

High Blood Pressure

Causes

Hypertension is the medical term for high blood pressure. In over 95% of patients with high blood pressure (high BP), the cause is unknown. Secondary hypertension (where the cause is known) is rare. Causes include renal (kidney) disease, adrenal disease (eg) Cushing's syndrome and medication (eg) anti-inflammatory medication such as ibuprofen (Nurofen[®]) and steroids. Illegal drugs such as cocaine and amphetamines can cause a rise in blood pressure. There is a tendency for high blood pressure to run in families but this may be due to environmental reasons learned or acquired from family (eg) heavy drinking.

Diastolic Vs Systolic blood pressure

Both diastolic and systolic pressure are important risk factors for cardiovascular disease. Systolic pressure is now considered the better predictor of cardiovascular risk. Systolic pressure is peak pressure in the arteries as blood is pumped out of the heart. Diastolic pressure is minimum pressure in the arteries when blood returns to the heart. An example of normal blood pressure for an adult is 120 mmHg systolic and 80 mmHg diastolic (written as 120/80 mmHg).

Measuring blood pressure

Blood pressure (BP) was traditionally measured with a sphygmomanometer, which historically used the height of a column of mercury to reflect the circulating pressure. Today BP values are still reported in millimetres of mercury (mmHg), though modern blood pressure monitors such as electronic monitors do not use mercury.

Blood pressure monitors that measures upper arm BP are more accurate than one that measures wrist or finger BP. Ensure that clothing does not restrict the arm. A patient should sit comfortably for 5-10 minutes in a quiet area before getting blood pressure measured. Ideally, the patient should sit with back straight and supported; legs not crossed and have no tea or coffee within the previous half an hour. The arm should be supported at heart height (eg) sitting on chair with arm resting on table. The palm of hand should be facing upwards. Blood pressure should be measured in both arms and the arm with the higher value should be used for subsequent measurements. Blood pressure can vary throughout the day so it is recommended to do at least 3 readings to ensure accuracy.

24 Blood Pressure monitoring

For greater accuracy, the GP or pharmacist may decide to fit a 24 blood pressure monitor which is worn by the patient for 24 hours and measures blood pressure at half hour intervals throughout the day. This is called Ambulatory Blood Pressure Monitoring (ABPM). It consists of a small device that is strapped to the patient's waste and a BP cuff attached to the upper arm which measures the patient's BP as they move around, living their normal daily life. It can give a more accurate indicator of overall blood pressure control as single readings can be skewed by white coat syndrome and some people can have spikes and dips in blood pressure which would not be found in single measurements. Whelehans can now fit you with a 24 hour Blood Pressure and after the 24 hours, we will provide you with printout and explanations of your results. If required, you can show the results to your GPs.

Risks from high blood pressure

Cardiovascular disease (CVD) is the leading cause of death worldwide, with two-thirds of cerebrovascular disease (eg Stroke) and half of ischaemic heart disease (eg Angina) being attributable to high blood pressure. In Ireland in 2000, CVD was the number one cause of death and was responsible for 41% of all deaths. High BP affects up to 50% of middle-aged and older people. High BP has no symptoms so routine checks are essential, especially on those over 50.

Trials have shown that achieving a target blood pressure of 140/90 achieves a 42% reduction in stroke, a 14% reduction in coronary events such as myocardial infarction (heart attack) and a 21% reduction in cardiovascular deaths. There is evidence that high BP can predispose individuals to the development of cognitive impairment and dementia in later life.

Other Lifestyle Changes that reduce Cardiovascular risk

Apart from high blood pressure, cholesterol is another big factor for cardiovascular disease. The World Health Organisation estimates that almost 20% of strokes and 50% of heart attacks are linked to high cholesterol. Risk factors for cardiovascular disease can be classified as modifiable or non-modifiable.

Modifiable lifestyle changes

Modifiable risk factors are factors a patient has influence over and can make a decision to change. The single most important modifiable risk factor is smoking. Smokers in their 30s and 40s are five times more likely to have a heart attack than non-smokers. Other factors that reduce the risk of cardiovascular disease include regular exercise (equivalent to brisk walking for 3 hours or more per week) and loss of weight in overweight or obese patients. Making healthier food choices with reduction in consumption of saturated fat and salt and increased consumption of oily fish and fruit and vegetables is recommended. Moderation of alcohol intake (to less than 2 units per day in females and 3 units per day in males) will reduce cardiovascular risk.

