

Hypertension

Implementation advice

Implementing the ambulatory blood
pressure monitoring recommendations

2nd Edition March 2013

This implementation advice accompanies the clinical guideline: 'Hypertension' (available online at: www.nice.org.uk/guidance/CG127).

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Updated March 2013 to include details of the NICE quality standard for hypertension. The clinical guideline has not changed

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This implementation advice is aimed at the person responsible for supporting the implementation of NICE guidance in the organisation (NICE manager) and the clinical lead for the topic.

This is a support tool containing suggested steps towards implementing our guidance informed by your local baseline assessment.

It is not NICE guidance. NICE recommendations are shown in grey boxes throughout this tool.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in the guidance or this document should be interpreted in a way which would be inconsistent with compliance with those duties.

If the guideline is not relevant to your organisation remember to record it.

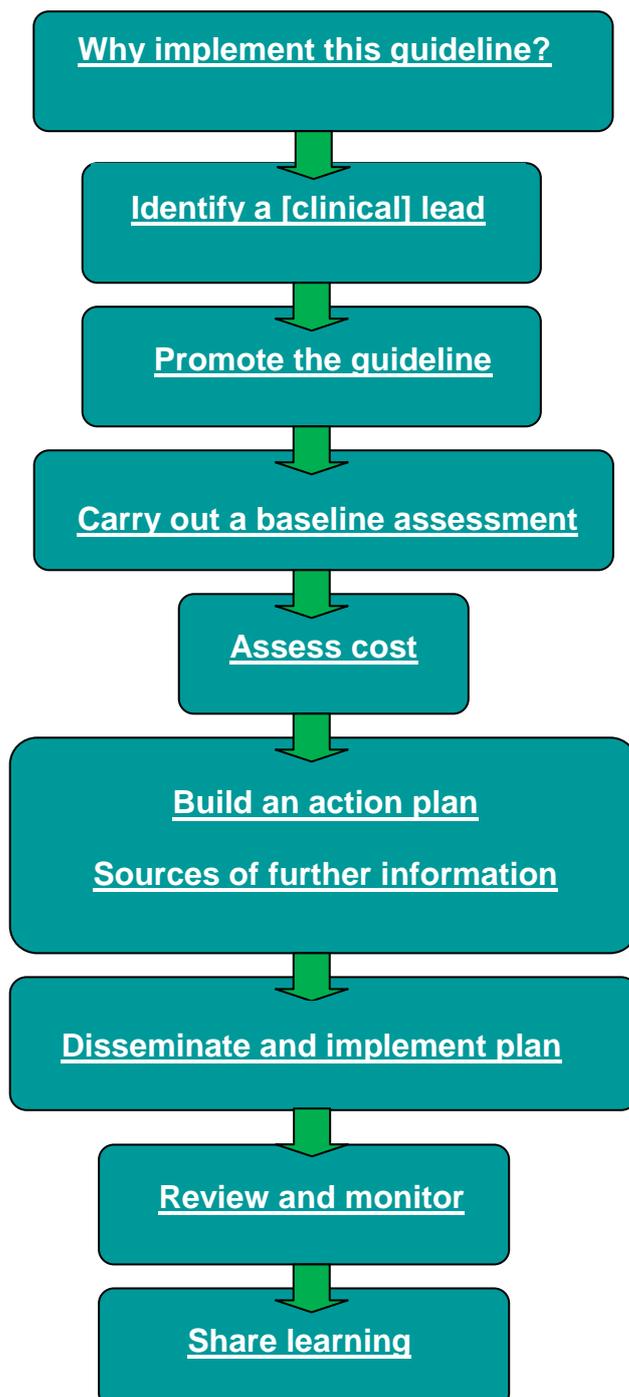
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Contents

Steps to implementing NICE clinical guidelines	4
Why implement this guideline?	5
Identify a clinical lead.....	7
Promote the guideline	8
Carry out a baseline assessment.....	9
Assess cost.....	10
Build an action plan.....	12
Disseminate and implement the plan	29
Review and monitor	30
Share learning.....	32
Sources of further information.....	32
Acknowledgements.....	33
What do you think?	33

Steps to implementing NICE clinical guidelines

The algorithm below outlines the process for implementing NICE clinical guidelines. When using this advice online, hold down the 'Ctrl' button and click on the hyperlinks in the boxes to go directly to the advice you need. The advice has been developed in consultation with a range of experts from patient and professional groups. A list of these contributors is available [here](#).



