Practice Guidance on Blood Pressure Monitoring

January 2003

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1. Introduction and Background

The Royal Pharmaceutical Society of Great Britain, in 1997, produced the strategy document, *Building the future*[1]. It outlined five main areas where pharmacists may make a major contribution to healthcare. One key area is helping people maintain good health by promoting and supporting healthy lifestyles. High blood pressure is one of the major contributors of coronary heart disease (CHD) and so by raising awareness, improving detection, monitoring and treatment, pharmacists can make a significant healthcare impact.

In the *NHS Plan* [2], pharmacists have a role as part of the multi-professional team. Pharmacists operating alone can provide good quality healthcare. However it was recognised that a multidisciplinary approach to healthcare allows patients to obtain maximum benefit from healthcare provision. Many pharmacists may work in teams alongside nurses, dentists, therapists, optometrists, midwives, social care staff and GPs from modern multi-purpose premises

Pharmacists have the clinical skills to provide services ranging from healthy lifestyle advice, smoking cessation clinics, warfarin clinics, medicine's management, glucose screening, blood pressure and cholesterol monitoring. These services are easily accessible to the general public and in many instances patients do not need appointments. Therefore patients are able to benefit from these services and gain valuable advice and information.

2. Policy context

England

The prevention and treatment of coronary heart disease as well as stroke is one of the Government's top three health priorities, alongside mental health and cancer. The Government's action plan, *Saving lives: Our Healthier Nation* [3], aims to reduce the death rate due to coronary heart disease and stroke in people under 75 by at least two fifths by the year 2010 saving up to 200,00 lives in total.

Scotland

The recent White Paper, *Towards a Healthier Scotland* [4] has emphasised that the aim of the NHS in Scotland is to improve health, not only through the delivery of health services, but also via close collaboration with local stakeholders and healthcare providers to influence life circumstances, lifestyles and health.

Wales

The priorities for Wales have been identified in the Welsh Assembly's strategic plan *Better Wales* [5]. This sets a number of early targets, such as for improving mortality rates for heart disease and cancer; using new powers to facilitate joint working between health and social services; focusing action and investment more sharply on the most deprived communities; improving the protection and opportunities given to our children; and for expanding the contribution of primary care.

These policy documents provide the platform from which the following national guidelines for treating CHD are established. England has the *National Service Framework for Coronary Heart Disease* [6]. The Scottish Intercollegiate Guidelines Network[7] has produced a model of care for CHD in Scotland. The document *Tackling CHD in Wales: Implementing Through Evidence* [8], outlines Welsh national policy for CHD. Blood pressure is a key indicator of health and its control is one of the major features in these various national guidelines.

Good blood pressure control is also linked to increasing life expectancy and improved quality of life for people with diabetes. The *National Service Framework for Diabetes* [9] describes good control of blood pressure as one of its standards for clinical care of adults with diabetes as a key intervention.

3.0 Setting up the service

3.1 Team working and Communication

Before setting up a BP monitoring service, it is essential that the local medical practitioners be consulted. In some cases the practice or district nurse will already have a cardiac rehabilitation/prevention programme underway. It is important that duplication or overlapping is kept to a minimum.

Knowledge of the local referral and prescribing guidelines is essential. Agreement must always be sought before such a service can take place. This teamwork approach will benefit not only patients but also the healthcare professionals involved in the service. The document *Team Working in Primary Health Care* [10] published jointly by the Society and the British Medical Association recognises the benefit of teamwork. The team could include any one healthcare professional actively involved in the medical treatment of a patient. A list of recommendations for successful team working was set out in the document and would be a good starting point.

3.2 Funding

Consider how the service will be funded. There will be cost implications regarding the equipment, pharmacist time, staff time, training, premises, paperwork printing, advertising, etc. Funding can be sought from various sources because controlling blood pressure is such a high priority. For example National Service Framework money, Medicines Management fund, the lottery new opportunities fund, or Health Action Zone funding. Funding may also be available locally in the form of a primary care investment fund, clinical governance money or social services fund.

Find out what the priorities are for the various funding bodies in your area and talk to them about their bidding process. Timing for this can be crucial as allocation of funds can be decided up to a year before the money will actually be available. Also consider talking to the Local Pharmaceutical Committee about where funds can be sought, the process involved and how to prepare a bid. The National Pharmaceutical Association and the Pharmaceutical Services Negotiating Committee have various guides to help pharmacists obtain sources for funding.

3.3 Clinical Governance issues

Record keeping
A full range of records should accompany any service provided by a pharmacist. The service should be fully auditable. Patients' details should be stored, electronically or otherwise, along with their consent forms, blood pressure measurements and any recommendations made.

Evaluation
It is important to evaluate your service compared to initial expectations. This may be required as part of the contract with the funding body. This should be done on a regular basis to ensure that you are reaching your target patients, that the users of the service are satisfied and that the desired outcomes are achieved (i.e. control of blood pressure in those patients).

Confidentiality
All information you receive concerning patients should be kept confidential. Pharmacists should follow the Code of Ethics and Standards regarding confidentiality and disclosure of information to be found in *Medicines, Ethics and Practice: A Guide for Pharmacists*[11]. The Data Protection Act must also be considered.

