

Fast Facts



Fast Facts: Hypertension

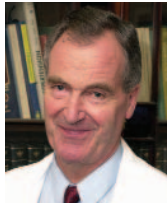
Graham A MacGregor and Norman M Kaplan
Fourth edition





Fast Facts: Hypertension

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Declaration of Independence

This book is as balanced and as practical as we can make it.
Ideas for improvements are always welcome:
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Introduction

Raised blood pressure is the biggest cause of death and disability in the world. Treatment trials have uniformly demonstrated major reductions in cardiovascular disease (i.e. stroke, heart failure and heart attack). Thus, the need for more effective management of hypertension is obvious, even in developed societies such as the UK and the USA, where still today fewer than one-half of hypertensive individuals are being adequately treated. As a result, many hundreds of people are dying, or suffering unnecessarily, from strokes, heart failure and heart attacks.

Since the last edition of *Fast Facts: Hypertension* in 2006, several important clinical trials have been published, guidelines for the effective management of high blood pressure have been modified and simplified treatment regimens have been introduced, including combinations of the newer drugs.

We hope that this new, up-to-date and concise edition will support the better management of this very common and ultimately devastating medical condition.

High blood pressure is the most common chronic medical condition. Approximately 30% of the adult population have an increased blood pressure, with diastolic pressure equal to or greater than 90 mmHg or systolic pressure equal to or greater than 140 mmHg. Blood pressure gradually and progressively rises with increasing age, such that raised blood pressure is seen in 20% of 20-year-olds, 40% of 40-year-olds, 60% of 60-year-olds and 80% of 80-year-olds.

Stroke and coronary heart disease

Hypertension is the most important risk factor for stroke and one of the three major risk factors for coronary heart disease (CHD). It is also the major contributory factor in over 90% of individuals who develop heart failure, as well as an important cause of accelerated renal disease.

Cardiovascular disease is responsible for just under half of all deaths and is the major cause of disability. Worldwide, raised blood pressure is responsible for more than 60% of all strokes and half of all cases of heart disease.

Population studies. The risk of stroke or heart attack is directly related to the level of blood pressure above a systolic pressure of 115 mmHg (Figure 1.1), which is the case for more than 80% of all adults. Individuals in the uppermost fifth of the blood pressure distribution have a 16-fold increase in risk of stroke compared with those in the lowest fifth. However, because there are fewer people with very high blood pressure than the much larger number with slightly elevated pressure, most strokes and CHD occur in those with only slightly elevated or 'high normal' pressure. For this reason, it is vitally important to treat not only those with high blood pressure, who individually are at greater risk, but also to develop strategies to reduce the blood pressure of the population as a whole, because this will have a major effect on the incidence of stroke and heart disease.

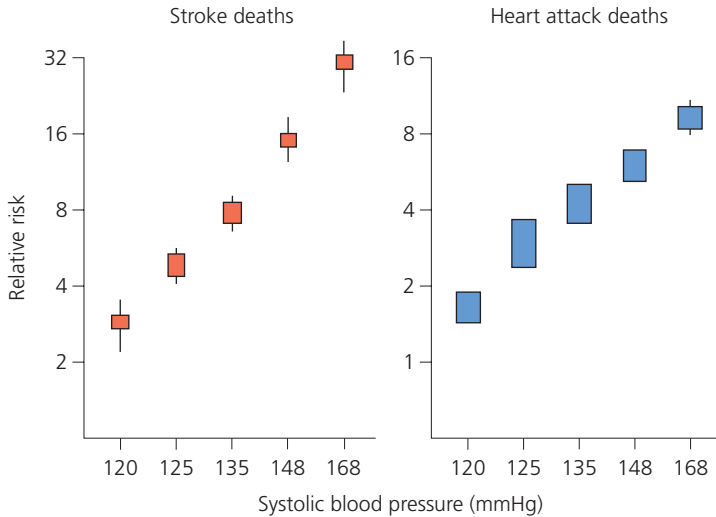


Figure 1.1 Risk of stroke or death from heart attack related to systolic blood pressure (quintiles). These data show that the risk of stroke and heart attack deaths increases throughout the range of blood pressure, starting at 115 mmHg. Note that there are insufficient numbers of people in the population with systolic blood pressure < 115 mmHg to determine whether the risk starts at even lower levels. The bars indicate 95% confidence limits; the size of the boxes is proportional to the number of events. Adapted from the Prospective Studies Collaboration, Lewington et al. 2002, with permission of Elsevier © 2002.

