

Putting NICE guidance into practice

Resource impact report: Hypertension in adults: diagnosis and management (update) (NG136)

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The guidance published in August 2019 was partially updated in March 2022 with 2 new recommendations made on blood pressure targets and on choosing antihypertensive drug treatment for people with cardiovascular disease. The resource impact of this partial update is not considered to be significant, and this report and template remain valid for those organisations that wish to implement the guidance published in August 2019.

Summary

This guideline on the diagnosis and management of hypertension in adults is an update of NICE guideline CG127 (published 2011) and will replace it.

The guideline covers the diagnosis and management of hypertension in adults. The recommendation most likely to have a substantial resource impact is:

- Discuss starting antihypertensive drug treatment, in addition to lifestyle advice, with adults aged under 80 with persistent stage 1 hypertension who have, among other criteria, an estimated 10-year risk of cardiovascular disease of 10% or more (recommendation 1.4.10).

The full recommendation is given in paragraph [3.1](#).

Financial impact

Based on 50% adherence to antihypertensive treatments, the estimated financial impact of implementing this guideline for England in the next 6 years is a cost of £0.9 million in 2019/20 rising to £4.6 million in 2024/25. These costs may be offset by savings of £0.2 million in 2019/20 rising to £1.5 million in 2024/25, giving a net impact of £0.8 million in 2019/20 rising to £3.1 million in 2024/25 as set out in table 1.

Table 1 Estimated budget impact of implementing the guideline

Recommendation	2019/20 (£000)	2020/21 (£000)	2021/22 (£000)	2022/23 (£000)	2023/24 (£000)	2024/25 (£000)
Costs						
Recommendation 1.4.10	920	1,839	2,759	3,678	4,598	4,598
Savings						
Recommendation 1.4.10	168	464	760	1,056	1,352	1,469
Net budget impact	752	1,375	1,999	2,622	3,246	3,129

1 Introduction

- 1.1 The guideline offers best practice advice on [diagnosing and managing hypertension in adults](#).
- 1.2 This guideline is an update of NICE guideline CG127 (published 2011) and will replace it. New evidence has been reviewed on diagnosis, monitoring, drug treatment and relaxation therapies for hypertension, and referral for suspected accelerated hypertension.
- 1.3 This report discusses the resource impact of implementing our guideline on diagnosis and management of hypertension in adults in England. It aims to help organisations plan for the financial implications of implementing this NICE guideline.
- 1.4 We encourage organisations to evaluate their own practices against the recommendations in the NICE guideline and assess costs and savings locally.
- 1.5 Services for people with hypertension are commissioned by CCGs. Providers are general practitioners and NHS hospital trusts.

2 Background

- 2.1 Hypertension is one of the most important preventable causes of premature morbidity and mortality in the UK and at least 27% of adults have high blood pressure ([Health Survey for England 2017](#)). In England, around 20% of adults (8.7 million people) have either stage 1 or 2 hypertension (see table 2).
- 2.2 Hypertension is a major risk factor for stroke (ischaemic and haemorrhagic), myocardial infarction, heart failure, chronic kidney disease, peripheral vascular disease, cognitive decline and premature death. Untreated hypertension is associated with a progressive rise in blood pressure, often culminating in a treatment resistant state due to associated vascular and renal damage.

- 2.3 Routine periodic screening for high blood pressure is now commonplace in the UK as part of National Service Frameworks for cardiovascular disease prevention. Around 8.1 million people with hypertension (16 years and over) are recorded with GP practices in England ([Quality and Outcomes Framework 2017-18](#)).

3 Recommendations with potential resource impact

3.1 Starting antihypertensive drug treatment

The guideline recommends:

Discuss starting antihypertensive drug treatment, in addition to lifestyle advice, with 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

Use clinical judgement for people with frailty or multimorbidity (see also [NICE's guideline on multimorbidity](#), recommendation 1.4.10).

Background

- 3.1.1 The recommendation lowers the current 10-year risk of CVD threshold for starting antihypertensive drug treatment from 20% or more to 10% or more.
- 3.1.2 The reduction will have a significant impact on practice and resources as people with a CVD risk of $\geq 10\%$ and $< 20\%$ will now be eligible for antihypertensive drugs.