3.4 Choice of Equipment

Most devices for measuring blood pressure are dependent on one common feature, namely, occluding the artery of an extremity (arm, wrist, finger, or leg) with an inflatable cuff to measure blood pressure either oscillometrically, or by detection of Korotkoff sounds, the vibrations in the artery walls. These sounds are divided into five phases based on the loudness and quality of the sounds. Regardless of which device is used to measure blood pressure, it must be remembered that blood pressure is a variable haemodynamic phenomenon, which is influenced by many factors, not least being the circumstances of measurement itself.

The traditional mercury sphygmomanometer is still the golden standard in devices for blood pressure measurement, and it is used to calibrate some electronic sphygmomanometers[12]. However, for health and safety reasons the use of mercury devices is declining and will eventually cease completely. There will be increasing use of alternative methods such as aneroid, semi-automated and automated devices. There is evidence that some alternatives to the mercury sphygmomanometer are unacceptably inaccurate when they are subjected to formal validation[13]. Those purchasing or using alternatives to the mercury sphygmomanometer should insist on evidence from the manufacturer that the device has been validated formally, and proved accurate, according to the standards of the British Hypertension Society protocol[14].

The following automatic blood pressure monitors have so far been validated and graded by the BHS:

Automatic digital blood pressure devices *
(For Clinical Use or Home self-measurement)

- A&D UA-767 Automatic — BHS Grade: A/A
- MICROLIFE 3AC1-1 — BHS Grade: A/A
- MICROLIFE 3BTO-A — BHS Grade: A/A
- MICROLIFE 3AS1-2 — BHS Grade: A/A
- MICROLIFE 3BTOH — BHS Grade: A/A
- OMRON M5-1 — BHS Grade: A/B

Automatic oscillometric blood pressure
(Devices for Clinical Use)

- Accutorr Plus* — BHS Grade: A/A
- Vital Signs* — BHS Grade: A/A

BHS grading system
To meet the BHS criteria devices must achieve a minimum B grade for both systolic and diastolic measurements. Grade A denotes greatest agreement with mercury standard and D denotes least agreement. Thus for grade A/A: both systolic and diastolic measurements have the greatest agreement with the mercury standard.

* Please see appendix 2 for contact details

Table 3 Explanation of the BHS grading system (adapted from the original paper by O'Brien et al)

Grade for Diastolic/Systolic pressure	Agreement with mercury standard
A	Greatest agreement
B	Good agreement
C	Poor agreement
D	Least agreement

The BHS has released the following Disclaimer:

'There is no independent testing body for validating the accuracy of blood pressure devices, and the British Hypertension Society has not tested the blood pressure machines themselves. In providing this list, we are recording what has been reported in the literature. The British Hypertension Society can therefore take no responsibility, whatsoever, for the accuracy of this information or the accuracy of the validation procedure.'

Importance of regular quality assurance

To obtain accurate readings with any blood pressure monitoring device, it is important that the device is tested regularly. For mercury based devices, the level of mercury should always be at zero before measurements are made. Servicing of these devices is recommended. For electronic devices, please follow the guidelines for quality assurance in accordance to the manufacturers instructions supplied with the device.

3.5 Premises

When BP is measured in a pharmacy, the premises must comply with the general requirements of the RPSGB, such as safety of the general public and people working on the premises. This is set out in the *Medicines Ethics and Practice. A guide for pharmacists*[11]. A designated area should also be reserved for this service so that it can be provided efficiently. A degree of comfort and privacy should be available to make it safe to give confidential advice to uphold patient confidentiality.

3.6 Training of Relevant Staff

All pharmacists and any of their staff involved in measuring BP must undergo adequate (preferably accredited) training to deliver the service competently.

They must be able to:

- measure blood pressure using the appropriate technique
- follow the operating instructions of the device being used
- interpret BP measurements
- explain the results to patients
- maintain comprehensive records.

It is the responsibility of the pharmacist in charge to ensure proper training of relevant staff before the task of measuring blood pressure is assigned to any member of staff.

3.7 Liability

If introducing a new service pharmacists are advised to contact their insurers as they may not be automatically covered under their present policy and must ensure that they have full liability cover for the full extent of their professional activities.

3.8 Advertising / Targeting patients

Pharmacists should consider how best to target the patients most in need of their service. Marketing the service in the right way could determine the success of the project. Ideas include:

- Leaflets – through doors, in shop bags.
- Posters – in the pharmacy, surgery, community centre, bus shelter, post office.
- Local newspaper, TV or radio interview to highlight the service.
- Patient selection either by surgeries involved or from PMR to identify likely users of the service.
- Special campaigns in local businesses or factories.

4.0 Running the service

Pharmacists are advised to be careful of making any diagnostic decisions when undertaking blood pressure measurement. The patient's GP has the clinical responsibility for the diagnosis and subsequent clinical responsibility for the treatment of the patient.