Why implement this guideline?

High blood pressure (hypertension) is one of the most important preventable causes of premature morbidity and mortality in the UK. It is a major risk factor for ischaemic and haemorrhagic stroke, myocardial infarction, heart failure, chronic kidney disease, cognitive decline and premature death. Hypertension is remarkably common in the UK, affecting at least one quarter of adults and more than half of people aged over 60. Its clinical management is one of the most common interventions in primary care, accounting for approximately £1 billion in drug costs alone in 2006.

Accurate diagnosis is essential to ensure people are offered the most appropriate management. A misdiagnosis of hypertension can result in antihypertensive medication being prescribed unnecessarily; conversely, untreated hypertension can lead to a progressive rise in blood pressure and an increasing risk of further vascular and renal damage.

NICE recommends ambulatory blood pressure monitoring (ABPM) to confirm a diagnosis of hypertension and in the monitoring of response to treatment. These recommendations may be a significant change to practice in some areas and are likely to increase demand for ABPM¹.

Given the importance of ABPM in diagnosis and monitoring and the potential barriers to implementing these recommendations, this implementation advice focuses on suggested actions for increasing capacity for ABPM.

The relevant recommendations and associated definitions are shown on the next page.

[Back to algorithm](#)

¹ The guideline also identifies home blood pressure monitoring (HBPM) as a potential tool for diagnosis and it is anticipated that demand for this service may also increase. This document focuses on ABPM because it should be the first choice.

Relevant recommendations

Diagnosis

- If the clinic blood pressure is 140/90 mmHg or higher, offer ambulatory blood pressure monitoring (ABPM) to confirm the diagnosis of hypertension. **[new 2011] [1.2.3]**

Monitoring treatment and blood pressure targets

- For people identified as having a 'white-coat effect'², consider ABPM or HBPM as an adjunct to clinic blood pressure measurements to monitor the response to antihypertensive treatment with lifestyle modification or drugs. **[new 2011] [1.5.7]**
- When using ABPM or HBPM to monitor the response to treatment (for example, in people identified as having a 'white-coat effect'³ and people who choose to monitor their blood pressure at home), aim for a target average blood pressure during the person's usual waking hours of:
 - below 135/85 mmHg for people aged under 80 years
 - below 145/85 mmHg for people aged 80 years and over. **[new 2011] [1.5.8]**

²⁻³ A discrepancy of more than 20/10 mmHg between clinic and average daytime ABPM or average HBPM blood pressure measurements at the time of diagnosis.

NICE quality standard

In March 2013 NICE published the [quality standard for hypertension](#). This quality standard covers the management of primary hypertension in adults, including diagnosis and investigations, treatment to reduce risk of cardiovascular disease, monitoring of treatment efficacy, and specialist referral. The quality standard defines clinical best practice within this topic area. It provides specific, concise quality statements, measures and audience descriptors to provide the public, health and social care professionals, commissioners and service providers with definitions of high-quality care. The quality standard contains six quality statements. The following quality statement is particularly relevant to the use of ABPM:

- Quality statement 1: People with suspected hypertension are offered ambulatory blood pressure monitoring (ABPM) to confirm a diagnosis of hypertension.

Definitions

In the guideline the following definitions are used.

- **Stage 1 hypertension** Clinic blood pressure is 140/90 mmHg or higher **and** subsequent ABPM daytime average or HBPM average blood pressure is 135/85 mmHg or higher.
- **Stage 2 hypertension** Clinic blood pressure is 160/100 mmHg or higher **and** subsequent ABPM daytime average or HBPM average blood pressure is 150/95 mmHg or higher.
- **Severe hypertension** Clinic systolic blood pressure is 180 mmHg or higher **or** clinic diastolic blood pressure is 110 mmHg or higher.

Identify a clinical lead

If you are responsible for supporting the implementation of NICE guidance on a day-to-day basis (NICE lead) you should identify a clinical lead to begin putting the guideline into practice. The focus of this implementation advice is the recommendations for the use of ABPM in diagnosis and monitoring of hypertension. The clinical lead for implementing the ABPM recommendations may be the clinical lead for implementing the guidance or may be someone who has been given responsibility for this task but is accountable to the clinical lead responsible for putting the guideline into practice.

