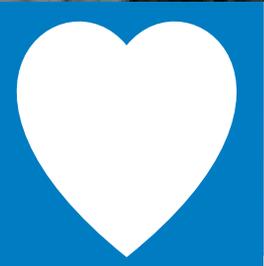
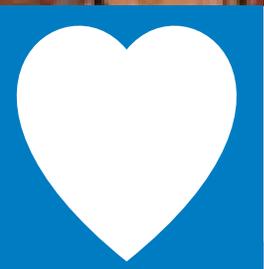


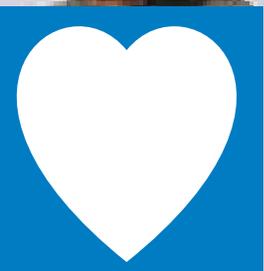
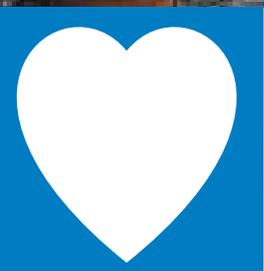
Includes new recommendations



CholesterolTM **LESS**



*A guide to cholesterol
and heart disease
for people with diabetes*



Developed
and Sponsored
by Pfizer

Assisted by



The charity for
people with diabetes

What is ChoLESterol?



ChoLESterol is a disease awareness programme that has been developed by Pfizer – the world's largest pharmaceutical company. The aim of the programme is to educate people in the UK about cholesterol and the health risks associated with raised cholesterol.

This booklet has been produced to provide further information about this important health issue for those of you with diabetes. While many

people would benefit from managing their cholesterol level, this is especially important when you have diabetes.

In this booklet you will find further information about cholesterol including **important new changes regarding your cholesterol number as recommended by leading UK heart doctors.**

Please note, a larger-text version of this booklet is available at www.lesscholesterol.co.uk

REMEMBER

Your doctor is the best person to talk to about your cholesterol level or your diabetes and how to minimise any associated health risks.



We hope that you find this booklet interesting and informative

Dealing with diabetes and heart disease

Heart disease is the biggest killer in the UK, and if you have diabetes you have a greater risk of heart disease or stroke. For example, heart disease or stroke (both referred to as cardiovascular disease) accounts for up to three quarters of all deaths in people with diabetes. Importantly, more than 7 out of every 10 people with Type 2 diabetes have raised cholesterol which can lead to cardiovascular disease.



The good news is that this is often preventable, with appropriate lifestyle changes, disease management and treatment where appropriate.

As recommended by Government guidelines and leading UK heart doctors, this includes keeping a careful check on your cholesterol level or 'number'. Given that you are quite used to managing your diabetes and addressing issues like your diet or taking medication, this shouldn't be too much more to think about. By considering it as a general part of dealing with your diabetes, it could make a big difference to your health.

"So, do I need to do anything?"

Yes. If you have recently been diagnosed with diabetes or if you have had diabetes for a while and you don't know your 'cholesterol number' then yes the chances are you do need to talk to your doctor. Read on to find out more.

What is Cholesterol?

Cholesterol is a type of fat (also referred to as a lipid) found in all of us. In fact, it is an essential compound whose important roles include making cells (the body's 'building blocks') and hormones (which act as important chemical messengers in the body).

Cholesterol is transported around the different parts of the body by proteins. Our body makes its own cholesterol in the liver but a small amount is obtained from our diet.

It is important to note that there are two types of cholesterol:

♥ **'BAD' CHOLESTEROL**
(known as low density lipoprotein: LDL)

♥ **'GOOD' CHOLESTEROL**
(known as high density lipoprotein: HDL)

'BAD' LDL-cholesterol is the most commonly found cholesterol in our bodies. Although our bodies need LDL-cholesterol to transport cholesterol from the liver where it is made, to the cells where it is needed, too much of it can block up our arteries.

'GOOD' HDL-cholesterol makes up about a third of the cholesterol in

our blood. It is known as good cholesterol because it can carry excess cholesterol away from our arteries and back to the liver, where it is broken down and recycled.

So, in terms of the potential damaging effects of cholesterol, what is important is the proportion of these two types of cholesterol in our blood.

What is my cholesterol number?

Your cholesterol number indicates the total level of cholesterol in your blood. It is important to **KNOW YOUR NUMBER** as this will allow you to

manage your level of cholesterol and subsequently your risk of heart disease and stroke.

What should my cholesterol number be?