4.1 Communicating with the patient

At all stages, before, during and after the test, the patient should be kept fully informed about the process and implications of the test and have opportunities to ask questions. Every effort should be made to reassure the patient, so as to avoid precipitating a high reading because of anxiety. Care must be taken when giving the results so as not to interfere with the patient/doctor relationship or cause undue concern.

4.2 Pharmacy procedure for blood pressure testing

The following procedure is followed when a patient wishes to have his or her blood pressure measured.

- The blood pressure measurement is done in the designated consultation area (please see Equipment/premises for requirements).
- The procedure is fully explained to the patient before any readings are taken.
- The patient is told to sit with feet together and relax for five minutes before the reading is taken.
- Disruption is minimized as far as possible when carrying out the measurement.
- The cuff must be level with the heart. An arm pad is placed under the elbow to ensure support and relaxation of the arm and accessibility of the brachial artery.
- The rubber bladder should encircle at least three-quarters and preferably the whole upper arm. If arm circumference exceeds 33cm, a large cuff must be used.
- The manufacturers' instructions for the device in use are now followed.

For electronic devices:

- Make sure an appropriate cuff size is used.
- The cuff is placed over the upper arm so that the tube inlet is positioned over the brachial artery.
- The cuff is then fastened (but not so tight as to influence the airflow into the balloon or constrict the brachial artery).
- The machine is switched on and the measurement taken.
- When using an electronic instrument the patient and the operator should remain quiet and still as not to influence the reading due to instrument sensitivity.
- Blood pressure readings are usually taken from the patient in the sitting position and usually taken from the same arm.

For mercury-based manual devices

- The cuff is placed over the upper arm so that the center of the bladder is positioned over the brachial artery.
- The stethoscope diaphragm is placed over the brachial artery. The BHS strongly recommend the routine use of the alternative adult cuff (12.5cm - 13.0cm x35cm) in all adults.
- The column of mercury should be vertical.
- Inflate until no pulse is detected.
- Deflate at 2-3mm / sec.

- Systolic (first sound) and diastolic (disappearance) should be measured to the nearest 2mmHg. When the disappearance of sounds (Phase V) cannot be identified diastolic pressures should be taken at the point of muffling of sounds.
- Mercury manometers must be cleaned regularly and the meniscus should read zero when not in use.

Note. Mercury is a toxic substance - it must not be handled without precautions being taken. A properly qualified person should look after any leaks of mercury or other faults. A Health and Safety assessment should be completed prior to use.

- The reading is immediately recorded on the results section of the patient's dedicated blood pressure monitoring record card, patient medication record, or any such recording system as decided.
- If conditions for the test are not optimal, this should be noted. Examples of sub-optimum conditions are:
    - If the patient is anxious or nervous
    - If the patient is a smoker who had their last cigarette within 20 minutes of the measurement
    - If they had any caffeine within 20 minutes of the measurement
    - Habitual and excessive alcohol consumption (above 4 units a day)
    - Non-compliance with medication.
    - Other medical conditions and medications taken by the patient e.g. hyperthyroidism

- Any of the above named conditions can increase the blood pressure in the short term, possibly giving an elevated reading.

4.3 Results and Guidelines for Referral

Patients should be given a copy of the blood pressure results. Patients whose diastolic blood pressure is less than 85mmHg and whose systolic blood pressure is less than 140mmHg should be reassured, and followed-up annually if they have arterial disease, and five-yearly otherwise.

If the first measurement is raised it should be taken again twice at four-weekly intervals (except for patients with diastolic more than 110 mm Hg). If the third reading is also raised they should have a full assessment. The assessment of patients with raised blood pressure includes:

- Recording of significant personal and family history.
- Resting ECG.
- Blood tests for U&E, FBC, total and HDL cholesterol, urate and glucose.
- MSU for urinalysis.
- Examination of CVS and fundi.

The NSF for CHD gives the following indications for referral to the patient's own doctor:

- New symptoms e.g. chest pain, increasing shortness of breath, claudication.
- Poor control of blood pressure or lipids. Check concordance with treatment and either measure again or refer to GP.
- Patients whose blood pressure is equal or greater than 180/110 mm Hg should be referred as a matter of urgency to the GP
- Side effects of medication, anxieties, or difficulty in adhering to medication.

The interpretation of BP measurement is detailed in table 4

Table 4 Guidelines for Interpretation of Blood Pressure Measurement Results

Blood Pressure Measurement (Mm Hg)	**Action**
Systolic less than 120 or Diastolic less than 75	Blood pressure is normal. No action should be taken but should be rechecked in a few years time.
Systolic between 120 and 130 or Diastolic between 75 and 85	Blood pressure is in the so-called normal range, but should be reviewed in a year or so.
Systolic between 130 and 139 or Diastolic between 85 and 89	Blood pressure is in the upper range of normal. Recheck in a few months. Individuals could consider adopting a healthier lifestyle - i.e. healthy diet, lose weight, take more exercise, etc.
Systolic between 140 and 199 or Diastolic between 90 and 109	Blood pressure is raised. It is important to try to retake the measurement after a period of relaxation. If it is the same, the individual may have high blood pressure. Tell them to visit their doctor or practice nurse within the next week to have it rechecked.
Systolic between 200 and 219 or Diastolic between 110 and 119	Recheck the blood pressure after five minutes. If it remains at these levels, tell the individual to visit their GP or practice nurse within a few days. They must not ignore these readings.
Systolic over 220 or Diastolic over 120	Recheck blood pressure. If it remains at this level, it is very important a GP or an accident and emergency department as soon as possible checks the blood pressure.

