodium salt altogether. A recent study assigned 220 patients with hypertension, as well as their families, regular salt or a salt substitute for 12 months. Results showed those using the salt substitute achieved significant reductions in blood pressure compared to those using regular salt. Individuals aged ≥60 years old, hypertensive patients with stage-2 hypertension, family members with hypertension and women experienced greater reductions in blood pressure (Hu J. *et al*, 2018) The use of potassium based salt replacers could also help address the optimal ratio of intake of sodium to potassium, and a reduction in sodium paired with an increase in potassium (through increased fruit and vegetable consumption as well as potentially through potassium based salt replacers) will have a twofold effect on individual blood pressure and be beneficial for health. GPs must be encouraged to recommend these alternatives to patients. Furthermore, salt substitutes have already been a successful component of population-level salt reduction strategies. In Finland, their use coupled with salt content targets, mandatory sodium labelling and consumer awareness programmes – led to a 33% decrease in salt intake, >10 mmHg decrease in average population systolic BP and a 75-80% decrease in both stroke and coronary artery disease mortality (Karppanen H. *et al.* 2006). GPs must provide evidence-based lifestyle advice and so we are concerned that these changes have not been proposed as a result of reviewing the evidence, despite the SACN COT 2017 Report clearly stating that sodium salt replacers were safe to use, as well as having acceptable taste for consumers and the food industry. The Department of Health and Social Care, under direction form the Secretary of State for Health, have released plans to put prevention at the heart of the nation's health, as detailed in their ***Prevention is better than cure*** document. Therefore, the amendment to ***1.4 Treating and monitoring hypertension*** does not reflect the evidence and does not follow current health messages focused on prevention. We propose that **statement 1.4.6 is reinstated** in the NICE 2019 Guidance to: **1.4.6**: Encourage people to keep their dietary sodium intake low, either **by reducing or substituting sodium salt**, as this can reduce	

				blood pressure.	
Blood Pressure UK (formally Blood Pressure Association)	Guideline	9	1.4.9	**Page 9** **1.4.9 Discuss with the person their preferences for treatment before starting antihypertensive drug treatment. Continue to offer lifestyle advice and support them to make lifestyle changes whether or not they choose to start antihypertensive drug treatment. [2019]** We support this more patient-led approach, and that opportunities for lifestyle modification should be discussed in detail – however if anti-hypertensive drug treatment is not taken, a follow up time (e.g. annual as per 1.2.10) needs to be specified in the guidelines e.g.: 1.4.9 Discuss with the person their preferences for treatment before starting antihypertensive drug treatment. Continue to offer lifestyle advice and support them to make lifestyle changes, **with annual review,** whether or not they choose to start antihypertensive drug treatment. [2019]	Thank you for your comment. This was not prioritised as an area to update within the guideline and therefore the original recommendations remain. We are therefore unable to make the changes you suggest.. Recommendation 1.4.23, which was retained from the previous iteration of the guideline does however recommend that an annual review should be provided for people with hypertension and so we think your suggestion is already covered in the guideline.
Blood Pressure UK (formally Blood Pressure Association)	Guideline	11	1.4.16	**Page 11** **1.4.16 Consider HBPM for adults with hypertension who choose to self-monitor their blood pressure. [2019]** Blood Pressure support the addition of HBPM for patients that choose to self-monitor, and notes the committee did not find enough evidence to recommend this as the priority, above clinic measuring, despite the known problems of clinic measurements (not limited to white-coat effect). However rather than 'consider', we would like to see a more strongly worded recommendation such as 'advice': **1.4.16 Advice** HBPM for adults with hypertension who choose to self-monitor their blood pressure. [2019]	Thank you for your comment. On consideration we've altered this to 'advise' as you suggest.
[British and Irish Hypertension Society]	Guideline	4	6-10	1.1.2 - It is suggested that it is just automated BP devices that do not measure blood pressure accurately in some instances, such as atrial fibrillation, but this is also true for auscultation. We know of no data that show one is necessarily more accurate than the other and the Guideline suggests automated devices may be less accurate.	Thank you for your comment. Due to the lack of evidence related to the measurement of blood pressure in people with atrial fibrillation, the committee decided to retain a research recommendation related to this (see recommendation for research 1: automated blood pressure monitoring in people with atrial fibrillation).
[British and Irish Hypertension Society]	Guideline	5	3-7, 8-13, 15-21, 22-27	1.1.5 - Many would suggest that in patients with symptoms at initial BP assessment it is worth recording BP both sitting and standing but it is probably preferable to measure blood pressure in both positions in all patients initially not just those with symptoms. 1.1.6 - The European Cardiac Society suggests in hypertensive patients a systolic fall of equal to or greater than 30 mmHg be taken	Thank you for your comment. Measuring blood pressure was not prioritised as an area to update within the guideline and therefore the original recommendations remain. We are therefore unable to make the changes you suggest for recommendations 1.1.5 and 1.1.6.

				as diagnostic of postural hypotension rather than a 20 mmHg fall as suggested in these guidelines. 1.2.1 - This procedure is made in all recommendations but having consideration to the difficulties in standardizing office BP measurement, to the time taken to perform the procedure, and to the variability of blood pressure, which can in itself account for differences between arms, this recommendation could be dropped. However, if this seems too drastic, the recommendation should contain wording acknowledging these difficulties and adding that "in ideal circumstances" (or some such wording) the above procedure should be followed. 1.2.2 - Some reference should be made to the substantial literature indicating that the Automated Office Blood Pressure (AOBP) measurement, either attended or unattended, should now be advocated in an effort to standardize measurement of BP in the office.	However, in reviewing the evidence for treatment targets, the committee agreed that it was important to highlight that standing blood pressure should be measured in those at increased risk of postural hypotension (recommendation 1.4.21), but not routinely in all individuals due to the increased burden on primary care. In relation to recommendation 1.2.1, this recommendation has been made based on committee consensus. It was agreed by the committee to be best practice and that a difference of 15mmHg between arms could suggest vascular damage or higher cardiovascular risk. In relation to recommendation 1.2.2, recommendations for clinic blood pressure measurement have been retained. The systematic review did not look at comparing the accuracy of different types of clinic blood pressure measurement, and so we haven't reviewed the necessary literature to make the changes you suggest.
[British and Irish Hypertension Society]	Guideline	6	1-4, 5-7, 19-28, 29	1.2.3 - This recommendation is wholly dependent on the method of office BP measurement, which if not standardized could lead to overuse of ABPM. 1.2.4 - Although agreeing that ambulatory and home blood pressure monitoring are of great value in diagnosing hypertension there is increasing evidence that daytime ABPM and HBPM values are not exactly the same and there may be significant differences between the two with daytime ambulatory levels being lower than home blood pressure monitoring. This assumed equivalence is brought out in other sections in this Guideline and there is no suggestion that there may actually be a clinically significant difference between the two shown in some patient groups that we and others have demonstrated. 1.2.7 - Whilst agreeing with the protocol of taking two readings morning and evening for those recording home blood pressure levels, it would be useful to suggest the timings of these measurements in relation to any antihypertensive medication particularly if home blood pressure monitoring is being used not only for diagnosis but also for assessing the effects of treatment. Most would take morning readings before any medication. In addition, an important distinction needs to be made. The above recommendation is valid if HBPM is being used as a diagnostic substitute for ABPM to obtain a BP measurement that approximates to mean daytime BP obtained with ABPM. However, the recommendation is very onerous and precludes the use of HBPM as a useful technique to provide information on the adequacy of BP	Thank you for your comment. Ambulatory blood pressure measurement was considered more accurate than clinic blood pressure measurement because it has been shown to predict cardiovascular events more accurately than other available tests. Furthermore ABPM correlates well with invasive blood pressure measurement techniques, which are thought to be the 'true' gold standard but are rarely used due to costs and harm to people with hypertension. As a result, any increase in the use of ABPM would be appropriate. ABPM was also shown to be cost saving in an economic model and therefore is shown to be a worthwhile investment as the additional accuracy means people are more appropriately identified and treated thus avoiding events, and also people who should be treated are correctly identified, with the cost savings outweighing the higher initial monitor costs. In regards to recommendation 1.2.4, this is not an assumed significance; home blood pressure measurement was found to be an accurate method of diagnosing hypertension, when compared to the reference standard of ABPM (see Evidence Review A). In light of this, the committee agreed it was appropriate to recommend HBPM where ABPM may not be tolerated or is unsuitable.

				control over time. This subject has not been much addressed in the literature, but the recommendation from the ESH guideline is: "*For the long- term follow- up of patients with treated hypertension, HBPM once or twice per week or less frequently seems to be appropriate to ensure maintenance of adequate BP control*." 1.2.8 - It would be useful to have more information on masked and white coat hypertension in terms of their diagnosis and CV risk.	In relation to recommendation 1.2.7, timing of home measurements was out of the scope of this update. For that reason we are unable to add detail related to the timing of measurements. The scope of this update did not include specific questions related to white coat hypertension and masked hypertension, and evidence related to these distinct populations was therefore not reviewed. We therefore cannot make recommendations you suggest about how to identify white coat or masked hypertension..
[British and Irish Hypertension Society]	Guideline	8	1-5	1.3.2 – It is perhaps confusing to take clinic blood pressure measurements to calculate cardiovascular risk where the diagnosis is based on ambulatory or home recordings. What does one do if the diagnosis is confirmed on home blood pressure monitoring but the clinic values are significantly lower though still in the hypertensive range and therefore puts the patient at a lower level of cardiovascular risk if just clinic values are just used? Moreover, this recommendation is wholly dependent on the method of office BP measurement, which if not standardized will lead to miscalculation of risk.	Thank you for your comment. Sections 1.1 (measuring blood pressure) and 1.3 (assessing cardiovascular risk and target organ damage) of the guideline were not prioritised for update within this guideline, and due to this we are unable to amend this recommendation or those relating to the method of office BP measurement. However, clinic blood pressure being significantly lower than home or ambulatory readings would be indicative of masked hypertension. In people who are identified as having a white-coat effect or masked hypertension, recommendation 1.4.17 recommends considering ABPM or HBPM in addition to CBPM.
[British and Irish Hypertension Society]	Guideline	9	1-2	1.4.4 - What is excessive consumption of coffee? Should levels of consumption and type of coffee be mentioned or referenced somewhere at least?	Thank you for your comment. This recommendation originated from CG18 (2004) where excessive consumption of coffee was defined as 5 or more cups per day. Following your comment we have added this definition to the glossary of the guideline.
[British and Irish Hypertension Society]	Guideline	10	17-20	1.4.14 - This statement is vague and should be followed by clearer qualification. Screening of all hypertensives under 40 years of age for all secondary causes of hypertension is not feasible or cost-effective. *"For adults aged under 40 with hypertension…"* – Patients under 40 years of age should only be considered for specialist investigations if presenting with stage 2 hypertension. If presenting with stage 1 hypertension the criterion of young age (under 40 years) should be accompanied by at least one other criterion (for example target organ damage, clinical or biochemical features suggestive of secondary causes, clinical features suggestive of obstructive sleep apnoea, CKD, or phaeochromocytoma.(1) *"…a more detailed assessment of the long-term balance of treatment benefit and risks".*- this statement is not very helpful in the context of clinical guidance for practicing physicians. There is no indication on 'how' benefits and risks be assessed at the time of consultation and	Thank you for your comment. This recommendation originates from two recommendations in CG127 Within a section that was not prioritised as an area to update within the guideline and therefore the original recommendations remain. We are therefore unable to make the changes you suggest. The wording was amended to improve clarity only, not to alter the meaning. This recommendation is worded as 'consider' to reflect the strength of the evidence reviewed by the CG127 guideline committee and is therefore not suggesting that all people with hypertension aged under 40 should be screened for secondary causes of hypertension. The previous committee agreed that it was not appropriate to include criteria for this referral as that would be too prescriptive given the evidence base. The

				'how 'to balance the choice in an evidence-based manner. Williams B, Mancia G, Spiering W, et al. 2018 ESC/ESH Guidelines for the management of arterial hypertension. Eur Heart J 2018; 39: 3021-104.	decision of whether or not to seek specialist evaluation should be based on clinical judgement.
[British and Irish Hypertension Society]	Guideline	11	1-2, 5-11	1.4.15 - Although this comment that clinic BP should be used to assess response to lifestyle and treatment it is rather at variance with the advice given in 1.4.16 (line 3-4). In addition, if ABPM and HBPM are the preferred methods of measurement why is clinic BP measurement used to monitor the response to therapy. It is now well established that office measurement will lead to either overtreatment because of the white-coat effect or undertreatment because of masked hypertension. 1.4.17 - This recommendation is in conflict with the above [1.4.15] recommendation. If clinic blood pressure is normal it is unlikely from these guidelines that ambulatory or home monitoring would then take place and masked hypertension therefore be identified. We could find no advice on the treatment of masked or white-coat hypertension or if it needed treating at all.	Thank you for your comment. The scope of this update did not include specific questions related to white coat hypertension and masked hypertension, and evidence related to these distinct populations was not reviewed. We therefore cannot add further detail on identifying or managing white coat or masked hypertension. The guideline shouldn't however result in overtreatment due to white-coat hypertension, since it is recommended that ABPM or HBPM is used to confirm the diagnosis of hypertension, thus reducing the implications of the white-coat effect. CBPM is recommended for monitoring because most evidence across this guideline involved CBPM use to measure response.
[British and Irish Hypertension Society]	Guideline	12	5-10	1.4.21 No evidence is given for treating to the standing BP. Measurements of OH are highly variable and so problematic to use as a target. Retain the seated BP as the target and (in the absence of evidence) use longer-acting preparations of antihypertensives and split them up so that not all the antihypertensives are taken at one time. Review and reduce or stop if possible other drugs such as those with anticholinergic potential and ensure the patient is not dehydrated. 1.4.22 - We would draw attention to the recently published issue of the Journal of Clinical Hypertension 2018; 20(7): 1084 with 13 papers discussing in detail BP measurement issues that are relevant in the context of NICE Guideline 2019	Thank you for your comment. These recommendations were based on committee consensus because no evidence was identified in relation to standing blood pressure, within either the blood pressure monitoring or diagnostic evidence reviews. Recommendations were retained based on the committee's clinical expertise. No evidence was identified to support the use of longer-acting antihypertensive medication over shorter-acting preparations, and so we are unable to recommend these specifically. Thank you for providing a reference to this review that outlines expert opinion and relevant literature related to blood pressure measurement. Many of the issues discussed in this review were discussed in detail by the committee and are outlined in the committee discussion sections of each evidence review. Making further comment related to the maintenance and validation of devices is however out of the scope of this guideline.
[British and Irish Hypertension Society]	Guideline	13 and 16	20-22 and 12	We congratulate the NICE Hypertension Committee on their comprehensive review and the proposed hypertension guideline. We are delighted by the recommendation on discussion of adherence (1.4.29 and 1.4.4) and its link to NICE guideline on "Medicines adherence: involving patients in decisions about prescribed medicines	Thank you for your comment and for your positive feedback. During the NICE surveillance review and scoping processes, adherence to hypertension treatment was not identified as an area requiring an update, particularly due to NICE's guideline on medicines adherence, as you have outlined. Because this

				and supporting adherence (CG76- 2009, reviewed 2016)" We would be amiss, if we did not point out the new evidence that has accumulated in the field of non-adherence in hypertension over the last five years. Unfortunately, it appears that these data have not been reviewed in either the draft of the guideline or the CG76 guideline on adherence. We would urge the NICE Committee to consider a stronger emphasis on testing for non-adherence especially in patients labelled as resistant hypertension (patients with uncontrolled blood pressure despite prescription of three or more antihypertensive medications). Furthermore, we request that the Committee should consider the selection of objective methods when testing for non-adherence to antihypertensive treatment. We make our case based the following: • As the Committee is aware, despite the availability of potent, cheap and tolerable therapies, blood pressure targets are achieved in less than half of patients worldwide including in Europe.(1) Recent data collected in one month as part of the May Measurement Month initiative shows that of the 105 456 (46·3%) of the 227 721 individuals receiving treatment did not have controlled blood pressure. (2) • Non-adherence is now clearly recognised as one of the key reasons for this apparent treatment failure and translates directly into poor cardiovascular outcomes. (3-6) • Non-adherence is not assessed in 40-50% of clinic appointments (7). The subjective "suspicion" of non-adherence by the doctor or health care professional is no better than a coin toss.(8). Hence, it is our considered view that non-adherence in patients with hypertension needs to be assessed by robust methods. • The incidence of resistant hypertension is thought to be around 10-20% of all cases with hypertension.(9-11) It is particularly important to address blood pressure control in this group of patients as they are difficult to treat and have worse cardiovascular outcomes. (10,12) • It has been recently recommended that pseudo-resistant hypertension (in particular that driven by non-adherence) should be excluded before the resistant hypertension is diagnosed. (13) • It has been demonstrated that non-adherence increases with increase in number of prescribed anti-hypertensives and around 30-50% of patients on 3 or more medications are non-adherent. (14) • Therefore, evaluation of non-adherence has been recommended	was out of scope for this update, we cannot make the changes you suggest but have added recommendations to check adherence before progressing to each subsequent step of treatment to highlight the importance of this.

				as a routine to exclude pseudo-resistant hypertension. (15) • There are various measures to assess non-adherence. Objective measures such as pharmacy refill rates or prescription pick up rates, electronic medication monitoring systems and direct biochemical measures are in our view the preferred measures over subjective methods. (16) • The 2014 Cochrane review on non-adherence concluded that advances in the field of non-adherence in chronic disease requires advances in objective measures.(17) • In UK, the use of direct biochemical measurement of non-adherence is growing in routine clinical practice undertaken in Hypertension centres. The National Centre for Adherence Testing (NCAT) at Leicester hospitals provides a routine NHS service to 33 centres across UK and analyses around 1000 samples a year. The service has been found to be very useful across these centres. • Retrospective studies have demonstrated that the objective screening test for non-adherence has improved blood pressure control on follow up. (18,19) It has been estimated by Markov modelling to be cost-effective to the NHS with a QALY saving of £495. (20) • The recent ESC/ESH guidelines place a strong emphasis on exclusion of non-adherence (Level 1A recommendation). They state: "*Poor adherence to prescribed medicines is a frequent cause of pseudo-resistant hypertension, occurring in 50% of patients assessed by therapeutic drug monitoring, and is directly related to the number prescribed tablets*". (21) "*Today, the most accurate methods that can be recommended, despite their limitations, are the detection of prescribed drugs in blood or urine samples*." (1) Kotseva K, Wood D, De Bacquer D, et al. EUROASPIRE IV: A European Society of Cardiology survey on the lifestyle, risk factor and therapeutic management of coronary patients from 24 European countries. Eur J Prev Cardiol 2016;23:636-648. (2) Beaney T, Schutte AE, Tomaszewski M, et al. May Measurement Month 2017: an analysis of blood pressure screening results worldwide. Lancet Glob Health 2018;6:e736-e743. (3) Elliott WJ. Improving outcomes in hypertensive patients: focus on adherence and persistence with antihypertensive therapy. J Clin Hypertens 2009;11:376-382. (4) Bosworth HB, Granger BB, Mendys P, et al. Medication	

				adherence: a call for action. Am Heart J 2011;162:412-424. (5) Burnier M. Medication adherence and persistence as the cornerstone of effective antihypertensive therapy. Am J Hypertens 2006;19:1190-1196. (6) Gosmanova EO, Kovesdy CP. Adherence to antihypertensive medications: is prescribing the right pill enough? Nephrol Dial Transplant 2015;30:1649-1656 (7) Clyne W, Mshelia C, McLachlan S, et al. A multinational cross-sectional survey of the management of patient medication adherence by European healthcare professionals. BMJ Open 2016;6:e009610-2015-009610. (8) Meddings J, Kerr EA, Heisler M, Hofer TP. Physician assessments of medication adherence and decisions to intensify medications for patients with uncontrolled blood pressure: still no better than a coin toss. BMC Health Serv Res 2012;12:270-6963-12-270. (9) Calhoun DA, Booth JN, Oparil S, et al. Refractory hypertension: determination of prevalence, risk factors, and comorbidities in a large, population-based cohort. Hypertension 2014;63:451-458. (10) Daugherty SL, Powers JD, Magid DJ, et al. Incidence and prognosis of resistant hypertension in hypertensive patients. Circulation 2012;125:1635-1642. (11) de la Sierra A, Segura J, Banegas JR, et al. Clinical features of 8295 patients with resistant hypertension classified on the basis of ambulatory blood pressure monitoring. Hypertension 2011;57:898-902. (12) Muntner P, Davis BR, Cushman WC, et al. Treatment-Resistant Hypertension and the Incidence of Cardiovascular Disease and End-Stage Renal Disease: Results From the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT). Hypertension 2014;64:1012-1021. (13) Calhoun A, Jones D, Textor S, et al. Resistant hypertension: diagnosis, evaluation, and treatment: a scientific statement from the American Heart Association Professional Education Committee of the Council for High Blood Pressure Research. Circulation 2008;117:e510-526. (14) Gupta P, Patel P, Strauch B, et al. Risk Factors for Nonadherence to Antihypertensive Treatment. Hypertension 2017;69:1113-1120. (15) Berra E, Azizi M, Capron A, et al. Evaluation of Adherence Should Become an Integral Part of Assessment of Patients With Apparently Treatment-Resistant Hypertension. Hypertension 2016;68:297-306.	

				(16) Gupta P, Patel P, Horne R, et al. How to Screen for Non-Adherence to Antihypertensive Therapy. Curr Hypertens Rep 2016;18:89-92. (17) Nieuwlaat R, Wilczynski N, Navarro T, et al. Interventions for enhancing medication adherence. Cochrane Database Syst Rev 2014;11:CD000011. (18) Jung O, Gechter JL, Wunder C, et al. Resistant hypertension? Assessment of adherence by toxicological urine analysis. J Hypertens 2013;31:766-774. (19) Gupta P, Patel P, Bransilav S. Biochemical Screening for non-adherence is associated with blood pressure reduction and improvement in non-adherence. Hypertension 2017;70:1042-1048. (20) van Schoonhoven AV, van Asselt A, Tomaszewski M, et al. Cost-utility of an objective biochemical measure to improve adherence to antihypertensive treatment. Hypertension 2018;72:1117-1124. (21) Williams B, Mancia G, Spiering W, et al. 2018 ESC/ESH Guidelines for the management of arterial hypertension. Eur Heart J 2018;39:3021-3104.	
[British and Irish Hypertension Society]	Guideline	13	24-26	1.4.30 - Although perhaps understandable, no mention is made of starting with low-dose combined antihypertensive preparations which seem to be more effective than full dose monotherapy. We presume this may be because of cost implications as well as the lack of outcome studies using low-dose combinations (see later)	Thank you for your comment. This evidence was reviewed and only three studies were identified. Most of the evidence related to adverse events rather than major cardiovascular event outcomes. There was therefore not enough evidence for the committee to make a recommendation for initial combination therapy (see the committees discussion of the evidence in evidence review E: Step 1 treatment).
[British and Irish Hypertension Society]	Guideline	15	8-13, 19-22	1.4.39 – We are not convinced about the suggested combination of CCB and thiazide-like diuretic for 2nd level treatment - few large outcome studies of this. 1.4.41 - Surely a review of patient medication should be done at all treatment stages of hypertension not just stage III?	Thank you for your comment. The review undertaken as part of this update did not identify any evidence related to step 2 or 3 treatment for hypertension that met the review protocols. As a result, a decision aid has been developed to emphasise patient choice and to outline the possible risks associated with each medication choice. In relation to 1.4.41, the committee agreed that treatment review is important during all steps of treatment and a link to NICE's guideline on medication adherence is included in recommendation 1.4.29. Recommendation 1.4.41 is intended to emphasise the additional considerations that should be taken before step 3 treatment is offered. This is because lack of efficacy could be due to lack of adherence at this stage, and because fourth line treatment is likely to be spironolactone (a

					drug without UK marketing authorisation for hypertension) or an alternative with less good outcome data compared to those recommended in Steps 1-3.
[British and Irish Hypertension Society]	Guideline	23	25-28	The most cost-effective, achievable and practical lifestyle change to reduce blood pressure is reducing salt consumption (1-3). The lack of mention in the examples is an omission to rectify, as it is in contrast with the statement listed on page 9, line 3-4 (1.4.5). From the point of view of the patient, clinical focus should be on avoiding adding salt to food at the table and when cooking, including discouraging the use of sodium-containing salts like mono-sodium glutamate (MSG) in addition to salt in all its forms (table salt, sea salt, black salt, pink salt, Himalayan salt etc.), all containing in excess of 95% sodium chloride (NaCl) (4). Patients should be encouraged to check food labels to avoid hidden salt in processed food. Cross-reference to NICE PH25 (2010) should be made to highlight the importance of reducing salt consumption in people before they develop 'hypertension'. 1. Cobiac LJ, Vos T, Veerman JL. Cost-effectiveness of interventions to reduce dietary salt intake. Heart 2010; 96: 1920-25 2. Collins M, Mason H, O'Flaherty M, et al. An economic evaluation of salt reduction policies to reduce coronary heart disease in England: a policy modelling study. Value in Health 2014; 17: 517-24. 3. Hendriksen MAH, Geleijnse JM, van Raaij JMA, et al. Identification of differences in health impact modelling of salt reduction. PLoS ONE 2017; 12(11): e0186760. 4. Infanger E, Haldimann M. Report on the composition of prevalent salt varieties. Federal Food Safety and Veterinary Office FSVO, Nutrition, Federal Department of Home Affairs, Swiss Confederation, 2016; pp. 1-53. NHS National Institute for Health and Clinical Excellence. *Prevention of cardiovascular disease at population level*. NICE Public Health Guidance 25June 2010 (reviewed 2016).	Thank you for your comment. As you have outlined, salt reduction is recommended within lifestyle interventions (recommendation 1.4.5). During the NICE surveillance review and scoping processes, lifestyle interventions were not prioritised as an area requiring an update, with the exception of relaxation therapies. The rationale section could not make reference to the effectiveness of salt consumption in particular, as compared to relaxation therapies, because this evidence was not reviewed in this update. Furthermore, pre-hypertension advice is not covered in this guideline and so we cannot make the changes you suggest.
[British and Irish Hypertension Society]	Guideline	11 11 29-31	19-20 21-22 All	There is strong evidence that greater reductions in BP produce greater reductions in strokes, heart attacks and other serious cardiovascular complications. Yet the draft guidance recommends BP targets that are only slightly lower than the starting threshold for treatment. The critical question is at what level of treated blood pressure will the harm outweigh the benefit?	Thank you for your comment. All of the evidence you have outlined was either included within the guideline or considered for inclusion. Evidence from the SPRINT trial was discussed in detail and a wide number of limitations of this evidence were identified. This included a difference in measurement techniques as compared to a UK setting, as well as variation in

				Since the 2011 NICE guidance, new evidence has emerged on this topic. However, the selection of eligible studies to inform the NICE Guideline on this question was extremely narrow. The BIHS feels that the NCG Committee selection to assess the potential additional health benefits of lowering systolic BP <130 mmHg has been discounted hastily. • The evidence of lowering systolic BP <120 mmHg is mainly provided by the results of the SPRINT study. The more rigorous measurement methods used in SPRINT would need some adjustment of the target aimed for in standard practice, in which a nurse or doctor is commonly present throughout the measurement process, equating to perhaps aiming for <130/80 mmHg. The NCG committee had downgraded the SPRINT findings using a new criterion. If the SPRINT study had not recorded whether someone was present during the measurements, as is the case for almost every other study, there would have been no discussion of the matter as a possible source of variability. It is biased to downgrade one study's findings, but not the findings of other studies in which this detail is wholly unknown. • The decision of the targets is only based on the results of the Cardio-Sis trial (2009) and all new evidence dated post-2011 has been discarded. The post-2011 evidence comes from post-hoc analyses of large outcome trials and registry data (1-3), and from two new meta-analyses of randomized clinical trials (RCTs) of BP-lowering (4-5). As extensively reviewed in the recent ESC/ESH Guidelines (2018) (6) lowering systolic BP to <130 mmHg was, in general, associated with no further benefit on major CV events, except for further reductions in the risk of stroke, in post-hoc analyses of RCTs. However, new information on systolic and diastolic targets for drug treatment is provided by two large meta-analyses of RCTs of BP lowering. In the first, achieved systolic BP was stratified according to three target ranges (149–140 mmHg, 139–130 mmHg, and <130 mmHg).(4) Lowering systolic to <140 mmHg reduced the relative risk of all major CV outcomes (including all-cause mortality); similar benefits were seen when systolic BP was lowered to <130 mmHg, even when compared to 130 - 139 mmHg. Similar benefits were seen with diastolic targets. The second, which also included the SPRINT trial, showed that every 10 mmHg reduction	up and down-titrating of medication as compared to the UK setting. You can find further details in the blood pressure targets rationale in Evidence review D.The committee consequently agreed that there was no evidence to warrant reducing systolic blood pressure targets to <120mmHg. Evidence to support a target of <130mmHg was also insufficient to warrant a recommendation, due to the relatively small sample size of the Cardio-Sis trial, lack of evidence for adverse events (in particularly acute kidney injury), and very serious imprecision for the outcomes. All outcomes comparing a target of 130mmHg to 140mmHg (all-cause mortality, stroke, MI, heart failure, dizziness and reduction in blood pressure) were downgraded for imprecision. The confidence intervals of the effect estimates were extremely wide, meaning that the certainty of the effect for each outcome was uncertain. There was therefore insufficient evidence to support a target as low as 130mmHg. To note that all references you have provided were excluded from this guideline because they included participants with established cardiovascular disease, such as coronary artery disease, heart failure or previous stroke. The scope of this guideline did not include the secondary prevention of established cardiovascular disease. Please see the evidence reviews for further details.