It is important that the clinical lead for implementing the ABPM recommendations is chosen on the basis of local circumstances and the [model](#) adopted for implementation. For example, if implementation influences just one GP practice it would be appropriate for the clinical lead to be based in that practice. However, if there is a plan to integrate ABPM services across a number of organisations, the most appropriate clinical lead would be part of a network or similar group. If implementation across a number of organisations is selected it would be advisable to have local clinical leads in each organisation.

[Back to algorithm](#)

Promote the guideline

The NICE lead should ensure that all relevant groups are aware of the guideline and the pathway and how to access these.

[The guideline](#) is available in a variety of formats including a quick reference guide and a version written for patients are

The recommendations from this guideline have been incorporated into a [Hypertension NICE pathway](#). NICE pathways are an online tool which provides quick and easy access, topic by topic, to the range of guidance from NICE, including quality standards, technology appraisals, clinical and public health guidance and NICE implementation tools.

The [slide set](#) provided by NICE should help you raise awareness of the guideline.

[Back to algorithm](#)

Carry out a baseline assessment

Using the published guideline, the clinical leads should work with the relevant specialist group to compare current activity with the recommendations. This information could be gathered through informal discussions or by using a more formal questionnaire. This baseline assessment will help identify exactly what your organisation and others are doing now and what needs to change in light of the guideline. Consider, for example, how the recommendations will affect:

- demand for ABPM
- changes to the workload of staff
- staff requirements for training
- requirements for information and support for patients
- availability of validated devices.

The NICE [baseline assessment tool](#), [audit support](#) and [electronic audit tool](#) may help this process.

Who should be involved?

Once the baseline assessment has identified what needs to change, the next stage is to identify which groups will need to alter their current way of working and to consider the best way to engage them in the development and implementation of the action plan. In most cases there may be existing groups or networks who could fulfil this function. These groups are likely to include:

- GPs
- practice nurses
- hypertension specialists
- hypertension nurse specialists
- cardiology departments in secondary care⁴
- practice managers
- commissioners.

[Back to algorithm](#)

⁴ Only required for certain [models](#) of service delivery.

Assess cost

The NICE lead should work with the clinical lead to assess how much it will cost to implement the guideline using the [costing template](#) provided by NICE. It might be possible to make some of the required changes using existing resources, and there may be potential for savings to be achieved, or capacity freed up to be used for other things.

Click here to view NICE's [costing report](#) which focuses on the costs and savings associated with implementing the ABPM recommendation.

Following extensive cost-effectiveness analysis, the Guideline Development Group (GDG) found that ABPM was the most cost-effective option (compared with current practice⁵) for the diagnosis of hypertension across a range of age groups in both men and women. The GDG therefore concluded that the use of ABPM for the routine diagnosis of hypertension, using a daytime average threshold of $\geq 135/85$ mmHg, in people who have previously been identified as potentially hypertensive at a threshold of $\geq 140/90$ mmHg using clinic blood pressure measurement (CBPM), would be both cost effective and, in almost all cases, cost saving for the NHS, as well as improving the accuracy of diagnosis.

It is acknowledged that ABPM devices are considerably more expensive than desktop blood pressure monitors. There will therefore be an initial outlay for the procurement of validated ABPM devices. However, it is anticipated these costs will be offset by savings achieved by:

- more accurate diagnosis resulting in
 - fewer people being inaccurately diagnosed with hypertension and therefore reduced medication costs
 - better health outcomes
- a potential reduction in the number and type of healthcare appointments needed to confirm a diagnosis of hypertension.

⁵ Using a series of clinic blood pressure readings to confirm the diagnosis of hypertension.

The NICE [costing template](#) can be modified to reflect local circumstances. The template will help you calculate the local costs and savings resulting from implementing the ABPM recommendations.

Please note, this cost data was correct at August 2011. This has not been updated for this 2nd edition

[Back to algorithm](#)

Build an action plan

Introduction

ABPM involves a cuff and bladder connected to electronic sensors in the device, which detect changes in cuff pressure and allow blood pressure to be measured oscillometrically. The cuff is inflated by a battery-powered compressor and sensors within the cuff detect changes in pressure oscillations during cuff deflation. Systolic and diastolic pressure readings are deduced from the shape of these oscillometric pressure changes using an algorithm built into the measuring device. Developed as a research tool in the 1960s, these devices have considerably reduced in size and now can be described properly as ambulatory. Thus a person's blood pressure can be automatically measured at repeated intervals, with most devices providing an average reading (O'Brien et al., 2001⁶).