Non-Modifiable risk factors

Non modifiable risk factors are factors a patient cannot change and include age, sex, and family history of CVD. Before menopause, women have a lower risk of CVD than men of the same age but after menopause, their risk is similar.

Ideal Blood Pressure level

All adults should have their blood pressure measured routinely every 5 years. According to the 2003 European Society of Hypertension classification of blood pressure values, optimal blood pressure is less than 120/80 mmHG. A reading of 130/85 mmHG is classified as normal. A reading of greater than 140/90 mmHG is considered high while a reading of greater than 180/110 is classified as severe hypertension. Patients with severe hypertension should be referred to a cardiac consultant as cardiovascular risk is high. An adult with a reading of above 140/90 mmHG should return to their GP annually if treatment is not recommended initially.

Treatment

Lifestyle measures that will lower blood pressure

Weight reduction, reduction of excessive alcohol intake, reduction of salt intake (less than one teaspoon per day), decrease in saturated and total fat intake, an increase in fruit and vegetable consumption and regular physical exercise all lower BP.

When to start treatment?

All those with sustained blood pressure of $\geq 160/100$ mmHg should be treated. All those with borderline blood pressures of 140-159mmHg Systolic or 90-99mmHg diastolic should be treated if they A. Show the presence of cardiovascular disease B. Show the presence of target organ damage (eg) kidney damage, heart failure, retinopathy (eye damage) C. Have diabetes D. Have a greater than 20% risk of having a cardiovascular event over the next 10 years (this will be calculated by your doctor and depends on factors such age, smoking, weight and cholesterol)

The major drug classes available are:

Thiazide diuretics: High doses can cause low potassium levels, gout, diabetes, increase in cholesterol and erectile dysfunction. Low doses are used to treat high BP as high doses have no advantage in blood pressure control. Therefore, bendrofluazide 2.5mg is a reasonable first choice as side effects are rare. Thiazides can also be prescribed for heart failure, but stronger loop diuretics such as furosemide are more often used for heart failure.

Beta-blockers: They are more effective in younger patients. Side effects can include lethargy, bradycardia (slow heart beat), effects on circulation causing cold hands and feet. Central nervous system effects such as impaired concentration and memory, vivid dreams (less frequent with the water soluble beta-blockers such as atenolol and sotalol), aches in limbs, fatigue during exercise. They should not be used in asthmatics. Beta blockers may also be prescribed for angina, myocardial infarction and heart failure. Atenolol is one of the most commonly used beta blockers because of its once daily dosing and low incidence of side effects.

Calcium channel blockers (CCBs): There are two types, the longer-acting dihydropyridine CCBs (amlodipine, lercaindipine) and non-dihydropyridine agents (diltiazem, verapamil). Side effects of the dihydropyridine CCBs can include swollen ankles, flushing and headache. Amlodipine (eg. Amlode[®], Istin[®]) and lercanidipine (eg. Zanidip[®]) are commonly used CCBs. This is because they only need to be taken once daily and have fewer side effects and interactions than nondihydropyridine CCBs.

Angiotensin Converting Enzyme (ACE) inhibitors: Side effects include hypotension (dizziness from lower blood pressure), persistent dry cough (10-15% users), and angio-oedema (a rare condition that causes swelling of face and tongue). They should be avoided in women of childbearing potential. ACE inhibitors may also be prescribed for heart failure, diabetic kidney damage and chronic renal failure. ACE inhibitors for which there are less expensive generics available and can be given once daily include ramipril and lisinopril, making them popular. The incidence of cough appears to be higher in women. It is a persistent dry cough which is worse when lying down and generally doesn't start for 24 hours after starting an ACE inhibitor. If the dry cough occurs, the doctor will need to change to another drug.

Angiotensin 11 receptor inhibitor (ARBs): They have similar efficacy, cautions and side effects as ACE inhibitors, but have a reduced incidence of cough and angio-oedema. They are a popular alternative to ACE inhibitors as they don't cause a cough. As with ACE inhibitors, ARBs may be prescribed for heart failure and diabetic nephropathy. Examples include Micardis[®], Cozaar[®] and Omesar[®].