- 3.1.3 Around 539,000 more adults are estimated to be eligible for treatment as a result of the change in the recommendation (see table 3).
- 3.1.4 Clinical experts suggest some people with stage 1 hypertension are already treated in line with the 10-year CVD risk of 10% or more as recommended in the [NICE guideline on cardiovascular disease: risk assessment and reduction, including lipid modification](#).

Population

- 3.1.5 Around 20% of adults (8.7 million people) are estimated to have treated or untreated stage 1 or 2 hypertension in England ([Health Survey for England, 2016](#)). Of these, around 5.3 million are treated and 3.4 million untreated (see table 2).
- 3.1.6 The population considered in the economic model analysis was adults with primary stage 1 hypertension, who do not have target organ damage, established CVD, renal disease or diabetes. More details of the economic model are available in the [guideline appendix](#).

Table 2: Adults under 80 years with treated or untreated stage 1 hypertension in England

Details	Number of adults
Adult with treated hypertension	5,298,619
Adults with untreated hypertension	3,449,294
Total with hypertension	8,747,913
Adults with treated stage 1 hypertension	4,359,291
Adults with untreated stage 1 hypertension	2,950,762
Total with stage 1 hypertension	7,310,053
For more details see the resource impact template : references worksheet details.	

3.1.7 Table 3 shows the number of adults with untreated stage 1 hypertension further analysed by their 10-year CVD risk. The target population is adults with a 10-year CVD risk of $\geq 10\%$ and $< 20\%$. This is the additional number of adults that are eligible for treatment in line with the new guideline recommendation.

Table 3: Adults under 80 years with untreated stage 1 hypertension by 10-year CVD risk in England

Details	Number of adults
Adults with a 10-year CVD risk of $< 10\%$	2,192,632
Adults with a 10-year CVD risk of $\geq 10\%$ and $< 20\%$	539,313
Adults with a 10-year CVD risk of $\geq 20\%$	218,817
Total (see table 2)	2,950,762

3.1.8 Table 4 shows the number of additional adults under 80 years with stage 1 hypertension and a 10-year CVD risk of $\geq 10\%$ and $< 20\%$ who would be eligible for antihypertensive drug treatment and those that would start and adhere to treatment.

Table 4: Additional adults <80 years with stage 1 hypertension in England likely to take up and adhere to treatment

Variables	%	Number
Adult population in England		43,752,473
Adults with stage 1 or 2 hypertension ^a	20%	8,747,913
Adults with untreated stage 1 hypertension (see table 2)	34%	2,950,762
Adults with untreated stage 1 hypertension and with a 10-year CVD risk score of $\geq 10\%$ and $< 20\%$ and who are eligible for antihypertensive drug treatments (See table 3)	18%	539,313
Number of adults taking up antihypertensive drug treatment ^b	50%	269,657
Adults having antihypertensive drug treatment who adhere to treatment ^b	50%	134,829
<p>a. Health Survey for England 2017. For more details see the resource impact template: references worksheet details.</p> <p>b. Based on clinical expert opinion. Please see para 3.1.11 for further details.</p>		

Costs

3.1.9 Table 5 sets out the costs of antihypertensive drug treatments for adults with stage 1 hypertension. The costs exclude GP monitoring because while the economic modelling included this cost, it is unlikely to lead to additional expenditure such as GPs or practice nurses being employed.

3.1.10 There is an upfront cost for CCGs for antihypertensive drug treatments. However, the benefit of antihypertensive treatment is that it reduces the risk of having a cardiovascular event. Therefore, treatment may help prevent CVD related events such as myocardial infarction, transient ischaemic attack, stroke, heart failure and angina. The savings are included in table 5.