An extensive review of the evidence by the GDG has identified that multiple blood pressure measurements by ABPM away from the clinic setting are the best predictors of blood pressure-related clinical outcomes. The GDG concluded that ABPM appeared to provide the best method of confirming a diagnosis of hypertension. It stated that ABPM would not only be a more clinically effective means of diagnosis, but also more cost effective. These findings are underpinned by the following rationale.

Evidence shows that there can be marked discrepancies between clinic blood pressure measurement and ambulatory blood pressure averages. These discrepancies may be caused by 'white-coat' hypertension (a discrepancy of more than 20/10 mmHg between clinic and average daytime ABPM or average HBPM blood pressure measurements at the time of diagnosis) or 'masked' hypertension (when clinic blood pressure is normal but ABPM and/or HBPM measurements are elevated). It is likely that this is because ABPM provides more measurements and more representative data on a person's usual blood pressure away from the clinic setting. The GDG identified that

⁶ O'Brien E, Beevers G, Lip G (2001) ABC of hypertension: blood pressure measurement. Part III. *BMJ* 322(7294): 1110–14

these findings suggest that the current practice of using a series of CBPMs alone for the diagnosis of hypertension can lead to inaccurate diagnosis. The benefits of ABPM to the NHS have been detailed in the [cost section](#). There are also benefits to people with suspected hypertension and the NHS. These include quicker diagnosis, avoidance of unnecessary medication and side effects, and reassurance of an accurate diagnosis.

If your organisation is not implementing the ABPM recommendations, the NICE lead (the person who is responsible for supporting the implementation of NICE guidance on a day-to-day basis) and the clinical lead should work together to develop an action plan. The details of your action plan will depend on the results of your baseline assessment and your local circumstances.

Key areas to address

In consultation with a range of [experts](#) we have identified three key areas to address for the successful implementation of this guideline:

- [Suggested actions for providers of ABPM services](#):
 - [staff training and clinical use of the device](#)
 - [choice of device](#)
 - [reporting mechanisms](#).
- [Suggested actions for commissioners of ABPM services](#):
 - [needs and costs assessment](#)
 - [Referral arrangements](#)
 - [quality assurance](#).
- [Possible models of delivery](#)⁷:
 - [Model 1: network of GP practices](#)
 - [Model 2: individual GP practice](#)
 - [Model 3: external providers](#)
 - [Model 4: secondary care provision](#).

⁷ These models are not shown in any particular order.

Suggested actions for providers of ABPM services

Staff training and clinical use of the device

Why this is important

It is important to ensure that clinicians responsible for delivering an ABPM service are fully trained in preparing the patient, attaching the device and interpreting the results. This will ensure accuracy in the results and subsequent diagnosis.

These actions are most relevant to those offering an ABPM service; however, it is important that those who commission the service satisfy themselves that the provider is offering a high-quality service that meets the NICE guideline.

The relevant recommendations are shown on the next page.

Relevant recommendations

- Healthcare professionals taking blood pressure measurements need adequate initial training and periodic review of their performance. **[2004] [1.1.1]**
- Because automated devices may not measure blood pressure accurately if there is pulse irregularity (for example, due to atrial fibrillation), palpate the radial or brachial pulse before measuring blood pressure. If pulse irregularity is present, measure blood pressure manually using direct auscultation over the brachial artery. **[new 2011] [1.1.2]**
- Healthcare providers must ensure that devices for measuring blood pressure are properly validated, maintained and regularly recalibrated according to manufacturers' instructions. **[2004] [1.1.3]**
- When measuring blood pressure in the clinic or in the home⁸, standardise the environment and provide a relaxed, temperate setting, with the person quiet and seated, and their arm outstretched and supported. **[new 2011] [1.1.4]**
- If using an automated blood pressure monitoring device, ensure that the device is validated⁹ and an appropriate cuff size for the person's arm is used. **[new 2011] [1.1.5]**
- When using ABPM to confirm a diagnosis of hypertension, ensure that at least two measurements per hour are taken during the person's usual waking hours (for example, between 08:00 and 22:00).
Use the average value of at least 14 measurements taken during the person's usual waking hours to confirm a diagnosis of hypertension. **[new 2011] [1.2.9]**

⁸ Please note the recommendation has been reproduced in full because ABPM measures blood pressure away from the clinic and it is important that people with ABPM are aware of good blood pressure measurement practice. This document does not address home blood pressure monitoring practice.