				in systolic BP reduced the rate of major CV events and all-cause mortality for baseline values >160 mmHg to values between 130 and 139 mmHg, implying benefit at achieved systolic values of <130 mmHg.(5) These benefits were consistent in patients at all levels of risk, including those with and without existing CVD, stroke, diabetes, and CKD. Whilst considering BP targets, less than 50% of patients treated for hypertension currently achieve a target office systolic BP of <140 mmHg.(7-8). In conclusion, the BIHS believes that the evidence is sufficient to justify '*aspirational'* targets of <130/80 mmHg (but not <120 mmHg systolic using current BP measurement methodologies) in relation to optimal health gains, if applied in the right circumstances (using clinical judgment, comorbidities and frailty). However, the BIHS recognizes that since current targets are still not being met due to a variety of reasons highlighted elsewhere in the guideline, the first objective should be to lower BP to <140/90 mmHg in all patients as a '*practical*' minimum requirement when BP-lowering drugs are used. Therefore, provided that the treatment is well tolerated, treated BP values should be targeted to 130/80mmHg or lower in most patients. In older patients (>65 years), systolic BP should be targeted to between 130 and 140 mmHg, and diastolic BP to <80 mmHg. This will result in large numbers of patients being given the opportunity to achieve the full potential benefits of treatment as a consequence of inadequate reduction in BP, whenever possible. (1) Bohm M, Schumacher H, Teo KK, et al. Achieved blood pressure and cardiovascular outcomes in high-risk patients: results from ONTARGET and TRANSCEND trials. Lancet 2017; 389: 2226–37. (2) Kjeldsen SE, Berge E, Bangalore S, et al. No evidence for a J-shaped curve in treated hypertensive patients with increased cardiovascular risk: The VALUE trial. Blood Press 2016; 25: 83–92. (3) Mancia G, Kjeldsen SE, Zappe DH, et al. Cardiovascular outcomes at different on-treatment blood pressures in the hypertensive patients of the VALUE trial. Eur Heart J 2016; 37:955–64 (4) Thomopoulos C, Parati G, Zanchetti A. Effects of blood pressure lowering on outcome incidence in hypertension: 7. Effects of more vs. less intensive blood pressure lowering and different achieved blood pressure levels - updated overview and meta-	

				analyses of randomized trials. J Hypertens 2016; 34: 613–22 (5) Ettehad D, Emdin CA, Kiran A, et al. Blood pressure lowering for prevention of cardiovascular disease and death: a systematic review and meta-analysis. Lancet 2016; 387: 957–67 (6) Williams B, Mancia G, Spiering W, et al. 2018 ESC/ESH Guidelines for the management of arterial hypertension. Eur Heart J 2018; 39: 3021-104 (7) Banegas JR, Lopez-Garcia E, et al. Achievement of treatment goals for primary prevention of cardiovascular disease in clinical practice across Europe: the EURIKA study. Eur Heart J 2011; 32: 2143–52. Falaschetti E, Mindell J, Knott C, Poulter N. Hypertension management in England: a serial cross-sectional study from 1994 to 2011. Lancet 2014; 383: 1912–9.	
[British and Irish Hypertension Society]	Guideline	14, 15, 16	17-20, 7 and 13, 1	The superiority of thiazide-like diuretics vs thiazide diuretics on outcomes has never been tested in head-to-head RCTs. Chlorthalidone and indapamide have been used in a number of RCTs showing CV benefits, and these agents are more potent per milligram than hydrochlorothiazide in lowering BP, with a longer duration of action compared with hydrochlorothiazide and no evidence of a greater incidence of side effects. (1-2) Placebo-controlled studies based on thiazides, chlorthalidone, and indapamide reported similar effects on CV outcomes of the three types of diuretics. (3) Therefore, in the absence of evidence from direct comparator trials and recognizing that many of the approved single-pill combinations (SPCs) are based on hydrochlorothiazide, the BIHS would suggest a less restrictive recommendation on the type of long-acting diuretic to be used as D. (1) Roush GC, Ernst ME, Kostis JB, et al. Head-to-head comparisons of hydrochlorothiazide with indapamide and chlorthalidone: antihypertensive and metabolic effects. Hypertension 2015; 65:1041–6. (2) Olde Engberink RH, Frenkel WJ, van den Bogaard B, et al. Effects of thiazide-type and thiazide-like diuretics on cardiovascular events and mortality: systematic review and meta-analysis. Hypertension 2015; 65: 1033–40. (3) Thomopoulos C, Parati G, Zanchetti A. Effects of blood pressure lowering on outcome incidence in hypertension: 4. Effects of various classes of antihypertensive drugs–overview and meta-analyses. J Hypertens 2015; 33: 195–211.	Thank you for your comment. Following submission of the draft guideline it has been noted that costs of Chlortalidone and Indapamide differ significantly, with Chlortalidone being more expensive, restricting its availability. Chlortalidone has therefore been removed from the recommendation as an example of a thiazide-like diuretic. Indapamide remains in the recommendation as an example only. The GC noted that hydrochlorothiazide is mainly available in combination with other medications, and consequently the committee did not include this medication within the recommendation.

[British and Irish Hypertension Society]	Guideline	13, 14, 32	23-26, 4-23, 1-7	The review of the evidence of the NICE committee on the use of 'dual therapy' in Step 1 concludes that *"in the absence of compelling new evidence on step 1 dual therapy, […] previous recommendations for step 1 treatment should be retained […], because they were based on robust clinical and cost-effectiveness evidence".* • The draft guidance recommends a stepped approach to treatment that involves slowly adding drugs one at a time over an extended period until the target is reached. • This is an approach that has not been updated for several decades, despite evidence showing that it does not work in practice (1-3). • Most patients will require combination therapy to achieve BP targets. • Initial combination therapy, even at low-dose, is invariably more effective at lowering BP than monotherapy, even at high dose (4). • No RCT has compared major CV outcomes between initial combination therapy and monotherapy. However, observational evidence suggests that the time taken to achieve BP control is an important determinant of clinical outcomes (5), in line with the evidence that it is the level of achieved BP that predicts the CV benefits. • Two-drug combination as initial therapy is safe and well tolerated (4) even in patients with stage 1 hypertension (6). • Many patients remain on a single antihypertensive drug long-term despite inadequate BP control, even by the conservative standard proposed by the new guidance. • Reducing the number of pills taken, in consideration of likely co-morbidities and polypharmacy, will contribute to improving adherence, the main cause of pseudo-resistance (1-3). • The UK lags behind other European countries in the broad and accessible availability of single-pill combinations with the use of generic compounds, and the few options available are under patent and expensive. This would change if UK adopted the treatment strategies that result in better control of BP in other parts of the world. • The UK is unique in denying convenient access to single pill combination therapy, now widely available and cheap generics, and now recommended by the U.S. and European guidelines in an effort to improve treatment compliance and the speed and efficiency of BP control. There are large amounts of data showing that single pill combination therapy, as initial therapy, results in better and faster BP control. Perhaps the lack of emphasis in the	Thank you for your comment. This evidence was reviewed and only three studies were identified comparing starting monotherapy with starting combination therapy. Most of the evidence related to adverse events rather than the critical cardiovascular outcomes required to determine clinical effectiveness. As a result there was insufficient evidence for the committee to make a recommendation for combination therapy as first step treatment. Observational evidence was not included within the evidence reviews, as stated in the protocol.Recommendations with a high resource impact such as this can only be based on the most robust evidence which for an intervention review usually requires RCT evidence. Furthermore, many of the references you have provided related to adherence to medication, which was not included within the scope of this guideline. Specific reasons these were not included are detailed below: Calhoun et al. is not a research study - but a scientific statement. Gupta et al. is survey on adherence and therefore outside of the scope. Berra et al. is a literature review on adherence and therefore outside of the scope. Wald et al. is a review of monotherapy versus combination – however only reports change in blood pressure, and no outcomes that were in our review protocol. Xu et al. is an observational study, related to targets/initiation of treatment. Yusuf et al. is a trial comparing blood pressure and statin treatment to placebo. This is detailed in the excluded study table for evidence review C: listed as being the wrong population for this review (not hypertension), no relevant outcomes and incorrect interventions The recommendations do not state the form that more than one pill should take (i.e. single pill or separate pills). This will be up to the prescriber. We appreciate that prescribers are likely to prescribe based on low cost and at the current time single pills can be more expensive but cost effectiveness is based on current prices.

				guideline in developing strategies to improve adherence and BP control is reflected in the complacency in addressing this key issue in treatment of hypertension. • It appears that to fulfill the cost-effectiveness requirement, NICE will accept market-driven guidelines. On the other hand an increased demand for generic single-pill combinations may drive the market to reducing the costs in face of greater competition. • The adoption of dual therapy in single-pill would also help patients of low socio-economic groups to reduce their prescription charges but perhaps not the profits made by pharmacies for dispensing multiple pills when one could suffice. The BIHS believes that dual-therapy should be used right from the start, to have a major effect on the speed and quality of BP control, and for the patients to achieve the largest reduction in the risks of strokes, heart attacks and other major cardiovascular complications. (1) Calhoun A, Jones D, Textor S, et al. Resistant hypertension: diagnosis, evaluation, and treatment: a scientific statement from the American Heart Association Professional Education Committee of the Council for High Blood Pressure Research. Circulation 2008; 117: e510-526. (2) Gupta P, Patel P, Strauch B, et al. Risk Factors for Nonadherence to Antihypertensive Treatment. Hypertension 2017; 69: 1113-20. (3) Berra E, Azizi M, Capron A, et al. Evaluation of Adherence Should Become an Integral Part of Assessment of Patients with Apparently Treatment-Resistant Hypertension. Hypertension 2016; 68: 297-306. (4) Wald DS, Law M, Morris JK, et al. Combination therapy versus monotherapy in reducing blood pressure: meta-analysis on 11,000 participants from 42 trials. Am J Med 2009; 122: 290–300 (5) Xu W, Goldberg SI, Shubina M, Turchin A. Optimal systolic blood pressure target, time to intensification, and time to follow-up in treatment of hypertension: population based retrospective cohort study. BMJ 2015; 350: h158 (6) Yusuf S, Lonn E, Pais Pet al, HOPE-3 Investigators. Blood-pressure and cholesterol lowering in persons without cardiovascular disease. N Engl J Med 2016; 374: 2032–2043.	
[British and Irish Hypertension Society]	Guideline	General	General	In current clinical practice for the management of hypertension there is still poor implementation of NICE Guideline and evidence-based criteria. The publication of the new NICE Guideline is an opportunity to re-emphasise what should NOT be considered when treating a hypertensive patient. A list of drugs now obsolete should be listed as	Thank you for your comment. Evidence related to hydralazine, direct renin inhibitors and centrally acting drugs was searched for within each review question and no evidence identified at any treatment stage. It should however be noted that no evidence was identified for any antihypertensive medications

				not suitable. • Hydralazine may reduce BP in patients with hypertension, but the evidence is only based on pre-post studies, not RCTs (1). There is no evidence on mortality and morbidity, and there are some serious adverse events reported including hemolytic anemia, vasculitis, glomerulonephritis and lupus-like syndrome (1). • Direct renin inhibitors (e.g. aliskiren) reduce BP compared to placebo in short-term studies (8 weeks) with effect similar to other classes. However, little evidence in the longer-term and on CV outcomes (2). Aliskiren in combination therapy with ACEs/ARBs could control BP effectively, but is associated with increasing risks of hyperkalaemia and kidney injury and have no benefit in preventing of major cardiovascular events (3), and it may even be harmful in patients with hypertension and diabetes (4). • Centrally acting drugs (e.g. moxonidine) have a higher risk of adverse effects and no endpoint evidence. (1) Kandler MR, Mah GT, Tejani AM et al. Hydralazine for essential hypertension. Cochrane Systematic Reviews 2011; 11: CD004934 (2) Musini VM, Lawrence KAK, Fortin PM et al. Blood pressure lowering efficacy of renin inhibitors for primary hypertension. Cochrane Systematic Reviews 2017; 4: CD007066 (3) Fu S, Wen X, Han F et al. Aliskiren therapy in hypertension and cardiovascular disease: a systematic review and a meta-analysis. Oncotarget 2017; 8(51): 89364-74 (4) Parving HH, Brenner BM, McMurray JJ, et al. Cardiorenal end points in a trial of aliskiren for type 2 diabetes. N Engl J Med. 2012; 367: 2204–13.	at step 2, 3 or 4 of treatment. Our question comparing initial step 1 monotherapy to initial combination therapy did identify some evidence, none of which on the drugs you have listed, but this question was not intended to assess the effectiveness of individual medications compared to each other. We therefore cannot add a list of medications that should not be used, but instead the recommendations for each step of treatment do outline the drugs that should be considered. To note that the references you have provided were excluded from the guideline. These focused on monotherapy comparisons at step 1 of treatment, by comparing antihypertensive medications to placebo or to other medications. As specified, the scope of this guideline did not include determining the best monotherapyfor step 1 treatment. Instead, evidence reviewed was comparing monotherapy to initial combination therapy.
[British and Irish Hypertension Society]	Evidence reviews	General	General	Whilst the broad questions are framed by the NCG committee, the search criteria are applied by the NGC technical team. We wonder if the two are one and the same. If they get no results, as frequently happened, they do seem to have a mechanism for relaxing their search criteria until they do find studies. They could then give guidance, but with caveats. For example, in Evidence Review G they look for CV endpoint studies in which patients are on one stage 4 treatment for a year. Not surprisingly they find no evidence. They cannot therefore consider the Pathway 2 study as shorter-term reduction in BP is well outside their criteria, yet this is the best evidence in the area and until something better comes along, should inform practice. The guidance does mention using spironolactone as	Thank you for your comment. The NGC has information specialists who produce broad search strategies for each review question. Before the evidence is searched for each systematic review, a pre-specified protocol is developed by the committee and technical team in order to answer each clinical question. These protocols define the inclusion and exclusion criteria for each review and are discussed in detail with the committee and are signed off by NICE. The inclusion criteria is agreed to identify the evidence required to inform each review question. NICE methodology emphasises the importance of review protocols being agreed upfront in this way, in order to minimise bias and reduce the possibility of adding studies that

				an aside, but the guidance should, in our view, have been more proscriptive. Diabetes is taken as a special case in this guideline and searches dichotomized, perhaps in response to the ACCORD trial and perhaps as there are many studies recruiting only diabetics, but some thought could have gone into handling other disease states in the same way. For example, the guideline (P13 line 24 and especially 1.4.31 page 14 line 4) suggests ACE inhibitors and for patients over 55yrs calcium channel blockers. The PATS study unequivocally showed the benefit of indapamide after stroke (1), PROGRESS showed that the combination of indapamide and perindopril were beneficial (2). Multiple studies conducted of calcium channel blockers after stroke have shown no benefit or in some possible harm, even when confined to those studies using oral, once-daily CCBs sometime after stroke in metanalyses. Stroke should have been handled separately. (1) PATS Collaborating Group. Post-stroke antihypertensive treatment study. A preliminary result. Chinese Med. J. 1995; 108: 710-717. (2) PROGRESS Collaborative Group. Randomised trial of a perindopril-based blood-pressure-lowering regimen among 6105 individuals with previous stroke or transient ischaemic attack. The Lancet 2001; 358: 1033 – 1041. (3) Horn J, Limburg M. Calcium Antagonists for Ischemic Stroke. A Systematic Review. Stroke. 2001;32:570-576.	do not fully answer each review question. Furthermore for future guidelines, NICE's systematic review protocols will be published online on PROSPERO to further improve the transparent nature of the guideline process. Please see 'Developing NICE guideilnes: the manual' where the full process is explained. In terms of Evidence review G, recommendations related to spironolactone were carried forward from the previous guideline. The committee agreed not to change this, in light of no evidence, and felt that the PATHWAY 2 study, although not included in the review due in part to its short follow up, supported this consensus decision. When there is an absence of evidence, search criteria cannot be and is not relaxed unless this was a pre-specified strategy in the review protocol. Consensus recommendations instead are based on the committee's own clinical experience, and it can often be reassuring if this also fits within the evidence base they are aware of, as was the case with PATHWAY 2. Thank you for your comment related to the post-stroke population. However, this population was not included in this guideline. The scope of this update included primary hypertension and its management, rather than the secondary prevention of stroke or other cardiovascular events in a population with established cardiovascular disease.
[British and Irish Hypertension Society]	Research recommendations	General	General	We should consider adding the need to show that the daytime ABPM and HBPM levels are the same.	Thank you for your comment. The recommendations on how to measure blood pressure were not prioritised for update in the guideline therefore we are not able to add the level of detail you suggest.
[British and Irish Hypertension Society]	Table 2 wording change	41	2-3	Change from 1.1.5 to 1.1.4 omits reference to validation list from the BIHS – this ought to be reinstated as the BIHS is the only organisation in the world to provide such an update list. The list is used globally and referenced widely (also by ESC/ESH and AHA/ACC).	Thank you for your comment, the reference to this list is included in a footnote to recommendation 1.1.3.

[British and Irish Hypertension Society]	Appendix 3	General	General	The flowchart suggests that a patient under the age of 40 years with Stage 1 hypertension without diabetes or TOD or with a CVD risk <10% should be considered for special referral. Given the rapid increase in prevalence of hypertension due to obesity and other unfavourable life-styles, these cases will be unlikely to have any secondary cause of hypertension. Tertiary referral will be overburdened with inappropriate referrals. The BIHS would suggest adding to young age any other sign or symptom suggestive of secondary cause (for instance, target organ damage, signs suggestive of secondary hypertension, like hypokalaemia, symptoms consistent with phaeochromocytoma, resistance to Step 3 management, other CV complications or multi-morbidity).	Thank you for your comment. This recommendation originates from two recommendations in CG127. Evidence related to this recommendation was not reviewed within the guideline because this was not prioritied within the scope. In addition the committee were not aware of any new evidence to change this recommendation and therefore retained it, with amended wording to improve clarity. This recommendation is worded as 'consider' to reflect the strength of the evidence and is therefore not suggesting that all people with hypertension aged under 40 should be screened for secondary causes of hypertension. The committee agreed that it was not appropriate to include criteria for this referral as that would be too prescriptive given the evidence base. The decision of whether or not to seek specialist evaluation should be based on clinical judgement.
[British and Irish Hypertension Society]	Appendix 4	General	General	• The management algorithm is a direct evolution of the management algorithm of NICE Guideline 2011 (and revised version) which was co-badged from the British Hypertension Society algorithm developed in 2004 (1). It is to the BIHS' surprise that – as presented in the draft – no reference or acknowledgment is made to the original. • As highlighted earlier, the BIHS believes there is little evidence to support the combination in Step 2 of a C + D. Williams B, Poulter NR, Brown MJ et al. Guidelines for management of hypertension: report of the fourth working party of the British Hypertension Society, 2004—BHS IV. J Hum Hypertens 2004; 18: 139-85	Thank you for your comment. The NICE implementation team are liaising with the BIHS directly regarding this issue.
British Dietetic Association	guideline	8	22	We would like to see weight reduction for those who are overweight or obese as a separate recommendation with the suggestion of considering referral to community weight management services.	Thank you for your comment. During the NICE surveillance review and scoping processes, lifestyle interventions were not prioritised as an area requiring an update, with the exception of relaxation therapies. We therefore cannot make the changes you suggest, although there are existing cross-references to the NICE guideline for obesity prevention at the beginning of the section on lifestyle advice.
British Dietetic Association	Guideline	8	23	We feel that it would be helpful to include details on what regular exercise should look like with guidance on government recommendations from the Department of Health: • moderate-intensity aerobic physical activity for at least 150 minutes per week of 30mins five times per week, and;	Thank you for your comment. During the NICE surveillance review and scoping processes, lifestyle interventions were not prioritised as an area requiring an update, with the exception of relaxation therapies We therefore cannot make recommendations for particular exercise regimens without reviewing the evidence of effectiveness (or safety) of this

				• muscle strengthening activities on two or more days per week Please also consider signposting to the Moving Medicine webpage: https://movingmedicine.ac.uk/prescribing-movement/?dm_i=1M7S,60OOY,S5H8OB,NLGNE,1 Move Medicine was created by the Faculty of Sport and Exercise Medicine in partnership with Public Health England. Department of Health (2011) Physical activity guidelines in the UK: review and recommendations. Accessed from: https://www.gov.uk/government/publications/uk-physical-activity-guidelines	exercise for people with hypertension.
British Dietetic Association	Guideline	16	18	There is a risk (approximately 10%) of mild hyperkalaemia with ACE and ARB therapy, we would recommend monitoring serum potassium in those with reduced eGFR, it has been suggested that eGFR or <45 confers a higher risk of hyperkalaemia.	Thank you for your comment. Due to the risk of hyperkalaemia and possible interactions with salt substitutes, recommendations related to salt substitutes have been reworded to include a footnote highlighting the contraindications of potassium alternatives. In terms of monitoring of hyperkalaemia, the BNF provides guidance on monitoring response according.
British Dietetic Association	Guideline	8	25	Please add the recommended UK guidelines on Alcohol – limiting alcohol to 14 units per week for men and women.	Thank you for your comment. During the NICE surveillance review and scoping processes, lifestyle interventions were not prioritised as an area requiring an update, with the exception of relaxation therapies. We cannot therefore make recommendations for specific alcohol restrictions without reviewing the evidence of effectiveness (or safety) of this for people with hypertension.
British Dietetic Association	Guidelines	9	1	Please add liquorice to the following statement: Discourage excessive consumption of coffee, caffeine-rich products and black **liquorice.** Sigurjonsdottir HA, Franzson L, Manhem K et al. Liquorice-induced rise in blood pressure: a linear dose-response relationship. J Hum Hypertens 2001;15:549–52. 10.1038/	Thank you for your comment. During the surveillance review and scoping processes, lifestyle interventions were not prioritised as an area requiring an update, with the exception of relaxation therapies. We cannot therefore make recommendations to discourage liquorice intake without formally reviewing the evidence for this in people with hypertension.
British Dietetic Association	Guidelines	All	All	The terminology that should be used when advising patient to limit their salt intake has changed: "sodium" has been removed from food packages and the industry is encouraged to use "salt" only. We recommend the NICE guidelines should therefore use salt or dietary salt and not sodium or dietary sodium.	Thank you for your comment. Following stakeholder comments regarding this we have reverted to the previous recommendation wording (retaining the option of substituting sodium salt) but have added a footnote to explain the contraindications of potassium alternatives.
British Geriatrics Society		General Comments		• It is noted that the new guideline will update NICE CG127 will also update and replace the section on blood pressure management in the NICE guideline on type 2 diabetes in adults	Thank you for your comment. Following your comments, recommendation 1.4.11 has now been clarified to highlight that frailty or multimorbidity could be present at any age.

				(NG28) • Comments are restricted to the new and updated recommendations and the recommendations that are planned to be deleted from CG127 • It is noted that Dr Lucy Pollock (Consultant Geriatrician, Taunton and Somerset NHS Foundation Trust) was a member of the Advisory Committee and thus will have already provided input on behalf of the British Geriatric Society during the updating of the new guidelines • There are no comments in relation to the recommendations that are planned to be deleted from CG127 • Overall, it was encouraging to see that emphasis was given to clinical judgement in those aged 80 or more and in people with frailty, thus promoting a patient-centric and holistic approach. However, a concern is that at times within the new guidelines the impression is given that people with frailty is linked with being aged 80 or more.	Recommendation 1.4.10, which relates to people aged **under** 80 (with stage 1 hypertension) has now been amended to highlight the need to also take into account frailty and multimorbidity when offering antihypertensive drug treatment to this population. The committee felt that these changes reduce any implicit link between older age and frailty within the guideline.
British Geriatrics Society	1.4.13			for the treatment of stage 1 hypertension, there is the implicit suggestion that frailty should impact on decision for treatment in those aged 80 or more. However, there will be people with frailty below the age of 80 for whom the consideration of frailty or multi-morbidity may be relevant.	Thank you for your comment. Following your comments, recommendation 1.4.11 has now been clarified to highlight that frailty or multimorbidity could be present at any age. Recommendation 1.4.10, which relates to people aged **under** 80 (with stage 1 hypertension) has now been amended to highlight the need to also take into account frailty and multimorbidity when offering antihypertensive drug treatment to this population. The committee felt that these changes reduce any implicit link between older age and frailty within the guideline.
British Geriatrics Society	1.4.11 and 1.4.22			about people with frailty in 1.4.11 and 1.4.22 is not so implicitly linked to age above or below 80. However, the lack of evidence for both the treatment and target blood pressure for such people with frailty, independent of age, is acknowledged.	Thank you for your comment. Following your comments, recommendation 1.4.11 has now been clarified to highlight that frailty or multimorbidity could be present at any age. Recommendation 1.4.10, which relates to people aged **under** 80 (with stage 1 hypertension) has now been amended to highlight the need to also take into account frailty and multimorbidity when offering antihypertensive drug treatment to this population. The committee felt that these changes reduce any implicit link between older age and frailty within the guideline.
British Geriatrics Society	1.1, 1.2 or 1.3			Given that comments are not requested on areas shaded in grey, there are no specific comments in relation to sections	Thank you for your comment.

British Geriatrics Society	1.1 1.4.21			Although, the issue of measuring standing blood pressure in covered in section 1.1 and is shaded in grey such that comments are not requested, it is covered in 1.4.21. One wonders if 70 years of age is a more appropriate cut-off to employ given prevalence rates of up to 30% at this age (F. Ricci *et al* JACG 2015 https://doi.org/10.1016/j.jacc.2015.06.1084). Also one wonders if Parkinson's Disease should also be listed given its prevalence in older adults and it association with postural changes in blood pressure?	Thank you for your comment. We do not believe it's necessary to add age 70 years as a cut off. The recommendation already suggests measurement in symptomatic people of any age, and given prevalence will be a continuous variable we do not think adding another cut-off would be helpful. Parkinson's is one of many conditions that can increase prevalence of postural hypotension and we don't think it should be singled out in particular.
British Geriatrics Society	1.4.9			although one would agree with "Discuss with the person their preferences for treatment before starting" one wonders if the guidelines should be more explicit, as stated in the rationale, and suggest that the benefits and risk of should be fully explored with the person.	Thank you for your comment. We have amended the wording of this recommendation to reflect more explicitly the need to discuss the benefits and risks of treatment with the patient.
British Geriatrics Society	1.4.10			it is noted that the for those under 80, drug treatment should be offered in stage 1 hypertensive if the person also has an estimated 10-year risk of cardiovascular disease of 10% or more. It is perhaps worth noting that based on the QRISK2, an individual aged 75 or more has a risk of between 19.1% (female) and 26% (male) based on age alone. Also it is noted in the glossary that established cardiovascular disease states "heart attack" and does not include stable angina. Would not "coronary artery disease" not be a more encompassing phrase that would include prior myocardial infarction and stable symptomatic coronary artery disease?	Thank you for your comment. You are correct that age is a large determinant of cardiovascular risk. In the write-up accompanying the model in Appendix 1, there are tables with information on the minimum risks for the different age subgroups modelled, which were indeed used for interpreting the model results. Angina has also been added to the definition of established cardiovascular disease as it was considered clearer to list individual events rather than use another encompassing term in a glossary.
British Geriatrics Society	1.4.36			It is noted that indapamide and chlorthalidone are recommended as non-thiazide diuretics, although the availability of chlorthalidone in the UK is limited.	Thank you for your comment. Following submission of the draft guideline it has been noted that costs of Chlortalidone and Indapamide differ significantly, with Chlortalidone being more expensive, restricting its availability. Chlortalidone has therefore been removed from the recommendation.
British Medical Association	Guideline	General	General	The Association welcomes the opportunity to respond to your consultation on Hypertension in adults: diagnosis and treatment. We are concerned that the recommendation to offer treatment to patients with stage 1 hypertension has been made on an economic model of cost efficiency based on the treating of populations, rather than treating patients as individuals. The evidence for individual benefit in stage 1 hypertension is not robust	Thank you for your comment. You are correct that the nature of an evidence based guideline means that evidence of effectiveness is based on a population level data from the average populations in trials. This in turn feeds into an economic model, where results are about the average patient. The clinical evidence for those with stage 1 hypertension was based on a large and recent meta-analysis in people with stage 1 hypertension. The committee concluded on this

				and is insufficient for the level of pharmacological intervention that implementing this guideline would produce. We are also concerned about the impact of these recommendations on primary care and secondary care workload. Please find enclosed the BMA's full submission to this consultation, including comments on specific paragraphs in the draft guideline.	evidence that treatment for people with stage 1 hypertension was effective and felt this evidence was robust, and fed into the economic model which showed that treatment was cost effective even as low as 5%. The model was considered conservative towards treatment in various ways such as using conservative treatment effects and adverse event probabilities, and only one CV event for an individual was possible in the model. It is however accepted that the average patient does not reflect all individuals, and the decision to treat should be based on discussion between clinician and patient, and shared decision making has been emphasised in the guideline. The opinion of the committee, and also based on published evidence, was that there are already people being treated below 20% risk, and therefore the impact on practice is not as large as might be perceived as the previous 20% threshold is not being strictly followed in practice. Treating these additional people will have longer term benefits in terms of costly events being avoided, although it is acknowledged that treating more people will mean more consultations to monitor treatment in primary care, with the savings falling more on secondary care.
British Medical Association	Guideline	General	General	We are concerned that the decision to recommend the offering of treatment to patients with stage 1 hypertension in the absence of other concerning features has been made on an economic model of cost-efficiency based on the treating of populations. Within their consultations, doctors do not see populations but individuals, and an examination of the potential benefits and harms to the individual, based on absolute and not relative values, ought to be at the heart of this guideline, together with the information that clinicians will need to have in order to inform their patients. The evidence for individual benefit in stage 1 hypertension is not robust and is insufficient for the level of pharmacological intervention that implementing this guideline would produce.	Thank you for your comment. You are correct that the nature of an evidence based guideline means that evidence of effectiveness is based on a population level data from the average populations in trials. This in turn feeds into an economic model, where results are about the average patient. The clinical evidence for those with stage 1 hypertension was based on a large and recent meta-analysis in people with stage 1 hypertension. The committee concluded on this evidence that treatment for people with stage 1 hypertension was effective and felt this evidence was robust, and fed into the economic model which showed that treatment was cost effective even as low as 5%. The model was considered conservative towards treatment in various ways such as using conservative treatment effects and adverse event probabilities, and only one CV event for an individual was possible in the model. It is however accepted that the average patient does not reflect all individuals, and the decision to treat should be based on discussion between clinician and patient, and shared decision