Direct Renin inhibitor: A new drug called aliskiran (Rasilez[®]) was recently launched. A recent Drug and Therapeutics bulletin concluded that on current evidence, there is no justification for using aliskiren in preference to the many effective and longer established alternatives. A new study released in December 2011 advised against using aliskiren in combination with ACE inhibitors or Angiotensin 11 receptor inhibitor (ARBs) in any patient, but especially diabetics and those with poor kidney function. This is because this combination can lead to an increased risk of stroke and kidney problems.

Alpha-blockers: They are generally used in combination with other agents, particularly in patients with other problems which can benefit from their use such as prostatism (prostate problems that affects 40% of older men), type 2 Diabetes and high cholesterol. Doxazosin (Cardura XL[®]) is the most popular alpha-blocker as it has fewer side effects.

Centrally acting agents: Methyldopa is used in high blood pressure in pregnancy, but otherwise they are rarely used as it is poorly tolerated. Methyldopa causes sedation, dry mouth, fatigue, headache, unpleasant dreams, confusion and depression.

Which drug to use

There is little evidence of one drug being more beneficial over another. The choice of agent depends on factors such as cardiovascular risk, presence of other conditions (eg. cardiovascular disease, diabetes, and kidney disease), other medication, age and previous response (favourable and unfavourable) to blood pressure medication.

In 2004, the British Hypertension Society (BHS) developed the ABCD treatment guidelines to encourage improved BP control. The guidelines are not intended to be strictly adhered to; they are intended to give doctors some guidance. An interval of at least 4 weeks should be allowed to observe the full response of any drug before moving to the next step.

The BHS algorithm is as follows for patients under 55:

STEP 1: ACE Inhibitor/ ARB (A) or Beta Blocker (B)

STEP 2: ACE Inhibitor/ ARB (A) or Beta Blocker (B) + CCB (C) or Diuretic (D)

STEP 3: ACE Inhibitor/ ARB (A) + CCB (C) + Diuretic (D)

STEP 4: Add either Alpha blocker, Spironolactone or other diuretic (Resistant Hypertension)

The only difference for older patients (over 55) or black patients is that the first choice (step 1) is a calcium channel blocker or a diuretic. This is because beta blockers are less effective in older or black patients. Newer NICE guidelines in the UK in 2006, guided that beta-blockers should no longer be used as routine first line in high blood pressure at any age.

How many drugs are needed?

There is no definitive answer for this question. Less than 50% of patients are controlled by one drug and more than two-thirds need a combination of two or more drugs to achieve optimal control.

How long do you treat for?

Therapy for high BP is generally for life.

Interactions of over the counter medications with blood pressure medication

Certain over the counter medication (OTC) available in pharmacies or supermarkets should be used in caution or avoided if taking blood pressure medication.

It is important for all those taking prescription medication, no matter what for, to check with their pharmacist before taking OTC medication to ensure there is no interaction.

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

Ibuprofen is a pain killer and anti-inflammatory medicine available to buy over the counter. Nurofen[®] is the most popular brand available to buy over the counter. Ibuprofen should be avoided in hypertensive patients (people suffering from high blood pressure) Ibuprofen (and all other NSAIDs) can increase systolic blood pressure by as much as 5-10mmHg due to fluid and salt retention. Ibuprofen should be avoided in people with asthma and stomach problems. Paracetamol based analgesics are safer in hypertensive patients. Paracetamol is a very effective painkiller, however it does not have anti-inflammatory effects like ibuprofen. However, hypertensive patients suffering from inflammation of the joints or muscles can safely use anti-inflammatory gels available in pharmacies such as ibuprofen or diclofenac gel. They have a local effect so do not raise blood pressure. In Whelehans, we sell Diclac[®] Gel, which is a very cost effective and powerful anti-inflammatory gel. Another safe option for hypertensive patients experiencing inflammatory conditions such as arthritis is Lyprinol[®]. Lyprinol[®] is an omega 3 supplement but is up to 100 times more potent than traditional omega 3 fish oils. It has powerful anti-inflammatory and painkilling effects for inflammatory conditions such as joint pain, back or neck strain and arthritis.