Age and sex. Blood pressure – particularly systolic – increases progressively throughout adult life. This rise in blood pressure reflects an increase in arterial stiffness related to a high salt intake and low potassium intake, and is not seen in unacculturated communities.

For any given blood pressure level, older people have a higher risk of death within a defined time than younger people. The highest fifth of the blood pressure distribution is associated with an annual mortality of about 3% in 45-year-olds compared with 5% at 55 years and 8% at 65 years.

Women have a lower risk of stroke or CHD than men at all levels of blood pressure until around 60 years of age, after which their risk increases to the same level as men.

3 Investigation

The investigation of hypertension should answer four key questions.

- What is the level of blood pressure and hence the risk?
- Has the blood pressure caused any target organ damage?
- What are the other associated cardiovascular risk factors?
- Is there any underlying cause for the increase in blood pressure?

By far the most important investigation of high blood pressure is its accurate measurement, for this largely determines whether treatment will be given. This will commit patients to a lifetime of treatment – an important, and expensive, decision.

As mercury manometers are being phased out, blood pressure can be measured reliably by automatic electronic sphygmomanometers. However, many of these machines are not tested for accuracy. It is essential that every machine has been validated using a proper testing protocol. The British Hypertension Society (www.bhsoc.org) has a full up-to-date list of validated blood pressure monitors.

Principles of blood pressure measurement

The conventional method for measuring blood pressure involves listening for the Korotkoff sounds (Figure 3.1). When used appropriately, these accurately reflect both systolic and diastolic pressures.

The first appearance of sounds is at systole, but occasionally in elderly people there may be a silent gap after the sounds are initially heard. It is therefore important to inflate the cuff and to feel for the disappearance of the radial

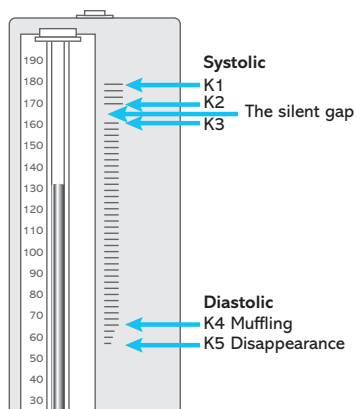


Figure 3.1 The Korotkoff sounds.

pulse to ensure that the cuff has been inflated above the systolic pressure before listening. When the sounds disappear, phase 5 is an accurate reflection of diastolic pressure. The muffling of sounds, phase 4, should not be taken as diastolic pressure unless the sounds continue to very low levels, as in high-output states such as pregnancy.

Technique of blood pressure measurement

- The patient should be seated comfortably with the forearm supported and the cuff placed around the arm at the level of the heart (Figure 3.2). The forearm should be slightly extended and externally rotated. Supporting the arm is important because blood pressure varies markedly depending on the position of the arm.
- Exertion, caffeine, smoking and stressful discussions should be avoided immediately before measurement.
- The cuff should be applied so that the appropriate mark is over the brachial pulse (with the brachial artery in the middle of the bladder of the sphygmomanometer), and connected to the manometer. If a mercury sphygmomanometer is used, the observer's eyes should be at the same level as the manometer.
- The cuff should be inflated slowly and steadily to a pressure 30 mmHg above that required to occlude the pulse. If it is the first time that blood pressure has been measured, it is advisable

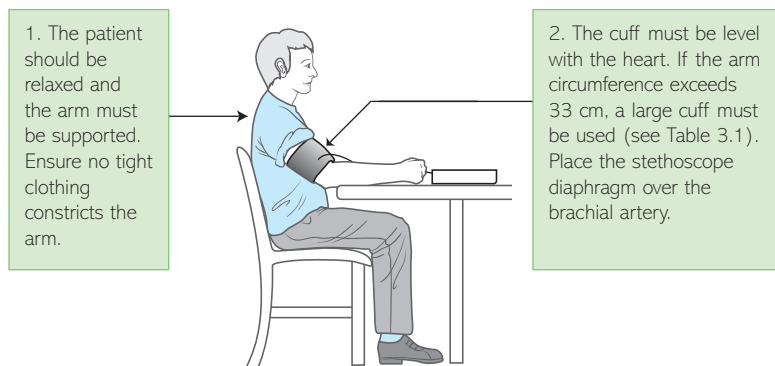


Figure 3.2 The recommended technique for measuring blood pressure with an automatic, validated, electronic machine.