Cholesterol levels are usually measured as TOTAL CHOLESTEROL LEVELS (total

amount of 'GOOD' and 'BAD' cholesterol). This is also known as your CHOLESTEROL NUMBER.

Changes and recommendations

As from December 2005, leading UK heart doctors - supported by patient charities such as Diabetes UK - now recommend a lower target for total cholesterol of below 4.0mmol/l

The new recommendations are from the Joint British Societies (JBS 2)

TOTAL CHOLESTEROL: below 4.0mmol/l
'BAD' LDL-CHOLESTEROL: below 2.0mmol/l

mmol/l is the unit used to measure the amount of cholesterol in your blood

These leading heart doctors now recommend that the previous target of 5.0mmol/l should be regarded as a minimum standard. The new target of below 4 is the optimum standard for total cholesterol (ie the ideal level) based on the latest evidence highlighting the benefits of treating to this target.

"So, my total cholesterol level needs to be below specific numbers?"

Yes. Everyone's total cholesterol needs to be below a specific number but is even more important if you have diabetes since you are at even greater risk of heart disease or stroke. Remember that the new recommendations (based on the latest evidence) are lower cholesterol numbers (as outlined above). You may want to discuss this with your doctor.

Are there any other terms I need to be familiar with?

Yes. Some other terms you may want to be familiar with include:

DYSLIPIDAEMIA – a term used to describe conditions where there are high levels of fat and/or an unusual mix of fat levels in the blood. Having high cholesterol is one form of dyslipidaemia.

TRIGLYCERIDE is another form of fat found in the body and raised triglyceride levels in the blood is also a risk factor for heart disease. If you have diabetes, you are more likely to have increased triglyceride levels.

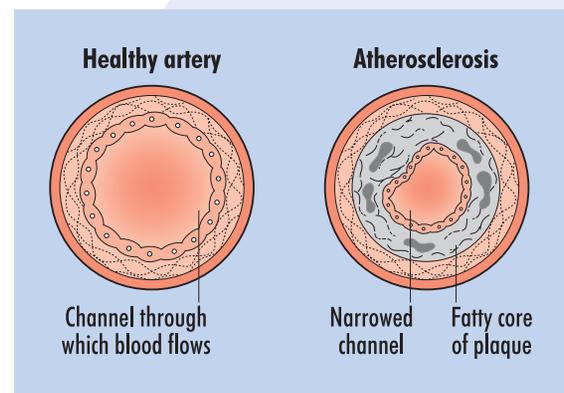
How does raised cholesterol lead to heart disease or stroke?

Although cholesterol is important to health, a high total level of cholesterol or a high level of **'BAD'** (LDL) cholesterol is a risk factor for heart disease.

Raised levels of total cholesterol or **'BAD'** (LDL) cholesterol can lead to the build up of fatty material known as plaque, in the arteries. As you probably know, the arteries transport blood around the body. The build up of fatty material can narrow and clog the arteries leading to a number of health problems.

The narrowing of the arteries is caused by atherosclerosis. When this happens the arteries become partially blocked, obstructing blood flow to the heart or brain (or a clot

breaks away from the artery wall), leading to a heart attack or stroke. Some people with atherosclerosis experience chest pain upon physical activity (angina) which is due to an inadequate supply of blood reaching the heart, as the arteries become narrow due to the build up of fatty material.



Are there any symptoms of raised cholesterol?

Raised cholesterol is not a disease in itself, but is associated with a number of illnesses. Therefore, you cannot tell if you have raised cholesterol unless you get your cholesterol levels measured (ie *know your cholesterol number*). Any symptoms that you do experience may include those associated

with narrowing of the arteries. These include chest or leg pain upon physical activity. In extreme circumstances, this narrowing of the arteries could cause you to black out. However it is worth remembering that many people with raised cholesterol do not experience any noticeable symptoms.

How can I find out what my cholesterol number is?

Measuring cholesterol levels is simple. Your GP or nurse will take a small blood sample which is then used to measure the amount of cholesterol in your blood. Before this test you will normally need to fast (not eat) for 8-12 hours or overnight in order that an accurate reading can be made. Obviously you should discuss this with your GP or nurse because fasting may not be appropriate as part of your diabetes management.

The only way to find out if you have a raised cholesterol number is to get a blood test as you cannot normally tell if you have a raised level. Also, remember recommendations have recently changed and leading UK heart doctors now recommend lower cholesterol numbers than previously suggested; you may want to discuss this with your doctor.



“So, I could have raised cholesterol and not know about it?”