⁹ A list of validated blood pressure monitoring devices is available on the British Hypertension Society's website (see www.bhsoc.org). The British Hypertension Society is an independent reviewer of published work. This does not imply any endorsement by NICE.

Suggested actions: clinicians offering an ABPM service

- It is estimated that fitting the ABPM device takes 15–30 minutes. Ensure this time is allocated in fitting appointments.
- People using ABPM need some understanding of how the device works and instruction about manual deflation, missed readings, arm position, machine location and possible side effects such as bruising if they are having anticoagulation.
- Consider developing written information for people using ABPM that addresses the issues identified in the bullet point above, and providing a contact for them to call.
- Ensure that health and safety issues, for example whether the person needs to drive or operate heavy equipment while fitted with the ABPM device, are considered and addressed before fitting the device.
- Two measurements per hour should be taken during the person's normal waking hours, for example between 8 am and 10 pm. A minimum of 14 readings should be used to derive the daytime average blood pressure.
- Consideration would also need to be given to shift and night workers whose 'normal waking hours' will differ.
- Ambulatory monitors use an oscillometric technique; therefore be alert for people for whom ABPM is not suitable. This includes people with atrial fibrillation or other significant pulse irregularity.
- Ensure an appropriately sized cuff is used, as with non-ambulatory monitoring, and if one arm gives a higher reading at baseline then this arm should be used for subsequent measurements.
- Consider asking people to make diary records of events that are known to affect blood pressure so that readings can be related to them, for example, periods of sleep. Sleeping times can be recorded or fixed times may be predefined, including preparing for sleep (for example, 9 pm to midnight) and waking up (for example, 6 am to 9 am).

Suggested actions: those managing ABPM services

- Allow time in the work schedules for training of staff and regular update of skills.
- Establish effective governance systems to ensure that the service delivered continues to operate in line with the NICE clinical guideline.
- Be aware of infection control issues associated with devices that are in use. Ensure that local infection control requirements are met.
- If your organisation commissions a cleaning service to provide laundry, investigate whether they are also able to clean blood pressure cuffs to the required standard. If your organisation does not require cleaning of laundry or other products to infection control standards, investigate whether there is a suitable service that would clean the cuffs.
- NICE recommend that two measurements per hour should be taken during the person normal waking hours. Timings when the devices are fitted can be arranged locally to allow an efficient service and one which meets the needs of those being fitted with the device. After considering patient throughput and flows you may identify that fitting monitors throughout the day is an efficient use of time and resources. This may mean that some people may start their monitoring in the afternoon. For these people continuation of monitoring for 24 hours will be needed to capture the person's 'normal waking hours' across a spread of 24 hours. If this approach is adopted it is important to consider that there may be an increased number of people who are not willing to tolerate the device if it has to be worn overnight. This may in turn reduce the efficiency of this approach.
- Consider the most cost-effective way to use staff time. For example, can staff of a lower grade be responsible for attaching the devices and those of a higher grade responsible for interpreting the results and reporting back? (This will be discussed in further detail in [Possible models of delivering ABPM.](#))

Choice of device

Why this is important

It is acknowledged that the choice of device may be related to procurement arrangements, which are discussed in the procurement sections of [Possible models of delivering ABPM](#). This section will discuss overarching principles for selecting and maintaining a device for use in an ABPM service. It is essential that the device is validated and properly maintained to ensure trust in the results.

These actions are most relevant to those offering an ABPM service. However, it is important that those who commission the service satisfy themselves that the provider is offering a high-quality service that meets the NICE guideline.

Relevant recommendations

- Healthcare providers must ensure that devices for measuring blood pressure are properly validated, maintained and regularly recalibrated according to manufacturers' instructions. **[2004] [1.1.3]**
- If using an automated blood pressure monitoring device, ensure that the device is validated¹⁰ and an appropriate cuff size for the person's arm is used. **[new 2011] [1.1.5]**

¹⁰ A list of validated blood pressure monitoring devices is available on the British Hypertension Society's website (see www.bhsoc.org). The British Hypertension Society is an independent reviewer of published work. This does not imply any endorsement by NICE.