					making has been emphasised in the guideline as well as a patient decision aid being produced to accompany the recommendations.
British Medical Association	Guideline	General	General	We are also concerned about the impact of these recommendations on primary care and secondary care workload, the latter will be a particular concern if our comments on paragraph 1.4.49 on referral are not heeded. NICE correctly recognizes the importance of recognizing multimorbidity in individual patients, and encourages clinicians to consider the effect of applying a single-disease guideline to a multimorbid patient. We consider that the current workload and funding crisis in the NHS has produced a multimorbid health-care system in which the addition of tasks will inevitably produce harm elsewhere. We do not believe it is reasonable that guidance that results in increased pressures within the NHS is produced without recognition of lost opportunity costs for patients with other conditions.	Thank you for your comment. Health economics by its nature recognises that recommending interventions that are cost effective means an opportunity cost from other areas of the NHS given a set NHS budget, as costs will be displaced from somewhere else. NICE methodology also requires that there be robust evidence of clinical and cost effectiveness if a recommendation has a significant resource impact (defined as more than £1 million per recommendation per year). The committee were confident that treating people with stage 1 was shown to be clinically effective, and a cost effectiveness model showed that treating people even at lower than 10% risk was a cost effective use of resources. It is recognised that treating more people will mean more consultations to monitor treatment in primary care, but there will also be savings from events avoided, and although likely to fall more on secondary care and other sectors such as social care, the cost effectiveness work looks at costs to the NHS as a whole. There are also other areas of the guideline that could result in savings, such as reinforcing that ABPM is recommended for confirming the diagnosis of hypertension, as this is actually cost saving compared to the other measurement methods. Treating people with type 2 diabetes to the same target as those with hypertension and without type 2 diabetes (to systolic BP of 140 instead of 130) can also reduce the treatment needed in those people.
British Medical Association	Guideline	1.2.4		‘If ABPM is unsuitable or the person is unable to tolerate it, offer home 5 blood pressure monitoring (HBPM) to confirm the diagnosis of 6 hypertension.’ In some areas Ambulatory Blood Pressure Monitoring has not been commissioned; therefore, we would recommend either alteration to If ABPM is unsuitable, unavailable, or the person…. or amending to recommend a choice of ABPM or HBPM.	Thank you for your comment. The recommendation on ABPM also existed in the previous guideline. Given this was a previous recommendation, implementation should be in place, although it is acknowledged there are still some areas where the recommendation hasn’t been implemented and there will be costs involved in doing so. The evidence review and economic analysis of diagnostic accuracy of the three measurement methods were updated in this guideline. ABPM was still found to be the most cost effective measurement method for confirming hypertension

					compared to the other measurement methods, even given its higher cost, and was actually found to be cost saving overall compared to CBPM and HBPM because of more accurately identify true positives and true negatives, therefore avoiding unnecessary treatment, as well as avoiding under treatment and consequently CV events. The committee therefore agreed that it was appropriate to retain this recommendation.
British Medical Association	Guideline	1.2.5		'While waiting for confirmation of a diagnosis of hypertension, carry out: • investigations for Target organ damage (see recommendation 1.3.3), followed by • formal assessment of cardiovascular risk using a cardiovascular risk assessment tool (see the section on full formal risk assessment in the NICE guideline on cardiovascular disease).' The predictive value of an isolated moderately raised blood pressure reading taken in surgery, particularly when the patient is ill or anxious, is limited. We would therefore recommend investigations for target organ damage only at the point where it appears that hypertension is likely. If it is done before this point it would be classified as a screening procedure and would therefore need to be shown to produce overall benefit in the general population (as opposed to the hypertensive population) and require separate commissioning following approval from the UK National Screening Committee.	Thank you for your comment. We do not agree that this recommendation implies a screening procedure for target organ damage. The people being tested are already suspected of hypertension, rather than being from the general population. This recommendation has been carried forward from the previous guideline, and is intended to ensure that there isn't a delay in diagnosis.
British Medical Association	Guideline	1.4.10		'Offer antihypertensive drug treatment in addition to lifestyle advice to adults aged under 80 with persistent stage 1 hypertension who have 1 or more of the following: target organ damage; Established cardiovascular disease; renal disease; diabetes; an estimated 10-year risk of cardiovascular disease of 10% or more.' We do not believe that the word 'offer' should be applied to those with stage 1 hypertension in the absence of the other factors mentioned. Many patients will interpret an offer of drug treatment as a recommendation for it, and the benefits to individual patients does not justify such an approach. We would recommend that, for these patients, it would be more appropriate to say 'discuss with the patient the potential benefits and harms of drug treatment'. For this discussion to be possible, decision-making aids should be supplied explaining the number-needed-to-treat and -number-needed-to-harm values. The guideline committee has noted that the evidence base here is incomplete, and therefore	Thank you for your comment. An 'offer' recommendation is NICE wording to reflect a high level of confidence that the intervention being offered is clinically and cost effective. There should always be a discussion between patient and clinician about any treatment recommended in NICE guidelines, and the guideline also links to various other NICE guidelines for advice on shared decision making. The clinical evidence for those with stage 1 hypertension was based on a large and recent meta-analysis in people with stage 1 hypertension. The committee concluded on this evidence that treatment for people with stage 1 hypertension was effective and felt this evidence was robust, and fed into the economic model which showed that treatment was cost effective even as low as 5% and to even lower levels in people

				there should be more emphasis placed on facilitating an informed patient choice.	under the age of 60. The model was considered conservative towards treatment in various ways such as using conservative treatment effects and adverse event probabilities, and only one CV event for an individual was possible in the model. There was less certainty about the benefit of treatment in people with lower risk, as these were a group of people less represented in the RCTs used to inform clinical effectiveness in people with stage 1 hypertension, hence the weaker 'consider' recommendation for those with risk below 10%. However, we accept your view that some people may read this as not including the discussion with the patient and therefore we have reword as 'Discuss starting antihypertensive treatment...' to clarify that this is the intention. A decision aid has been produced to accompany the guideline, to help people decide which drug to start with.
British Medical Association	Guideline	1.4.12		'Consider antihypertensive drug treatment in addition to lifestyle advice for younger adults with stage 1 hypertension and an estimated 10-year risk below 10%. Bear in mind that 10-year cardiovascular risk may underestimate the lifetime probability of developing cardiovascular disease.' We believe that the evidence for this is insufficient to justify the recommendation even with 'consider' and request that a comparison of outcomes be provided with annual monitoring without treatment.	Thank you for your comment. The cost utility analysis undertaken as part of the guideline has undertaken the analysis you describe and compared antihypertensive treatment with no antihypertensive treatment (monitoring only) in people with stage 1 hypertension at different cardiovascular risks and ages. This identified that at the base case age of 60, it was cost effective to treat people at 10% risk, and even below 10% in people younger than age 60. The treatment effect used in the model was based on the guideline clinical review which identified a large recent meta-analysis on antihypertensive treatment in people with stage 1 hypertension, which found treatment to be clinically effective in this group. The relative risks from this review were applied to all risk groups in the model, which resulted in different absolute effects depending on risk. The committee were also aware of other data included in the review, such as observational data specifically in a lower risk population that did not find a treatment benefit. Given this, the committee felt that a good compromise would be to offer treatment to those above 10% risk aged under 80, but to consider treatment to those below 10% risk aged under 60, given the uncertainties in treatment benefit. Additionally, the recommendation on those below 10% was intended to target a younger group of patients, in which lifetime risk could be

					underestimated by 10 year calculators, and these are also likely to be people in whom individual preferences and circumstances are likely to have the biggest impact on the treatment decision. Age 60 was chosen to reflect the low risk because this is around the age at which an individual would become 10% risk as mentioned, and this is also around the age where discrepancies between the 10 year and lifetime risk start. In addition, due to age alone someone over 60 is unlikely to have a risk under 10%. There is also a separate research recommendation for people aged under 40 to investigate the treatment initiation threshold.
British Medical Association	Guideline	1.4.13		'Consider starting antihypertensive drug treatment for people aged over 80 with stage 1 hypertension. Use clinical judgement for people with frailty or multimorbidity (see also NICE's guideline on multimorbidity).' We welcome the reference to multimorbidity and frailty, but even without these features the greater propensity of adverse effects from drug treatment in this age group, combined with concerns about the effects of low blood pressure, raise significant concerns even at the 'consider' level of recommendation.	Thank you for your comment. Recommendation 1.4.9 has been amended to reflect more explicitly the need to discuss the benefits and harms of treatment. Furthermore, recommendation 1.4.13 has been amended to recommend that treatment should be considered only in those who are over 80 with a blood pressure of over 150/90mmHg, rather than all people in this age group with stage 1 hypertension. The committee agreed that this aligned more appropriately to the blood pressure target of 150/90mmHg in this age group. The committee agreed that the strength of the recommendation highlights the need to use clinical judgement. Given concerns related to multimorbidity and frailty as well as uncertainty around treatment effectiveness, the committee agreed that a consider recommendation was appropriate in this population.
British Medical Association	Guideline	1.4.15 & 1.4.16		'Use clinic blood pressure measurements to monitor the response to lifestyle changes or drug treatment in adults with hypertension. 'Consider HBPM for adults with hypertension who choose to self-monitor their blood pressure.' We consider HBPM has significant advantages to clinic blood pressure readings, particularly with regard to empowering patients to share responsibility for their treatment. Clinic and HBPM should be given equal validity.	Thank you for your comment. There was not enough evidence to strongly recommend HBPM for monitoring treatment. The evidence on monitoring was limited, with relatively small studies comparing different combinations of HBPM, pharmacy monitoring and clinic monitoring. It suggested that people had improved blood pressure control with HBPM compared with clinic monitoring, and the greatest blood pressure reduction was achieved with pharmacist input. However the evidence was insufficient for the committee to make a recommendation. The recommendation to consider the use of HBPM therefore reflects that there was insufficient evidence to make a stronger recommendation.
British Medical Associati	Guideline	1.4.49		'If blood pressure remains uncontrolled in people with resistant hypertension taking the optimal tolerated doses of 4 drugs, seek expert advice.'	Thank you for your comment. We have amended the wording to seek specialist advice rather than expert. The committee agreed that the term 'advice' rather than referral was important

on				The word 'expert' is inappropriate as patients are already under the care of experts in primary care, the phrase should be amended to 'referral for specialist assessment.'	and more appropriate. This takes into account that seeing specialist advice could be an informal discussion, rather than a formal referral.
British Medical Association	Guideline	General	General	We do not believe that all patients will benefit from this, particularly those who are more frail or multimorbid, or those with readings close to the ideal. The word 'consider' needs to be added to prevent unwanted criticism should referral not be indicated.	Thank you for your comment, but unfortunately we cannot respond in full because it is unclear what this comment refers to. In relation to frailty and multimorbidity, further clarifications have been added to relevant recommendations.
British Society of Interventional Radiology (BSIR)	Guideline	General	General	I am agreement with the Guideline Hypertension in adults: diagnosis and management Draft for consultation, March 2019 with no negative comments.	Thank you for your comment, we are glad that you agree with the guidance.
Champs	Guideline	20	2	Automated blood pressure monitors are inaccurate in people with AF because the oscillometric algorithms are designed to measure blood pressure for people in sinus rhythm, and so the research recommendation around which (if any) device could be used for monitoring of hypertension is welcomed. What does NICE recommend in relation to the use of automated devices for the **diagnosis** of hypertension for people in AF and the use of automated devices in this context ABPM/HBPM? While most patients are likely to have a diagnosis of hypertension before a diagnosis of AF, the situation could arise the other way around.	Thank you for your comment. A research recommendation was included for measurement of blood pressure in people with atrial fibrillation as this had been prioritised to retain from the previous iteration of the guideline. Research into the best method for diagnosis for this group was not prioritised by the committee, and there was no evidence reviewed to inform a specific recommendation on this topic.
Champs	Guideline	11	25	1.4.21 The greater clarity around assessment for postural drop is welcomed, i.e over 80, T2DM and symptomatic.	Thank you for your comment.
Champs	Guideline	11	19	Overall impression: There is scope to improve clarity re: the advice for stage1 hypertension. 1.4.19: is a simple statement that many clinicians will read and act on **Reduce clinic blood pressure to below 140/90.** There is however a lot of complexity that 'sits' underneath this**.** From the algorhythm for people within stage 1 hypertension (even with a QRISK less than 10.) the advice is anti-hypertensive medication should be **considered** in addition to lifestyle advice. This statement could • lean clinicians towards advising medication even with a relatively	Thank you for your comment. The target blood pressure only applies to people that have been initiated on treatment. The evidence review identified RCT evidence in people with stage 1 hypertension who were considered of moderate risk (above 10%), that showed treating those people was clinically effective. This fed into an economic model (assuming the same relative risk reduction applied across all risk subgroups, although there would be a difference in absolute benefit

				low CVD risk. (e.g 47 year old female , BP 146/ 80, no target organ damage QRISK =8) • cause confusion. Later in the document it is mentioned that anti -hypertensive medication should be **offered** to for people with target organ damage and a QRISK over 10. While acknowledging the need for leeway for clinical judgement and patient choice, in practice (particularly with the advent of the new QoF targets) it may mean most patients with a BP over 140/90 will be medicated. If that is the intent, (alongside obviously patient choice) it may be more clear/simple to state this and place a strong emphasis on lifestyle alongside this.	between groups), which showed that even treating to as low as 5% risk was cost effective. The model was also considered conservative through the inputs used and assumption made. The committee therefore were confident that treating above 10% was clinically and cost effective, and this is reflected in the strength of the wording in the recommendation. The recommendation includes lifestyle advice as well as antihypertensive drug treatment and has been reworded to highlight that this should be started in discussion with the person with hypertension to clarify that patient choice is central to the decision to start treatment. The committee discussed how there is more uncertainty around the relative benefit of treating people of lower risk, as supported by evidence such as Sheppard et al. 2018, but also that people with lower risk, particularly who might be younger, have a lower absolute risk calculated by the 10 year risk calculators, which is likely to underestimate their lifetime risk of cardiovascular events. Additionally, there are other factors to consider that are not always captured by the risk calculators, such as family history. Taking all of this together, the committee decided to make a consider recommendation for people below 10% under the age of 60. With the use of the word 'consider' reflecting there is more uncertainty around treating these people.
Champs	Guideline	9	23	1.4.10. The guidelines state that for people with persistent stage 1 hypertension lifestyle advice should be given; and if unsuccessful or inappropriate the benefits and risks of medication should be discussed. A) it would be helpful if 'persistent' was defined clearly B) When should the discussion take place following diagnosis? 3 months, 6 months 12 months, longer?	Furthermore, following your comments related to persistent hypertension, we have added this definition to the guideline glossary. However, this is not defined after an exact time period and relies on clinical judgement. Consequently we are unable to add specific detail about when discussions should take place following diagnosis. Persistent hypertension: High blood pressure at repeated clinical encounters.
Champs	Guideline	12	13	• **1.4.23 Provide an annual review of care for adults with hypertension to monitor blood pressure, provide people with support , and discuss their lifestyle , symptoms and medication**. More detail would be useful in the context of annual review. What monitoring and follow up does a person with hypertension require? If/when should an ECG or fundoscopy be repeated ? What bloods	Thank you for your comment. This section was not prioritised for update within the guideline and has been carried forward from the previous iteration. We therefore cannot make the changes you suggest because we have not reviewed the evidence to determine which tests should be undertaken during a review. Recommending specific tests would have

				should be done to assess fort target organ damage? How frequently ? Is it the same for those on people on medication and those managed via lifestyle?	resource and cost implications, and thus the recommendation addition you suggest would require robust evidence.
Champs	Guideline update information	41	Table 1	1.4.14. How often should routine follow up of a person on medication follow, annually, bi annually? In the Deletions table it states that "This recommendation (in relation to monitoring every 4-6 months) will be deleted as it is now covered by the recommendation to provide an annual review for adults with hypertension (recommendation 1.5.14)" but we were unable to find recommendation 1.5.14 in the guideline.	Thank you for your comment. Frequency of monitoring was not prioritised for update within the guideline and consequently we cannot make the changes you suggest.
Champs	Guideline	8	1	1.3.2. Estimating CVD risk- It appears that the guidance is based on QRisk 2. Should clinicians use QRisk2 in preference to QRISK3? If and if so what would be the impact of using an alternative risk calculator?	Thank you for your comment. The recommendations do not refer to a specific version of QRISK, but instead indicate this should be based on the NICE guideline for cardiovascular disease which will include the most up to date recommendations for risk assessment. Minimum risk values from the QRISK for different ages were used only for the interpretation of the economic model results. The risk subgroups compared in the model were based on specific risk levels, and were not predicted from patient characteristics at all. At the time of model development, the QRISK2 was used to interpret the model results; however a table has been added to the model write-up in Appendix 1 to also use the values from QRISK3 to interpret the model results. This does not impact the recommendations in any way as the risk threshold predicted as cost effective from the model is still far below the 10% threshold recommended.
Champs	Guideline	Evidence, general	general	Given that ECG and Fundoscopy are not routinely done how important are these, previously both were based on consensus evidence only, has this been strengthened?	Thank you for your comment. In the previous guideline it was recommended that both ECG and fundoscopy should be offered to all hypertensive individuals to assess cardiovascular risk and target organ damage. In the updated guideline the evidence for this recommendation was not reviewed as this should be established clinical practice and no evidence to suggest otherwise was identified during scoping. The recommendation has therefore been retained.

Champs	Guideline	7	general	How frequently should a person who has been diagnosed with stage 1 be followed up to assess for end organ damage, annually, bi annually?	Thank you for your comment. Frequency of monitoring was not prioritised for update in this guideline and consequently we cannot clarify the frequency of assessment of end organ damage.
Diabetes UK	Guideline	7	11	Hypertension can increase the risk of Type 2 diabetes. We suggest that in this section, following the advice to formally assess cardiovascular risk (lines 11-13), the guideline then advises that a risk assessment for Type 2 diabetes and, if indicated a blood test to detect non-diabetic hyperglycaemia is conducted too. This would reflect the public health guideline PH38, which states that risk assessment for diabetes should be encouraged in people with hypertension. Guideline PH38 should also be cross-referenced with this guideline. https://www.nice.org.uk/guidance/ph38/resources/type-2-diabetes-prevention-in-people-at-high-risk-pdf-1996304192197	Thank you for your comment. The level of detail you suggest is beyond the evidence reviewed by the committee and therefore we are unable to include it within the recommendations. However, when published, the NICE pathway on the website will be updated, which links to all relevant NICE guidance, including PH38.
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline; management	General	General	In terms of **2. *Would implementation of any of the draft recommendations have significant cost implications?*** If the current draft guidelines are implemented, costs are likely to increase, because **the current draft guidelines do not address the root causes of the hypertension, merely their symptom management**. The emphasis on hypertension in adults would be more effective if it focused and provided additional support to the prevention efforts that would take place in the primary care community. **Suggestions for complementary, effective, non-drug interventions are provided, with the rationale and evidence-based research behind them. These suggestions aim to provide a primary, preventive and ameliorative intervention, minimising the number, impact and cost of pharmaceutical interventions.**	Thank you for your response. Your comments will be considered by NICE where relevant support activity is being planned.
Lactation Consultants of Great Britain; the Associati	Draft guideline; management	General	General	In terms of **3. *What would help users overcome any challenges?*** *(For example, existing practical resources or national initiatives, or examples of good practice.)* A national training initiative would need to be put in place that focuses on the successful interventions such as those provided above. These would be recommended in the NHS Long Term Plan, integrating and updating interventions and protocols. Drugs would still need to be	**Thank you for your response. Your comments will be considered by NICE where relevant support activity is being planned.**

on of Naturopathic Practitioners				used for some patients, especially where the problem is already acute, or the patient does not comply with the recommendations, but these would evolve into the exception rather than the rule. Evidence of the effectiveness of such programmes is given in the line below.	
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline; management	General	General	**Despite evidence showing that changing health behaviours improves (mental) health outcomes and lowers health care costs (Spring et al, 2013) to date, lifestyle counselling is not routinely implemented in physicians' office** (Hivert et al, 2016) More precisely, **physicians provide this type of counselling in only 34% of the clinic visits (Lobelo et al, 2009]. One of the important reasons for this is the fact that face-to-face counselling is time-consuming.** Previous trials within the cardiac population have demonstrated that a "one size fits all" approach does not seem to work(Habibović et al, 2013) - revealing the importance of personalizing the care plan and addressing patients' needs and preferences. Spring, B., Ockene, J., Gidding, S., Mozaffarian, D., Moore, S., Rosal, M., Brown, M., Vafiadis, D., Cohen, D., Burke, L. and Lloyd-Jones, D. (2013). Better Population Health Through Behavior Change in Adults. *Circulation*, 128 (19), pp.2169-2176. [PubMed] Hivert, M., Arena, R., Forman, D., Kris-Etherton, P., McBride, P., Pate, R., Spring, B., Trilk, J., Van Horn, L. and Kraus, W. (2016). Medical Training to Achieve Competency in Lifestyle Counseling: An Essential Foundation for Prevention and Treatment of Cardiovascular Diseases and Other Chronic Medical Conditions: A Scientific Statement From the American Heart Association. *Circulation*, 134(15). [PubMed] 7. Lobelo F, Duperly J, Frank E. Physical activity habits of doctors and medical students influence their counselling practices. Br J Sports Med. 2009 Feb;43(2):89–92. doi: 10.1136/bjsm.2008.055426. [PubMed] Habibovic, M., Burg, M. and Pedersen, S. (2013). Behavioral Interventions in Patients with an Implantable Cardioverter Defibrillator: Lessons Learned and Where to Go from Here? *Pacing and Clinical Electrophysiology*, 36(5), pp.578-590. [PubMed]	Thank you for your comment and for outlining implementation concerns related to lifestyle interventions, however this area (with the exception of relaxation therapies) was not prioritised as an area to update within the guideline and therefore the original recommendations remain. We are therefore unable to make the changes you suggest..

Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Guideline Appendix	Algorithm Management	Diagram	*"Offer lifestyle advice to people with hypertension"* Do GPs receive sufficient training on behavioural change and lifestyle advice currently? In an ideal world, GPs should be able to refer people to the relevant intervention and behaviour change groups, as to be truly effective, these interventions require more than a ten minute appointment. If 'very brief interventions' worked, we would not be seeing the rates of hypertension we see currently. From the NICE guideline on behavioural change intervention below: *"Encourage behaviour change service providers and practitioners to provide high intensity interventions (typically these last more than 30 minutes and are delivered over a number of sessions) for people they regularly work with who: have been assessed as being at high risk of causing harm to their health and wellbeing (for example…. people with type 2 diabetes or cardiovascular disease) and/or have not benefited from lower-intensity interventions (for example, an extended brief intervention)."[2004]* *And in the 2019 Draft, Line 20 &21 "Continue to offer lifestyle advice and support them to make lifestyle changes whether or not they choose to start antihypertensive drug treatment."* It would be more helpful if the algorithm stated, *"refer to behavioural intervention groups that address risk factors for hypertension and/or diabetes."* **However, these behavioural change programmes may not be available to all GPs and patients.** The behavioural change guidelines themselves acknowledge their limitations: *"The PDG agreed that some of the recommendations were ambitious and may prove difficult to resource at local level. However, it was keen to set a 'gold standard' for service delivery as an aspirational target". (Guideline Page 9, lines 20; 21)* Are these services available and within reach of all surgeries and communities, particularly for those patients with limited mobility, multiple morbidities or reliant on public transport?	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest.

				There may *not* be any behavioural interventions locally, meaning that the physician is left to their own devices, without adequate training on more than the briefest of interventions and the patient is unlikely to make the changes required. Only 14% of individuals make any lifestyle changes, even after a CVD event – but how many more might there be, and how many CVD events could be avoided if patients all had access to adequate, structured, well trained, timely support? **Recommendation:** Please add a link to additional CPD-accredited training in the pathway for the many highly committed GPs whose communities might not have easy access to these support services.	
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Guideline Appendix	Algorithm Management		The next box *"using clinical judgement around frailties or multi-morbidities"* is relevant, but where are the references to questions and pathways on nutrition and stress reduction as drug-free alternatives that help to ameliorate frailties or multi- morbidities? Sadly, there are more details on marketing authorisation specifics than there are on what constitutes effective lifestyle guidance. Spring, B., Ockene, J., Gidding, S., Mozaffarian, D., Moore, S., Rosal, M., Brown, M., Vafiadis, D., Cohen, D., Burke, L. and Lloyd-Jones, D. (2013). Better Population Health Through Behavior Change in Adults. *Circulation*, 128(19), pp.2169-2176. [PubMed] Hivert, M., Arena, R., Forman, D., Kris-Etherton, P., McBride, P., Pate, R., Spring, B., Trilk, J., Van Horn, L. and Kraus, W. (2016). Medical Training to Achieve Competency in Lifestyle Counseling: An Essential Foundation for Prevention and Treatment of Cardiovascular Diseases and Other Chronic Medical Conditions: A Scientific Statement From the American Heart Association. *Circulation*, 134(15). [PubMed]	Thank you for your comment. Recommendations reflect that antihypertensive medication should be considered only when lifestyle interventions have not adequately reduced blood pressure, and that lifestyle advice should continue in combination with antihypertensive medication. These recommendations are also for people that are frail or have multimorbidities, but specific recommendations have been made to ensure careful clinical judgement is used for these people. Furthermore, lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline.
Lactation Consultants of Great Britain; the Association of Naturopathic	Guideline Appendix	Algorithm Management	Step 4	*"If hypertension not controlled with optimal tolerated doses of A + C + D, regard this as resistant hypertension."* A diagnosis of resistant hypertension at this point is merely descriptive. It means that the root causes have not been identified nor the symptoms suppressed sufficiently by the drugs. Drugs do not address nutrition or lifestyle causes whereas a functional medicine approach would have identified these causal factors much earlier in the patient's history and may have removed both the hypertension and the need for treating with drugs altogether. "Consider adding a fourth antihypertensive drug or seek expert	Thank you for your comment. The guideline is in line with internationally accepted definitions of resistant hypertension, that is, a persistently raised blood pressure regardless of antihypertensive treatment. This diagnosis is irrespective of the underlying pathology, and further treatment is therefore recommended in order to reduce blood pressure. It should be noted though that the guideline does still consider lifestyle interventions at this stage. Antihypertensive medication should be given in combination with lifestyle advice, and so your concerns related to nutrition and lifestyle causes should be

Practitioners				advice." We would recommend seeking advice from a functional medicine practitioner and/or training in functional medicine protocols.	addressed.
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft Guidelines	Page 1	Title page	*"This guideline covers identifying and treating primary hypertension (high blood pressure) in people aged 18 and over, including people with type 2 diabetes. It aims to reduce the risk of cardiovascular problems such as heart attacks and strokes by helping healthcare professionals to diagnose hypertension accurately and treat it effectively."* These draft guidelines are not currently worded to address or support the NHS Long Term Plan's new emphasis on prevention. This aspect may need to be updated. There is currently no expectation within the draft guidelines of reversing hypertension to a healthy state, except by using an increasing cascade of drug treatment to suppress the symptoms. This does not identify or focus on a consistent way of helping the patient remove the underlying root cause agents, which remain as drivers of hypertension and are almost always lifestyle-related.	Thank you for your comment. This guideline is related to the management of the condition rather than identifying root causes. As such recommendations relate to the management and reduction of blood pressure and related symptoms or cardiovascular events. That being said, the importance of lifestyle interventions, which is recommended before antihypertensive medication, is highlighted throughout the guideline. Please refer to the NICE pathway for cardiovascular disease prevention.
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline	page 91.4.9,	20, 21	• *Continue to offer lifestyle advice and support them to make lifestyle changes whether or not they choose to start antihypertensive drug treatment.* ***[2019]*** It might be helpful to revise this wording to include *"and/or refer them to lifestyle intervention support programmes where they exist".*	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest.Please refer to the NICE pathway for cardiovascular disease prevention.
Lactation Consultants of Great Britain; the Association of Naturopa		Page 25	18	*"Opportunities for lifestyle modification should be discussed in detail."* This is very welcome and likely to be beneficial ***if*** successful behaviour modification programmes are in place and available to the patient, and/or ***if*** the GP in question is sufficiently trained in their techniques to offer them themselves. It might be helpful to refer to these programmes explicitly, otherwise time-pressured GPs may not offer these discussions within a conventional appointment. (See points raised in comment 4)	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest.

thic Practitioners					
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline	General	General	Hypertension and diabetes type 2 may be tackled more effectively together, as insulin resistance reduces vasodilation and increases vasoconstriction. **Recommendation:** **Addressing hyperglycaemia and hyperinsulinaemia using dietary interventions and exercise (see below) will help to alleviate hypertension in adults.** The relationship between insulin and blood pressure is supported by studies that show blood pressure drops when the insulin dose is decreased in obese hypertensive patients with type 2 diabetes. Additionally, blood pressure increases when insulin treatment is initiated in diabetic patients. Tedde R, Sechi LA, Marigliano A, et al. Antihypertensive effect of insulin reduction in diabetic hypertensive patients. *Am J Hypertens.* 1989; 2:163-70. Randeree HA, Omar MA, Motala AA, Seedat MA. Effect of insulin therapy on blood pressure in NIDDM patients with secondary failure. *Diabetes Care.* 1992; 15:1258-63. Yu, Q. Gao, F. & Ma, X.L. (2011). 'Insulin says NO to cardiovascular disease', *Cardiovascular Research*, 89(3), pp.516–524	Thank you for your comment. Recommendations relating to the primary management of type 2 diabetes are covered in the type 2 diabetes guideline. When published, the pathway on the NICE website will link the two topics together the enable people to more easily see the recommendations for hypertension in people with diabetes alongside the related management recommendations for that condition.
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline	General	General	**Recommendation:** **We would recommend that practitioners are trained in the Dietary Approaches to Stop Hypertension (DASH) methodology.** This is an evidence based diet and lifestyle approach to reducing blood pressure, which can be used as a way to reduce the requirement for anti-hypertensive drugs in adults with hypertension. The Dietary Approaches to Stop Hypertension (DASH) dietary pattern, which emphasizes fruit, vegetables, fat-free/low-fat dairy, whole grains, nuts and legumes, and limits saturated fat, cholesterol, red and processed meats, sweets, added sugars, salt and sugar-sweetened beverages, is widely recommended by international diabetes and heart association guidelines. **The DASH diet not only significantly lowers blood pressure within two weeks of starting the plan but also reduces total cholesterol and low-density lipoprotein (LDL).** Kaiser Permanente, one of the largest insurance companies in the	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest.

