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Diabetes and high blood pressure

It is important to keep your blood pressure under control if you have diabetes. Stroke, heart disease and other complications are more likely if your blood pressure is high. Tackling unhealthy factors in your lifestyle can help. Some people need medication if lifestyle changes aren't enough.

If you have diabetes you should aim to keep your blood pressure well controlled. Having [high blood pressure \(hypertension\)](#) is one of several risk factors that can increase your chance of developing heart disease, a stroke and some other complications. Treatment includes a change in lifestyle risk factors where these can be improved. Many people with diabetes need to take medication to lower their blood pressure.

How common is high blood pressure in people with diabetes?

In the UK, about 1 in 4 of people have high blood pressure (hypertension). It is less common in younger adults. High blood pressure is more common in people with diabetes. Around 3 in 10 people with [type 1 diabetes](#) and around 8 in 10 people with [type 2 diabetes](#) develop high blood pressure at some stage.

People with diabetes are more at risk of developing high blood pressure if they:

- Are of African-Caribbean origin.
- Are from the Indian sub-continent.
- Have a family history of high blood pressure.

- Have certain lifestyle factors – for example, those who:
 - Are overweight.
 - Eat a lot of salt.
 - Do not eat much fruit and vegetables.
 - Do not take much exercise.
 - Drink a lot of alcohol.

What is high blood pressure?

This is not as simple to answer as it may seem. In general, the higher the blood pressure, the greater the risk to health. Depending on various factors, the level at which blood pressure is said to be high (hypertension) can vary from person to person.

The cut-off point for blood pressure that is said to be high is 140/80 mm Hg or above for people with diabetes and 130/80 mm Hg for those with diabetes and complications (for example, kidney disease). These are lower than the cut-off point for people who do not have diabetes.

Note: high blood pressure actually means that your blood pressure remains above the cut-off point each time it is taken. That is, your blood pressure is sustained at a level higher than it should be and is not just a one-off high reading when you happen to be stressed.

High blood pressure can be:

- Just a high systolic pressure – for example, 170/70 mm Hg.
- Just a high diastolic pressure – for example, 120/104 mm Hg.
- Both – for example, 170/110 mm Hg.

[See the separate leaflet called High Blood Pressure \(Hypertension\).](#)

What causes high blood pressure?

The cause is not known in most cases. This is called essential hypertension. The pressure in the blood vessels depends on how hard the heart pumps, and how much resistance there is in the blood vessels (arteries). It is thought that slight narrowing of the arteries increases the resistance to blood flow, which increases the blood pressure. The cause of the slight narrowing of the arteries is not clear.

Various factors probably contribute. (It is a bit like water in a hosepipe. The water pressure is increased if you open the tap more but also if you make the hosepipe narrower by partially blocking the outflow with your thumb.)

Diabetic kidney disease

Diabetic kidney disease (diabetic nephropathy) is a complication which develops in some people with diabetes. In this condition the kidneys are damaged, which can cause high blood pressure. This is more common in people with type 1 diabetes.

Rarely, high blood pressure is caused by other conditions. It is then called secondary hypertension. For example, certain kidney or hormonal problems can cause high blood pressure.

Do I need any tests?

If you are diagnosed as having high blood pressure (hypertension) you are likely to be examined by your doctor and have some routine tests which include:

- A urine test to check whether you have protein or blood in your urine.
- A blood test to check your kidney function and to check your cholesterol level.
- A heart tracing (electrocardiogram, or ECG).

The purpose of the examination and tests is to:

- Rule out (or diagnose) a secondary cause of high blood pressure.
- Check to see if the high blood pressure has affected the heart.

- Check whether you have other risk factors such as a high cholesterol level.

Several of these tests are ones that are routinely done anyway if you have diabetes, even if you do not have high blood pressure.

Why is high blood pressure a problem?

High blood pressure (hypertension) is a risk factor for developing a cardiovascular disease (such as a heart attack or stroke) and kidney damage, sometime in the future.

If you have high blood pressure, over the years it may have a damaging effect on blood vessels (arteries) and put a strain on your heart.

In general, the higher your blood pressure, the greater your health risk. However, high blood pressure is just one of several possible risk factors for developing a cardiovascular disease.

Other risk factors that also increase the risk of developing a cardiovascular disease are:

- Lifestyle risk factors that can be prevented or changed:
 - Smoking.
 - Lack of physical activity (a sedentary lifestyle).
 - Obesity.
 - An unhealthy diet.
 - Excess alcohol.
 - High cholesterol blood level.
 - High fat (triglyceride) blood level.
- Diabetes.
- Kidney diseases that affect kidney function.
- A strong family history. This means if you have a father or brother who developed heart disease or a stroke before they were aged 55, or in a mother or sister before they were aged 65.

- Being male.
- An early menopause in women.
- Age. The older you become, the more likely you are to develop furring or 'hardening' of the arteries (atheroma).
- Ethnic group. For example, people who live in the UK, with ancestry from India, Pakistan, Bangladesh or Sri Lanka, have an increased risk.

Diabetes plus high blood pressure is a particularly strong combination of risk factors.

In addition, some other complications of diabetes are more common if you have high blood pressure. For example, damage to the back of the eye (diabetic retinopathy) and kidney damage related to diabetes (diabetic nephropathy).

What are the benefits of lowering blood pressure?

There is now plenty of good evidence from studies that controlling blood pressure in people with diabetes reduces the risk of future complications.