(Adopted from the Blood Pressure Association blood pressure awareness campaign)

5. Epidemiology

In the 1996 Health Survey for England, the prevalence of hypertension was found to be approximately 50 per cent in people aged between 65 and 74 years. It was higher still above this age[15].

With the increasing age of the general population, the prevalence of hypertension and its complications are likely to increase rather than decrease. Many people will be unaware that they have the condition until they fall victim to its complications, (see section5.2 below). The detection and treatment of hypertension is, therefore, vital in the battle to reduce cardiovascular disease and strokes[16]. Headache may be the only symptom of hypertension and then it is only more common in hypertensive patients at diastolic pressure less than 130 mm Hg. In epidemiological studies, poor detection has been shown to be the greatest source of error in the overall care of hypertensive patients, where it is estimated that only one in eight patients receive satisfactory treatment[17].

CHD, stroke and related conditions are a major cause of early death, accounting for about 66,000 deaths each year in people aged under 75, 18,000 deaths (a third of all deaths in men) and 7,000 deaths (one fifth of all deaths in woman) aged under 65 years. These illnesses account for a large proportion of the health budget and certified days taken off work. They limit the ability of the people who live with them to have a full and active life. Men in lower social classes are at greater risk of dying from coronary heart disease than men in the overall population[3].

Community based pharmacists also have an important role in helping and assisting to identify patients at risk of CHD by doing primary prevention in conjunction with local GP surgeries. Managing the hypertensive patient in primary and secondary care involves an understanding of the contributory factors of hypertension, its complications and specific risk factors for CHD.

5.1 Contributing factors to hypertension:

- Overweight
- Excess alcohol
- Salt intake
- Lack of exercise
- Diet
- Current medication (e.g. NSAID's, steroids, sympathomimetics)
- Current diseases (e.g. renal disease)

5.2 Complications of hypertension/target organ damage:

- Stroke, transient ischaemic attack (TIA), dementia
- Left ventricular hypertrophy (LVH), heart failure
- Myocardial infarct, angina, or angioplasty
- Peripheral vascular disease
- Proteinuria
- Renal impairment
- Retinopathy

5.3 Cardiovascular risk factors:

- Smoking
- Diabetes
- Total cholesterol:HDL – cholesterol ratio
- Family history
- Age
- Sex

5.4 Role of good blood pressure control in diabetes

The UK Prospective Diabetes Study[18] (UKPDS) was a 20-year trial which recruited over 5000 patients with type 2 diabetes in 23 clinical centres based in England, Northern Ireland and Scotland. This is the largest clinical research study of diabetes ever conducted has shown that lowering raised blood glucose and blood pressure levels reduces the risk of heart disease, stroke and death from diabetes-related diseases as well as diabetic eye disease and early kidney damage.

Optimal blood pressure and blood glucose levels from the time of diagnosis must be achieved. Effective therapy to attain these will reduce the risk of diabetes complications and they are necessary to maintain good health. Individual patient targets need to be assessed in relation to age, general health and other risk factors. Even if ideal blood glucose or blood pressure levels cannot be reached despite maximal attempts to improve treatment, it is important to realize that any improvement in blood glucose or blood pressure levels will help to reduce the risk of complications[19].

6. Related Issues

6.1 Cholesterol Testing

High cholesterol levels increase the risk of coronary heart disease. It is one of the measurable and subsequently treatable risk factors in the prevention of strokes and myocardial infarction. Hypertensive patients are advised to measure their cholesterol.

Self-test cholesterol kits have been available for some time in community pharmacies. However there are concerns about interpretation and reproducibility of these test results. Increasingly, pharmacists are conducting cholesterol measurements in primary care as a service or as part of a shared care initiative with local doctors. Guidelines for serum cholesterol testing and interpretation of the results are available from the Royal Pharmaceutical Society

6.2 Non-drug measures

Lifestyle modification forms an integral part of the treatment of hypertension and CHD. Pharmacists are well-trained health professionals that can easily emphasize these measures to diagnosed and undiagnosed high-risk patients in their pharmacies. Carers and families of people with hypertension are also linked to the successful management of BP so this advice might also be useful for them. Lifestyle advice on reducing blood pressure and preventing cardiovascular disease is:

For blood pressure lowering:

- Weight loss via reduced fat and calorie intake.
- Regular dynamic physical exercise (e.g. brisk walking for 20 minutes per day).
- Reduced use of salt in food preparation and elimination of excessively salty food (maximum 5g per day).
- Increased intake of fruit and vegetables (7 portions per day).
- Alcohol intake also provides energy in the form of calories and needs to be taken into account in maintaining energy balance for weight control.
- Limit alcohol consumption (<21 units per week for men and <14 units per week for women).