Yes. Many people do not experience noticeable symptoms. So it is important that you find out your cholesterol number by getting a cholesterol test from your GP.

Can I lower my cholesterol number?

Yes, there are a number of things you can do which will help you to lower your cholesterol (ie lower your total and **'BAD'** (LDL) cholesterol). These include:



DIET

Studies have shown that dietary measures can lower blood cholesterol levels. A balanced diet low in fat and sugar with meals including starchy foods like bread, potatoes and chapattis with plenty of fruit and vegetables is best. Although some fat in the diet is necessary it is the type and quantity that is important.

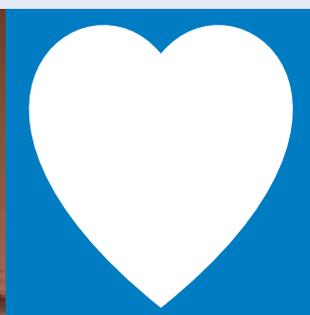
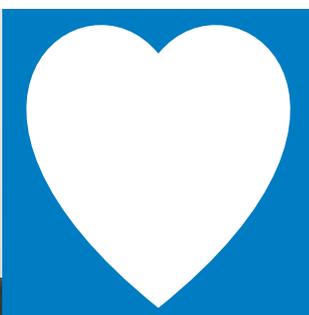
SATURATED FATS are mainly found in animal and dairy products like butter, ghee, lard, cheese, full-fat milk and cream. Saturated fats are converted by our bodies into cholesterol so it is important that we reduce our intake.

UNSATURATED FATS include polyunsaturated fats and monounsaturated fats.

POLYUNSATURATED FATS are found in many vegetable margarines and oils. They lower the **'BAD'** (LDL) cholesterol, but they can, if intake is high also lower the **'GOOD'** (HDL) cholesterol.

MONOUNSATURATED FATS lower **'BAD'** cholesterol without lowering **'GOOD'** cholesterol. Monounsaturated fats are found in foods like olive oil, avocados, rapeseed and ground nut oils.

And because fat is high in calories, it is generally important to reduce the total amount of fat in our diets, particularly saturated fat. Foods containing cholesterol eg shellfish, eggs and liver do not make much difference to your blood cholesterol as long as they are eaten in sensible amounts. However, you should moderate your intake of dietary cholesterol if excessive.





WEIGHT

Being overweight can be due to a variety of reasons including an unhealthy diet and lack of physical activity. Weight loss, if needed, will help to lower your cholesterol levels.



ALCOHOL

Moderate amounts of alcohol have been shown to be beneficial. And studies have shown it can raise your **'GOOD'** (HDL) cholesterol, however the evidence is not clear cut. Excessive drinking can damage your health and lead to raised blood pressure and raised triglycerides (a type of blood fat linked with heart disease).

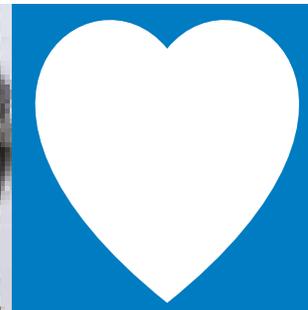
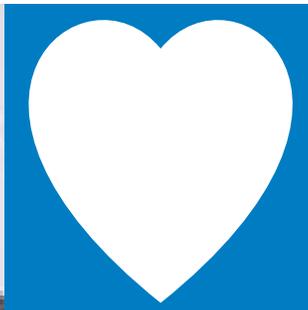
PHYSICAL ACTIVITY

As well as helping to control your weight, exercise helps to increase your amount of **'GOOD'** (HDL) cholesterol.



“So, there are a number of things I can do to lower my cholesterol number?”

Yes. As well as addressing your diet, weight and level of physical activity, it may also be necessary to take medication. All medications available are discussed overleaf.



Are there treatments available to help lower my cholesterol?

Yes - since lifestyle modification may not be enough to fully control your cholesterol number. There are a number of different treatments available to lower cholesterol. The following information may help you talk to your doctor about finding the treatment that is right for you.

STATINS

This group of oral tablets are regarded as the treatment of choice for **'BAD'** (LDL) cholesterol. They work by reducing the creation of **'BAD'** (LDL) cholesterol.

There are five statins currently available in the UK for reducing blood cholesterol: atorvastatin (Lipitor), fluvastatin (Lescol), pravastatin (Lipostat), rosuvastatin (Crestor), simvastatin (Zocor).

Different products may have different benefits – for instance some statins may give bigger cholesterol reductions than others – but it is worth discussing these with your doctor to decide which is most suitable for you.