Suggested actions: clinicians and services looking to procure a device

- Consider the device's ability to manipulate and present data and consider the needs of the clinicians who will be using the device. If possible, trial a number of devices and consult with colleagues about the device that manipulates the data in the most useful way. Some devices may present complex data in a variety of formats. Keep in mind what key information clinicians require when assessing data manipulation.
- Consider the purchase, maintenance and disposables costs associated with the devices.
- Consider the variations in size, weight and noise level between devices and if possible trial a number of devices and ask people using them for feedback.
- Ensure that the device you choose is validated¹¹.

Reporting mechanisms

Why is this important

It is important that the results of the ABPM are efficiently and effectively delivered to the referrer in the agreed time period. This will enhance the management and outcomes for the patient.

Suggested actions: those managing ABPM services

- Manage workloads to ensure that reports are delivered back to the refer in the agreed amount of time
- Work with primary care to develop appropriate reporting mechanisms and liaison with primary care
- Liaise with secondary care to ensure that where appropriate complex results are reported.
- Ensure that healthcare record systems are used most effectively to assist in the reporting of results. For example if a community-wide healthcare records system is in place to allow healthcare records to be accessed by a

¹¹ A list of validated blood pressure monitoring devices is available on the British Hypertension Society's website (see www.bhsoc.org). The British Hypertension Society is an independent reviewer of published work. This does not imply any endorsement by NICE.

variety of healthcare professionals it will be important to ensure that the ABPM results are available on this system.

Suggested actions for commissioners of ABPM services

Needs and costs assessment

Why this is important

When choosing the most appropriate service delivery model for ABPM in your area it is important to fully understand the requirements of your locality to ensure the service will be fit for purpose.

These actions are most relevant to those looking to commission an ABPM service.

Relevant recommendation

- For people identified as having a 'white-coat effect'¹², consider ABPM or HBPM as an adjunct to clinic blood pressure measurements to monitor the response to antihypertensive treatment with lifestyle modification or drugs.

[new 2011] [1.5.7]

¹² A discrepancy of more than 20/10 mmHg between clinic and average daytime ABPM or average HBPM blood pressure measurements at the time of diagnosis.

Suggested actions: clinicians with managerial responsibilities, practice managers and commissioners

- Carry out a needs assessment in your practice. Capture the numbers of people who were diagnosed with hypertension based on clinic blood pressure measurements of 140/90 mmHg or above.
- Ensure estimates of the number of people who will need ABPM for monitoring the response to antihypertensive treatment are incorporated into the needs assessment.

- Consider collaborating with other GP practices in order to commission an ABPM service. Consider whether using a courier service to pick up used monitors from your GP practice and return them to the service provider could be an option to help make this model effective. Ensure costs of courier services are included when costing this service. If considering collaboration, combine data detailing the need for the service.
- Consider whether your GP practice needs ABPM for conditions other than hypertension, for example cardiac, renal or diabetic problems. Pooling resources for ABPM in all of these specialties may help guide the choice of the most appropriate delivery model.
- Calculate the cost effectiveness of a variety of models to help identify which is the most suitable for your organisation. If possible, conduct sensitivity analysis on these results, taking into account different levels of staff who could perform different functions (see models below for more information) and the monitoring patterns (that is, monitors attached only in the morning or all day).
- Consider what service you require, whether attachment of the device and interpretation of the results is required or just one of these elements.
- Refer to the NICE [costing template](#) and [costing report](#) to help calculate the potential costs and savings of implementing the ABPM recommendations. The template can be modified to reflect local circumstances and to calculate the anticipated local costs and savings. The costing template also contains details of the unit costs of monitors, their maintenance costs and costs of appointments with healthcare professionals. Use this information to help calculate the most cost-effective model of delivering ABPM.
- Commissioners should refer to section 5 of the [costing report](#) which contains suggestions about how to reconcile differences arising from the fact that funding ABPM is likely to come from general practice budgets but the potential savings likely from reducing inappropriate prescribing will be realised by primary care budgets.

Referral arrangements

Why is this important

It is important that staff are fully trained in how to refer to the ABPM service, what the service offers and what the criteria for referral are in order to keep inappropriate referrals to a minimum.