Table 5 Current and future (steady state) costs of antihypertensives

Variables	Number	Unit cost per annum £	Total cost per annum for England £	Cost per 100,000 population for England £
Current practice				
Current treatments (based on a 10-year CVD risk of 20% or more)	2,179,646	34	74,333,915	133,652
Total			74,333,910	133,652
Future practice				
Current treatments (based on a 10-year CVD risk of 20% or more)	2,179,646	34	74,333,915	133,652
New people with stage 1 hypertension (CVD risk score of ≥10% and <20%)	134,828	34	4,598,163	8,287
Total			78,932,078	141,918
Net additional costs			4,598,163	8,267
Savings: NHS events avoided				
Stroke	40	14,006	560,234	1,021
Transient Ischaemic Attack	16	1,746	27,936	51
Myocardial infarction	30	4,641	139,230	248
Stable angina	53	908	48,124	86
Unstable angina	15	2,336	35,040	62
Heart failure	11	2,719	29,909	53
NHS post event savings				
Stroke	40	1,005	40,211	73
Transient Ischaemic Attack	16	587	9,392	17
Myocardial infarction	30	768	23,040	41
Stable angina	53	273	14,469	26
Unstable angina	15	273	4,095	7
Heart failure	11	706	7,766	14
Social care savings:				
Stroke events avoided	40	9,070	362,806	661
Stroke post event costs avoided	40	4,178	167,109	305
Total savings			1,469,361	2,666
Net budget impact			3,128,802	5,621

3.1.11 Available evidence suggests different rates of adherence to treatment are ranging from 34% to 78% (Fitz-Simon et al, 2005), 58.4% (Gupta et al, 2017,) and 35.8% (Chapman et al, 2005). In table 4 below, adherence rates of 30% and 70% respectively have been used to show the change in the resource impact as a result of non-adherence to treatment.

Table 6 Resource impact at year 6 with varying non-adherence rates to treatment

Variables	Total cost per annum £	Total cost per annum £	Total cost per annum £
<u>Current practice</u>	30% adherence	50% adherence (baseline assumption)	70% adherence
Current treatments (CVD risk score of ≥10% and <20%)	44,600,363	74,333,915	104,067,468
Total			
<u>Future practice</u>			
Current treatments (CVD risk score of ≥10% and <20%)	44,600,363	74,333,915	104,067,468
New people with stage 1 hypertension (CVD risk score of ≥10% and <20%)	2,758,884	4,598,163	6,437,408
Total	47,359,247	78,932,078	110,504,876
Net additional costs	2,758,884	4,598,163	6,437,408
<u>Savings</u>			
Stroke	678,216	1,130,360	1,610,763
Transient Ischaemic Attack	23,330	37,328	53,659
Myocardial infarction	97,362	162,270	227,178
Stable angina	37,792	62,593	87,394
Unstable angina	23,481	39,135	54,789
Heart Failure	20,550	37,675	51,375
Total savings	880,731	1,469,361	2,085,158
Net budget impact	1,878,153	3,128,802	4,352,250

Potential savings

- 3.1.12 There is an upfront cost for CCGs for antihypertensive drug treatments. However, the benefit of antihypertensive treatment is that it reduces the risk of having a cardiovascular event. Therefore, treatment may help prevent CVD related events such as heart attack, transient ischaemic attack, stroke, heart failure and angina.
- 3.1.13 Preventing CVD events is expected to deliver cash savings to CCGs and local authorities from the associated treatment costs (reduced admissions and rehabilitation), and social care costs.
- 3.1.14 The savings were calculated based on events avoided per 1000 population cohort (see [resource impact template](#): Unit costs and events avoided worksheet for further information) and are estimated to be £1.5 million each year from 2024/2025.
- 3.1.15 There may also be other benefits to taking antihypertensive treatment such as reduced renal impairment from progressive hypertensive nephropathy and reduced retinopathy, arterial aneurysms and dissections, which are not modelled.

Assumptions made

- 3.1.16 The resource impact focuses on the cost of the additional adults with stage 1 hypertension with a 10-year CVD risk score of $\geq 10\%$ and $< 20\%$ (539,300) who are eligible and who choose antihypertensive drug treatment.
- 3.1.17 The prevalence of stage 1 hypertension in adults under 80 years was obtained from the [Health Survey for England 2017](#). See the [resource impact template](#): references worksheet for more details.
- 3.1.18 Consultation comments highlighted that Health Survey for England data use blood pressure measured in clinic on a single occasion and so may overestimate the prevalence of stage 1 hypertension. Therefore, the untreated population was adjusted accordingly (see

[resource impact template](#): references worksheet for more details, Table 4: Summary (adults aged 18-79 years).