A large research study called the UK Prospective Diabetes Study confirmed this. In this study, many people with diabetes were monitored over several years. The study found that those with well-controlled blood pressure had nearly a third less risk of dying from complications related to diabetes (heart attack, stroke, etc) compared with those with poorly controlled blood pressure.

In fact, this study found that good control of blood pressure was even more beneficial than good control of the blood sugar (glucose) level to reduce the risk of developing complications from diabetes.

Since this study, other studies have been undertaken which confirm these results.

How can blood pressure be lowered?

There are two ways in which blood pressure can be lowered:

- Modifications to lifestyle (weight, exercise, diet, salt, and alcohol) if any of these can be improved upon (details below).
- Medication (details below).

Lifestyle treatments to lower high blood pressure

- Lose weight if you are overweight:
 - Losing some excess weight can make a big difference.
 - Blood pressure can fall by up to 2.5/1.5 mm Hg for each excess kilogram which is lost.
 - Losing excess weight has other health benefits too.
- Regular physical activity:
 - If possible, aim to do some [physical activity](#) on five or more days of the week, for at least 30 minutes. For example, brisk walking, swimming, cycling, dancing, etc.
 - Regular physical activity can lower blood pressure in addition to giving other health benefits.
 - If you previously did little physical activity and change to doing regular physical activity five times a week, this can reduce your blood pressure.
- Have a low salt intake:
 - The amount of salt that we eat can have an effect on our blood pressure. Government guidelines recommend that we should have no more than 6 grams of salt per day. (Most people currently have more than this.)
 - Tips on how to reduce salt include:
 - Use herbs and spices rather than salt to flavour food.
 - Limit the amount of salt used in cooking and do not add salt to food at the table.
 - Choose foods labelled 'no added salt' and avoid processed foods as much as possible.

- Eat a healthy diet
 - If you have diabetes you will normally be given plenty of advice about a healthy diet.
 - A healthy diet provides health benefits in different ways. For example, it can lower cholesterol and help control your weight. It also has plenty of vitamins, fibre and other nutrients which help to prevent certain diseases. [See the separate leaflet called Type 2 Diabetes Diet.](#)
- Drink alcohol in moderation:
 - Too much alcohol can be harmful and can lead to an increase in blood pressure.
 - You should not drink more than the recommended amount. That is for both men and women no more than 14 units of alcohol per week, spreading the units out through the week and having at least two alcohol-free days a week.
 - Pregnant women and women trying to become pregnant should not drink alcohol at all.
 - One unit is in about half a pint of normal-strength beer, or two thirds of a small glass of wine, or one small pub measure of spirits.
 - Cutting back on heavy drinking improves health in various ways, including lowering your blood pressure.

Treatment with medication

- If you have diabetes, treatment with medicines is usually advised if your blood pressure remains at 140/80 mm Hg or above despite lifestyle treatments.
- The target blood pressure is below 130/80 mm Hg if you have had kidney or eye problems, or have had a stroke.

There are several different medicines that can lower your blood pressure. The one chosen depends on such things as:

- Whether you have other medical problems.

- Whether you take other medication.
- Possible side-effects of the medicine.
- Your age.
- Your ethnic origin.

The first medicine most often used is a medicine called an angiotensin-converting enzyme (ACE) inhibitor. ACE inhibitors protect against kidney damage as well as helping to control blood pressure. [See the separate leaflet called Diabetic Kidney Disease.](#)

One medicine reduces high blood pressure to the target level in less than half of cases. This therefore means that it is common to need two or more different medicines to reduce your blood pressure to a target level (140/80 mm Hg or below).

In about a third of cases, three medicines or more are needed to get blood pressure to the target level. [See the separate leaflet called Medicine for High Blood Pressure.](#)

How long is medication needed for?

In most cases, medication is needed for life. However, in some people whose blood pressure has been well controlled for a period of time, medication may be able to be stopped. In particular, in people who have made significant changes to their lifestyle (such as lost a lot of weight, stopped heavy drinking, etc). Your doctor will be able to advise you if you can reduce any of your medication.

Smoking and high blood pressure

Smoking does not directly affect the level of your blood pressure. However, smoking greatly adds to your health risk if you already have high blood pressure (hypertension) and diabetes. If you smoke, you should make every effort to stop.

Further reading

- [Management of diabetes](#); Scottish Intercollegiate Guidelines Network – SIGN (March 2010 – updated November 2017)

- [Diabetes UK](#)
- [Type 1 diabetes in adults: diagnosis and management](#); NICE Guidelines (August 2015 – last updated August 2022)
- [Diabetes \(type 1 and type 2\) in children and young people: diagnosis and management](#); NICE Guidelines (Aug 2015 – updated May 2023)
- [Diabetic foot problems: prevention and management](#); NICE Guidelines (August 2015 – last updated October 2019)
- [Type 2 diabetes in adults: management](#); NICE Guidance (December 2015 – last updated June 2022)
- [Stewart MW](#); Treatment of diabetic retinopathy: Recent advances and unresolved challenges. World J Diabetes. 2016 Aug 25;7(16):333–41. doi: 10.4239/wjd.v7.i16.333.
- [Sharma H, Lencioni M, Narendran P](#); Cardiovascular disease in type 1 diabetes. Cardiovasc Endocrinol Metab. 2019 Feb 13;8(1):28–34. doi: 10.1097/XCE.000000000000167. eCollection 2019 Mar.

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