Suggested actions for clinicians and managers of clinicians who will be referring to an ABPM service

- Ensure time is available to allow for staff training and updates about appropriate referral to the ABPM service.
- Ensure that health and safety issues, for example whether the person needs to drive or operate heavy equipment while fitted with the ABPM device, are considered and addressed before referring the person for ABPM. This will reduce the number of people who are unable to be fitted with the ABPM device on the day.
- Ensure that available and developing healthcare systems are used as effectively as possible to make referrals and to ensure the results are available to all those who require them. For example, if a community-wide healthcare records system allows a variety of healthcare professionals to access a person's records, it would be beneficial to make sure that the referral for ABPM and the results with interpretation are available on this system. Where these systems are developing, ensure those responsible for developing the system are aware of the need to allow ABPM providers access in order to add ABPM results.

Quality assurance

Why is this important

It is important that commissioners of ABPM services are aware of what a high-quality ABPM service is and that they continue to monitor the quality of the provider's service.

***Suggested actions for clinicians and managers commissioning
ABPM services***

- Establish a system for monitoring the quality of the service provided by secondary care. See the NICE guideline and [Suggested actions for providers](#) for details of what clinical approaches make a high-quality service.

Possible models of delivery

Model 1: Network of GP practices

This model would involve one GP practice or health centre offering the ABPM service to a number of GP practices.

In addition to the suggestions made in [Suggested actions for providers](#) and [Suggested actions for commissioners](#), this section will detail specific actions for providers and commissioners of this type of model.

Suggested actions for establishing a network of GP practices

- Establish a working group that brings together representatives from the GP practices that will be involved.
- Each GP practice should have a lead and should have projected demand requirements for their practice.
- If an urgent care centre or similar type of service exists within your locality, explore whether this could offer an ABPM service on a walk-in basis.

Suggested actions for the GP practice that has the capacity to offer an ABPM service

- Consider training needs for GPs and nurses who will lead this service.
- Consider how to use staff time as efficiently and effectively as possible.
Could healthcare assistants attach the devices, the receptionist collect the devices back in and then suitably qualified GPs interpret the results?
Interpretation of results could be organised on a rota.

Model 2: Individual GP practice

In this model a GP practice would provide an ABPM service only for its registered patients. This model is likely to be an option for large GP practices in which the needs assessment identified a number of patients who would require this service. It would also be an option for GP practices that have the required experience and training in their teams to offer this service.

In addition to the suggestions made in [Suggested actions for providers](#) and [Suggested actions for commissioners](#), this section will detail specific actions for providers and commissioners of this type of model.

Suggested actions for practice managers

- Consider how to use staff time as efficiently and effectively as possible. Could healthcare assistants attach the devices, the receptionist collect the devices back in and then suitably qualified GPs interpret the results? Interpretation of results could be organised on a rota.

Model 3: External providers

This model would involve external providers offering a service in which they prepare the patient and attach the device, collect the devices in and upload the data from the machine to a computer system/database. The computer system would then analyse the results and send the diagnosis to the referring clinician. There may be many providers who could offer this service, including gyms and pharmacies. The computer system would need to be provided by experts in that field.

In addition to the suggestions made in [Suggested actions for providers](#) and [Suggested actions for commissioners](#), this section will detail specific actions for providers and commissioners of this type of model.

Suggested actions for external providers looking to offer this service

- Explore the IT options for supporting this service.
- Ensure that the IT system chosen satisfies data protection requirements and that the staff using this system are aware of, and adherent to, data protection and information governance policies and regulations. Where appropriate this may involve organising mandatory information governance training for staff of external providers.

Model 4: Secondary care provision

This model would involve referring people who need ABPM to a secondary care provider. The results would then be sent back from the secondary care provider to the clinician who ordered the test.

In addition to the suggestions made in [Suggested actions for providers](#) and [Suggested actions for commissioners](#), this section will detail specific actions for providers and commissioners of this type of model.

Suggested actions for GP practices

- When selecting the most appropriate model consider that patients who are likely to need secondary care input are most appropriately referred to secondary care for ABPM.