				USA, has instructed its 17,000 physicians to advise this diet as 1st line treatment for Diabetes, Hypertension & Coronary artery disease. Chiavaroli, L., Viguiliouk, E., Nishi, S., Mejia, S., Rahelić, D., Kahleová, H., Salas-Salvadó, J., Kendall, C. and Sievenpiper, J. (2019). DASH Dietary Pattern and Cardiometabolic Outcomes: An Umbrella Review of Systematic Reviews and Meta-Analyses. *Nutrients*, 11(2), p.338. Endemann, H. Schiffrin, E. (2004). 'Endothelial Dysfunction', *JASN,* 15(8), pp.1983-1992 Gans RO, Donker AJ. Insulin and blood pressure regulation. *J Intern Med Suppl*. 1991;735:49-64. Hagashi, Y. Noma, K. *et al.*(2009). 'Endothelial Function and Oxidative Stress in Cardiovascular Diseases', *Circ J.,* 73, pp.411 – 418 Hoi, Y. Yoon, Y. Lee, K. *et al.* (2014). 'Uric acid induces endothelial dysfunction by vascular insulin resistance associated with the impairment of nitric oxide synthesis', *The FASEB Journal,* 28(7), pp.3197-3204 Sinatra, T. & Houston, M.C. (2015). 'Nutritional and Integrative Strategies in Cardiovascular Medicine. Florida: CBC Press. Zavaroni I, Mazza S, Dall'Aglio E, et al. Prevalence of hyperinsulinaemia in patients with high blood pressure. *J Intern Med.* 1992;231:235-40.	
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline	General	General	**Following on from the DASH diet with specifics on inflammation, C Reactive Protein (CRP) and homocysteine:** **Insulin resistance, hyperglycaemia and hyperuricemia all increase inflammation** via RAGE activation and eNOS/NADPH oxidase uncoupling, leading to hypertension. Homocysteine also increases CRP and **CRP Increases hypertension**. **Inflammation is now understood to be a central aspect of the pathophysiology of a wide range of conditions** from obesity, diabetes mellitus, atherosclerosis, and **hypertension**, to Alzheimer's and Parkinson's diseases, cancer, depression, and autism. **Recommendation:** **Promote dietary and lifestyle approaches to reducing insulin resistance, hyperglycaemia, hyperuricemia and the underlying inflammation, indicated by CRP markers. This would address multiple root causes and be preferable to pharmacological**	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest.

				interventions, at least initially. Bawaskar, H. Bawaakar, P. *et al.*(2014). 'Homocysteine: Often Neglected but Common Culprit of Coronary Heart Diseases', *Journal of Cardiovascular Disease Research,* 5(3). Charradi, K. Sebai, H. *et al.*(2011). 'Grape Seed Extract Alleviates High-Fat Diet-Induced Obesity and Heart Dysfunction by Preventing Cardiac Siderosis', *Cardiovascular Toxicology,*11(1), pp 28-3 Hage, F.G. (2014). 'C-reactive protein and hypertension. *Journal of Human Hypertension'*, 28(7), pp.410-415 Zampelas A, Paschos G, Rallidis L, Yiannakouris N. Linoleic acid to alpha-linolenic acid ratio. From clinical trials to inflammatory markers of coronary artery disease. *World Rev Nutr Diet*. 2003;92:92-108.	
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline	Page 45	1.4.6	**Agree with recommendation on dietary salt reductions:** The sodium hypothesis of hypertension attributes increased peripheral vascular resistance to elevated *intra*cellular sodium concentrations. Based on cross-cultural comparisons, this was thought to be mainly due to increased dietary intake of sodium in salt-sensitive individuals. **Intracultural studies suggest, however, that dietary salt may account for only a minor segment of increased blood pressure in the hypertensive population**. It has been proposed that **a large segment of essential hypertension is caused by enhanced renal sodium reabsorption in the distal tubule, which is promoted by hyperinsulinemia**. Hyperinsulinemia may also play a role by altering internal sodium and potassium distribution in a direction that is associated with increased peripheral vascular resistance. Insulin appears to work through other mechanisms as well to increase sympathetic nervous system activity and thus peripheral resistance. This relationship between insulin and blood pressure is further supported by studies that show **blood pressure drops when the insulin dose is decreased in obese hypertensive patients with type 2 diabetes.** Additionally, blood pressure increases when insulin treatment is initiated in diabetic patients. **Recommendation:** **Sodium restriction remains important for managing obesity and cardiometabolic risk – continue to recommend.** **Research into the DASH diet found that dose dependent sodium restriction had more pronounced effects on hypertension.** Of the following three intake patterns, the lowest intakes saw the greatest	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest..

				improvements: 1) 3,300 mg of sodium per day (a normal amount for many); 2) 2,300 mg of sodium (a moderately restricted amount); 3) 1,500 mg of sodium (a more restricted amount, about 2/3 of a teaspoon of salt He, F.J. Li, J. & Macgregor, G.A. (2013). 'Effect of longer term modest salt reduction on blood pressure: Cochrane systematic review and meta-analysis of randomised trials', *British Medical Journal*, 346, pp.f1325 Immumorin IG, Dong Y, Zhu H, et al. A gene-environment interaction model of stress-induced hypertension. *Cardiovasc Toxicol.* 2005;5(2):109-32. Johnson, C. Raj, T.S. Trieu, K. *et al*. (2016). 'The Science of Salt: A Systematic Review of Quality Clinical Salt Outcome Studies June 2014 to May 2015', *Journal of Clinical Hypertension,* 18(9), pp.832-839 Luft FC. Salt and hypertension at the close of the millennium. *Wien Klin Wochenschr*. 1998:110(13-14):459-66. Taylor, R.S. Ashton, K.E. Moxham, T. *et al*. (2013). 'Reduced dietary salt for the prevention of cardiovascular disease', *Cochrane Database of Systematic Reviews,* 2(9), CD009217 Zavaroni I, Coruzzi P, Bonini L, et al. Association between salt sensitivity and insulin concentrations in patients with hypertension. *Am J Hypertens*. 1995; 8:855-58.	
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guidelines	Page 141.4.32	Line 9	"If an ACE inhibitor is not tolerated for example, because of cough, offer an ARB3 to treat hypertension. **[2019]"** What about giving additional iron? (while checking for haemochromatosis particularly in males) This reduces and/or can eliminate the cough associated with ACE inhibitors. Lee, S., Park, S., Kim, D., Lee, S. and Hong, K. (2001). Iron Supplementation Inhibits Cough Associated With ACE Inhibitors. *Hypertension*, 38(2), pp.166-170. https://www.ncbi.nlm.nih.gov/pubmed/11509470	Thank you for your comment. This topic is out of scope for the update and was therefore not a considered outcome. Furthermore, iron does not have a UK marketing authorisation for this indication.
Lactation Consultants of Great	Draft guideline	Page 39	1.4.3	**Sympathetic Nervous System activity, stress, meditation and yoga effectiveness:** "Relaxation therapies can reduce blood pressure and people may wish to pursue these as part of their treatment. 2004" - This	Thank you for your comment. Relaxation therapies were reviewed in this update and evidence identified was insufficient to support their recommendation. The relevant evidence on relaxation therapies was limited to a single small study. The

Britain; the Association of Naturopathic Practitioners				recommendation has been deleted because in the update of the review insufficient evidence was identified to support this recommendation 2019." **Recommendation:** **We would suggest that the recommendation from 2004 is kept. The references below provide further support. Encourage meditation and focused movement meditation in adults with hypertension.** When an individual experiences chronic stress along with maladaptive responses such as poor diet, lifestyle and/or a lack of coping, cortisol levels may remain inappropriately elevated. Cortisol helps maintain blood glucose levels but (as noted above) chronic stress causes insulin resistance and hypertension among other conditions. Insulin also appears to work through other mechanisms to increase sympathetic nervous system activity and hypertension, forming a vicious cycle. S Park and K Han (2017) concluded that meditation and yoga are demonstrated to be effective alternatives to pharmacotherapy. Given that blood pressure decreased with the use of meditation and yoga, scientifically measured outcomes indicate that these practices are safe alternatives in some cases. Wu et al (2019) concluded that yoga is a viable antihypertensive lifestyle therapy that produces the greatest blood pressure benefits when breathing techniques and meditation/mental relaxation are included. Religion/spirituality/meditation is associated with lower blood pressure, less hypertension, better immune function (all category 2). Meditation/relaxation is associated with lower cholesterol, lower stress hormone levels, and differential patterns of brain activity (category 2). Meditation is associated with less oxidative stress, and less blood pressure and stress hormone reactivity under challenge (category 1). In summary, techniques such as meditation and focused movement meditation such as yoga may enhance the likelihood of maintaining a lower blood pressure. Park, S. and Han, K. (2017). Blood Pressure Response to Meditation and Yoga: A Systematic Review and Meta-Analysis. *The Journal of Alternative and Complementary Medicine*, 23(9), pp.685-695. Park, S. and Han, K. (2017). Blood Pressure Response to Meditation and Yoga: A Systematic Review and Meta-Analysis. *The Journal of Alternative and Complementary Medicine*, 23(9), pp.685-695.	study suggested some benefit in reducing angina and myocardial infarction, but it also suggested an increase in stroke. The committee agreed that this evidence was not adequate to determine the effectiveness of these therapies or to make a recommendation. The recommendation in the 2011 guideline (CG127) stated that relaxation therapies could reduce blood pressure, but it did not recommend their routine use in practice. The committee noted that this was based on evidence for reducing blood pressure only, and there was no evidence of a direct benefit to people with hypertension, such as improving quality of life or reducing cardiovascular events. The committee agreed there was insufficient evidence of benefit to recommend that people pursue this option themselves and agreed to remove this recommendation. Thank you for the references you have also provided. We include systematic reviews that meet our review protocol and are conducted to the same methodological standard to enable us to incorporate the critical appraisal and analysis. If this is not possible, we check the studies included within each systematic review to ensure we have captured these appropriately within our evidence review. This has been done for the references you have provided.

				Wu, Y., Johnson, B., Acabchuk, R., Chen, S., Lewis, H., Livingston, J., Park, C. and Pescatello, L. (2019). Yoga as Antihypertensive Lifestyle Therapy: A Systematic Review and Meta-analysis. *Mayo Clinic Proceedings*. Orth DN, Kovac WJ. The adrenal cortex. In: Wilson JD, Foster DW, Kronenberg HM, Larsen PR, eds. Williams *Textbook of Endocrinology*.9th ed. Philadelphia: WB Saunders, 1998: 517-664. Munck A, Guyre PM, Holbrook NJ. Physiologic function of glucocorticoids in stress and their relation to pharmacologic actions. *Endocr Rev.* 1984;5(1):25-44. Pacak K. Stressor-specific activation of the hypothalamic-pituitaryadrenocortical axis. *Physiol Res*. 2000;49 (Suppl 1):S11-S17.	
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline	General	General	**Covert or Overt Food Allergies:** The combination of a hypersensitive/dysregulated immune system and exposure to dietary antigens sets the stage for the clinical phenomenon commonly described as “food allergy.” Diverse in frequency, duration, severity, and quality, **these immune-mediated adverse reactions to foods can precipitate or exacerbate a wide range of clinical manifestations including** rhino-conjunctivitis, chronic sinusitis, dermatitis, epilepsy, migraine, **hypertension,** joint inflammation, and mental depression. The immunopathogenesis generally includes multiple mechanisms and is not limited to mediation via IgE antibodies and histamine. Indeed, the pathophysiology of “food allergy” is commonly seen with numerous (not singular) aberrations in physiological function. **Recommendation:** **Both IgE and IgG can be tested for and dietary recommendations provided based on test results. These interventions are likely to reduce hypertension, along with multiple symptoms and morbidities.** Gaby AR. The role of hidden food allergy/intolerance in chronic disease. *Altern Med Rev.* 1998;3(2):90-100.	Thank you for your comment. The scope of this update did not include food allergies or causes of hypertension and consequently we cannot make the amendments you suggest.
Lactation Consultants of Great Britain; the Association of Naturopathic	Draft guideline	General	General	**Omega 3 Fatty Acids:** **A meta-analysis of 1,356 subjects concluded that fish oils are associated with a small but significant lowering in blood pressure.** **This appears to occur in patients with pre-existing** heart disease, lipid abnormalities or **hypertension**, but not in healthy subjects with normal blood pressure. Evidence obtained in animal and human studies suggests that omega-3 PUFA affect many steps of the atherosclerotic process. In blood vessels, omega-3 PUFA improve endothelial function;	Thank you for your comment. Lifestyle interventions were not prioritised for update within this guideline and consequently we cannot make the amendments you suggest.

Practitioners				promote vasodilatation through relaxation of smooth muscle cells; exert antioxidant, anti-inflammatory, and antithrombotic actions; delay development of plaques and increase their stability; and decrease wall stiffening. Omega-3 PUFA might affect BP, and studies conducted with ambulatory monitoring suggest that supplementation with these fatty acids decreases the average 24-h BP levels. This effect on BP is related to the pre-treatment membrane content of omega-3 PUFA, and this might explain some inconsistencies among intervention trials. Meta-analyses indicate that omega-3 PUFA have a mild but significant BP lowering effect. Colussi, G., Catena, C., Novello, M., Bertin, N. and Sechi, L. (2017). Impact of omega-3 polyunsaturated fatty acids on vascular function and blood pressure: Relevance for cardiovascular outcomes. *Nutrition, Metabolism and Cardiovascular Diseases*, 27(3), pp.191-200. **Recommendation:** **Encourage hypertensive adults to eat small, oily fish (sardines, mackerel, anchovies, salmon, herring, trout) and / or take high quality, high strength marine or algal oil supplements.** Berry ME, Hirsch J. Does dietary linolenic acid influence blood pressure? *Amer J Clin Nutr.* 1986; 44:336-40. Connor SL, Connor WE. Are fish oils beneficial in the prevention and treatment of coronary artery disease? *Am J Clin Nutr*. 1997;66(4 Suppl):1020S-31S. Harper CR, Jacobson TA. The fats of life: the role of omega-3 fatty acids in the prevention of coronary heart disease. *Arch Intern Med*.001;161(18):2185-92. Howe PRC. Fish oil supplements and hypertension. *ISSFAL newsletter*. 1996;3(4):2-5. Nestel P, Shige H, Pomeroy S. The n-3 fatty acids eicosapentaenoic acid and docosahexaenoic acid increase systemic arterial compliance in humans. *Am J Clin Nutr*. 2002;76(2):326-30. Singh RB, Dubnov G, Niaz MA, et al. Effect of an Indo-Mediterranean diet on progression of coronary artery disease in high risk patients (Indo-Mediterranean Diet Heart Study): a randomised single- blind trial. *Lancet*. 2002;360(9344):1455-61. Weiser, M., Butt, C. and Mohajeri, M. (2016). Docosahexaenoic Acid and Cognition throughout the Lifespan. *Nutrients*, 8(2), p.99.	
Lactation Consultants of Great	Draft guideline	General	General	**Fasting:** **Recommendation:** **Although fasting is not commonly prescribed there is a benefit to intermittent fasting (or fast-mimicking food regimes) in non-**	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest.

Britain; the Association of Naturopathic Practitioners				**insulin dependent adults to reduce both insulin requirements and high blood pressure.** **GPs and front line staff involved in interventions would benefit from training on promoting intermittent fasting/fast mimicking food regimes to hypertensive adults.** Mattson, M., Longo, V. and Harvie, M. (2017). Impact of intermittent fasting on health and disease processes. *Ageing Research Reviews*, 39, pp.46-58. Cheng, C., Villani, V., Buono, R., Wei, M., Kumar, S., Yilmaz, O., Cohen, P., Sneddon, J., Perin, L. and Longo, V. (2017). Fasting-Mimicking Diet Promotes Ngn3-Driven β-Cell Regeneration to Reverse Diabetes. *Cell*, 168(5), pp.775-788.e12. McCarty MF. A preliminary fast may potentiate response to a subsequent low-salt, low-fat vegan diet in the management of hypertension — fasting as a strategy for breaking metabolic vicious cycles. *Med Hypotheses.* 2003;60(5):624-633	
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline	General	General	**Magnesium supplementation as a possible treatment adjunct for hypertension in adults:** **A poor intracellular magnesium concentration, as found in** non-insulin-dependent diabetes mellitus (NIDDM) and in **hypertensive (HP) patients,** may result in a defective tyrosine-kinase activity at the insulin receptor level and exaggerated intracellular calcium concentration. **Both events are responsible for the impairment in** insulin action and a worsening of insulin resistance in non-insulin-dependent diabetic and **hypertensive patients**. By contrast, in NIDDM patients, daily magnesium administration, restoring a more appropriate intracellular concentration, contributes to improve insulin-mediated glucose uptake. Similarly, in HP patients, magnesium administration may be useful in decreasing arterial blood pressure and improving insulin-mediated glucose uptake. The benefits deriving from daily magnesium supplementation in NIDDM and HP patients are further supported by epidemiological studies showing that **high daily magnesium intake to be predictive of a lower incidence of NIDDM and HP**. In conclusion, a growing body of studies suggest that **intracellular magnesium may play a key role in modulating insulin-mediated glucose uptake and vascular tone**. **Paolisso and Barbagallo further suggest that a reduced intracellular magnesium concentration might be the missing link helping to explain the epidemiological association between NIDDM and hypertension.**	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest.

				Recommendation: **Test for and supplement adults who are deficient in magnesium and are therefore at risk of hypertension and/or IDDM.** Paolisso G, Barbagallo M. Hypertension, diabetes, and insulin resistance: the role of intracellular magnesium. *Am J Hypertens.* 1997;10(3):346-55.	
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline	General	General	**Recommendations:** **Functional medicine has the potential to revolutionise healthcare delivery, not only as a result of its anticipatory and preventive nature, but because the identification and supportive treatment of underlying contributing factors is the most effective means of addressing the health of the individual.** **By recognizing and treating functional disturbances, physicians can guide patients toward more advantageous environmental inputs, thereby saving millions of pounds in healthcare expenditures.** The functional medicine model embraces the old adage "If you don't take time for your health, you'll have to take time for your illness." **To begin with, we must apply the same level of effort to these issues that we applied in the last 100 years to acute care, with its myriad (and often miraculous) drug and surgical interventions. Nothing less will suffice.** Textbook of Functional Medicine, (2010) *Institute of Functional Medicine*	Thank you for your comment and for providing information on functional medicine. Treating functional disturbances was not included in the scope of this guideline and it is unclear from your comment how functional medicine should be considered within the guideline and what this would entail. We have however responded to various comments above relating to these concerns, so please see these responses about more specific aspects of the guideline.
Lactation Consultants of Great Britain; the Association of Naturopathic Practitioners	Draft guideline	General	General	**While the patient takes part in lifestyle and dietary changes, recommend that GPs take steps to reduce or discontinue other medications that may increase blood pressure in these hypertensive patients such as**: *NSAIDs / Cox-2 inhibitors* *Antihistamines* *Decongestants* *Corticosteroids* *Tricyclic antidepressants* *MAOI* *Lithium* *Liquorice* Textbook of Functional Medicine, (2010) *Institute of Functional Medicine*	Thank you for your comment. This guideline covers the management of hypertension only and could not recommend that other medications should be reduced or discontinued without the appropriate evidence to do so. This could also contradict other guidelines. NICE's guideline on multimorbidities provides support and recommendations in the case of multiple conditions. Furthermore, evidence for other medications causing hypertension has also not been reviewed and no comment can be made on this.
Merck Sharp & Dohme	Guideline	General	General	MSD does not have any comments on the proposed amendments	Thank you for your comment.

Limited					
NHS England	Guideline	General	General	Important that health systems identify adults with learning disabilities, to highlight potential vulnerabilities and possible need for reasonable adjustments to the care pathway offered. The Equality Impact Assessment does not mention people with a learning disability. From GP records, analysed by Public Health England, the disease prevalence ratio for hypertension in adults with learning disabilities appears to be lower than would be expected compared to the general population. The reason for this is unclear. It might indicate that people with learning disabilities are not affected by hypertension to the same degree as those without learning disabilities, or it might indicate poorer access to healthcare, their condition is not being diagnosed or not being accurately recorded. We know they are also more prone to diabetes & obesity. (JOH)	Thank you for your comment. We agree it is important to acknowledge people with learning disabilities and their needs within the care pathway. Specific recommendations have not been made for this group as we do not believe any of the recommendations should disadvantage people with learning disabilities, but we note that this should be highlighted within the equalities impact assessment and have now done so.
NHS England	Guideline	Recommendation 1	Eg Mental Capacity Act	It would be useful here to include more specific information about the Reasonable Adjustments that might be required (under the Equality Act) to facilitate better access to care pathways and treatments for people with learning disabilities (and others with cognitive impairments) rather than just MCA (JOH)	Thank you for your comment. Consideration of adjustments for people with learning disabilities apply across the health care service, rather than being specific to this guideline, and therefore while we agree this is an important topic to highlight, it is beyond the remit of the guidance to provide detail on the reasonable adjustments that should be made. Specific recommendations have not been made for this group as we do not believe any of the recommendations should disadvantage people with learning disabilities, but we note that this should be highlighted within the equalities impact assessment and have now done so.
NHS SHEFFIELD CCG	Guideline	5	1	We welcome the inclusion of guidance on using appropriate cuff sizes when measuring blood pressure. We would appreciate more information on the appropriate cuff sizes for different arm widths	Thank you for your comment. Recommendations for particular cuff sizes were not made since this may not be standardised across manufacturers. It may be appropriate to instead refer to manufacturers for advice or width sizes.
NHS SHEFFIELD CCG	Guideline	6	1	We welcome the more concise qualification of the range of blood pressure which indicates confirmation of diagnosis with ABPM	Thank you for your comment.
NHS SHEFFIELD	Guideline	9	24	It would be helpful to have a definition of persistent stage 1 hypertension in order to inform the appropriate intervals for follow-up.	Thank you for your comment, a definition of persistent hypertension (high blood pressure at repeated clinical encounters) has been added to the glossary.

CCG					
NHS SHEFFIELD CCG	Guideline	10	6	It would be helpful to have a definition of persistent stage 2 hypertension in order to inform the appropriate intervals for follow-up.	Thank you for your comment, a definition of persistent hypertension (high blood pressure at repeated clinical encounters) has been added to the glossary.
NHS SHEFFIELD CCG	Guideline	10	9	The guideline makes reference to "younger adults" within the body of the document however a definition is not given except in the rationale and impact. We would like for the body of the guideline to include a definition for those considered to be younger adults i.e. an age range	Thank you for your comment. Clarification has been added to the relevant recommendations and text to explain how the term 'younger' should be interpreted.
NHS SHEFFIELD CCG	Guideline	10	18	The guideline refers to a "…more detailed assessment of the long-term balance of treatment benefits and risks". We acknowledge that the QRISK CVD risk assessment tool is not appropriate in the age group of patients referred to here. We are not clear if this assessment is to be done in primary care or by the specialist. In primary care, given that CVD risk assessment may be carried out by other members of the healthcare profession other than the general practitioner we would like for the guideline to make recommendations on what other tools may be appropriate for assessing CVD risk in these group of patients or more information on what constitutes a "more detailed assessment".	Thank you for your comment. The committee were aware of the limitations of CVD risk assessment tools in relation to younger people, and acknowledge that they could underestimate risk; NICE's guideline on cardiovascular risk assessment provides further detail on this and this was not covered in the scope of this update. Recommendation 1.4.12 outlines that this underestimation should be taken into account when considering treatment.
NHS SHEFFIELD CCG	Guideline	11	19-24	While the guideline tries to emphasize consistently maintaining a reduced level of BP, it does not provide clinicians with any information on the benefit-risk ratio of treating to lower targets in patients who can tolerate it. This is especially the case in type 2 diabetes patients with kidney, eye or cerebrovascular damage. Current NICE diabetes guidelines recommend lower blood pressure targets for type 2 diabetes patients with kidney, eye or cerebrovascular damage based on existing evidence. These guidelines acknowledge that there is no new evidence however has come to a different conclusion. We consider this very problematic for clinicians as it questions the validity of previous recommendation and reduces confidence in following NICE guidance. The Royal College of Physician's Stroke guidelines 2016 recommend that for patients with a stroke or TIA, BP should be treated as tolerated to a systolic bp that is consistently below 130 mmHg unless they have bilateral carotid artery stenosis. The European Society of Cardiology/European Society of Hypertension 2018 guidelines for managing arterial hypertension also encourage pursuing lower BP targets in patients who can tolerate it and who are more likely to	Thank you for your comment. The evidence related to targets did not provide a clear benefit-risk ratio and this could therefore not be provided for healthcare professionals. This guideline update will replace recommendations in the type 2 diabetes guideline related to blood pressure management. The committee considered the evidence in which previous recommendations were based on and the lack of new evidence identified and agreed that there was no evidence to suggest that lower targets in this population reduced the risk of cardiovascular events. This evidence was from 2 small studies that were not intended to compare different treatment targets, and were not in people who had hypertension. They therefore agreed not to retain this recommendation, and noted that this decision was similar to other international guidelines. Following your comment we have added further detail to the rationale of this recommendation, for clarity. Furthermore, CG182 (Chronic kidney disease: assessment and management) is being updated currently and will include updating the recommendations on blood pressure management in people

				achieve the most benefit such as higher risk patients. It is well known that a 10mmHg reduction in systolic BP reduced the risk of cardiovascular disease by 20% and stroke by 27%. A lot of work has been carried out locally in partnership with secondary care specialist to improve BP management for patients in Sheffield especially in high risk groups such as those with diabetes and those with a recent myocardial infarction. These guidelines would undermine the work that has been done over many years to improve BP management in our patients as well as the recommendations that have been made by other national and international guidelines.	with CKD. For further information please see the final scope: https://www.nice.org.uk/guidance/gid-ng10118/documents/final-scope In relation to stroke, the scope of this guideline did not include the secondary prevention of stroke in people that have established cardiovascular disease, and recommendations are not intended for this population.
NHS SHEFFIELD CCG	Guideline	11	19-24	The guideline does not provide information on the interval for monitoring the effect of treatment while BP is still uncontrolled. Guidance on what is a suitable monitoring interval would be most appreciated	Thank you for your comment. The scope of this update did not include frequency of monitoring and consequently we cannot make the amendments you suggest.
NHS SHEFFIELD CCG	Guideline	12	13	With the guideline trying to emphasize maintaining a reduced BP, we considered whether a 6-monthly review of BP might be more appropriate as opposed to an annual BP review. The NG 28 recommended 4-6 monthly reviews of BP once BP was under control and we think that a 6-monthly review is appropriate and suitable for making sure that BP consistently remains below target.	Thank you for your comment. This guideline replaces the previous section on blood pressure management from NG28. The scope of this update did not include frequency of monitoring and consequently we cannot make the amendments you suggest, but the committee were not aware of evidence suggesting that the frequency of monitoring should differ between people with type 2 diabetes and those without.
NHS SHEFFIELD CCG	Guideline	13	24-26	We welcome the guidelines recommending a preference for angiotensin receptor blockers (ARBs) over angiotensin converting enzyme (ACE) inhibitors for step 2 treatment in patients of African and Caribbean family origin. We recognize that the a lot of the clinical trials demonstrating the reno-protective effects of renin angiotensin system drugs were conducted using ARBs so we support this preference. We however think that this preference should also be offered at Step-1 to patients of African and Caribbean family origin who have type-2 diabetes.	Thank you for your comment. A recommendation about considering an ARB in preference to an ACE inhibitor for adults of African and Caribbean family origin has been added to the first section on choosing antihypertensive treatment; in order provide further clarity on the steps of treatment.
NHS SHEFFIELD CCG	Guideline	14	15	The NICE guidelines for management of people with chronic heart failure (NG106) does not include any recommendation for the use of thiazide-like diuretics. We would appreciate more clarity on this recommendation for example whether a thiazide-like diuretic used here is a substitute for a loop diuretic or if it is in addition to a loop diuretic. A comment on the clinical evidence surrounding this would also be appreciated. The aim of treatment with ACE inhibitors or ARBs and beta-blockers in the management of chronic heart failure is to use the maximum tolerated dose of each drug as opposed to treating to below a target blood pressure. However this is not emphasized in either the draft	Thank you for your comment. Blood pressure management for people with chronic heart failure is out of the scope of this update. The scope of this update included the primary prevention of hypertension in people without established cardiovascular disease, rather than the secondary prevention of further cardiovascular disease in those that have already had events or diagnoses such as chronic heart failure. NG106 recommends the treatment that should be used for people with CHF, including advice on titrating dose for ACE inhibitors and ARBs. The referral back to hypertension just related to the measurement of blood pressure (for monitoring of treatment),

				hypertension guidelines or the NICE chronic heart failure guidelines. We think this poses a potential barrier to implementation as there is no clear message on which disease condition is to be prioritized. The draft NICE hypertension guidelines refer patients to the NICE chronic heart failure guidelines and these refer patients back to the NICE hypertension guidelines. We would therefore welcome much clearer recommendations for treating both conditions.	not for the treatment.
NHS SHEFFIELD CCG	Guideline	15	19	We think the recommendation to review dose and adherence before stepping-up treatment should also be included in step 2 to avoid unnecessary increases in tablet burden and increased risk of adverse events due to polypharmacy.	Thank you for your comment. The previous guideline iteration found evidence to suggest that the addition of another drug was more effective than maximising the dose of existing antihypertensives. This finding is supported by Law 2003/2009. No new evidence was identified for step 2 treatment and so these recommendations were considered still relevant. Furthermore, adverse events are more likely when drugs are used at higher doses, with limited additional clinical effectiveness. We have added a recommendation to consider adherence before progressing to step 2 treatment.
NHS SHEFFIELD CCG	Guidance	16	15	We welcome the clarification on when it is appropriate to seek expert advice.	Thank you for your comment.
NHS SHEFFIELD CCG	Evidence Review E	17	16	Recommendations in NG28 for the use of a thiazide-like diuretic or calcium channel blockers in addition to an ACE/ARB were made based on evidence that the former class of drugs were more effective at improving cardiovascular outcomes in people of African or Caribbean family origin with type 2 diabetes than with the class of ACE/ARB drugs. However, it seems that the evidence referred to here is not sufficient to retain these recommendations for the above described group of patients. This change in recommendations based on the same evidence reduces clinicians confidence in the robustness of NICE's evidence review.	Thank you for your comment. This guideline will replace the section in NG28 for blood pressure management in people with type 2 diabetes. Step 1 antihypertensive treatment in the type 2 diabetes guideline was an ACE inhibitor for everyone of any age except black people of African or Caribbean family origin: where dual therapy of an ACE inhibitor plus a diuretic or CCB was step 1. The committee discussed what had informed those recommendations, and noted they were based on committee consensus from physiological information rather than a clinical evidence base. Although there was some evidence identified for this question on people with hypertension and diabetes, it was only from a single small study, and the committee did not consider this strong enough to base a recommendation on. People with hypertension but no diabetes are offered a CCB in the hypertension guideline, but an ACE inhibitor or ARB is more suitable for those with diabetes because these drugs are better at improving renal outcomes compared to other blood

					pressure lowering agents. It was discussed how in practice the step 1 dual therapy recommendation for people of African or Caribbean family origin is not generally current practice. Black people of African or Caribbean family origin often show inadequate response to ACE inhibitors and therefore require additional drugs. The committee's view was that a monotherapy of an ACE inhibitor could be offered to anyone with diabetes of any age or family origin, as the dual therapy recommendation for black people of African or Caribbean family origin population is not generally followed in practice and was not based on evidence.
NHS SHEFFIELD CCG	Evidence Review E	13	13	For completeness, we would like to also see a cost trade-off illustration for prescribing monotherapy vs dual therapy at step one for people of African and Caribbean family origin with type 2 diabetes with an accounting for the extra clinic cost required for up-titration and how this compares to cardiovascular events per 1000 for this particular group of patients.	Thank you for your comment. It is not possible to illustrate the cost trade-off for this specific population because no data on the effectiveness of monotherapy vs dual therapy was identified in this specific population.
Obesity Group of the British Dietetic Association	Guideline	9	19-22	We agree that individual preferences should be discussed prior to starting antihypertensive treatment. We are also glad to see that lifestyle advice and lifestyle changes are emphasised regardless of decisions about treatment that are made. It is important that patients understand the fundamental importance of addressing (and continuing to address) lifestyle whether or not they begin antihypertensive medication.	Thank you for your comment.
Obesity Group of the British Dietetic Association	Rationale and impact	34	15-16	We support the development of a patient decision aid. We hope that this will include lifestyle modification advice throughout so that patients understand the need to address relevant lifestyle issues, and maintain healthier changes, regardless of the treatment options they choose.	Thank you for your comment; this will be published alongside the guideline and will include lifestyle advice as well as pharmacological treatment options.
Obesity Group of the British Dietetic Association	Update information	43 (table 2)	Table 2	We agree with the amended wording around sodium salts, and potential concerns about the use of sodium salt substitutes.	Thank you for your comment. There has been a slight rewording of this recommendation following other stakeholder comments and we have reverted to the previous wording (retaining the option of substituting sodium salt) but have added a footnote to explain the contraindications of potassium alternatives.
Obesity Group of	Equality impact			We are pleased that people of specific ages (aged over 80 years) and ethnicities (those of south Asian, West African and Caribbean family	Thank you for your comment.