For cardiovascular disease prevention:

- Stopping smoking.
- Reducing total intake of saturated fat, and replacement with polyunsaturated fats.
- Increased intake of oily fish.
- Regular physical exercise.

It is important to note that above measures can motivate patients to take responsibility for improving their general health. The pharmacists who provide this information should assess the needs of the patient, and if the patient needs more detail on specific aspects, they should be referred to another member of the multidisciplinary healthcare team.

6.3 Self-testing of blood pressure

There are now many machines available for patients to purchase for measuring their own blood pressure at home. On request for purchase of one of these machines, it would be desirable to counsel the patient. The patient should be educated in the proper use of the machine, in order to get accurate results. Evidence on the role of self-measurement is scant but suggests that measurements made at home should be increased by about 12/7 mm Hg to make them equivalent to clinic or surgery measurements[20].

The patient should also be advised as to when they should seek a consultation with a health professional and that the machine should be an additional aid to monitoring by a health professional, not a replacement. The patient should also be encouraged to get the machine calibrated on a regular basis as advised by the manufacturer. Pharmacists should only recommend properly validated machines (see section 3.4 Choice of Equipment).

7.0 Recommendations of relevant guidelines and standards

7.1 National Service Framework (NSF) target

The NSF for CHD[6] Standard (3&4) " Preventing CHD in high risk patients in primary care", advised that the aim of treating blood pressure in people with diagnosed CHD or other occlusive arterial disease should be to maintain blood pressure below 140/85 mm Hg. This same guideline is also relevant for people without diagnosed CHD or other occlusive arterial disease with a CHD risk greater than 30% over ten years*.

Table 1 NSF recommendations for the assessment of hypertension

Reading	Action
Diastolic BP > 110mmHg	Repeat weekly over three weeks, and if sustained treat
Systolic BP > 160 mm Hg and/or **Diastolic BP > 100mm Hg**	Lifestyle advice, assessment of other risk factors, repeat monthly for three months, and if sustained, treat.
Systolic BP 140-159 mm Hg and/or **Diastolic BP 85-99mm Hg**	Lifestyle advice, assessment of other risk factors, and repeat two-monthly for six months.

7.2 The British Hypertension Society Guidelines

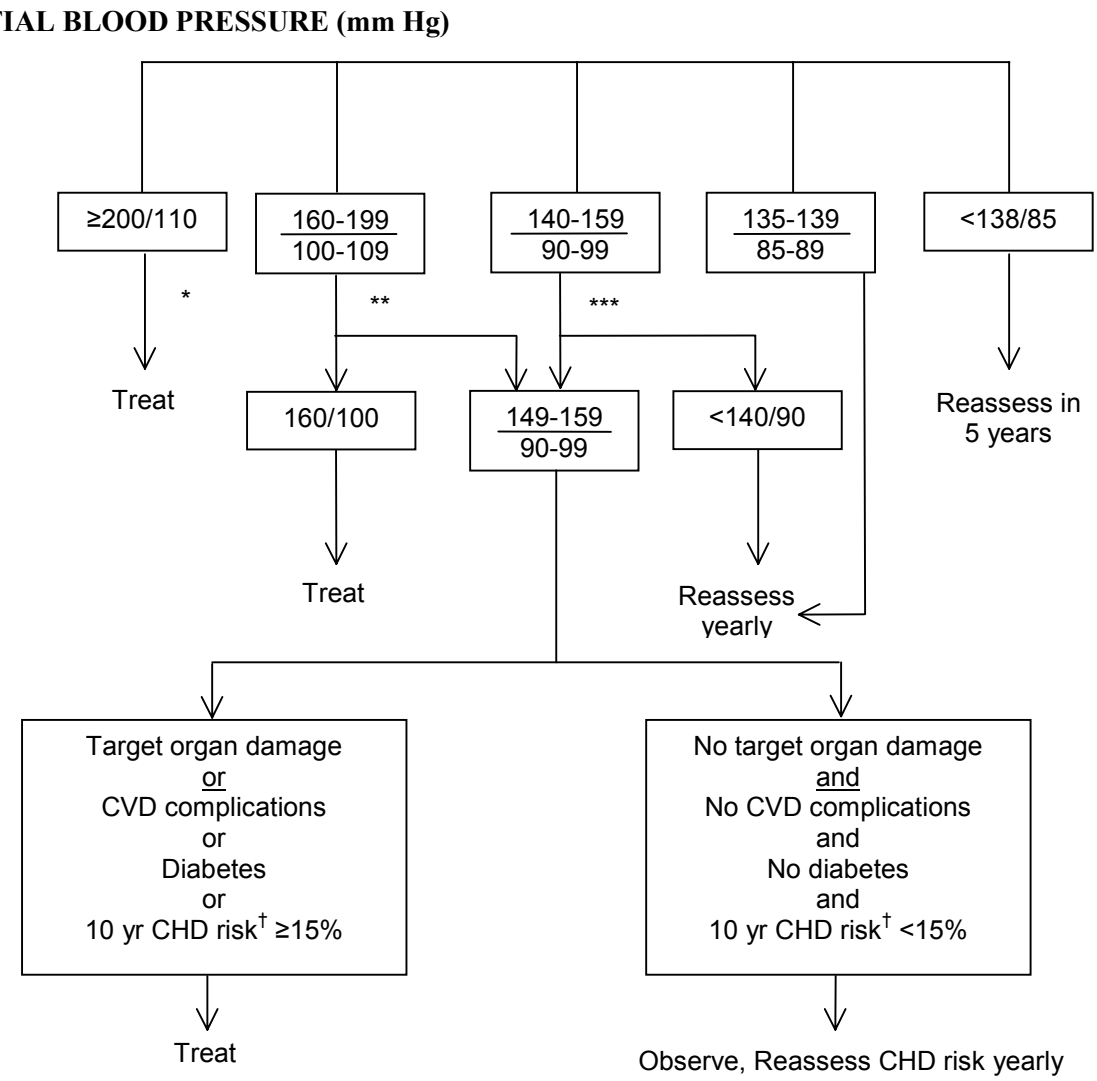
The standard for managing hypertension is set by the British Hypertension Society (BHS). Most of the guidelines in use are based on this. This organisation draws its members from leading medical institutions. The BHS guidelines for the management of Hypertension are as follows:[20]