Suggested actions for secondary care providers

- Consider the likely local demand for increased provision of ABPM in secondary care, in collaboration with local primary care commissioners.
- If appropriate, develop a business plan detailing the likely increase in demand for the service and the associated increased cost of equipment and staff.
- Increasing the capacity for ABPM may increase the number of required sessions. Assess whether there is space/availability of rooms that will meet this need.
- Consider the most cost-effective use of staff. Healthcare assistants or a Band 5 nurse could attach the monitor, receptionists could collect the monitors from the patients after use and an appropriately trained nurse specialist, registrar or consultant could interpret the results (if required).
- Consider the geographical area you could offer this service to. Using couriers to bring monitors back from GP practices could increase the number of people who could be offered your service. It is important to factor courier costs into your cost modelling.
- Consider offering the service to diabetes, cardiac and renal specialties or combining the ABPM services your organisation provides for these specialties into one. This could lead to more efficient use of equipment and staff.
- Consider whether the service can be run from satellite clinics in the community. This may reduce the amount of time patients need to travel to a clinic. If the clinic is near to the patient's home, this might reduce non-attendance.

- Consider whether your organisation offers non-urgent walk-in services that ABPM on a walk-in basis could be added to.

Disseminate and implement the plan

Once the action plan and assessment of cost have been evaluated and discussed by the implementation team, the work of implementation begins. To ensure this is effective all relevant organisations should sign up to the action plan – for example, via a local area agreement.

[Back to algorithm](#)

Review and monitor

Implementation of the guideline should be reviewed and monitored, with results fed back to the relevant trust board.

One way to monitor implementation of the guideline is to audit current practice against the NICE guidance. The guideline is accompanied by [audit support](#) and an [electronic audit tool](#) to help you with this.

Implementation and uptake of NICE guidance

The ERNIE (Evaluation and review of NICE implementation evidence) database is a source of information on the implementation and uptake of NICE guidance. ERNIE will provide:

- a bank of guidance-specific NICE implementation uptake reports
- references to external literature
- a simple classification system summarising the uptake of NICE guidance.

The recommendations from this guideline have been incorporated into a [Hypertension NICE pathway](#). NICE pathways are an online tool which provides quick and easy access, topic by topic, to the range of guidance from NICE, including quality standards, technology appraisals, clinical and public health guidance and NICE implementation tools.

NICE has developed tools to help organisations implement this guidance (see www.nice.org.uk/guidance/CG127).

- Slides highlighting key messages for local discussion.
- Costing tools:
 - costing report to estimate the national savings and costs associated with implementing the ABPM recommendations
 - costing template to estimate the local costs and savings involved in implementing the ABPM recommendations.
- Audit support for monitoring local practice.

- Baseline assessment tool to help you identify which areas of practice may need more support, decide on clinical audit topics and prioritise implementation activities.
- Clinical case scenarios to illustrate how the recommendations from the guideline can be applied to the care of patients presenting to primary care.
- Podcast with Professor Bryan Williams discussing implementing the ABPM recommendations in practice.

Evidence updates

Evidence Updates are publications produced by NICE that provide a summary of selected new evidence published since a literature search was last conducted for the accredited guidance in a particular field. They identify new evidence that might reinforce or generate future change to the practice laid out in the guidance, and should be read in conjunction with the relevant clinical guideline. Evidence Updates do not replace current accredited guidance and do not provide formal practice recommendations. An [evidence update for hypertension](#) was published in March 2013.

Share learning

Have you got some tips to share with other organisations on implementing NICE clinical or public health guidance? Or would you like to learn from other people's experiences? If so, NICE's ['shared learning' database](#) can help.

[Back to algorithm](#)

Sources of further information

- British Hypertension Society (BHS) (www.bhsoc.org)
The BHS provides 'a medical and scientific research forum to enable sharing of cutting-edge research in order to understand the origin of high blood pressure and improve its treatment'. The BHS have developed a [section of their website](#) to assist in the setting up and management of an Ambulatory Blood Pressure Monitoring clinic.
- The Blood Pressure Association (www.bpassoc.org.uk)
This is a blood pressure charity representing patients.
- NHS evidence (www.evidence.nhs.uk)
This is a service that enables access to authoritative clinical and non-clinical evidence and best practice through a web-based portal. It helps you find, access, and use high quality clinical information.
- Medicines and Prescribing Centre at NICE
(www.nice.org.uk/mpc/index.jsp)
The MPC provide provides support for medicines and prescribing through: advice on medicines optimisation including support for QIPP, specific medicines advice, for example on unlicensed and off-label drugs and practical tools and materials to aid implementation.

[Back to algorithm](#)

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[Back to algorithm](#)

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