the British Dietetic Association	assessment			origin), were considered in the scope and will be specifically included in review questions as relevant.	
Obesity Group of the British Dietetic Association	Additional question 1			In our view because of the lowered threshold for some groups starting antihypertensive medication, this is likely to be most challenging to implement due to additional resource implications. If more individuals are eligible for treatment more resource will be needed. Given the committee view that individual circumstances and preference in young people are most likely to drive their treatment decisions, significant additional time to discuss preferences and encourage lifestyle changes are likely to be required. However some of this time may be offset by better management of hypertension in these groups.	Thank you for your comment. It is recognised that treating more people will mean more consultations to monitor treatment in primary care, but there will also be savings from events avoided, and although likely to fall more on secondary care and other sectors such as social care, the cost effectiveness work looks at costs to the NHS as a whole. The NICE resource impact team are developing tools around the resource imact of this recommendation.
Obesity Group of the British Dietetic Association	Additional question 2			Yes, there is a cost implication of lowering thresholds for starting antihypertensive medication and for holding conversations about treatment options with patients.	Thank you for your comment. It is recognised that treating more people will mean more consultations to monitor treatment in primary care, but there will also be savings from events avoided, and although likely to fall more on secondary care and other sectors such as social care, the cost effectiveness work looks at costs to the NHS as a whole.
Obesity Group of the British Dietetic Association	Additional question 3			The development of a simple and clear patient decision guide, based on the need for all patients to address lifestyle issues such as weight management, activity levels, sedentary behaviours and healthy eating. This should also cross refer to additional relevant NICE guidance and needs to be in a format accessible to all groups.	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest.. The committee however have emphasised the importance of lifestyle interventions and that antihypertensive medication should only be offered in combination with this and this will be considered within the decision aid.
Polycystic Kidney Disease Charity	Guideline	General	General	We welcome the new guideline, in particular the inclusion of support for home monitoring. We are disappointed that no reference is made to blood pressure in people with autosomal dominant polycystic kidney disease (ADPKD). The HALT-PKD clinical trial (reported in the N Engl J Med 2014; 371:2255-2266 DOI: 10.1056/NEJMoa1402685) was a very important study and our understanding is that doctors have taken note of its findings. Many patients report that their doctors suggest aiming for a BP target below 140/90 mmHg and I think this will continue in practice, despite your	Thank you for your comment. The scope of this guideline did not include prevention of hypertension in people with kidney disease. As such, reference to ADPKD could not be made within the guideline.

				new guidelines. In particular, in young patients with good kidney function, blood pressure control to levels lower than recommended by current guidelines reduced the rate of increase in kidney volume by 14%, the increase in renal vascular resistance, urine albumin excretion, and after the first four months of treatment the rate of decline in estimated glomerular filtration rate (eGFR).	
Polycystic Kidney Disease Charity	Guideline	4/5	1.1.4	We think that more guidance should be provided on how to take BP measurements at home. Saying simply to 'standardise the environment' etc is inadequate. The US guidelines provide, in our opinion, good recommendations to patients: https://www.cardiosmart.org/For-Clinicians/Content/High-Blood-Pressure?_ga=2.177805925.1577745568.1556011052-571045434.1555423267 Surely, by now, the optimum way to measure BP at home is known? Eg best time of day, how, etc. If you want to support patients at home, please make it easier for them to by standardising the methodology and explaining it in easy to understand language.	Thank you for your comment. How to measure blood pressure was not prioritised for update in the guideline. As a result, recommendations related to measurement protocols cannot be amended as you have requested.
Primary Care Diabetes Society	Guideline	5	2	We felt you should include the appropriate cuff sizes i.e. Upper arm measurement 17–22 cm (small cuff) 22-–32 cm (medium cuff) and 32–42 cm (large cuff).	Thank you for your comment. Recommendations for particular cuff sizes were not made since this may not be standardised across manufacturers. It may be appropriate to instead refer to manufacturers for advice or width sizes.
Primary Care Diabetes Society	Guideline	5	1	Measure BP with cuff on an undressed arm – not over clothing	Thank you for your comment. The committee agreed that measuring blood pressure on an undressed arm is a recognised clinical technique that does not require specific recommendations. Recommendations related to measuring blood pressure were also not updated within this guideline update.
Primary Care Diabetes Society	Guideline	5	3	If diabetic and postural hypotension detected, review diabetes therapy and glycaemic control and ask about symptoms suggestive of autonomic dysfunction.	Thank you for your comment. This update did not include the primary management or assessment of diabetes or autonomic dysfunction, and so the recommendations you have requested cannot be added.

Primary Care Diabetes Society	Guideline	5	19	Also consider screening for peripheral arterial disease if there is a 15mmHg or greater difference in blood pressure readings between arms using Ambulatory Blood Pressure Index.	Thank you for your comment. The committee's rationale for this recommendation emphasises that a difference of 15mmHg or greater between arms is important because it may indicate risk of cardiovascular disease or vascular damage. CG147 (peripheral arterial disease: diagnosis and management) provides further recommendations related to the blood pressure measurement in people with suspected PAD.
Primary Care Diabetes Society	Guideline	6	1	re use of ABPM (rather than HBPM) - although we understand the rationale about ABPM being the preferred option, in some practices there will be large numbers of people with raised BP and, therefore, from a practical point of view, offering ABPM as the preferred option over home BPM, might be unsustainable – should we acknowledge ABPM as the preferred option, with HBMP considered an acceptable alternative where access to ABPM is limited or considered more difficult?	Thank you for your comment. The economic model, which included updated accuracy data for the three measurement methods, found that ABPM was cost saving compared to the CBPM or HBPM. Whilst it is recognised that upfront investment will be required, the increased accuracy of ABPM means the cost savings from accurately diagnosing people outweigh the upfront cost. Patient choice also means that not everyone will want to choose ABPM.
Primary Care Diabetes Society	Guideline	11	25	1.4.21 - needs clarification - does the guideline mean - measure standing BP as the usual method of measuring BP in this defined group or does it mean to measure both sitting/supine blood pressure AND standing BP?	Thank you for the comment. This recommendation is intended to mean that standing blood pressure should be measured in these circumstances instead of sitting blood pressure. We have reworded the recommendations and moved this to sit with the other recommendations on monitoring to clarify this.
Primary Care Diabetes Society	Guideline	10	23	Why refer to the CKD guideline rather than include in this document – it means having to look up another guideline. CKD and hypertension often go hand in hand and it should be included in this guideline.	Thank you for your comment. The scope of this update did not cover the CKD population, and as such recommendations related to this population cannot be made within this guideline. When published the guideline recomemndations will be linked via the pathway on the NICE website to help view both sets of recommendations alongside one another. NICE are aware that further integration and links between guidelines would be useful, and are currently exploring new methods to improve their presentation of guidelines via the NICE Connect initiative: https://www.nice.org.uk/about/who-we-are/our-vision/nice-connect
Primary Care Diabetes Society	Guideline	8	13	Is the general practice environment conducive to examine fundi (no dark room) and furthermore are all healthcare practitioners trained to do so – would it not be better to suggest referral to optometrist instead as an alternative?	Thank you for your comment. The committee agreed that fundi examination was a clinical skill that could be conducted in general practice (e.g. by turning lights off where possible) and that serious fundi damage would be apparent upon investigation.
Primary Care	Guideline	8	20	Lifestyle advice is vague – no real recommendations despite evidence base for Mediterranean style eating, DASH diet etc. The importance	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for

Diabetes Society				of lifestyle advice seems to be understated.	update within the guideline. As a result we cannot make the changes you suggest..
Primary Care Diabetes Society	Guideline	9	14	Disappointing not to see initial combination treatment offered as per our US and European colleagues	Thank you for your comment. Evidence was not sufficient to suggest that initial combination treatment would be clinically or cost-effective. Although comparing monotherapy to combination was prioritised in this guideline, the evidence review did not identify enough evidence to warrant a change in clinical practice. Most evidence related to adverse events of medication rather than the effect on cardiovascular outcomes; as a result, clinical effectiveness was unclear.
Primary Care Diabetes Society	Guideline	10	22	Signposting to CKD guideline is cumbersome – given the fact that hypertension and CKD often co-exist surely this guideline should cover it without the need to access another guideline.	Thank you for your comment. The scope of this update did not cover the CKD population, and as such recommendations related to this population cannot be made within this guideline. When published the guideline recomemndations will be linked via the pathway on the NICE website to help view both sets of recommendations alongside one another. NICE are aware that further integration and links between guidelines would be useful, and are currently exploring new methods to improve their presentation of guidelines via the NICE Connect initiative: https://www.nice.org.uk/about/who-we-are/our-vision/nice-connect
Primary Care Diabetes Society	Guideline	13	14	Before starting therapies in women of fertile age, ensure appropriate contraception in place, and that the women are aware of the risks to an unplanned pregnancy – not just check on their plans for pregnancy	Thank you for your comment. This guideline does not cover pregnancy risks or women likely to become pregnant. The hypertension in pregnancy guideline covers this population and is also being updated at present. .
Primary Care Diabetes Society	Guideline	11	19	The preferred BP targets should be more clearly illustrated and consideration should be given to a lower BP threshold e.g. in the frail elderly. The idea that one size fits all is a worry. New QOF indicators allow exemption from BP targets for people with mod/severe frailty but many will want guidance as to where a lower limit threshold might be considered likely to increase the risk of harm. It would be useful and practical to include something about this in the guidance.	Thank you for your comment. The recommendation includes a statement on using clinical judgement when deciding a target in the frail or those who have comorbidities.
Primary Care Diabetes Society	Guideline	17	13	In section 1.5, severe hypertension is defined as 180/110 or more. Accelerated hypertension is clinic blood pressure 180/120 mmHg or higher with signs of retinal haemorrhage or papilloedema. So if there are no signs of retinal haemorrhage will that just be severe hypertension or accelerated? Should be waiting to investigate for target organ damage in this case? What if the blood pressure is 180/110 with signs of retinal haemorrhage or papilloedema- is that now accelerated or still severe?	Thank you for your comment. The guideline update opened to consultation used accepted definitions for severe hypertension and accelerated hypertension. However, the committee agrees that it is important to provide clear guidance on who requires same-day assessment. Reference to 180/110 mmHg has now been removed from the guideline and the section on same-day referral has been edited for clarity.

				It would be easier for us if they just stick to one number with or without target organ damage. (unless of course there is some strong evidence behind the choice 120 and 110 as the diastolic values) Later on, there is also a mention 220/120; making it even more confusing. We need simplicity in this area as there are decisions to be made regarding urgent same day specialist referrals.	The mention of >220/120 (extreme hypertension) is in the context of recommendations for future research and so has not been modified.
Public Health England	Guideline	7	8	Recommendation 1.2.10 – On reading the guidance it is unclear whether this recommendation would apply to any occasion where there has been a previous blood pressure measurement and no subsequent diagnosis, for example as part of a new registration. Having a guideline which sets out how often adults, who do not have a diagnosis of hypertension, should check their blood pressure would be helpful as this is a question which has been raised by the NHS Health Check expert advisory panel.	Thank you for your comment. Screening for hypertension or frequency of monitoring in this population was not included in the scope of this update. As such, we cannot make the amendments that you suggest.
Public Health England	Guideline	9	3	Recommendation 1.4.5 – PHE notes that this recommendation has been amended to remove wording advising sodium salt substitution. In 2017, the Scientific Advisory Committee on Nutrition and the Committee on Toxicity published a position statement following a benefit-risk assessment on reducing the sodium (salt) content of foods through the use of potassium-based sodium replacers and concluded that at a population level the potential benefits of using potassium-based sodium replacers to help reduce sodium in foods outweigh the potential risks. Considering this, PHE suggests that the evidence base for the removal of the reference to substituting sodium salt is clarified.	Thank you for your comment. The use of salt substitutes was removed from the guideline due to concerns about the risks of this intervention, particularly in terms of possible interactions with antihypertensive medications, due to risks of hyperkalaemia. Following stakeholder comments regarding this we have reverted to the previous wording (retaining the option of substituting sodium salt) but have added a footnote to explain the contraindications of potassium alternatives.
Public Health England	Guideline	9	19	Recommendation 1.4.9 – PHE supports the addition of this new guideline.	Thank you for your comment.
Public Health England	Guideline	9	23	Recommendation 1.4.10 – PHE supports the recommendation that people with high blood pressure and a ten year CVD risk of 10% or more should be offered antihypertensive drug treatment.	Thank you for your comment.
Public Health England	General	General	General	In the long-term plan NHS England committed to the adoption of the cardiovascular disease (CVD) prevent tool to help primary care professionals identify people who have a diagnosis of hypertension and are not being managed. This guidance should include a recommendation that practitioners take action to audit their records	Thank you for your comment. Providing recommendations to undertake audits is beyond the remit of this guideline. Reviewing evidence to identify those that require review or how frequently monitoring should occur was not included within the scope of the update. Subsequently we cannot make

				regularly to help them identify people whose treatment needs to be optimised.	the additions you have suggested.
Public Health England	General	General	General	PHE published ambitions on the secondary prevention of CVD in February 2018. One of these focusses on the detection and management of hypertension. We recommend that the guidance link back to these recommendations. The PHE CVD ambitions are available to view here: https://www.gov.uk/government/publications/health-matters-preventing-cardiovascular-disease/health-matters-preventing-cardiovascular-disease.	Thank you for your comment. The scope of this update did not include secondary prevention of CVD, although we can make links to PHE guidance within the committee's discussion of the evidence and other factors to take into account. The link provided however does not provide guidance for healthcare professionals and provides instead the aims of PHE CVD which is less relevant to this guideline; this link has therefore not been added.
Centre of Preventive Medicine, Wolfson Institute of Preventive Medicine, QMUL	Guideline section 1.4	8	Whole Document	I. The recommendation that lifestyle advice is offered first and if this fails then patients are offered blood pressure lowering drug therapy is unnecessarily complicated and staggered. Both lifestyle advice (namely salt reduction, weight reduction, alcohol reduction, smoking cessation, increased exercise) and blood pressure lowering drug therapy are needed – they are not mutually exclusive and both should be offered at the same time. Separating the strategies minimises the benefit and Individuals may be misled into thinking it is an either or approach. II. When starting blood pressure lowering therapy the initial strategy should be combination therapy with at least two different classes of drug, ideally at low dose (half standard) given the extensive evidence showing that combining drugs from different classes is more effective than increasing the dose of a single class (Wald DS, American Journal of Medicine 2007), and keeping the dose low (half the standard dose recommended in the British National Formulary) minimises side effects (Law et al BMJ 2003). The current recommended approach is outdated and no longer the best that can be offered. III. Ideally combination therapy should be in the form of a single pill, providing this is affordable, but if not then individual drugs in combination should be used. The use of an ACE inhibitor as first line treatment should be replaced with the use of an angiotensin receptor blocker because angiotensin receptor blockers have equivalent efficacy and reduced side effects. In particular, 1 in 10 people experience a cough on an ACE inhibitor which does not occur on an angiotensin receptor blocker. There is also a lower incidence of angioedema. At the moment the guideline gives both drugs equal weighting when angiotensin receptor blockers are preferred.	I. Thank you for your comment. Recommendation 1.4.9 states; "Continue to offer lifestyle advice and support them to make lifestyle changes whether or not they choose to start antihypertensive drug treatment." We agree that they are not mutually exclusive. II. The guideline looked for evidence comparing starting with monotherapy and dual therapy, and only three studies were identified and only one had cardiovascular event outcomes Although there may be evidence, such as in Wald 2007, that combination treatment can reduce blood pressure to a greater extent than monotherapy, the evidence for a reduction in cardiovascular events is limited. The committee did not feel confident basing a recommendation on the limited evidence. III. The form of treatment if taking more than one pill has not been specified in the recommendation and has been left up to the prescriber. There is a specific recommendation on switching to an ARB if an ACE is not tolerated for example because of cough. A review comparing the different monotherapies was not undertaken as part of this update.

Centre of Preventive Medicine, Wolfson Institute of Preventive Medicine, QMUL	Guideline	Whole document	Whole Document	Overall this new guideline misses an opportunity in the prevention of heart disease, stroke and renal disease. It is virtually no different from the previous guideline, apart from reducing the risk cut-off from 20% to 10% and does not incorporate major conceptual and practical advances in blood pressure modification that have happened in recent years. It overcomplicates both the selection of people who are offered treatment and it fails to embrace the benefits of combination therapy on efficacy, side-effects and adherence. There needs to be a recognition of the observation in cohort studies, supported by randomised trials that there is a straight line proportional relationship between blood pressure and the risk of these disorders. Therefore, there is no rationale for using blood pressure thresholds for determining who receives treatment. Selecting patients for treatment should be based on their risk of having a future heart attack or stroke and this can either be done using multiple risk factor measurements combined into risk scores or using an age alone strategy. We recommend that the guideline recognises both approaches as valid selection options.	Thank you for your comment. Automatically treating people with stage 2 hypertension was not a recommendation that was updated. The guideline has taken a risk based approach to treating stage 1 hypertension because this needed both a blood pressure and a way of caveating that not everyone with stage 1 needs to be treated, as there was less confidence in evidence of benefit in people with low risk because this population is not well represented in RCTs. The previous risk threshold of 20% was not evidence based. The new threshold of 10% is based on a cost utility analysis to identify the most cost effective risk threshold for treatment in people with stage 1 hypertension. The relationship between blood pressure at treatment initiation and reduction in events was reviewed and evidence from a meta-analysis was used in the model. This relative effect was assumed to be the same regardless of risk level. The committee believed that a change from treating above 20% risk to 10% would have a substantial impact on preventing cardiovascular events.
Queen Mary University of London	Guideline	13	24	Recommendation 1.4.30 advises initiation with a single agent typically ACEi/ARB or CCB (depending on age/ethnicity); only in specific circumstances, does it advise the use of a thiazide-like diuretic. • We note that the ALLHAT trial demonstrated thiazides to be the most beneficial first line anti-hypertensive agent. • We note also the Cochrane Review CCD001841 specifically identifies thiazides as the best first choice for treatment of hypertension. • Other international guidelines eg ESC guidance also recommend thiazides as a first-line option.	Thank you for your comment. This guideline update did not review the effectiveness of different monotherapies compared to each other, because no new evidence was identified during the NICE surveillance or scoping processes that would change recommendations. The scope of this update prioritised instead the comparison of monotherapy versus combination at step 1, which was highlighted as an important area to review. Futhermore, there was limited evidence comparing thiazides to other antihypertensive medication in the previous guideline, and the previous guideline iteration therefore did not conclude that thiazides were the most effective agent.

				We therefore ask NICE to reconsider the evidence and advice with a view to including thiazides as a first-line option.	
Royal College of General Practitioners	Guideline	General	General	The RCGP is working with NHS England to support GPs and primary care teams deliver person-centred care. The person-centred care approach can reduce pressures on the primary care team and bring increased professional satisfaction to GPs. It empowers individuals to take an active role in managing their own health and well-being, working alongside the GP's medical expertise and that of other professionals. The committee should consider making a recommendation about giving people the information and tools such health apps to help them understand their own health and how they can improve their own lifestyle and management their chronic conditions. The NHS app has the potential to help.	Thank you for your comment. Information and support, and methods of information and support for patients was not included in the scope for this update. As a result, recommendations related to specific apps or digital health interventions cannot be added, particularly without a formal evidence review.
Royal College of General Practitioners	Guideline	14	13	Further justification is needed for recommendation 1.4.34. Why is it recommend switching to a diuretic rather than an ACE or ARB after the development of oedema?	Thank you for your comment. The recommendation to switch to a thiazide diuretic rather than an ACE/ARB is from the evidence review in the previous guideline and is based on anticipated efficacy in different groups. In this update we did not perform an evidence review comparing the choice of monotherapy for different populations.
Royal College of General Practitioners	Guideline	13	24	The committee should reconsider the age cut-off of 55 years stated in recommendations 1.4.30 and 1.4.31. ACE can be suitable for people aged 55 years and under and more emphasis should be put on patient choice. We welcome reconsideration of this or the provision of further evidence to justify this cut-off.	Thank you for your comment. No new evidence was identified related to step 2or 3antihypertensive treatment. Recommendations related to these age cut offs were carried forward from the previous guideline update. A patient decision aid has been developed by NICE to emphasise the importance of patient choice.
Royal College of General Practitioners	Guideline	General	General	The committee should consider making a recommendation on informing patients on the success rate of first line therapy and the likelihood for the need for multiple therapy to achieve blood pressure targets.	Thank you for your comment. This update did not review step 1 monotherapy and so we cannot make recommendations related to the success rate of this. A patient decision aid has been developed to aid decisions related to medication choices if further steps of treatment are required.
Royal College of General	Guideline	10	4	Reducing the threshold for initiating treatment in Stage 1 Hypertension to include a 10 year CV risk of 10%will be a very significant change to the guideline and creates many more treatment candidates, as NICE have already described.	Thank you for your comment. You are correct no studies were identified that directly compared different risk thresholds. Only evidence in blood pressure threshold groups was identified. The observational

Practitioners				This decision is based on indirect clinical evidence (though in the absence of direct evidence we acknowledge this is not unreasonable). There is observational evidence of harms from treatment at this level (Sheppard). Benefits of treatment at this level are likely to be in the preference-sensitive range (much like initiating statins at this baseline risk level). We strongly suggest that when the guideline is launched is accompanied by a treatment decision aid, communicating the possible benefits of treatment (in absolute numbers) according to baseline risk and the risk of harms (in absolute numbers). It should be clear in the guideline itself that this resource is available. It should also be clear that there is a degree of uncertainty (due to indirectness) of the evidence to treat at low risk to ensure genuine understanding (among clinicians particularly). Without all this clarity and supportive information it is highly likely that this recommendation will be perceived as a "must treat" recommendation (much like the statins issue a few years ago). Such supportive information also supports a well informed choice to take treatment for those who wish to.	Sheppard study was included in the guideline clinical review of treatment initiation thresholds, however as it was observational it was considered to be of lower quality than the randomised evidence identified. The relative risks from the stage 1 hypertension group in the Brunstrom systematic review were the treatment effects used in the economic model (with the assumption that relative risk would be the same across risk groups, but this would lead to a different absolute benefit in different risk groups) as they were felt to be conservative compared to the other systematic review of Law 2009 identified. The economic model also incorporated adverse events, and these were from RCT data (the SPRINT trial) that were actually higher than those in the Sheppard study and therefore more conservative towards treatment. The results of the model showed that treatment was cost effective down to even 5%, and committee opinion was therefore that the 10% recommended was a conservative conclusion. The observational Sheppard study was in a population with stage 1 hypertension with an average risk of around 8%. The Brunstrom study was assumed to be in people with more moderate risk given the average age being slightly higher than that in the Sheppard study for example. Given this, the Brunstrom data that was also used in the model, was felt to better represent the population that the recommendation was made in (of above 10%). The committee felt confident that the recommendation to offer treatment to those with a risk above 10% was a clinically and cost effective use of NHS resources. The degree of uncertainty in treating people at low risk is reflected in the strength of the recommendation for those above and below 10% risk. As mentioned above, there is less certainty about treatment benefit in people with low risk (as evidenced by the Sheppard study but also the lack of evidence in low risk populations), and therefore a consider recommendation was made in that group. A decision aid will be produced to accompany the guideline to help people decide which drug to start with, but a decision aid on whether to start treatment at all is very patient specific dependent on their blood pressure and risk and therefore

					hasn't been included.
Royal College of General Practitioners	Guideline	11	19-24	We are pleased that NICE have maintained the current treatment targets and not been drawn into ultra-low targets as advocated by SPRINT (which showed significant harms and used atypical BP measurement techniques)	Thank you for your comment.
Royal College of General Practitioners	Guideline	6	1	We welcome this collection of measures on home BP and standing BP monitoring which should be valuable in supporting treatment harms reduction.	Thank you for your comment.
Royal College of General Practitioners	Guideline	General	General	There is no content regarding trial of withdrawing medication (especially in old age). This would be useful to include.	Thank you for your comment. The scope of this update did not include withdrawal of mediation and us such we cannot make recommendations related to this. The multimorbidity guideline (NG56) provides recommendations for this population, including for those who are taking multiple medications and whether withdrawal should be considered.
Royal College of General Practitioners	Guideline	General	General	The committee should consider using 'identifying' rather than 'diagnosing' people with hypertension. The use of the word diagnosis implies this is a disease rather than a risk factor	Thank you for your comment. The committee agreed that the term diagnosis should be used because hypertension is a clinical diagnosis. Using terminology related to identification may be misleading and imply that recommendations relate to screening.
Royal College of General Practitioners	Guideline	General	General	We believe that data on relative/absolution risk reduction and numbers needed to treat are important to inform shared decision making. The committee should consider making this data available. The document sets out to support individual decision making (see, for instance, p34, L16-17), but fails to provide the summary data to inform such shared decision making. The committee does support the discussion of risk (see p10, L4), but only as an indicator for starting treatment	Thank you for your comment. As the guideline has not reviewed every step of treatment (such as comparing step 1 treatments), the relative risk reductions are not available to calculate numbers needed to treat. This would also be quite patient specific because it would depend both on the patients' risk and the choice of treatment in question and is therefore quite complex to cover within one decision aid.
Royal College of General Practition	Guideline	10	9	The 10% risk level is arbitrary and not based on concrete evidence. Treatment at this level of risk should be a 'consider' recommendation, based on the level of evidence involved. Decisions to treat at this level should involve both discussion on risk and on patient preferences.	Thank you for your comment. The recommendation on treating people with stage 2 hypertension was carried forward from the previous guideline. The guideline looked for evidence that compared treatment

ers				Experience from senior GP colleagues is that using such an approach is that very few patients decide to take hypotensive drugs at the level of 10-15% overall risk. Of course some do, but that is why it has to be an individualised, shared decision. The committee appears to have agreed that there should be a decision based on the overall risk. Why then do they not recommend the same approach for patients with higher levels of blood pressure ('stage 2 hypertension', para 1.4.11), some of whom will indeed have overall 10-year risks below 10%?	initiation thresholds, looking for evidence on risk thresholds or blood pressure thresholds. Only evidence in blood pressure thresholds was identified. The previous recommendation that had caveats on who should be treated with stage 1 hypertension, based the risk threshold of 20% on consensus and not evidence. A cost utility analysis was undertaken as part of the guideline to investigate the risk threshold at which treatment becomes cost effective. This was informed by clinical evidence from a large recent systematic review (Brunstrom 2018) which found that treating those with stage 1 hypertension was clinically effective because it led to a reduction in mortality and cardiovascular events. These relative risks were applied to all risk subgroups in the model, but the absolute risk reduction would vary depending on risk. The model found that treatment was cost effective even down to 5% risk. The model was conservative in many ways, such as; the clinical effectiveness data feeding in was felt conservative compared to another systematic review (Law 2009) included in the clinical review, the adverse event risks used were also conservative towards treatment, and a patient could only have one event. Therefore the committee felt confident that treating above 10% risk was both clinically and cost effective and was more conservative than what the model predicted. The strength of the recommendation reflects the certainty. Which is why the recommendation to treat those below 10% risk is a consider recommendation, as there is less certainty on the benefit of treatment in that group. Any discussion about treatment with the patient should consider shared decision making and patient preferences, and the guideline makes specific reference to this as well as cross referencing to other NICE resources with advice on shared decision making.
Royal College of General Practitioners	Guideline	General	General	The committee should consider adding references to shared decision making to all recommendations on treating to target, i.e. shared decision making should be used to decide on whether to start treatment and whether add 2nd or 3rd line treatment. The patient should be involved in the assessment of potential benefits, risks and side effects, and should be supported in making a decision with the healthcare professional.	Thank you for your comment. Shared decision making is an underpinning principle of all of NICE's guidance and of clinical practice across the NHS. However it was agreed important to include specific reference to shared decision making and reference to relevant NICE guidance in the section about starting hypertensive drug treatment. Furthermore, the patient experience in adult NHS services guideline (CG138) should be taken into account for all relevant guidelines, and the decision