Decongestants

Pseudoephedrine and phenylephrine (eg. Sudofed[®], Actifed[®]) are best avoided in hypertensive patients as they cause a short term increase in blood pressure. Decongestant sprays or Drops such as (xylometazoline, oxymetazoline) are probably a safer alternative as they work directly on the nasal passage and they are unlikely to raise blood pressure. Brands available in pharmacy include Sudofed[®] nasal spray, Vicks Sinex[®] Nasal Spray or Otrivine[®] nasal spray and drops. They should never be used for longer than 5 days as they can cause a rebound effect which can make the problem worse after this time.

Antacids

Some antacids such as Gaviscon[®] have high sodium content and if used on a regular basis can cause fluid retentions and reduce the effects of blood pressure medication. Low sodium antacids such as Maalox[®] are a better alternative when taking blood pressure medication.

Special Patient Groups

Elderly

High blood pressure in the elderly is common and is associated with a significant increase in cardiovascular problems and death.

The diagnosis of high BP may be difficult as older people show greater variation in blood pressure. The doctor needs to take multiple blood pressure measurements (both seated and standing) on several occasions to confirm the diagnosis. While all patients should be advised about the non-drug measures, the majority require drug therapy, with often two or more drugs. The HYVET study in 2008 showed that older hypertensive patients will benefit from blood pressure therapy much more than younger patients. The HYVET study showed a significant reduction in deaths in elderly patients using blood pressure medication. Therefore; it is important to treat high blood pressure in older patients provided they are reasonably well. Blood pressure target for the over 80s group should be around 150/80mmHg. Elderly patients more commonly have isolated systolic hypertension caused by arteriosclerosis (fatty deposits on walls of arterial blood vessels).

Initiation of therapy should be particularly gradual, especially in frail individuals. Thiazide diuretics and the dihydropyridine calcium channel blockers are particularly effective in older patients and in those with isolated systolic hypertension.

Diabetes

The co-existence of hypertension and diabetes mellitus (either Type 1/ 2) substantially increases the risk of complications, including stroke, coronary heart disease, congestive heart failure and peripheral vascular disease (problems with circulation). The risk of cardiovascular mortality also increases, for example, type 2 diabetics have a 2 to 5 fold higher risk of dying from coronary heart disease. The development of high blood pressure may be due to the onset of diabetic nephropathy (kidney damage) in Type 1 diabetics. In both Type 1 and 2, the threshold for starting treatment is BP \geq 140/90 mmHg, the target is $<$ 130/80 mmHg, or lower if proteinuria is present. Proteinuria is an indicator of kidney damage. While consensus regarding optimal first-line therapy is lacking, evidence supports the use of many drugs particularly the ACE inhibitors and the angiotensin 11 receptor inhibitors (ARBs). Maintaining normal BP with the use of ACE inhibitors and ARBs reduce the rate of decline in kidney function. The NHS drug advisory authority in the UK (NICE) advises that the first-line antihypertensive drug for type 2 diabetes should be a once daily generic ACE inhibitor (eg) Lisinopril, Ramipril.

Pregnancy

Women may have pregnancy induced hypertension (ie) high blood pressure which develops after the 20th week of pregnancy. The most worrying form of hypertension in pregnancy is pre-eclampsia, a potentially life threatening condition. Rest remains the integral part of the management of hypertension in pregnancy. Most anti-hypertensive drugs are not safe in pregnancy. ACE inhibitors and Angio-tension 11 inhibitors are particularly harmful to the unborn child so must be avoided. Methylodopa is safe to use during pregnancy and is most often used for hypertension during pregnancy.

Reducing Blood Pressure without medicines

The silent killer

High blood pressure could be described the silent killer. This is because high blood pressure has no symptoms. It can triple your chance of developing heart disease, kidney disease and stroke. Regular checks are important. In Whelehans, we can check your blood pressure for free, simply call in any time. 10,000 people die every year every year in Ireland from preventable heart disease. Don't become a statistic, everybody over 40 should get their cholesterol, blood pressure and risk of diabetes checked once a year. In Whelehans, we can check your cholesterol, blood pressure, blood glucose and body mass index as part of our heart screening service. Screening takes place every Wednesday morning. Results are instant.