- Non-pharmacological measures should be used in all hypertensive and borderline hypertensive people.
- Antihypertensive drug therapy should be initiated in people with sustained systolic blood pressure ≥ 160 mm Hg or sustained diastolic blood pressure ≥ 100 mm Hg.
- Treatment should be considered in people with sustained systolic blood pressure between 140 and 150 mm Hg, or sustained diastolic blood pressure between 90 and 99 mm Hg according to the presence or absence of target organ damage, cardiovascular disease or CHD risk of ≥15% according to the Joint British Societies CHD risk assessment programme/risk chart.
- In non-diabetic hypertensive people, optimal blood pressure treatment targets are: systolic blood pressure <140 mm Hg and diastolic blood pressure <85 mm Hg. The minimum acceptable level of control recommended is <150/<90 mm Hg. Despite best practice, these levels will be difficult to achieve in some hypertensive people.
- In diabetic patients an optimum blood pressure is considered to be systolic 135mm Hg and diastolic 80mm Hg

Figure 1 sets out the levels or threshold for intervention in hypertensives.

* 3 out of 10 people developing coronary heart disease over 10 years. This risk is calculated using risk equations that take into account risk factors like age, body mass index, cholesterol, blood pressure and family history.

Figure 1. Thresholds for Intervention in Hypertensives



*Unless malignant phase or hypertensive emergency, confirm over 1-2 weeks then treat.
**If cardiovascular complications, target organ damage, or diabetes is present, confirm over 3-4 weeks then treat; if absent re-measure weekly and treat if blood pressure persists at these levels over 4-12 weeks.
***If cardiovascular complications, target organ damage, or diabetes is present, confirm over 12 weeks then treat; if absent re-measure monthly and treat if these levels are maintained and if estimated 10 year CHD risk is ≥15%
†Assessed with Cardiac Risk Assessor computer programme or coronary heart disease risk chart.

7.3 The Scottish Intercollegiate Guideline Network

The Scottish Intercollegiate Guideline Network (SIGN) recommendations for review following initial blood pressure measurement are illustrated in Table 1[7]. A target blood pressure of below **140/90** mmHg is recommended and it is noteworthy that it is slightly higher than the NSF and BHS recommendation of below **140/85**.

Table 2. Scottish Intercollegiate Guideline Network Recommendations

Initial Blood Pressure (mm Hg)*		Recommended minimum review period**
Systolic	Diastolic	
<130	<85	Recheck in 2-5 years (patients aged >75 years offered annual health check)
130-139	85-89	Provide advice about lifestyle modification and recheck in one year
140-159	90-99	Provide advice about lifestyle modification and confirm within two months
160-179	100-109	Serial blood pressures repeated within one month
>180	>110	Confirm immediately and repeat BP in one day and again within one week depending on clinical situation

* If systolic and diastolic categories are different, follow recommendations for shorter review period.
** Modify review period according to reliable information about past blood pressure measurements, other cardiovascular risk factors, or target organ disease.

7.4 Local guidelines

Local guidelines may be available to pharmacists from their individual PCT Pharmacy Advisors and the local hospital NHS Trusts. These guidelines will reflect local practice and may include treatment protocols and formulary advice.