				For example, a person being treated from a systolic BP of, say, 156 mm Hg. Two drugs have brought the systolic BP to an average of 143 mm Hg. At this point the decision has to be made whether to introduce a third drug. At this point the decision has to be made whether to introduce a third drug. The argument in favour is in order to get the BP below target. But the marginal reduction in overall cardiovascular risk will be very small, so that the balance of likely benefits and harms of a third drug are likely to be more weighted in favour of harms. Targets are likely to be built into QOF criteria in due course and may therefore in the long run be harmful.	aid that NICE have developed for treatment choices in hypertension also emphasises the importance of this principle.
Royal College of General Practitioners	Guideline	6	5	1.2.4 Statement favours ambulatory BP measurement over home measurement, on the grounds of better cost effectiveness. Tracing this back, the better accuracy of ambulatory measurement is circular, given that the comparisons start by using ambulatory BP measurement as the gold standard. This would be acceptable if ambulatory BP measurement were shown to be a better predictor of mortality. However the only statement to justify this says that the committee chose the reference standard of ABPM for this review because ambulatory blood pressure is accepted as having the best evidence among commonly used blood pressure measurement techniques for correlation to target organ damage and prognosis; then cites only one reference (13) where the comparison is between ambulatory and clinic measurement – i.e. home BP measurement is not assessed at all.	Thank you for your comment. As well as reviewing evidence for diagnostic accuracy this guideline searched for evidence that compared the clinical effectiveness of different diagnostic techniques. Diagnostic RCTs that demonstrate differences in critical outcomes between diagnostic techniques would be the best evidence to recommend a particular diagnostic technique. However, no diagnostic RCTs were identified and as such; recommendations were based instead on diagnostic accuracy evidence. Diagnostic accuracy can only be assessed if there is a reference standard and ambulatory blood pressure measurement is widely accepted as the reference standard for diagnosing hypertension. Ambulatory blood pressure measurement was considered more accurate than clinic blood pressure measurement because it has been shown to predict cardiovascular events more accurately than other available tests, as highlighted within the study you refer to. Furthermore ABPM correlates well with invasive blood pressure measurement techniques, which are thought to be the 'true' gold standard but are rarely used due to costs and harm to people with hypertension. In regards to recommendation 1.2.4, home blood pressure measurement was found to be an accurate method of diagnosing hypertension, when compared to the reference standard of ABPM (see Evidence Review A). In light of this, the committee agreed it was appropriate to recommend HBPM where ABPM may not be tolerated or is unsuitable.
Royal	Guideline	8	1	The committee should consider adding a recommendation to be	Thank you for your comment. The scope of this guideline did

College of General Practitioners				aware of the 'white coat' effect when measuring blood pressure, which may lead to an overestimate of risk and potentially lead to overtreatment. It is important that clinicians are advised to exercise their judgement here	not include reviewing evidence for white coat or masked hypertension, and so the recommendation you have requested cannot be added. However, the accuracy of different methods of blood pressure measurement, as outlined in Evidence Review A, would have captured the impact of white-coat and masked hypertension on the accuracy of these methods. The committee felt that the recommended methods of measuring blood pressure were the best options for minimising overtreatment, due to the high specificity of HBPM and ABPM. Specificity was prioritised as the critical outcome within Evidence Review A over sensitivity, because the committee agreed that avoiding overtreatment is a key issue in the diagnosis of hypertension.
Royal College of General Practitioners	Guideline	10	9	1.4.12 We agree with the statement that the 10-year risk may underestimate the lifetime probability of developing CVD. However the committee need to reconsider recommending hypotensive treatment in this younger people with this level of risk. It remains that the absolute risk reduction in younger age groups will be very low (although it is equally likely that the harms of small amounts of hypotensive treatment will also be low in this age group). The guideline does not provide any clinical evidence that starting treatment in this age is beneficial compared to delaying treatment until the risks are higher. Also, the committee needs to consider the additional burden this puts on the patient.	Thank you for your comment. The cost utility analysis undertaken as part of the guideline compared antihypertensive treatment with no treatment in people with stage 1 hypertension, at different risk levels and ages. This identified that at the base case age of 60, it was cost effective to treat people at 10% risk, and even below 10% in people younger than age 60. The model showed it was more likely that the lower risk subgroups were cost-effective. Even though at a lower risk level there are fewer absolute events avoided, because younger people live longer and accrue more life-years overall then they had more time to be at risk of events, and events avoided from treatment therefore lead to larger QALY gains. In other words, an event at a younger age would be more impactful on their remaining life, which is why avoiding an event has a larger benefit in younger people in terms of quality adjusted life years. The committee however acknowledged that the relative risk reductions from antihypertensive treatment for those with stage 1 hypertension were likely to be from a medium to high risk cohort rather than a low risk cohort, and so there is uncertainty around the benefit of treatment in lower risk individuals (<10%), hence the strength of the recommendation being a 'consider' to reflect the level of evidence. The committee discussed many factors in relation to this recommendation and shared their own experiences. Some clinicians who see younger people who might have a low 10

					year risk but have sustained stage 1 hypertension would offer treatment to those individuals even in the absence of established target organ damage as their lifetime risk is significant. Some risk factors such as family history of hypertension are not included in the QRISK CVD calculator but have a significant disease-associated effect for hypertension and would disproportionately manifest in younger age groups. Additionally, individual preferences and circumstances are likely to have the biggest impact on the treatment decision in younger people. Age 60 was chosen because this is around the age at which an individual would become 10% risk as mentioned, and this is also around the age where discrepancies between the 10 year and lifetime risk start. In addition, due to age alone someone over 60 is unlikely to have a risk under 10%. Every patient is individual and some people at low risk may want to start treatment and some may not, which is why shared decision making is so important. The recommendation is a 'consider' recommendation to reflect the committee's confidence in the evidence, which is why it is weaker than the recommendation for those above 10% risk.
Royal College of General Practitioners	Guideline	10	9	'Younger adults' is ambiguous. It would be good to provide a clearer definition of this within the recommendation	Thank you for your comment. Clarification has been added to the relevant recommendations and text to explain how the term 'younger' should be interpreted.
Royal College of General Practitioners	Guideline	10	14	We welcome the reference to multimorbidity. However 'use clinical judgement' needs to be rephrased as clinicians use clinical judgement all the time so this is not very informative. It would be better to give further detail on what should be additionally be considered here e.g. treatment burden, life expectancy, treatment interactions with other conditions/treatments.	Thank you for your comment. The committee agreed that although clinical judgement is always used across the NHS and when interpreting NICE guidance, this needed to be emphasised within these recommendations in order to highlight the need to assess patients on a case-by-case basis and to fully consider multimorbidity and frailty in each patient before making treatment decisions Examples of what to consider within this were not given because the committee agreed that this could vary widely between patients.
Royal College of General	Guideline	24	21-26	This passage is unclear and would benefit from being rephrased. "it was unclear if the benefit would encompass all people with stage 1 hypertension" is problematic as it is unlikely that there would be a benefit to all people with stage 1 hypertension as this seems to	Thank you for your comment. This has been amended for clarity. The point about absence of evidence for different cardiovascular risk thresholds is described in great detail within the committee's discussion of the evidence (see Evidence

Practitioners				suggest. Also the point about lack of evidence on cardiovascular risk thresholds using UK-validated tools needs to be developed further	review C: Initiating treatment).
Royal College of General Practitioners	Guideline	25	29-30	It is important to emphasise individual preferences and circumstances are important for all age groups and should be taken into consideration, not just in younger people.	Thank you for your comment. The committee agreed that individual preferences and circumstances are important in all clinical decisions and that this principle applies across the NHS and across all NICE guidance. However, the committee felt this was important to emphasise within recommendations for younger people, because individual preferences and circumstances are likely to have the biggest impact on the treatment decision in this group, where the benefit and risks of treatment is more uncertain.
Royal College of General Practitioners	Guideline	31	11-12	The committee suggests that individualised targets should be agreed upon however this is limited to people aged over 80 years. It is unclear why individualised targets are not recommended for all age groups.	Thank you for your comment. The committee agreed that although clinical judgement should always be used across the NHS and when interpreting NICE guidance, this needed to be emphasised for recommendations intended for people with multimorbidity or frailty. The committee felt it was important to highlight the need to assess patients on a case-by-case basis and to fully consider multimorbidity and frailty in each patient before making treatment decisions.
Royal College of General Practitioners	Guideline	32	12	There needs to be clarification on the use of 'early'. Does this refer to early in the person's life, or early into the treatment programme?	Thank you for your comment. There is no difference between the two interpretations you outline in relation to hypertension, because the use of the term 'early' is in relation to the presentation of hypertension and therefore interpretation of this depends on when hypertension presents; it would never mean early in someone's life if someone has not yet been diagnosed with hypertension.
Royal College of Nursing	General	General	General	1. Which areas will have the biggest impact on practice and be challenging to implement? Please say for whom and why. There needs to be more recognition of HBPM as a tool for diagnosis. The guidelines suggest that this would be an alternative to ABPM but isn't it a robust enough tool to be equal to ABPM?	Thank you for your comment. ABPM was shown to be the most cost effective option when compared to HBPM and CBPM in economic modelling updated with new accuracy data as part of the guideline. It was actually shown to be cost saving compared to the other interventions because the higher accuracy means it is better at identifying people that need treatment, therefore avoiding events, but also identifying those who do not need treatment and might be misdiagnosed with other methods.
Royal College of Nursing	General	General	General	2. Would implementation of any of the draft recommendations have significant cost implications? Increased need for ABPM creates a cost to purchase the machines and also nursing time to set up and then interpret the results	Thank you for your comment. ABPM was shown to be the most cost effective option when compared to HBPM and CBPM in economic modelling updated with new accuracy data as part of the guideline. It was actually

					shown to be cost saving compared to the other interventions because the higher accuracy means it is better at identifying people that need treatment, therefore avoiding events, but also identifying those who do not need treatment and might be misdiagnosed with other methods. Although there will be initial upfront costs, as it is cost saving compared to other methods then the cost from events avoided and unnecessary treatment avoided outweighs the cost of the intervention itself. Although it is acknowledged that costs may fall on different sectors.
Royal College of Nursing	General	General	General	3. What would help users overcome any challenges? (For example, existing practical resources or national initiatives, or examples of good practice.) Recognition of HBPM as a tool	Thank you for your comment. ABPM was shown to be the most cost effective option when compared to HBPM and CBPM in economic modelling updated with new accuracy data as part of the guideline. It was actually shown to be cost saving compared to the other interventions because the higher accuracy means it is better at identifying people that need treatment, therefore avoiding events, but also identifying those who do not need treatment and might be misdiagnosed with other methods. There is also a recommendation that acknowledges that HBPM is an alternative if someone cannot tolerate ABPM.
[Sheffield Teaching Hospitals NHS Foundation Trust]	Guideline	4	6	1.1.2 There is now evidence (Salvetti M et al 2018) that not all semi-automated devices are inaccurate in atrial fibrillation and that manual pressures can be equally flawed when compared with intra-arterial measurement. This makes the current guidance out-dated although some warning is required. There is the separate question as to whether the gradient of risk with blood pressure is the same in atrial fibrillation and sinus rhythm and what the thresholds and targets for drug treatment should be.	Thank you for your comment. Research into the best method for diagnosis for this group was not prioritised by the committee, and there was no evidence reviewed (and the study you mention was therefore not looked at within this update) to inform a specific recommendation on this topic.A research recommendation related to measuring blood pressure in this population has been retained from the previous guideline. This is intended to encourage further research within this area.
[Sheffield Teaching Hospitals NHS Foundation Trust]	Guideline	10	9	1.4.12 I am sure that this will be a contentious area and assume that others will comment on the risks and burden of turning a significant proportion of the population into patients requiring drug treatment. I will focus on the evidence base and synthesis underlying this. Given that this will involve a large number of people it is vital that the reasoning is as robust as possible. I deal with the absence of evidence of clinical effectiveness below but here focus on the synthesis. In the sensitivity analyses included with the 2011 guideline there was an exploration of possible reduction in QOL with tablet taking. Inclusion of patients at lower risk and stage I hypertension makes the importance of this even greater. Since 2011 there has	Thank you for your comment. I believe you are referring to the diagnosis model from the previous guideline which undertook a sensitivity analysis incorporating a small reduction in quality of life from being on treatment. This was a method used in that model instead of formally including the effect of adverse events. In the model on risk thresholds undertaken as part of this guideline, we explicitly included adverse events for those over 60 who were on treatment, whereas no adverse events were

				been much research on the possible reduction of QOL with drug treatment independent of adverse effects (e.g. Thompson et al 2016) and none of this has been captured. The excess of trivial adverse effects in treated patients is clear even if the further effect of this on QOL measured in away useful for modelling is not to hand. With a move to ever lower risk patients clarity that full rigour has been given to the modelling needs to be demonstrated.	included in the diagnosis model. These were based on risks from the SPRINT trial thereby capturing serious adverse events like injurious falls and AKI, and were considered very conservative towards treatment. This led to quality of life reductions from treatment in the model because quality of life decrements were attached to falls and AKI. Therefore the committee felt that the impact of treatment had been well captured in the model. As the model has been conservative in many ways, adding further QoL reductions from being on tablets alone is unlikely to change the conclusions, given that treatment was cost effective at a lower threshold than was recommended. Balance of risks and benefits would be different for different people and this needs to be discussed as part of shared decision making when discussing possible treatment with patients.
[Sheffield Teaching Hospitals NHS Foundation Trust]	Guideline	10	14	1.4.13 The only trial specifically looking at patients over the age of 80 was the HYVET study (Beckett NS et, N Eng J Med 2008;358:1887-98), the inclusion blood pressure for which was a systolic pressure > 160mmHg. Similarly of the clinical trials with identifiable subgroups of patients over the age of 80 (Gueffyier et al 1999) all had inclusion criteria requiring systolic pressures > 160mmHg. There is nothing in the explanatory rationale to clarify why the committee believed in the absence of evidence of benefit that patients over the age of 80 with stage I hypertension should be started on drug treatment.	Thank you for your comment. Recommendations related to the initiation of treatment in people aged over 80 with stage 1 hypertension have been amended to highlight that treatment should be considered only in those with a blood pressure of over 150/90mmHg. This now aligns with recommendations for a blood pressure target of 150/90mmHg in this population, which is based on the evidence you outline. An explanation of what the 150/90mmHg target recommendation was based on is in the rationale section for this recommendation, and further explained in the committee's discussion of the evidence in Evidence review D.
[Sheffield Teaching Hospitals NHS Foundation Trust]	Guideline	10	17	The rationale for referral of patients under 40 is based on committee consensus but it is admitted that further research is required. That doesn't come through in research recommendations. When there is no evidence for the clinical or cost-effectiveness of such searches for secondary hypertension it surely should be a research priority especially when the only controlled clinical trials (atherosclerotic RAS) show intervention of no benefit.	Thank you for your comment. The research recommendation for people under 40 is actually in relation to the risk thresholds for starting treatment in this age group, not about referral. The recommendation for referral of patients under 40 originates from two recommendations in CG127. They committee were not aware of any new evidence to change this recommendation and therefore retained it, with amended wording to improve clarity. The scope of this update did not include screening for secondary hypertension, and therefore the evidence within this area has not been reviewed. NICE make research recommendations when the evidence has been reviewed and is insufficient for recommendations or where further evidence would be useful. We therefore cannot

					make a research recommendation related specifically to referral of patients under 40. However, the research recommendation on treatment thresholds within this group should provide insight into whether treatment is beneficial in this group, which could then feed into questions related to screening and whether this is required.
[Sheffield Teaching Hospitals NHS Foundation Trust]	Evidence Review C	24	12	Brunstrom et al (online supplement) did provide analysis based on trials including only patients without pre-existing CVD for both overall mortality and major coronary events. These clearly showed no significant effect of antihypertensive treatment for patients with systolic pressures 140 – 160mmHg. Indeed scrutiny of the trials included in Brunstrom shows that only HOPE-3 might have contributed to information about patients without pre-existing CVD and mild hypertension above and beyond that in the Cochrane meta-analysis of Diao. Whilst some comfort might be taken for the results of the upper tertile of pressures in HOPE-3 this is not stage I hypertension. In the March 2013 Evidence update (section 1.5 page 9) the NICE CG 127 was said to be consistent with the results of Diao because the guideline was limited only to patients with stage I hypertension who had coexisting conditions that might increase their risk of cardiovascular events. The move of the QRISK threshold down to 10% surely makes that more difficult to defend.	Thank you for your comment and for highlighting this evidence with Brunstrom et al 2018, which was included within Evidence Review C. We have checked the supplementary data and found multiple sensitivity analyses which we think you may be referring to. These analyses excluded studies on people with previous cardiovascular disease, heart failure and trials with 'mixed' populations. We don't know which trials were included in these analyses, how many participants were included, or the actual number of events within each arm. We are therefore unable to use this data is within the guideline review to inform recommendations. However, if we were able to, this evidence you refer do does actually still show a benefit of treatment at a systolic blood pressure of 140-160mmHg and is therefore consistent with the evidence within the guideline. The risk ratios are all below 1 and therefore all highlight a reduction of all-cause mortality and cardiovascular events with treatment, compared to no treatment.
south Sefton Clinical Commissioning Group	Draft Guideline	6	13	The NICE guideline on Cardiovascular Disease refers to QRisk2 but is being replaced with QRisk3 on GP computer systems.	Thank you for your comment. The recommendations do not refer to a specific version of QRISK, but instead refer to the relevant NICE guideline which will include the most up to date recommendations on risk assessment. Minimum risk values from the QRISK for different ages were used only for the interpretation of the economic model results. The risk subgroups compared in the model were based on specific risk levels, and were not predicted from patient characteristics at all. At the time of model development, the QRISK2 was used to interpret the model results; however a table has been added to the model write-up in Appendix 1 to also use the values from QRISK3 to interpret the model results. This does not impact the recommendations in any way as the risk threshold predicted as cost effective from the model is still far below the 10% threshold recommended.
south Sefton	Draft Guideline	General	General	If a CCB is clinically indicated but oedema is encountered with one CCB experience suggests that switching to a different CCB may result	Thank you for your comment. We did not perform an evidence review comparing side effects of individual drugs within each

Clinical Commissioning Group				in a reduction in the oedema for a period of time allowing patients to continue on this class of drugs for longer..	class. Recommendations of CCB selection is therefore outside the scope of this update.
south Sefton Clinical Commissioning Group	Draft Guideline	16	16	A combination of an ACE or ARB and low dose spironolactone may not be widely initiated in primary care especially if the combination is unlicensed. This could produce logistical problems in primary care to ensure that patients prescribed this combination of therapies are identified and receive renal blood tests and reviews as clinically indicated.	Thank you for your comment. Recommendations related to spironolactone were carried forward from the previous guideline update in light of no new evidence for other step 4 treatments. No new logistical problems should therefore be caused from this guideline update.
Stroke Association	Guideline	General	General	We understand that screening for hypertension is outside the scope of this guideline but considering hypertension rarely produces noticeable symptoms but effective treatment significantly reduces the risk of stroke [1] we urge NICE to include a reference to blood pressure checking for at-risk groups to help make every contact count and help make the best possible use of NHS resources. The impact of this could be substantial as two out of every five people with hypertension are undiagnosed, amounting to over 5 million people in England alone [2] and because blood pressure is also a key risk factor for other conditions, including heart disease, dementia and kidney disease. The Long Term Plan (LTP) ambitions to help prevent up to 150,000 heart attacks, strokes and dementia cases over the next 10 years and the National Stroke Programme (NSP), working closely with the CVD/respiratory programme, aims to improve detection and management of atrial fibrillation, high blood pressure and high cholesterol. This sets the scene for the huge potential impact of improved prevention across the NHS in England. The revision of these guidelines feeds into this, providing a real chance to respond as a whole CVD and stroke community to the challenges and opportunities that have opened up as a result of the LTP and NSP. Through cementing the policy aspirations found across	Thank you for your comment. As you've highlighted, screening of hypertension is outside of the scope of this update and we cannot add recommendations relating to this without a formal review of the evidence to ensure advice around evidence related to screening is taken into account. We will however pass on feedback to NICE related to the importance of proactive case finding for hypertension, to ensure that evidence related to this is considered during the next surveillance review.

[1] British Heart Foundation, Public Health England, Stroke Association, Royal College of General Practitioners, Primary Care Leadership Forum, Blood Pressure UK and British and Irish Hypertension Society (2016). High blood pressure: How can we do better? Data collated and visualised by the National Cardiovascular Intelligence Network (NCVIN) in Public Health England. Available: http://bit.ly/2ju4O31

[2] Public Health England and NHS England. Size of the Prize. 2017. Available: https://www.healthcheck.nhs.uk/commissioners-and-providers/data/size-of-the-prize-and-nhs-health-check-factsheet/

				the system in clinical guidance, and reflecting new research developments and emerging and established best practice, this new guideline can help to ensure that policy makers, clinicians and academics are all moving in the same direction. As such, we would urge NICE to consider referencing or linking to the Long Term Plan ambitions within the guidance as they set the latest national policy landscape around treating hypertension. Our recent survey of stroke survivors has further shown how important diagnosis and treatment of hypertension is. The data shows that the number of stroke survivors who are aware of having hypertension following their stroke increases as the severity of the stroke increases. For those who had no difference in their physical health following their stroke, only 21% identified as being aware of having hypertension after their stroke. However, this increased to 26% for 'some impact' and up to 28% for those saying after their stroke their physical health was 'completely different'. This is echoed for emotional health too, increasing from 19% for no effect, to 29% for 'completely different'. [3] It is vital that all stroke survivors are checked for hypertension and it is managed properly, it should not be dependent on the level of impact of their stroke as to whether someone is aware of the condition. Only by diagnosing and managing all cases of hypertension can the numbers of secondary stroke be reduced.	
Stroke Association	Guideline	General	General	The Stroke Association continues work to help people understand the link between high blood pressure and stroke, and what they can do to reduce their risk of having a stroke. This NICE updated guideline on hypertension will support ongoing work to improve prevention of stroke. The Stroke Association has been working in partnership with NHS England and other key arm's length bodies, including a representative from NICE, to develop the new National Stroke Programme which builds on the NHS England Long Term Plan. The programme focuses on where most value can be gained in improving stroke treatment, care and prevention including hypertension, particularly the ambition to help prevent up to 150,000 heart attacks, strokes and dementia cases over the next 10 years.[4]	Thank you for your comment and for your positive feedback.

[3] Lived Experience of Stroke survey (Stroke Association, 2019) (Forthcoming).

[4] NHS England Long Term Plan (2019) Available: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/01/nhs-long-term-plan.pdf p.63

				As we stated above, diagnosis rates for hypertension are low and of those who are diagnosed, around 40% are not optimally treated to the 140/90 target. Public Health England modelling[5] suggests that over ten years, 7,000 years of life could be saved and £120m saved if we achieve a 15% increase in the proportion of adults with blood pressure controlled to 140/90. Societal costs could yield cost-savings of £619m over 5 years.[6] The scale of stroke is enormous and growing. Without action, in under two decades the number of strokes will increase by almost half, and the number of stroke survivors by a third.[7] Each year stroke costs the health and care system over £8bn, adding to this the cost of informal care and also lost productivity, this rises to a total of £26 billion. If no action is taken, it is estimated that this will increase to between £61bn and £91bn by 2035.[8] This research clearly highlights the importance of working together across the stroke community to ensure that hypertension is diagnosed and effectively managed. These NICE guidelines are a vital element of this.	
Stroke Association	Guideline	General	General	It is important that the guideline clearly includes the specific and unique input of voluntary sector in identifying hypertension, monitoring blood pressure and raising awareness. Charities such as the Stroke Association are integral parts of the work to reduce levels of hypertension. We sit on the CVD system leadership forum in which hypertension is one of the areas that the group has recently published CVD ambitions around. We also engage regularly with PHE through channels such as the Blood Pressure System Leadership Board which focusses on improving prevention, detection and management of hypertension. We also continue to support the sharing and use of information packs we jointly developed with PHE on blood pressure (BP) and how commissioners and providers can do better. These packs can be accessed here: https://www.bhf.org.uk/healthcare-	Thank you for your comment. The scope of the guideline outlines that the guideline is relevant to a range of users, including those that you specify. The guideline is however intended to be implemented by the NHS and therefore it cannot make recommendations for the voluntary sector. NICE guidelines in general also do not make reference to which professionals are supporting clinical practice and research, due to the complex network of involved stakeholders that exist.

[5] Public Health England Tackling High Blood Pressure (2014): From evidence into action Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/375985/20141018_Tackling_high_blood_pressure_-_FINAL_INCL_LINK_CHANGES.pdf
[6] Patel A, Berdunov V, King D, Quayyum Z, Wittenberg R, Knapp M (2017) Current, future and avoidable costs of stroke in the UK Available https://www.stroke.org.uk/research/research-publications/current-future-and-avoidable-costs-of-stroke-in-the-uk
[7] Kings College London & Stroke Alliance for Europe (SAFE) The Burden of Stroke in Europe – challenges for policy makers (2017) Available: https://www.stroke.org.uk/sites/default/files/the_burden_of_stroke_in_europe_-_challenges_for_policy_makers.pdf
[8] Patel A, Berdunov V, King D, Quayyum Z, Wittenberg R, Knapp M (2017). Current, future and avoidable costs of stroke in the UK. Executive summary Part 2: Societal cost of stroke in the next 20 years and potential returns from increased spending on research. London: Stroke Association. Available: https://www.stroke.org.uk/research/research-publications/current-future-and-avoidable-costs-of-stroke-in-the-uk

				professionals/bp-how-can-we-do-better	
Stroke Association	Guideline	6	1-7	We welcome the inclusion of the use of ambulatory blood pressure monitoring. We encourage people to have their blood pressure checked regularly, whether by medical professional, trained volunteer or, increasingly, by themselves at home using a home blood pressure monitoring tool. The continued poor access to ambulatory blood pressure monitors contributes to the problems in detecting and therefore managing hypertension. We hope inclusion of these within the guideline will further raise awareness of the benefits of these monitors particularly as hypertension is largely without symptoms and also result in improved access to them. We also welcome that the guideline references the need for people to be given training to use home blood pressure equipment. Effective monitoring, alongside medicines adherence, is vital to successfully managing hypertension and providing training will help to give patients the ability and confidence to do this.	Thank you for your comment and for your positive feedback.
Stroke Association	Guideline	6	11-13	We welcome the recommendation for a formal assessment of cardiovascular disease whilst waiting for confirmation of a diagnosis of hypertension. However we would like NICE to go further than this and recommend that at this point patients have their NHS Health Check. As an existing statutory programme which looks at stroke, heart disease, kidney disease and diabetes alongside information to reduce risk of dementia, this is best placed to identify any further risk factors.	Thank you for your comment.Unfortunately it is beyond the remit of NICE to specify who should be included in the NHS health check.
Stroke Association	Guideline	10	4	We welcome the update to prescribe antihypertensive medication to people with BP of 140/90 and a 10% risk of CVD within 10 years, rather than 20%. We believe this will help to reduce their overall of risk of stroke and other conditions. Clinical trials have shown that lowering blood pressure reduces CV risk by 20% - 25% for myocardial infarction, 35%-40% for stroke and by 50% for heart failure.[9] We welcome that the guideline includes having a conversation about lifestyle changes that can be made, alongside medication, to reduce a person's blood pressure. Stopping smoking, drinking less alcohol, eating healthily, doing more exercise and watching weight can all help reduce the risk of stroke. We would like to see NICE make it clear that	Thank you for your comment. This guideline recommends that a full cardiovascular risk assessment is completed, in line with the cardiovascular risk assessment guideline (CG181). This guideline outlines what these assessments cover, and relevant risk factors such as previous cardiovascular disease and high cholesterol are usually considered, such as in QRISK2.