Can you reduce blood pressure without medication?

The answer is yes! However, with some people lifestyle changes are not enough and medication is required. The following are ways you can keep your blood pressure down.

Losing weight

Keeping your weight down will help prevent high blood pressure. If you need to lose some weight, start by limiting the portion size of your meals and snacks, and cut way back on high calorie foods. It is recommended to exercise at least half an hour five times a week. You will not lose any weight by cutting down food alone without exercise. If you are having trouble losing weight, ask staff in Whelehans about our weight loss clinic and our clinically proven weight loss products. Our weight loss products are based on natural ingredients and are not dangerous fad diets. You will not have to cut out your main meals which is a dangerous requirement of some diets on the market.

Increase exercise

Exercise is a key factor in preventing high blood pressure. If you get very little exercise now, start slowly and work your way up to at least 30 minutes of a moderate-level activity, such as brisk walking or bicycling, each day.

Healthy food

Eat plenty of fruit and vegetables. Stick to low fat versions of butter and milk. Avoid saturated fats. Do not fry food.

Omega 3

Fish is an important source of omega 3. Try to eat fish at least twice a week. Fish with high levels of omega 3 include salmon, sardines and anchovies. Fish oil stimulates blood circulation, increases the breakdown of fibrin, a compound involved in clot and scar formation, and additionally has been shown to reduce blood pressure. There is strong scientific evidence that omega fatty acids reduce blood triglyceride levels and regular intake reduces the risk of secondary and primary heart attack. Omega 3 supplements are beneficial if you don't eat a lot of fish. Whelehans Omega 3 supplement is €5.50 per 30.

Reduce salt

Salt and sodium can increase blood pressure, so it is important to limit it. It is recommended to limit salt to about one teaspoon daily. On average, 75% of our salt comes from processed food. When buying canned, processed, and convenience foods, most are labelled with sodium content so buy the brands that are lower in sodium. High is more than 1.5g salt per 100g (or 0.6g sodium) and low in salt is 0.3g salt or less per 100g (or 0.1g sodium).

If you salt your food at the table, try using less, or none. It may take a little while to get used to the new flavours, but you may find that food tastes better when you use less salt.

Stop smoking.

Smoking increases your chances of developing a heart disease, stroke, peripheral arterial disease, and several forms of cancer. Your chances of these conditions can increase five fold if you smoke and even more you smoke and your blood pressure is high.

Garlic

Garlic is beneficial in preventing heart disease in many ways. Some recent studies show that it is beneficial in lowering total cholesterol including bad LDL cholesterol. It may help in preventing clots and there is some evidence of its benefits in lowering blood pressure. Garlic adds great flavour to your food. For those concerned about the smell of garlic from their breath, Whelehans Odourless one a day Garlic Capsules are €3.95 per 30 pack. Garlic is also a powerful antioxidant and is great for preventing and fighting colds.

Take your medication regularly

If you are prescribed medication from your doctor for blood pressure, it is very important to take it regularly. If you do not take it every day, your blood pressure will fluctuate, increasing your risk of heart disease. If you or a loved one are prescribed numerous medicines, Whelehans can blister pack your medication for free. We will put your medicine in easy to follow packs that divide your medicines into the times of the day and days of the week. We find this service is very beneficial for older people trying to manage numerous medicines. Whelehans also have a free prescription delivery service. We will collect your prescription from your GP and deliver your medication to your home for free.

Screening Service

Our heart screening service takes place every Wednesday morning; it only takes a few minutes and includes a check for blood pressure, cholesterol, blood glucose (diabetes) and body mass index. Results are instant. Our screening takes place in a private consultation room. You will get a printout of your results on the day. Please note that our foot clinic with chiropodist, James Pedley, takes place every Thursday in our private consultation room. Our free hearing test with our audiologist, Tony Battersea, takes place every second Monday. Call us at 04493 34591 to book any of our screening services or clinics.

For comprehensive and free health advice and information call in to Whelehans, log on to www.whelehans.ie or dial 04493 34591. You can also e-mail queries to info@whelehans.ie.