Appendix 1 Useful addresses

The British Hypertension Society
127 High Street
Teddington
Middlesex
TW11 8HH
Tel: 0208 977 0012
Website: www.hyp.ac.uk/bhs

The British Hypertension Information Service
Blood Pressure unit
St George's Medical Unit
Cranmer Terrace
London
SW17 0RE
Tel: 0208 725 2849

The Stroke Association
Stroke House
Whitecross Street
London
EC1Y 8JJ
Tel: 020 7566 0300
Helpline Number: 0845 30 33 100
Website: www.stroke.org.uk

The British Heart Foundation
14 Fitzhardinge Street
London
W1H 6DH
Tel: 020 7935 0185
Website: www.bhf.org.uk

Chest Heart and Stroke Scotland
65 North Castle Street
Edinburgh
E42 3LT
0131 225 6963
Website: www.chss.org.uk

The Northern Ireland Chest, Heart and Stroke Association (NICHSA)
21 Dublin Rd
Belfast
BT2 7HB
Website: www.nichsa.com

Health Development Agency
Holborn Gate
330 High Holborn
London
WC1V 7BA
020 7430 085
Website: www.had-online.org.uk

Appendix 2 Distributors of blood pressure monitors

A&D Instruments Ltd. Abingdon Science Park, Abingdon, Oxfordshire OX14 3YS
Tel. 01235 550420 Fax 01235 550485

Datascope Medical Co. Ltd, Lakeview Court, Ermine Business Park, Huntingdon, PE29 6XR Tel. 01480 423600 Fax. 01480 423638

Microlife Health Management Ltd. Culham Innovation Centre, D5 Culham Science Centre, Abingdon, Ox OX14 3DB
Tel 01865 408311 Fax 01865 408344

Omron Healthcare Ltd, 18-20 The Business Park, Henfield, West Sussex, BN5 9SL
Tel. 01273 495033 Fax. 01273 495123

Welch Allyn, Cublington Road, Aston Abbotts, Buckinghamshire, HP22 4ND
Tel. 01296 682140 Fax. 01296 682104

Appendix 3 Useful Resources

Books

Hypertension in focus First Ed.; Susan Shankie; Pharmaceutical Press; July 2001
Medicines, Ethics and Practice Guide, a guide for pharmacists, vol26, July 2002, RPSGB

Distance learning modules

CPPE
Angina, myocardial infarction and heart failure 1995; Number 30093
Hypertension and Hyperlipidaemia 1998; Number 30062

WCPPE
Cardiovascular disease

SCPPE
Managing Medicines in Elderly Patients

Articles

Pharmacists Place in Stroke Prevention. PJ Vol 267 No 7165 p342. 15th September 2001
NSF for coronary heart disease. Primary Care Pharmacy Vol 1 No3 p67. June 2000

(both available online at www.pharmj.com or reprints from the publication's department)

Websites

Scottish Health	www.show.scot.nhs.uk/
SIGN Guidelines	www.show.scot.nhs.uk/sign/index.html
Health of Wales Information Service	www.wales.nhs.uk/
Blood Pressure Association	www.bpassoc.org.uk
Family Heart Association	www.familyheart.org
High Blood Pressure Foundation	www.hbpf.org.uk
Diabetes UK	www.diabetes.org.uk
The NHS Direct	www.nhsdirect.nhs.uk
Department of Health	www.doh.gov.uk

Appendix 4 Sample patient information fact sheet

The British Hypertension Society.

Why treat high blood pressure?

High blood pressure does not make people feel unwell. However, if untreated it tends to cause damage to blood vessels and the heart, which may lead to heart or kidney failure and an increased risk of suffering from a heart attack or stroke. The purpose of treatment, which lowers blood pressure, is to prevent this damage occurring and so help to prevent these illnesses. Treatment will not make you "feel better" but you should stay healthier for longer and ideally you will feel no different when taking the treatment.

Is there any other way of reducing blood pressure?

There are several things that you can do to lower your blood pressure. If your blood pressure is marginally raised this may prevent the need to take tablets. However, in most cases you will still need to take tablets but you may be able to take less because you have helped to reduce your own blood pressure.

- **Avoid being overweight**. Try to keep your weight to a healthy level. Being overweight can increase your blood pressure.
- **Keep alcohol levels down**. Do not drink more than 21 units per week. (One unit is a glass of wine, a half-pint of beer or a single measure of alcohol). Try to drink the units evenly over the week and avoid a big drinking session and the resulting hangover!
- **Reduce salt intake**.
- **Exercise regularly**. It reduces blood pressure, helps to keep weight down and is a good stress-reliever!
- **Quit smoking** - giving up smoking does not lower blood pressure, but it greatly reduces the risk of blood vessel damage.

Who needs treatment with tablets?

It is normal for blood pressure to change from minute to minute and from day to day. Single measures of blood pressure are not important and the need for treatment is decided after taking the average of repeated blood pressure measurements. When the blood pressure is only marginally high, it may need to be measured over several months before the right decision about treatment can be reached.

The need for treatment is decided by the level of blood pressure and by other factors, which may also affect the risk of damage to blood vessels e.g. diabetes or continued smoking. So, treatment can vary from person to person and is not always due to a certain level of blood pressure.

Blood pressure which averages 160/100 mm Hg or higher over many readings is best treated by tablets. Mild high blood pressure (between 140-159/90-99 mm Hg) may be checked regularly but not treated if the risk of blood vessel damage is low. This is often the case in young people, and particularly in young women. On the other hand, mild blood pressure is best treated in older people, those who already have blood vessel damage e.g. angina and those with other risk factors leading to vessel damage.

What do blood pressure tablets do?

They lower the blood pressure and by doing so prevent blood vessel damage in the long term. They do not "cure" blood pressure, they only control it, and if they are stopped the blood pressure will rise again. Therefore you must continue to take the tablets, usually for life and you must only stop blood pressure treatment if your doctor advises you to.