[9]Antonakoudis G, Poulimenos L, Kifnidis K, Zouras C, Antonakoudis H. Blood pressure control and cardiovascular risk reduction. *Hippokratia*. 2007;11(3):114–119. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2658793/

				lifestyle changes are vitally important, and should still be made when medication has been prescribed as they are an essential part of hypertension management. We would like NICE to recommend that as part of the conversation on lifestyle changes, other risk factors for stroke and wider cardiovascular disease are also discussed, such as high cholesterol.	
Stroke Association	Guideline	11	19	We support the decision to keep the target blood pressure at the same level as the 2011 guideline, diagnosing hypertension at 140/90. We acknowledge the limitations of the SPRINT trial particularly around the applicability to the UK and applicability of the population, for example, as set out in NICE guideline, that the participants had high cardiovascular risk levels including many with pre-existing cardiovascular disease or renal impairment and were already receiving treatment before the study started. As explained above around 40% are not optimally treated to the 140/90 target. It is important to focus on efforts to that help patients are treated to bring their blood pressure to this such as the RightCare CVD prevention pathway, which uses the 140/90 target.[10] This pathway provides local areas with information on the case for change and best practice for conditions alongside real world case studies. We do recommend that NICE continue to monitor evidence on the benefits of lowering the target blood pressure and review targets as necessary. It is vital that GPs, pharmacists and voluntary sector staff use these targets for diagnosing, monitoring and where appropriate treating those with hypertension. Consistent messaging for the public on what level of blood pressure is safe, and when they should seek further information, guidance and treatment is important to improve public awareness of hypertension and treatment options.	Thank you for your comment and for your positive feedback. NICE will continue to monitor new evidence and conduct surveillance reviews to assess when the hypertension guideline should be next updated. It is standard NICE process to monitor new evidence and decide whether update is required based on this.
Stroke Association	Guideline	General	General	We still believe it is important for this guidance promote opportunistic pulse testing for atrial fibrillation (AF) to make every health professional contact count. We welcome that the AF guidance has been linked but we don't believe this goes far enough. Alongside hypertension, atrial fibrillation is a key stroke risk factor, with around 1	Thank you for your comment. Pulse testing for atrial fibrillation was not included within the scope of this update, and so the guideline cannot recommend this. The committee recognise the importance of identifying accurate methods of diagnosing hypertension in this population, and have retained a research

[10] NHS RightCare CVD prevention pathway (updated 2016) Available https://www.england.nhs.uk/rightcare/products/pathways/cvd-pathway/

				in 5 strokes in the England Wales and Northern Ireland attributed to AF.[11] AF is often asymptomatic yet increases stroke risk five-fold[12] and is linked the most devastating strokes. AF is chronically underdiagnosed with estimates of around 293,000 people in England unaware they have the condition.[13] By including opportunistic pulse checking when doing a blood pressure check it will help to reduce this number, increase the numbers of people managing the condition and ultimately prevent more strokes.	recommendation related to this.
Stroke Association	Guideline	11	25-28	We continue to urge NICE to add a specific reference to women on the combined oral contraceptive pill or HRT within the guidance. Research is clear that this increases risk of stroke as it can raise a women's blood pressure. Whilst existing prescription guidance for these types of contraception do include annual checks we know this does not always happen and that many women are unaware that the combine pill and HRT can increase risk of stroke. We believe that they should be included as a specific sub group to increase the likelihood that they are checked for hypertension.	Thank you for your comment. This is covered by the hypertension in pregnancy guideline (CG107). Causes of hypertension are not covered in the scope of this update, and so no comment can be made related to oral contraceptive pills or HRT.
Stroke Association	Guideline	37	21-29	We would like to see reference to the considerable economic benefits of effectively diagnosing, treating and managing hypertension as set out below included within this background section alongside the existing information included on the cost of treating hypertension. The scale of stroke is enormous and it continues to grow, with the number of strokes set to double in 10 years. Currently stroke costs the health and care system over £8bn every year but when informal care and lost productivity are factored in, that spirals to £26 billion. If no action is taken to reduce this, it is expected to rise to between £61bn and £91bn by 2035.[14] As stated above blood pressure is a	Thank you for your comment. There is a context section at the end of the recommendations which sets out the importance of the guideline including the burden of hypertension and the impact effective diagnosis and treatment can have. This is not specific to stroke as there are other related NICE guidelines that would cover that topic in more detail. However we have added some more detail on the resultant cardiovascular events. The benefits of interventions that reduce blood pressure in terms of avoiding cardiovascular events are also referenced throughout the guideline in the economic sections of each review chapter.

[11] Royal College of Physicians Sentinel Stroke National Audit Programme (SSNAP). National clinical audit annual results portfolio March 2016-April 2017. Available: http://bit.ly/1M5R3Op
[12] Savelieva I, Bajpai A, Camm AJ (2007). Stroke in atrial fibrillation: Update on pathophysiology, new antithrombotic therapies, and evolution of procedures and devices. Annals of Medicine 39: 371-391. Available: https://www.ncbi.nlm.nih.gov/pubmed/17701479
[13] QOF data 2017/2018 Available https://fingertips.phe.org.uk/profile-group/cardiovascular-disease-diabetes-kidney-disease/profile/cardiovascular/data#page/3/gid/1938133110/pat/15/par/E92000001/ati/152/are/E38000008/iid/280/age/1/sex/4
[14] Patel A, Berdunov V, King D, Quayyum Z, Wittenberg R, Knapp M (2017). Current, future and avoidable costs of stroke in the UK. Executive summary Part 2: Societal cost of stroke in the next 20 years and potential returns from increased spending on research. London: Stroke Association. Available: https://www.stroke.org.uk/research/research-publications/current-future-and-avoidable-costs-of-stroke-in-the-uk

				contributing factor in over half of all strokes and treatment for high blood pressure significantly reduces the risk of stroke.[15] Whilst treating hypertension is important, improving detection and management will reduce the number of strokes and help to save money and resource.	
The Renal Association, UK	**Guideline**	5	22	Guideline 1.2.2 implies that BP should be measured "during the consultation". This is potentially dangerous and could lead to overtreatment. There is ample evidence that BP varies markedly according to the circumstances of measurement, and that resting BP is best measured after 5 minutes' quiet rest and without talking to the patient. Although this is covered in 1.1.4, we feel this is needs to mentioned explicitly here or refer to 1.1.4.	Thank you for your comment. Diagnosis is also based on ABPM or HBPM and so measurement of blood pressure in the clinic, as part of diagnosis, should not lead to overtreatment. ABPM or HBPM is recommended for the diagnosis of hypertension for the reason you outline; that CBPM may be less accurate in some people. The committee felt that recommendations for how to measure blood pressure sit within the measuring blood pressure section and should not be repeated within recommendation 1.2.2.
The Renal Association, UK		6	1	Guideline 1.2.3 suggests ABPM should be offered to those with clinic BP between 140/90 and 179/109 mmHg. Evidence from the UK suggests those with clinic BP>180/100 may have much higher white coat effect (average of 40/20 mmHg) – higher the clinic BP greater is the WCE (Thomas O, et al. J Hum Hypertens. 2016 Jun;30(6):386-91. doi: 10.1038/jhh.2015.95.).	Thank you for your comment. This recommendation cross-refers to section 1.5 which outlines recommendations for people with a clinic blood pressure above 180/110mmHg. Further investigations are recommended within this population in order to accurately diagnose hypertension and identify any target organ damage.
The Renal Association, UK		6	29	Guideline 1.2.8 implies that a HBPM and ABPM measurements are reliably 5/5 mmHg lower than standardized office BP measurements. This assumption is not supported by evidence. Furthermore, as mentioned above, higher the clinic BP greater is the difference (Thomas O, et al. J Hum Hypertens. 2016 Jun;30(6):386-91. doi: 10.1038/jhh.2015.95.).	Thank you for your comment. The previous guideline update (CG127) found evidence to highlight that the difference between HBPM and ABPM as compared to CBPM is on average 5/5mmHg. The scope of this update did not include reviewing evidence related to this difference, and so recommendations related to this cannot be changed. The diagnostic accuracy review (Evidence Review A) did however identify evidence that support the notion that the current diagnostic thresholds of HBPM and CBPM are appropriate as compared to CBPM.
The Renal Association, UK		7	4	Guideline 1.2.9 - "evidence of target organ damage". A list as to what counts as target damage here might be useful and save busy health care professionals to refer to the full document.	Thank you for your comment. Target organ damage is defined within the glossary of the guideline.
The		8	1	Guideline 1.3.2 suggests calculation of CVD risk using NICE	Thank you for your comment.

[15] British Heart Foundation, Public Health England, Stroke Association, Royal College of General Practitioners, Primary Care Leadership Forum, Blood Pressure UK and British and Irish Hypertension Society (2016). High blood pressure: How can we do better? Data collated and visualised by the National Cardiovascular Intelligence Network (NCVIN) in Public Health England. Available: http://bit.ly/2ju4O31

Renal Association, UK				guidelines from 2008 (on page 8). We feel this should be updated to reflect the current UK practice of using QRisk 3 calculator (2018, developed in and relevant to the UK, takes into account postcode as a surrogate for socioeconomic status) for CVD risk prediction. For guidelines to work it needs to be really clear how to determine the CVD risk threshold for treatment.	The recommendations do not refer to a specific version of QRISK. Minimum risk values from the QRISK for different ages were used only for the interpretation of the economic model results. The risk subgroups compared in the model were based on specific risk levels, and were not predicted from patient characteristics at all. At the time of model development, the QRISK2 was used to interpret the model results; however a table has been added to the model write-up in Appendix 1 to also use the values from QRISK3 to interpret the model results. This does not impact the recommendations in any way as the risk threshold predicted as cost effective from the model is still far below the 10% threshold recommended.
The Renal Association, UK		9	3	Guideline 1.4.5 suggests reducing salt intake but nothing on substances that cause salt retention (liquorice, OTC drugs like NSAIDs etc). We note from p 43 that the support for salt substitutes has been removed but we wonder if these should be actively discouraged. This is particularly important for those with CKD.	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest, however a footnote has been added to clarify the contraindications of sodium substitution.
The Renal Association, UK		9	19	Guideline 1.4.9 pays lip service to the need for shared decision-making. To facilitate shared decision-making, information needs to be shared with the patient, ideally in the form of Cates plots, on their 10-year risk (and ideally also on their lifetime risk), based on their individual characteristics. The previous Right Care patient decision aid on antihypertensive treatment (http://arms.evidence.nhs.uk/resources/hub/1057551/attachment) was withdrawn in 2017 but has not been replaced. This must be remedied, with the provision of a patient decision aid that allows the clinician to provide individualized information, based on risk factors (including ethnic origin, post-code, family history, age, SBP, DBP, presence or absence of diabetes, urine albumin:creatinine ratio, eGFR, presence or absence of heart failure), on the patient's absolute risk of an event and the change in absolute risk that would be predicted with achievement of a given BP target. It would also be possible to provide estimates of the likely pill burden required to achieve that BP target.	Thank you for your comment. This guideline did not review methods of shared-decision making and cannot make a comment on the methods you have outlined, however NICE are currently developing a guideline on shared decision-making. Evidence related to the risk factors you have outlined varied considerably. Due to this, absolute event rate reductions associated with different populations cannot be provided as part of a decision aid. Instead, a patient decision aid has been produced to aid the choice of treatment in people with hypertension, which takes into account the possible benefits and risks of different medications.
The Renal Association, UK		9	23	Guideline 1.4.10 includes 'renal disease' as an indication to offer antihypertensive drug therapy in addition to lifestyle advice in patients under 80 with stage 1 hypertension. It would be more consistent with current usage, and clearer, to use the term 'chronic kidney disease' here.	Thank you for your comment. This was carried forward from CG127 and we believe it is more appropriate to retain the term renal disease in this context.
The Renal		10	9	Guideline 1.4.12: Need to define 'younger adults'. We think this is likely to cause confusion when read alongside 1.4.10	Thank you for your comment. Clarification has been added to the relevant recommendations and text to explain how the term

Association, UK					'younger' should be interpreted.
The Renal Association, UK		10	14	Guideline 1.4.13 and 1.4.20 appear slightly incongruous and confusing – it is suggested to consider BP-lowering medications in patients over 80 with BP 140-159/90-99 but to accept BP <150/90.	Thank you for your comment. Recommendations related to treatment initiation in people over 80 have been amended to highlight that treatment should be considered if blood pressure is over 150/90mmHg. This is now consistent with the target in this population of 150/90mmHg.
The Renal Association, UK		11	3	Guideline 1.4.16 Consider HBPM for adults with hypertension who choose to self-monitor their blood pressure – suggest changing 'consider' to 'offer'. There is a body of evidence to suggest self-monitoring improves BP control.	Thank you for your comment. This 'consider' recommendation reflects that although there was evidence to suggest good clinical and cost effectiveness of HBPM compared to CBPM, ABPM was found to be the most effective and cost effective when compared to HBPM and CBPM. The use of 'offer' would be a stronger recommendation that would therefore not reflect the evidence base. Due to this we cannot make the change you suggest.
The Renal Association, UK		11	5	Guideline 1.4.17 states that 'corresponding measurements for ABPM and HBPM are 5 mmHg lower than for clinic measurements. This 'fudge factor' is not supported by evidence. The difference between ABPM and standardized clinic measurements varies from patient to patient, and is larger with higher clinic BP (Thomas et al JHH 2016 above).	Thank you for your comment. The previous guideline update (CG127) found evidence to highlight that the difference between HBPM and ABPM as compared to CBPM is on average 5/5mmHg. The scope of this update did not include reviewing evidence related to this difference, and so recommendations related to this cannot be changed. The diagnostic accuracy review (Evidence Review A) did however identify evidence that support the notion that the current diagnostic thresholds of HBPM and CBPM are appropriate as compared to CBPM.
The Renal Association, UK		11	19	Guideline 1.4.19 recommends that BP be reduced to <140/90, 1.4.20 recommends <150/90 for patients <80, and 1.4.22 provides targets 5/5mmHg lower for ABPM and HBPM. This decision to retain the 2011 target, despite the findings of SPRINT (and the reduced risk of stroke in ACCORD), is justified by a judgement made by the committee that the risks of more intensive blood pressure control outweigh the benefits. No evidence is provided on how patients would balance the risks and benefits. The benefits from more intensive blood pressure control include reduced risks of death, hospitalization, and cardiovascular events – particularly heart failure. The risks from more intensive treatment included more episodes of syncope, but not of injurious falls; electrolyte abnormalities; and acute kidney injury. A significant proportion of the 'acute kidney injury' episodes may have been due to the expected haemodynamic effects of BP reduction, rather than to genuine tubular injury, and carry a favourable prognosis (Malhotra, doi	Thank you for your comment. The economic model that compared risk thresholds for initiating treatment took into account the trade-off between benefits and risks because it incorporated both the treatment benefit and adverse events from treatment, with the adverse event risks actually taken from SPRINT and were considered conservative towards treatment. And therefore the overall cost effectiveness of treatment takes into account both benefits and harms. Evidence from the SPRINT trial was discussed in detail within the committee and a wide number of limitations of this evidence were identified. This included a difference in measurement techniques as compared to a UK setting, as well as variation in up and down-titrating of medication as

				10.1053/j.ajkd.2018.07.015); Rocco, doi 10.1053/j.ajkd.2017.08.021) Zhang, doi 10.7326/M18-1037); the effects of more intensive BP control on patient-important outcomes such as the need for renal replacement therapy are uncertain. Whether patients would be content to accept these risks to obtain the benefits of more intensive control can only be decided on by individual shared decision-making. The other justification for ignoring SPRINT is that BP was measured under standardized conditions, and that, on average, such measurements will be lower than obtained from 'casual' clinic/office BP measurements. However, all recent informative trials have used standardized BP measurement. The evidence-based approach, therefore, would be to issue clear guidance that casual office BP measurements should never be used to guide therapy, and that standardized office BP measurements should be offered to all patients in whom BP measurement is undertaken in a clinic setting. **We suggest modification of this recommendation suggesting target BP of <140/90 mmHg but aiming for 130/80 mmHg, using standardised clinic BP measurement, especially in those with higher CV risk, diabetes or CKD which may confer benefit if tolerated.**	compared to the UK setting. You can find further details in the blood pressure targets rationale in Evidence review D. The committee consequently agreed that there was insufficient evidence to warrant reducing systolic blood pressure targets to <120mmHg. Evidence to support a target of <130mmHg was also insufficient to warrant a recommendation, due to the relatively small sample size of the Cardio-Sis trial, lack of evidence for adverse events (in particularly acute kidney injury), and very serious imprecision for the outcomes. All outcomes comparing a target of 130mmHg to 140mmHg (all-cause mortality, stroke, MI, heart failure, dizziness and reduction in blood pressure) were downgraded for imprecision. The confidence intervals of the effect estimates were extremely wide, meaning that the certainty of the effect for each outcome was uncertain. There was therefore insufficient evidence to support a target as low as 130mmHg.
The Renal Association, UK		11	25	Guideline 1.4.21: (a) "Significant postural drop" should be defined – although the guidelines refer back to section 1.6, it might be helpful to reinforce an actual value here (>20 mmHg). (b) We suggest that the bullets should include "Significant postural decline in BP at initial assessment".	Thank you for your comment. This is defined within recommendation 1.1.6.
The Renal Association, UK		13 15 16	20 19 12	Guideline 1.4.29, 1.4.41 and 1.4.42: We welcome the emphasis on assessment of medicines optimisation and adherence at all stages of treatment (page 13, lines 20-22), and the reassessment of adherence in those reaching step 4 (page 16, line 12). Although they reference the Medicines Adherence Guideline (CG76), CG76 lists only generic methods for assessment of adherence (patient self-reporting, using records of prescription re-ordering, pharmacy patient medication records and return of unused medicines). Given the significant issue of medication nonadherence in hypertension, it would have been useful to discuss more objective strategies of **direct adherence testing** including observed pill taking with day case BP/ABPM monitoring, as well as, especially **urinary drug metabolite analysis** which is now more widely available in the UK (Birmingham Heartlands and Leicester centres supporting large number of hypertension centres across the country).	Thank you for your comment. Adherence to treatment was not highlighted as a priority by stakeholders during the scoping process. Recommendations to monitor adherence therefore cannot be added to the guideline, without a formal review of the evidence.

The Renal Association, UK		15	24	Guideline 1.4.30: Although CKD covered in separate guideline, we suggest, it should at least be mentioned here, e.g. use of ACEi/A2RB if a compelling indication present (proteinuric CKD, heart failure, ischaemic heart disease, etc).	Thank you for your comment. We cannot make recommendations related to this population since, as you say, this update is not covering the CKD population. We have however highlighted with NICE the challenges in interpreting recommendations across the CKD and hypertension guidelines.
The Renal Association, UK		16	7	Guideline 1.4.44: 'Before considering further treatment for a person with resistant hypertension:' **Bullets should include 'exclude secondary hypertension', and 'discuss adherence' should be changed to 'check adherence'.** There is now a large body of evidence to suggest that as many as 50% of apparently treatment resistant hypertensive individuals are non-adherent to medication (Review article: Hameed and Dasgupta, Drugs in Context 2019).	Thank you for your comment. Investigations for secondary hypertension have been covered in previous recommendations. The committee agreed that 'discuss adherence' reflects principles related to shared decision making and person centred care which underpin every NICE guideline recommendation.
The Renal Association, UK		16	16	Guideline 1.4.46: We would recommend **a specific value is provided in the context of 'reduced GFR'**. A cut off **eGFR of 45 ml/min/ 1.73m^2** would be sensible and consistent with the PATHWAY-2 Trial protocol. The PATHWAY-2 trial also suggested that amiloride could be as effective as spironolactone in lowering blood pressure at step 4 (https://www.ncbi.nlm.nih.gov/pubmed/29655877). We would therefore suggest that the guidelines should recommend amiloride if spironolactone is not tolerated which is not uncommon, especially in men.	Thank you for your comment. The PATHWAY-2 study was not included within the evidence review on step 4 treatment because it did not include cardiovascular outcomes and had a short follow up time, and no other evidence was identified in relation to step 4 treatment. We therefore cannot update recommendations as you suggest.
The Renal Association, UK		18	2	Guideline 4.5.2: 'Acute renal impairment' should be replaced with **'acute kidney injury'**	Thank you for your comment. We have amended this term.
The Renal Association, UK	**Key Recommendations For Research**	20		We would suggest adding **Medication Adherence**. Although the committee would have been limited to the number of research recommendations, we feel this is a clinically significant (and financially/health economic) relevant topic, worthy of further research.	Thank you for your comment. Medications adherence was not included in the scope of this update. This guideline cannot make a research recommendation for this area because the evidence related to adherence was not reviewed. Research recommendations are usually made whereby a search for evidence is carried out and no evidence is identified, or if evidence is identified but insufficient to base recommendations on. Please see NICE's process and methods guide for research recommendations: https://www.nice.org.uk/Media/Default/About/what-we-do/Science-policy-and-research/research-recommendation-process-methods-guide-2015.pdf
The	**General**			• There is no guidance about diastolic BPs – this may be difficult	Thank you for your comment. Evidence for diastolic blood

Renal Association, UK	**comments**			but some comment might be helpful. • The guideline comments on masked and white coat hypertension but doesn't recommend anything about it e.g. monitoring/interventions • Evidence review A states that ABPM is "accepted as the best test to diagnose hypertension" as ABPM is a better predictor of CV events than office or HBPM. While this may be true, the available trial evidence is nearly all based on standardized office BP. The evidence supporting thresholds and targets for BP-lowering treatment is derived from these trials. Given that there is no accepted 'fudge factor that allows translation from standardized office BP to ABPM, basing decisions on treatment on ABPM is not consistent with the available evidence. • Guideline page 41 footnote to recommendation 1.1.4 – it's now the British and Irish Hypertension Society, website www.bihsoc.org	pressure was limited, and this has been described in the committee discussion of the initiating treatment and targets evidence reviews. (Evidence reviews C and D). Furthermore, the scope of this guideline did not include specific questions related to the identification, diagnosis or management of masked or white coat hypertension, and so further recommendations within this population cannot be made. Furthermore, this guideline does not recommend that decisions related to treatment should be based on ABPM and HBPM. It recommends that CBPM should be used to monitor response to treatment and that ABPM and HBPM can be used in those who which to self-monitor. Recommendations for targets and treatment initiation also relate to clinic blood pressure measurement and are therefore consistent with the evidence base. The footnote has been amended to correctly state the British and Irish Hypertension Society, and the web link updted accordingly.
The University of Edinburgh		21	25	The guideline states that there is *"Limited evidence suggested that clinic blood pressure measurement is less accurate than home blood pressure measurement (HBPM) or ambulatory measurement (ABPM) when used to diagnose hypertension*" We contend that this is wrong. It is not that it is less accurate, it is that it is less representative – and it is this rather than a question of accuracy that argues in favour of out of office BP. (1) 1. Stergiou GS et al. Methodology and technology for peripheral and central blood pressure and blood pressure variability measurement: current status and future directions. Journal of Hypertension, 2016, 34: 1665 – 1677	Thank you for your comment. The terminology of accuracy is used to depict the specificity and sensitivity of clinic blood pressure measurement. Whilst the lower accuracy of clinic blood pressure measurement may be related to issues you have raised around representation, this still translates to an overall reduced accuracy for the whole population, although based on limited evidence.
The University of Edinburgh		11	16-18	The mean may be 5mmHg lower using ABPM when compared to clinic BP but it doesn't account for the variability seen in the population, even when those diagnosed with white coat effect are taken into account. Such statements undermine the use of ABPM and home BP monitoring if the implication is simple subtraction will suffice. We have reservations that this statement will be misinterpreted.	Thank you for your comment. The previous guideline update (CG127) found evidence to highlight that the difference between HBPM and ABPM as compared to CBPM is on average 5/5mmHg. The scope of this update did not include reviewing evidence related to this difference, and so recommendations related to this cannot be changed. The diagnostic accuracy review (Evidence Review A) did however identify evidence that support the notion that the current diagnostic thresholds of HBPM and CBPM are appropriate as compared to CBPM.
The Universit		28	3-5	Supporting home BP monitoring without recommending the practice has unintentional consequences. While the GDG felt the evidence	Thank you for your comment.

y of Edinburgh				was limited for the use of home BP monitoring, it was also noted this was already widely used in practice, an experience shared with ourselves. It is also in our experience that motivated patients with access to home BP monitors will use them and it is this issue of access that is crucial. As home BP monitoring is not first line for either diagnosis or monitoring, there is no imperative for healthcare organisationsto provide home monitors. In the main, patients who can afford to buy their own monitor are the ones who will benefit.	ABPM was shows to be the most cost effective compared to HBPM and CBPM in economic modelling updated with new accuracy data as part of the guideline. It was actually shown to be cost saving compared to the other interventions because the higher accuracy means it is better at identifying people that need treatment, therefore avoiding events, but also identifying those who do not need treatment and might be misdiagnosed with other methods. Although there will be initial upfront costs, as it is cost saving compared to other methods then the cost from events avoided and unnecessary treatment avoided outweighs the cost of the intervention itself. Although it is acknowledged that costs may fall on different sectors. If a treatment is recommended by NICE then the implication is that it will be funded by the NHS. There is a recommendation that acknowledges that HBPM is an alternative if someone cannot tolerate ABPM.
The University of Edinburgh		14	17-20	In 2011, the NICE GDG first recommended the use of the thiazide-like diuretic chlorthalidone. This decision was based on efficacy as an antihypertensive and the side effect profile of thiazide diuretics. The wording has now changed to include indapamide as a shared first line diuretic therapy but still fails to address the critical issue of access. 'Chlorthalidone hasn't become more widely available to European market as was hoped' (Evidence review E, pg 19), indeed chlorthalidone is not available in the UK nor has it been available in the intervening years between guideline updates. We called for this to be addressed in 2013 (Morrison EE, Turtle EJ, Webb DJ. UK supply of chlortalidone for hypertension must be restored. *BMJ* 2013; 346 doi: https://doi.org/10.1136/bmj.f3076). While the evidence for the recommendation is sound, we remain at an impasse between what is recommended as best practice and what is possible. It is our opinion that NICE should be providing practical rather than aspirational advice and would recommend the advice is changed to reflect best practice using medicines available in the UK. This will avoid unnecessary confusion in prescribing practice.	Thank you for your comment. Following submission of the draft guideline it has been noted that costs of Chlortalidone and Indapamide differ significantly, with Chlortalidone being more expensive, restricting its availability. Chlortalidone has therefore been removed from the recommendation.
The University of Edinburgh		10	17-20	The practicality and cost impact of screening all patients under 40 for secondary causes of hypertension has not been addressed. This recommendation is not evidence based and is a consensus recommendation, based on the committee's expertise and experience. We urge the GDG to consider the necessity of this recommendation in light of the low rates of secondary hypertension in	Thank you for your comment. This recommendation originates from two recommendations in CG127 and evidence related to this recommendation has not been reviewed. The committee therefore amended the wording for clarity. This recommendation is worded as 'consider' to reflect the strength of the evidence and is therefore not suggesting that all people

				patients aged 18-40 years old and the profound impact on services if this advice was to be followed.	with hypertension aged under 40 should be screened for secondary causes of hypertension. The committee agreed that it was not appropriate to include criteria for this referral as that would be too prescriptive given the evidence base. The decision of whether or not to seek specialist evaluation should be based on clinical judgement.
The University of Edinburgh	Evidence review B	*22*	*25-27*	We note that in considering evidence that the committee decided to take into account randomised controlled trials of one year or greater in length. No justification was made for this decision. There have been several trials of greater than 6 months but less than one year which will not have been considered because of this decision, including our own trial (2) which measured change in blood pressure by daytime ambulatory blood pressure (ABP). The result was strongly positive for telemonitoring showing a reduction of 4.3 mmHg systolic compared with usual care (clinic measurement). A further trial we conducted in people with type 2 diabetes (3) showed a 3.1 mmHg difference in systolic BP over 9 months (this trial included some people whose BP was initially controlled). We have evidence from the first trial that the greatest impact on blood pressure of telemonitoring occurs largely in the first three months of the intervention (see figure 1). We therefore believe strongly that some justification is required for excluding trials with follow-up periods of 6-9 months.	Thank you for your comment. The committee agreed that it was important to only include evidence that reported outcomes at one year or greater after an intervention had been initiated. This is because differences in cardiovascular outcomes and mortality may be underestimated in shorter time periods. For example, a trial of 12 weeks is unlikely to find a difference in these events between different interventions, but the longer the follow up period, the more likely it is that a difference between interventions will be detected if it exists, and thus the true treatment effect can be measured. Included evidence with a shorter follow up period would have limited the committee's ability to interpret the evidence and form robust recommendations. Furthermore, blood pressure outcomes were not included when assessing the effectiveness of interventions because this would be an indirect 'surrogate' outcome that does not show the direct impact on a patient or their quality of life. In relation to the RCTs you have referenced, McKinstry 2013 was not included in the guideline because it had a less than minimum duration of follow up (minimum for inclusion was 12 months). Wild 2016 was not included because it related to monitoring of glycated haemoglobin levels in people with type 2 diabetes. Ettehad 2016 was not included in this guideline because the majority of participants had coronary heart disease and 15-40% had heart failure. This guideline does not cover blood pressure management in these populations. Please see Evidence review C for further details.