- 3.1.19 The number of people with stage 1 hypertension with a 10-year CVD risk of $\geq 10\%$ and $< 20\%$ was based on Collins et al, 2009.
- 3.1.20 Currently, around 4.4 million people (see table 2) with stage 1 hypertension are already taking antihypertensive drug treatment ([Health Survey for England 2017](#)). Of these, 50% (around 2.2 million) are assumed to adhere to treatments. See the [resource impact template](#): references_worksheet for more details. It is assumed these people will continue with treatment as they are not affected by the recommendation changes.
- 3.1.21 For future treatments, only people affected by the change in the recommendation, that is, with stage 1 hypertension and a 10-year CVD risk of $\geq 10\%$ and $< 20\%$ would represent the additional treatment costs.
- 3.1.22 Clinical experts suggest that following the [NICE guideline on cardiovascular disease: risk assessment and reduction, including lipid modification](#), some people with stage 1 hypertension are already treated in line with the 10-year CVD risk of 10% or more. This does not affect the population estimates of 539,300 eligible for treatment but may influence potential future uptake of drug treatments.
- 3.1.23 The unit cost of events avoided was based on the economic modelling evidence supporting the guideline recommendation. See table 4: [resource impact template](#): Unit cost and events avoided worksheet.
- 3.1.24 The unit cost of antihypertensive drugs is based on the data obtained from primary care prescription cost analysis for 2018. The data specifically covered in chapter 2 section 5 of the [British](#)

[National Formulary](#). The cost does not include dispensing costs as this is not a cost to CCGs.

3.1.25 Savings are modelled based on the cost of the events avoided, and the post event costs, split between NHS, and social care for stroke only. However, for myocardial infarction, transient ischaemic attack, stable, and unstable angina, and heart failure, the costs included are NHS only as no robust data for social care savings are available.

3.2 **Other recommendations with a potential resource impact**

Background

3.2.1 If clinic blood pressure is between 140/90 mmHg and 180/120 mmHg, offer ambulatory blood pressure monitoring (ABPM) to confirm the diagnosis of hypertension (recommendation 1.2.3). The committee noted that there is still variation in practice in the implementation of the 2011 recommendations on ABPM. Where ABPM has not been used at all training may be needed but this could be internal, or a one-off external training event may be needed.

ABPM is the most cost-effective method of diagnosis of hypertension and it is anticipated that the long-term benefits of accurate diagnosis and treatment (such as avoiding over diagnosis and unnecessary treatment) will outweigh any initial costs.

3.2.2 Refer people for specialist assessment, carried out on the same day, if they have accelerated hypertension, if they have a clinic blood pressure of 180/120 mmHg and higher (recommendation 1.5.2). This would reduce A&E associated costs because currently many people are being referred to A&E with high blood pressure but without urgent features as defined in the updated guideline.

However, the overall resource impact associated with this is unlikely to be significant.

4 Implications for commissioners

- 4.1 The guideline is anticipated to change prescribing for people with hypertension by offering antihypertensive drugs to people with a 10-year risk of CVD of at least 10% or more compared to the old guideline threshold of 20% or more.
- 4.2 Commissioners may also need to review their hypertension commissioning policies in order to comply with the updated guideline on the diagnosis and management of hypertension in adults. Demand and capacity planning may be needed to model any changes to monitoring the potential increase in the number of people having drug treatment.
- 4.3 Hypertension falls under programme budgeting category 10X (Problems of circulation).

References

1. Nicola Fitz-Simon, Kathleen Bennett, John Feely. A review of studies of adherence with antihypertensive drugs using prescription databases. *Therapeutics and Clinical Risk Management* 2005;1(2) 93–106.
2. Pankaj Gupta, Prashanth Patel, Branislav Štrauch, et al. [Risk Factors for Nonadherence to Antihypertensive Treatment](#). *Hypertension*. 2017; 69:1113–1120
3. Richard H. Chapman, Joshua S. Benner et al. Predictors of Adherence with Antihypertensive and Lipid-Lowering Therapy. *Arch Intern Med*. 2005; 165:1147-1152.
4. Gary S Collins, Douglas G Altman. An independent external validation and evaluation of QRISK cardiovascular risk prediction: a prospective open cohort study. *BMJ* 2009;339: b2584 doi:10.1136/bmj.b2584.

About this resource impact report

This resource impact report accompanies the [NICE guideline on hypertension in adults: diagnosis and management](#). See [terms and conditions](#) on the NICE website.

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