Are the tablets safe?

Yes. In the long-term people who take blood pressure tablets suffer from less heart attacks, less strokes, less heart failure, less kidney failure and they live longer. Good blood pressure treatment reverses all the risks of high blood pressure. It is much safer to take tablets than to have untreated high blood pressure.

Are the tablets simple to take?

Most types of blood pressure tablets can be taken only once a day, or at most twice in the day. It is common to take more than one type of tablet to get good control of blood pressure. Some people may need to take three or even four types of blood pressure tablet. The different types of tablet act together to lower blood pressure in different ways. The number of tablets does not matter - the level of blood pressure does.

Do the tablets cause side effects?

All the tablets can cause uncomfortable side effects in a few people but most people are so comfortable on tablets that they would not know they were taking them. If you think the tablets may be disagreeing with you in any way (it is often hard to tell) discuss this with your doctor or practice nurse. If any tablet makes you feel very unwell, which is most uncommon, stop that tablet but consult your doctor straight away. You will get an information leaflet with your tablets, which lists a large number of possible side effects. Do not be alarmed by this. The manufacturer must list all the side effects that have ever occurred, no matter how rare they are. Remember that most people would not even know that they were taking tablets.

Where can more detailed information be obtained?

You can find out more about your tablets from the information leaflet, which comes with them, or by asking your doctor, practice nurse or pharmacist.

Will prescription charges need to be paid?

People with high blood pressure are not exempt from prescription charges, unless exempt for some other reason. If you have to pay for your prescriptions and need to take two or more types of tablet for your blood pressure, you may save money by pre-payment of the charges.

What are the different tablet types?

There are five main types of tablet. Within each type there is a large choice and to make things even more confusing each tablet has two names, the "proper" name (e.g. Atenolol) and the "trade" name (e.g. Tenormin).

Your doctor will advise on the best tablet type (or combination of tablet types) for you.

For further information on other aspects of hypertension please contact (enclosing a sae): The British Hypertension Information Service 127 High Street Teddington Middlesex TW11 8HH

Appendix 5 Sample patient evaluation form

Mr/Mrs/Miss/Ms	First Name	Surname
Date of Birth	Height (m/ft- please state)	Weight (kg/lbs. – please state)
Your Address		
GP Name		
GP Address		

LIFESTYLE	HEALTH
How often do you exercise (>20 minutes continuously) ☐ Never ☐ 2 – 4 times a week ☐ Once a week ☐ 5 – 7 times a week Please indicate your unit alcohol consumption per week: Male Female ☐ 0 units ☐ 0 units ☐ 1-7 units ☐ 1-2 units ☐ 8 –14 units ☐ 3-5 units ☐ 15-21 units ☐ 6-14 units ☐ >21 units ☐ > 14 units ONE UNIT = 1 small glass of wine; ½ pint beer 1 small sherry, 1 spirit measure Do you smoke cigarettes? ☐ Yes ☐ No If yes, how many? ☐ 1-10/day ☐ > 10/day Do you smoke cigars or a pipe? ☐ Yes ☐ No Are you an ex-smoker? ☐ Yes ☐No (<2 years ago) Does your spouse/partner smoke regularly ☐ Yes ☐ No How many portions of fruit/vegetables do you eat? ☐ 0-1 per week ☐ 2-3 per day ☐ 2-3 per week ☐ 4-5 per day ☐ 4-7 per week ONE portion = 1 medium piece of fruit, two serving spoons of vegetable or one bowl of salad	Are you on Hormone Replacement Therapy ☐ Yes ☐ No Do you have Diabetes ☐ Yes ☐ No Have you been diagnosed by ECG to have Left Ventricular Hypertrophy (an enlarged Heart)? ☐ Yes ☐ No Have either of your parents (mother less than 60 years. Father less than 55 years) Died from or suffered a heart attack/stroke ☐ Yes ☐ No Do you have history of: ▪ Heart attack/stroke ☐ Yes ☐ No ▪ Angina ☐ Yes ☐ No ▪ Coronary bypass graft ☐ Yes ☐ No ▪ Balloon angioplasty ☐ Yes ☐ No ▪ Narrowing of the leg or neck arteries ☐ Yes ☐ No *Thank you for completing this questionnaire. Please return it to the pharmacist* *We would appreciate it if you could indicate how you found out about this service* ☐ Advertising ☐ Friend or relative ☐ Coupon ☐ Radio ☐ Other _____

I hereby consent to a copy of my blood pressure results being sent to my GP.

Signature: _____ Date: _____

I do not wish to make the results of my assessment known to my General Practitioner ☐

Appendix 6 Sample referral form

[Pharmacy Name]
[Pharmacy Address]

Dear Doctor / Nurse

We have monitored the blood pressure of the patient below. In line with recommended guidelines it is now appropriate for the patient to be referred back to you for the reason specified below.

Name			
Date of Birth			
Address			
GP Name			
GP Address			
Recent Results			
Date	Result	Date	Result
Reason for referral / other relevant information			
Other medication			

Many thanks

Pharmacist

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