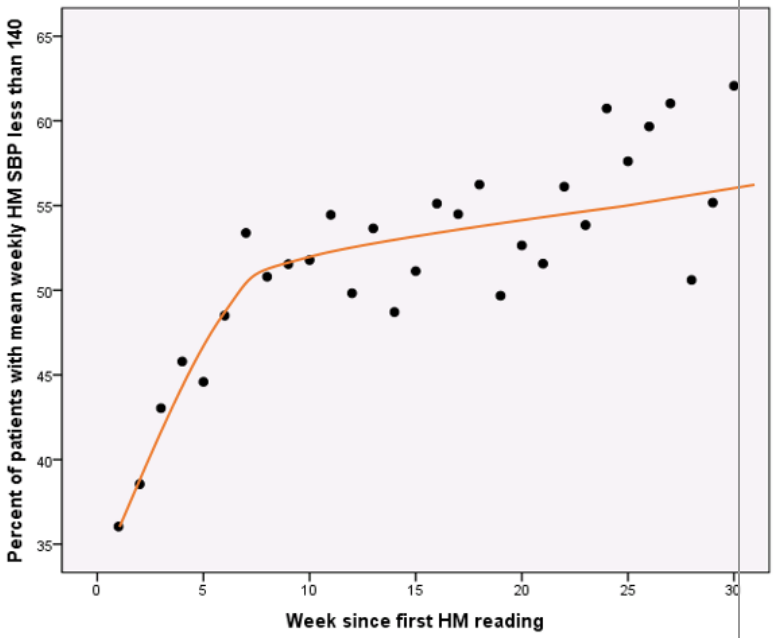

Figure 1. Proportion of people whose blood pressure is controlled with time. Data from McKinstry et al. 2013 (1)

Secondly, we note that despite the exclusion of high quality trials noted above, the metanalysis clearly shows a difference of -3.08 [-4.71, -1.44] mmHg systolic BP between home monitoring with telemonitoring and clinic monitoring groups. This has been dismissed by the authors of the review as clinically insignificant, but the basis for that judgement is not presented. The recent systematic review by Ettehad et al (4) suggests that such a reduction would reduce the incidence of stroke by 8% which in public health terms would not be insignificant.

2. McKinstry B, Hanley J, Wild S, Pagliari C, Paterson M, Lewis S, Sheikh A, Krishan A, Stoddart A, Padfield P. Telemonitoring-based service redesign for the management of difficult-to-control hypertension (HITS): a multi-centre

				randomised controlled trial. BMJ 2013;346:f3030 3. Wild SH, Hanley J, Lewis SC, McKnight JA, McCloughan LB, et al. (2016) Correction: Supported Telemonitoring and Glycemic Control in People with Type 2 Diabetes: The Telescot Diabetes Pragmatic Multicenter Randomized Controlled Trial. PLOS Medicine 13(10): e1002163. 4. Ettehad D, Emdin CA, Anderson SG, Callendar T, Emberson J, Chalmers J, Rodgers J, Rahimi K. Blood pressure lowering for prevention of cardiovascular disease and death: A systematic review and metanalysis. Lancet 2016;387:957-67	
The University of Edinburgh	Evidence review b	Page 9	Table 2	There is an error on table 2 McManus et Al did not include 527 people with diabetes.	Thank you for your comment. The patient characteristic details regarding the number with diabetes has been amended and reflects the number stated in the study.
The University of Edinburgh	Guideline	27-28	22-27, 1-2	*'The committee agreed that there was not enough evidence to strongly recommend HBPM for monitoring treatment in adults with hypertension. The evidence on monitoring was limited, with relatively small studies comparing different combinations HBPM (with or without telemonitoring and with or without pharmacist input), pharmacy monitoring and clinic monitoring. It suggested that people had improved blood pressure control with HBPM with telemonitoring, with or without pharmacy input, compared with clinic monitoring, and the greatest blood pressure reduction was achieved with pharmacist input. However the evidence was insufficient for the committee to make a recommendation'* In the patient level meta-analysis conducted by Tucker et al, (5) the authors made an a priori decision to explore telemonitoring interventions of different intensity and made a clear distinction between those studies which had structured support to manage the telemonitored readings and those that did not. They concluded that supported telemonitoring interventions were effective resulting in a 6.1 mmHg (-9.0, -3.2) reduction in systolic BP when monitoring was combined with such support. We propose that the guideline makes a similar distinction between supported telemonitoring and unsupported telemonitoring.	Thank you for your comment. We acknowledge your point and we did not downgrade for lack of patient blinding for objective outcomes, which includes blood pressure measurements. We only took lack of patient blinding in to account and downgraded for subjective outcomes such as quality of life. The Tucker review was also included in the guideline and distinctions across the intensity of telemonitoring were taken into account. Discussions related to this can be found in Evidence Review B.

				We note the review concludes that several trials were deemed low quality or very low quality because of risk of bias due to lack of patient blinding. However, lack of patient blinding will always be a problem in any technology intervention (6), indeed the perception of surveillance by clinicians is considered part of the reason of success of intervention. Investigators were blind when assessing outcomes some using ABP which further reduced the risk of researcher bias. We would contend, therefore that lack of patient blinding should not be considered a serious risk of bias. 5.Tucker KL, Sheppard JP, Stevens R, Bosworth HB, Bove A, Bray EP, et al. Self-monitoring of blood pressure in hypertension: A systematic review and individual patient data meta-analysis. PLoS Med. 2017 Sep 19;14(9):e1002389. 6. Hanley J, Ure J, Pagliari C, Sheikh A, McKinstry B. Experiences of patients and professionals participating in the HITS home blood pressure telemonitoring trial: a qualitative study. (2013). BMJ Open;3:e002671	
The University of Edinburgh		11	21-22	The advice to reduce clinic blood pressure to below 150/90 mmHg and maintain that level in adults with hypertension aged 80 and over is at odds with the recommendation to consider starting antihypertensive drug treatment for people aged over 80 with stage 1 hypertension.	Thank you for your comment. This recommendation has been amended. Treatment consideration is now recommended for those over the age of 80 only if their blood pressure is above 150/90mmHg.
NICE GP virtual forum	Guideline	General	General	Most of the replies we received welcomed changes in this guideline e.g. “generally this guidance is very thorough and well written and it is very useful to include the diabetic patients and not have to remember different targets.” The modifications for frailty were also welcomed. However, there were some concerns about complexity, potential confusion in some areas, and a diminution of the art of medicine and shared decision-making.	Thank you for your comment. We are pleased that you welcome the guidance and have responded to these concerns below.
NICE GP virtual forum	Guideline	General and 27	General and11-14	This guideline may increase diagnosis and follow-up (and health anxiety). We recommend that the potential need for additional resource is highlighted.	Thank you for your comment. It is recognised that treating more people will mean more consultations to monitor treatment in primary care, but there will also be savings from events avoided, and although likely to fall more on secondary care and other sectors such as social care, the cost effectiveness work looks at costs to the NHS as a whole. The committee were confident that treating people with stage 1 was shown to be clinically effective, and a cost

					effectiveness model showed that treating people even at lower than 10% risk was a cost effective use of resources. There are also other areas of the guideline that could result in savings, such as reinforcing that ABPM is recommended for confirming the diagnosis of hypertension. As although upfront investment will be required for those areas not already using ABPM: the increased accuracy of ABPM means the cost savings from accurately diagnosing people outweigh the upfront cost. Treating people with type 2 diabetes to the same target as those with hypertension and without type 2 diabetes (to systolic BP of 140 instead of 130) can also reduce the treatment needed in those people. The impact on practice is acknowledged in the rationale and impact sections of the short guideline. Additionally the NICE resource impact team are producing tools to identify the resource impact of the recommendation on treating people over 10% risk.
NICE GP virtual forum	Guideline	General	General	NNT's for treating hypertension could help discussions/ shared decision-making with patients.	Thank you for your comment. As the guideline has not reviewed every step of treatment (such as comparing step 1 treatments), the relative risk reductions are not available to calculate numbers needed to treat. This would also be quite patient specific because it would depend both on the patients' risk and the choice of treatment in question and is therefore quite complex to cover within one decision aid.
NICE GP virtual forum	Guideline	General	General	We would welcome recommendations about the concept of pre-hypertension and if it can be applied to UK?	Thank you for your comment. The scope of the guideline did not include pre-hypertension and so recommendations related to this cannot be made. If this is a key area for future guidance, this should be raised during the NICE surveillance and scoping processes of future guidelines. We would suggest you raise this at the next surveillance consultation.
NICE GP virtual forum	Guideline	General	General	We view the guideline group's concerns about the applicability of the 2015 SPRINT study to the UK population positively	Thank you for your comment.
NICE GP virtual forum	Guideline	General	General	There appears to be no evidence for the risk arising from raised diastolic pressures (and electronic machines may cause false +ve elevated readings)	Thank you for your comment. No evidence was identified to highlight the risks associated with high or low diastolic blood pressure.
NICE GP virtual forum	Guideline	5	14-27	Three BP readings in a 10 minute appointment, readings in both arms, and managing other recommendations in the guideline is aspirational!	Thank you for your comment. The guideline is intended to provide recommendations on best clinical practice within the constraints of NHS resources, such as short primary care

					appointments.
NICE GP virtual forum	Guideline	6	1-7	We welcome the recommendation that ABPM or HBPM are required for diagnosis – but implementation may be more difficult as machines are expensive and easily 'go missing'. Patients' own machines may not be calibrated.	Thank you for your comment. ABPM was shows to be the most cost effective compared to HBPM and CBPM in economic modelling updated with new accuracy data as part of the guideline. It was actually shown to be cost saving compared to the other interventions because the higher accuracy means it is better at identifying people that need treatment, therefore avoiding events, but also identifying those who do not need treatment and might be misdiagnosed with other methods. Although there will be initial upfront costs, as it is cost saving compared to other methods then the cost from events avoided and unnecessary treatment avoided outweighs the cost of the intervention itself. Although it is acknowledged that costs may fall on different sectors.
NICE GP virtual forum	Guideline	6	1-7	We would welcome clarification on how to diagnose hypertension in someone with atrial fibrillation: electronic BP monitors are not recommended in people in atrial fibrillation but aneroid monitors are generally unsuitable for home use.	Thank you for your comment. A research recommendation was included for measurement of blood pressure in people with atrial fibrillation as this had been prioritised to retain from the previous iteration of the guideline within the guideline update. Research into the best method for diagnosis for this group was not prioritised by the committee, and there was no evidence reviewed to inform a specific recommendation on this topic.
NICE GP virtual forum		6-7	29-3	We received a few comments on the treatment target levels: We are pleased to see that the recommendation is for >140/90 and >10% CVD score, rather than a target of 130/80, which could increase the risk of iatrogenic falls/ presyncope. One respondent suggested that 150/90 should be the cut-off point for treatment in uncomplicated hypertension	Thank you for your comment. On review of the recommendations the committee agreed that the blood pressure for initiating treatment in people aged over 80 should be consistent with the target in this group, and therefore this has been amended to 150/90 mmHg. .
NICE GP virtual forum	Guideline	9	3-4	NB although highlighted in grey this recommendation has been changed in 2019 - What levels of salt intake should we aim for?	Thank you for your comment. Lifestyle interventions (with the exception of relaxation therapies) were not prioritised for update within the guideline. As a result we cannot make the changes you suggest. The NICE hypertension pathway provides links to relevant public health advice related to this.
NICE GP virtual forum	Guideline	9	19-22	Lifestyle advice – also check herbal remedies including kelp as some can affect blood pressure	Thank you for your comment. The scope of this guideline did not include supplementary interventions and so we cannot comment on herbal remedies.
NICE GP virtual forum	Guideline	9	23-25	We received a few requests to define 'persistent' hypertension and/or length of time to persist with lifestyle advice alone.	Thank you for your comment. We have added this definition to the glossary.
NICE GP	Guideline	10	10	Please define 'younger adults'.	Thank you for your comment. Clarification has been added to

virtual forum					the relevant recommendations and text to explain how the term 'younger' should be interpreted.
NICE GP virtual forum	Guideline	10	10-13	Will Qrisk underestimate risk of cardiovascular disease in certain groups e.g. those with a family history of CVA/ IHD at a young age and adults of Afro-Caribbean origin at higher risk?	Thank you for your comment. Cardiovascular risk assessments can underestimate risk in some groups such as younger people. The cardiovascular risk assessment guideline (CG181) should be used when assessing cardiovascular risk and this outlines factors that should be considered when making assessments.
NICE GP virtual forum	Guideline	10	10	There was positive feedback that advice links lipids and blood pressure measurement once again	Thank you for your comment.
NICE GP virtual forum	Guideline	10	10-13	Implementation: In practice, cardiovascular risk is used to determine statin but not antihypertensive treatment. Most people with stage 1 hypertension are offered drug treatment – this may be in part due to the very many automatic reminders GPs are given! One respondent advised that since the primary prevention target for cholesterol had changed, most people with a 10-15% cardiovascular risk have declined statins and this is likely to be similarly received for hypertension. NB very many people with stage 1 hypertension over the age of 60 have a QRisk >10% without any specific risk factors.	Thank you for your comment. Risk was still used as a threshold in the previous hypertension guideline, and therefore perhaps there is some inappropriate treatment of people with stage 1 hypertension. A discussion on treatment should always involve patient's preferences and shared decision making, and will be different for different individuals. It is acknowledged that age alone is a large part of the risk calculators, and the minimum risk values for different age groups was used to inform the interpretation of the cost effectiveness model results.
NICE GP virtual forum	Guideline	10	17-20	Further clarity on when to consider secondary hypertension in the under-40s would be helpful	Thank you for your comment. The recommendations highlight that investigations for secondary causes of hypertension should be considered in people under the age of 40 with hypertension.
NICE GP virtual forum	Guideline	11	1-11	We would welcome guidance on those who have satisfactory ABPM but continue to have clinic readings >140/90 – e.g. when should you repeat ABPM?	Thank you for your comment. The population you describe could be white-coat hypertension, and the scope of this update did not include specific questions related to the identification, assessment of management of hypertension in this population. If this is a key area for future guidance, this should be raised during the NICE surveillance and scoping processes of future guidelines. We would suggest you raise this at the next surveillance consultation for it to be considered.
NICE GP virtual forum	Guideline	11	1-11	Will ABPM be properly measured at home? (see also section 1.1.4)	Thank you for your comment. Recommendations outline the appropriate protocol to measure blood pressure at home with an ABPM device.
NICE GP virtual forum	Guideline	11	25-26	This is a helpful addition as this is not an uncommon scenario especially in the elderly	Thank you for your comment.

NICE GP virtual forum	Guideline	13	1-5	Should pre-diabetes affect treatment and choice of drugs?	Thank you for your comment. Although people with pre-diabetes are included within this guideline, the scope of this update did not include specific questions related to the management of hypertension within this population specifically. We therefore cannot answer your question, as this isn't covered by this update.
NICE GP virtual forum	Guideline	13 -14	14-19 and 23- 3	Although a link Is provided to the hypertension in pregnancy guideline we feel that insufficient emphasis is given to this tricky area, which will include pre-conceptual advice. ACE inhibitors are first line for women under 55 but contra-indicated in pregnancy. Even if this is taken into account when agreeing treatment, many pregnancies are unplanned.	Thank you for your comment. This is beyond the scope of this guideline. When published the two guidelines will be linked via the pathway on the NICE website to help view both sets of recommendations alongside one another. This comment has also been passed to the Hypertension in Pregnancy team for information.
NICE GP virtual forum	Guideline	13-14 and related sections	23 - 8	We received a few comments asking for clarity regarding Afro Caribbean patients with Type 2 diabetes, stage 1 hypertension. The following outlines the source of confusion: "P13 line 23 – P14 line 8. This clearly states that Type 2 diabetes patients of ANY age or family origin should initially start on an ACE-I or ARB -the only group where this is not the case is women who are pregnant or planning pregnancy. On p32 lines 30-32 to p33 lines 1-8 you state that the previous guidance that initial treatment of Type 2 DM patients with ACE-I should be retained EXCEPT Afro Caribbean patients. I also see no reference to any change in this guidance in your Recommendations that have been changed or deleted - pages 39-43."	Thank you for your comment. We have reworded this section for clarity. The rationale for not carrying forward the recommendation for initial dual therapy in people who are of black Caribbean or African family origin has been described in full; there was insufficient evidence to support retaining this recommendation. We have amended the wording of the rationale to reflect that ACE- should be offered in this population.
NICE GP virtual forum	Guideline	16	7-12	We agree that confirmation of resistant hypertension is helpful at this stage.	Thank you for your comment. Assessing the presence of resistant hypertension is recommended at step 4 of treatment, since this is consistent with the definition of resistance hypertension (lack of response to 3 or more antihypertensive medications).
NICE GP virtual forum	Guideline	17	5-7	We suggest step 4 treatment = any other anti-hypertensive that works and is tolerated	Thank you for your comment. No new evidence was identified for step 4 treatment in the update of this review. Previous recommendations related to medication choice have therefore been retained, and recommendations related to other antihypertensive medications cannot be made due to the lack of evidence.
NICE GP virtual forum	Guideline	17	12	We found this helpful	Thank you for your comment.
NICE GP virtual forum	Guideline	20	12	We agree that blood pressure targets for people aged over 80 are a key area for research. It is a major worry for GPs. Research should cover reducing medication – there is significant pressure on GPs to reduce unnecessary or harmful prescribing. We would welcome	Thank you for your comment and positive feedback. Future research related to targets in this population should identify the effectiveness of treatment in this population.

				research outlining the speed of effect of anti-hypertensive treatment – if benefits are delayed then treatment might not be indicated in elderly people.	
NICE GP virtual forum	Guideline	32	1-28	Patients are now asking about the US practice of low dose combination therapy - more effective and fewer side effects. One respondent named the University of Toronto as their source.	Thank you for your comment. This evidence, comparing initial monotherapy to combination therapy, was reviewed and only three studies were identified comparing starting monotherapy with starting combination therapy. Most of the evidence related to adverse events rather than the critical cardiovascular outcomes required to determine clinical effectiveness. As a result there was insufficient evidence to make a recommendation. The recommendations do not state the form that more than one pill should take (i.e. single pill or separate pills). This will be up to the prescriber. We appreciate that prescribers are likely to prescribe based on low cost and at the current time single pills can be more expensive but cost effectiveness is based on current prices.
Royal College of Physicians	Guideline	General	General	We would like to endorse the response submitted by the Renal Association	Thank you for your comment.
Department of Health and Social Care	Guideline	General	General	I wish to confirm that the Department of Health and Social Care has no substantive comments to make, regarding this consultation.	Thank you for your comment.
Greater Manchester Cardiac Strategic Clinical Network	**Guideline**	**6**	**13**	**1.2.5** On p12 of the PHE guidance on NHS Health Checks, file:///D:/Downloads/NHS_healthcheck_best_practice_guidance_December_2017.pdf it specifically excludes people with hypertension from the NHS Health Check. The reason seems to be because these patients are covered by NICE guidelines and cardiovascular risk assessment should be done (1.2.5) as a part of usual clinical practice. However, by excluding these patients from the NHS Health Checks, the payment made for other people's cardiovascular risk assessment is not given for these patients. Payment is made as it is believed that it will increase the probability of patients having a cardiovascular risk assessment. It is	Thank you for your comment. Unfortunately it is beyond the remit of NICE to specify who should be included in the NHS health check.

				difficult to justify patients with hypertension, who are at higher cardiovascular risk than patients who are normotensive, being excluded from the NHS Health Check. It would be helpful if NICE made clear that their guidelines is not a justification for excluding patients with hypertension form the NHS Health Check.	
Greater Manchester Cardiac Strategic Clinical Network	**Guideline**	**7**	**1**	**1.2.8** The target of 140/90 is higher than is consistent with the evidence from SPRINT and Accord. Although it is only the outcome data from SPRINT that shows significant better outcomes with a lower target, ACCORD did show a non-significant reduction with confidence intervals that overlap the SPRINT results. The NICE evidence review considers this evidence to be low grade evidence as it regards the data as imprecise but it is difficult to see how this imprecision could have led to a false positive result. Indeed, the American, Canadian and European guidelines all consider that the evidence for lower targets, based on SPRINT and ACCORD, justifies a lower target than in the NICE draft guidelines. A major problem is the higher proportion of adverse events associated with more intensive treatment but adverse events are much fewer if half standard doses are used as shown in table 5 in https://www.ncbi.nlm.nih.gov/pmc/articles/PMC162261/ Although this review dates from 2003, there is no subsequent evidence to doubt this conclusion. A therapeutic strategy in line with the evidence, would be to have a target of 130/85 or below using up to four drugs, from different classes, at half standard dose. This would be expected to reduce blood pressure by an average of 20%. In SPRINT only a quarter of patients in the intensive group had four antihypertensive drugs or more and half doses give about 80% of the reduction in blood pressure compared to full doses. If the blood pressure target is not reached after the prescribing of four drugs, there should be a review of the patient rather than either increasing doses or number of drugs for fear of increasing the risk of adverse events. This review ought to consider: • adherence with possible blood sampling as, at least, partial non-adherence is a common reason for insufficient reduction in blood pressure;	Thank you for your comment. Evidence from the SPRINT trial was discussed in detail and a wide number of limitations of this evidence were identified. The committee consequently agreed that there was no evidence to warrant reducing systolic blood pressure targets to <120mmHg. Evidence to support a target of <130mmHg was also insufficient to warrant a recommendation, due to the relatively small sample size of the Cardio-Sis trial, lack of evidence for adverse events (in particularly acute kidney injury), and very serious imprecision for the outcomes. All outcomes comparing a target of 130mmHg to 140mmHg (all-cause mortality, stroke, MI, heart failure, dizziness and reduction in blood pressure) were downgraded for imprecision. The confidence intervals of the effect estimates were extremely wide, meaning that the certainty of the effect for each outcome was uncertain. There was therefore insufficient evidence to support a target as low as 130mmHg. See Evidence review D. Other areas you have mentioned (pre-hypertension treatment, lifestyle interventions, adherence and bariatric surgery) were not prioritised for update within the guideline (with the exception of relaxation therapies). As a result we cannot make the changes you suggest..

				• further review of lifestyle; • offer of dietary intervention as used in the DiRECT trial which led to both a reduction in blood pressure and the amount of antihypertensive medication taken; • discussion of bariatric surgery with those with a BMI >35 in line with NICE guidance for bariatric surgery for those with hypertension. We believe that eligibility for antihypertensive treatment should be lower than in this recommendation. The lower level given for ABPM assumes that the only problem with clinic blood pressure is white coat hypertension. If the higher threshold is going to be maintained, people with a blood pressure of 130/85 -139/89 should be checked for masked hypertension.	
Greater Manchester Cardiac Strategic Clinical Network	**Guideline**	**9**	**3**	**1.4.5** This states that sodium intake should be kept low and 1.4.6 does say that potassium supplements should not be given. However, it does not give guidance on salt substitutes. The only RCTs of salt substitutes seem to be in Asia eg https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4206289/ but they do give evidence that, for those who find it difficult to stop adding salt, salt substitutes are worthwhile. In combination with other evidence, NICE could give guidance that salt substitutes are an alternative for those finding it difficult to reduce their added salt.	Thank you for your comment. Salt substitutes has been removed from the guideline due to concerns related to the associated harm of these interventions, particularly in terms of possible interactions with antihypertensive medication and risks of hyperkalaemia. Following stakeholder comments regarding this we have reverted to the previous wording (retaining the option of substituting sodium salt) but have added a footnote to explain the contraindications of potassium alternatives.
Greater Manchester Cardiac Strategic Clinical Network	**Guideline**	**11**	**5**	**1.4.17** The guidelines state how clinicians should detect masked hypertension but not whom they should consider as having masked hypertension. The rest of the guidelines only consider the same issue. It would be helpful to give guidance about which patients with normal clinic blood pressure should be considered for APBM. From the study https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3668422/ it may be that masked hypertension is only considered in those with a clinic systolic pressure of at least 110 or a diastolic blood pressure of at least 75. This would still leave too many to undertake APBM. Possible additional criteria are history of cardiovascular disease, diabetes, renal disease or QRISK above an agreed risk level.	Thank you for your comment. The scope of this update did not include screening and consequently the changes you suggest cannot be made.

Greater Manchester Cardiac Strategic Clinical Network	**Guideline**	**11**	**19**	**1.4.19** See above comment 2.	See response above.
Greater Manchester Cardiac Strategic Clinical Network	**Guideline**	**13**	**24**	**1.4.30** Recommendations for treatment seems to assume starting with just one drug. This is contrast to the ESC/ESH guidelines that recommend *"normalizing the concept of initiating therapy with a two-drug combination for most patients with hypertension is likely to have a major effect on clinical practice and the speed and quality of BP control."* and *"favoured the use of combinations of two antihypertensive drugs in a single pill, because reducing the number of pills to be taken daily improves adherence and increases the rate of BP control"* The choice of whether to start with one drug, in a single-pill combination OR start with one drug, up-titrate and then start a second drug is a matter almost completely of adherence. Starting with one drug and then later adding a second drug will arrive at the same treatment as starting with two drugs for almost all patients except those with minimally raised blood pressure. Moreover, only using half standard dose with each drug achieves a very large proportion of the benefit compared to the full dose. https://www.bmj.com/content/338/bmj.b1665). Starting with two standard drugs at half dose in a single pill combination can improve compliance by reducing the number of types of tablets that the patient feels they are taking, minimising adverse events and giving patients the feeling that treatment is not working properly at the early stages. NICE seem to consider only RCT evidence which is problematical as volunteers in such trials tend to be motivated and the monitoring in trials is likely to increase adherence in all participants. This can probably only be overcome by using a Zelen design which is ethically dubious when offering two types of treatment. This means it is unlikely there will ever be sufficient good RCT evidence on adherence for deciding whether to start hypertensive treatment with monotherapy or dual therapy using	Thank you for your comment. The guideline looked for evidence comparing starting with monotherapy and dual therapy, and only three studies were identified and only one had cardiovascular event outcomes. The committee did not feel confident basing a recommendation on the limited evidence. Thank you for highlighting that drug prices have changes since the costing in the guideline was undertaken. These costs have now been updated. As the drug prices of the example drugs used for dual therapy costs have decreased in price relatively more than the example drug used for monotherapy costs: there are now bigger cost savings demonstrated from dual therapy. However, there still remains a lack of clinical evidence to support the effectiveness of dual therapy.

				a combination single pill. ESC/ESH consider all evidence eg retrospective cohort studies https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002584 which leads to the recommendations that differ from NICE. We hope NICE follow the ESC/ESH approach. One other matter is that the cost of dual therapy quoted by NICE seems high. The costs of the following combinations are (per 1,000 people per year): • losartan 50mg + HCTZ 12.5mg = £14,000 • losartan 100mg + HCTZ 25mg = £20,000 • valsartan 160mg + HCTZ 12.5mg = £23,000 • valsartan 160mg + HCTZ 25mg = £23,000 • perindopril 4mg + amlodipine 5mg = £60,000. For some of these combinations, higher doses will be much more expensive but these need not be recommended as the increase in blood pressure control will be small compared to offering a third type of drug.	
Greater Manchester Cardiac Strategic Clinical Network	**Guidelines**	**16**	**4**	**1.4.43** Hypertension is defined as resistant to treatment, by ESC/ESH, when the recommended treatment strategy fails to lower office SBP and DBP values to <140 mmHg and/or <90 mmHg, respectively, and the inadequate control of BP is confirmed by ABPM or HBPM in patients whose adherence to therapy has been confirmed. NICE seem to be using a similar definition and takes the use of three types of drugs as the point at which they define resistant hypertension. However, if a patient has a very high baseline BP (e.g. systolic BP = 180), the average patient would not meet the target in this definition even if they reduced the systolic blood pressure by 35 which appears to be a good response to three types of drugs at full dose. The consequence of NICE guidelines is an expectation that that greater care needs to be taken in proceeding from three drugs to four compared to proceeding from two drugs to three, even when there has been a good response to the first three drugs but the target has not been met because of the high baseline. The SPRINT pathway does not seem reflect the same concern which is why, presumably, almost a quarter of patients in the intensive	Thank you for your comment. The definition of resistant hypertension is the one that was used in previous versions of the guideline. The requirement for individuals to be taking 3 or more drugs is consistent with the 2017 ACC/AHA guideline (albeit they have a lower BP target). We agree that caution in the interpretation of resistant hypertension is required, and recommendation 1.4.46 indicates the use of clinical judgement in selecting when to seek expert advice. The guideline does suggest greater caution when proceeding from three drugs to four, as the fourth drug is likely to be either spironolactone (a drug without a UK marketing authorisation for hypertension), or an alternative which has inferior outcome data compared to those recommended in Steps 1-3. We agree that it is important to discuss medication adherence at each review and especially prior to discussions around drug escalation. Recommendation 1.4.29 links to NICE's guideline on medication adherence. Specific reference to adherence is made at the diagnosis of resistant hypertension for the reasons discussed in the paragraph above.

				group, were prescribed four types of antihypertensive drugs. This is an especially important issue if the use of half standard dose of drugs is advocated. The rationale for using half standard doses is there is the law of diminishing returns, in reducing blood pressure, as the dose increases whilst adverse events increase exponentially. As half standard doses achieve about 80% of the effect of the full dose, this policy could lead to more patients being defined as having resistant hypertension. Whilst patients who have a smaller than expected reduction in blood pressure but reach the target would not be considered to have resistant hypertension, patients who have an average or above average percentage reduction in blood pressure but do not reach the target should NOT be considered to have resistant hypertension. Even though the label of resistant hypertension is not reasonable before three drugs are prescribed, we agree with NICE that it is important to check every time a change in medication is considered, as to whether there has been the expected reduction in blood pressure from the drugs already taken. If not, it should be assumed that the patient is, at least, partially non-adherent until there is evidence to the contrary. This view should be shared with the patient in a non-judgemental way. "	
British Association for Nurses of Cardiovascular Care	Guideline	General	General	From BANCC's attendance at the initial scoping hypertension guidelines workshop on Friday 12th May 2017 it was noted that there is a lack of protocol across the United Kingdom on hypertension diagnosis, treatment offered and huge variations on patient management. It was acknowledged that this will vary across the Country due to variation in care and available resource, however these proposed guidelines provide a standardised template for health care practitioners to use as a baseline framework to commence treatment plans for these patients, which will aid standardisation of treatment for hypertensive patients. Recommendations for further research should perhaps include the link further investigation between obesity and hypertension due to huge increase of obesity in our adults and children population.	Thank you for your comment and for your positive feedback. We cannot make research recommendations related to obesity because the scope of this update did not include the impact of obesity on hypertension nor did it include exercise or weight loss interventions. Research recommendations are only made if the existing evidence is reviewed and is limited, or insufficient for recommendations.