FIBRATES

These can lower triglycerides and raise **'GOOD'** (HDL) cholesterol.

MARINE TRIGLYCERIDES (Fish oils)

The exact mechanism of these capsules is unknown. They reduce triglycerides in the blood. Note that high levels of fish oils are not recommended if you have diabetes.

BILE ACID SEQUESTRANTS

These are powders which must be dissolved in liquid before drinking. They work by increasing the activity of liver cells resulting in the breakdown of LDL-cholesterol.

NICOTINIC ACID DERIVATIVES

These can lower triglycerides and raise **'GOOD'** HDL cholesterol.

ISPAGHULA HUSK

A form of soluble fibre which must be mixed or dissolved in water before taking. It is thought to reduce blood levels of cholesterol by reducing cholesterol absorption from the gut.

CHOLESTEROL ABSORPTION INHIBITOR

These capsules also work by reducing cholesterol absorption from the gut.

Whatever treatment you take, you should discuss it with your doctor to ensure that it brings you down to your target cholesterol number. Remember experts now recommend a total cholesterol level (cholesterol number) of 4.0mmol/l or below and a **'bad'** LDL - cholesterol number of 2.0mmol/l or below for those with diabetes. Check with your healthcare team what level is right for you.

The following table lists all of the treatments currently available from your doctor:

TREATMENT	TREATMENT CLASS	AVAILABLE AS
Atorvastatin	Statin	Tablet
Fluvastatin	Statin	Tablet / capsule
Pravastatin	Statin	Tablet
Rosuvastatin	Statin	Tablet
Simvastatin	Statin	Tablet
Bezafibrate	Fibrate	Tablet
Ciprofibrate	Fibrate	Tablet
Fenofibrate	Fibrate	Tablet / capsule
Gemfibrozil	Fibrate	Tablet / capsule
Eicosapentaenoic & docosahexaenoic acid	Marine triglyceride	Capsule
Colestipol hydrochloride	Bile acid sequestrant	Sachet
Colestyramine	Bile acid sequestrant	Sachet
Ezetimibe	Cholesterol absorption inhibitor	Tablet
Ezetimibe Simvastatin combination	Cholesterol absorption inhibitor & statin	Tablet
Acipimox	Nicotinic acid derivative	Capsule
Nicotinic acid	Nicotinic acid derivative	Tablet



“I’m generally healthy – could I still benefit from treatment?”

Yes. Because you have diabetes, you may need extra help lowering your cholesterol, which in turn may help to lower your risk of heart disease or stroke.

How else can I lower my risk of cardiovascular disease?

As well as managing your cholesterol, there are a number of other risk factors that are important – particularly if you have diabetes. These are controllable and include:

BLOOD GLUCOSE

Poorly controlled blood glucose is a risk factor for cardiovascular disease. You should already have a strategy for controlling your blood glucose levels, as part of managing your diabetes.

BLOOD PRESSURE

You should also keep your blood pressure in check. High blood pressure (known as hypertension) is another big cause of heart attacks and cardiovascular disease. Like high cholesterol, hypertension may not produce any obvious symptoms. People with diabetes should be monitored or treated for hypertension. If you're not, you should talk to your doctor about this.

SMOKING

Smoking also increases the risk of heart disease and it goes without saying that if you smoke, you should really do something about stopping as soon as possible.

DIET/OBESITY

Being overweight can increase your level of cholesterol and likelihood of having hypertension.

How should I talk to my doctor about my cholesterol number?

Your doctor will be happy to talk to you about such an important health matter. He or she is also the best person to talk to about the different treatments available, should you require one. You may wish to ask your doctor:

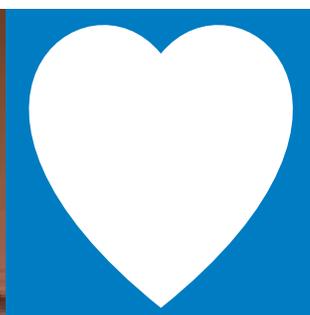
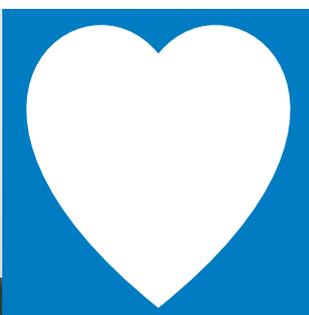
- What is my cholesterol number?
- What should my cholesterol number be?
- What treatments are available to help lower my number?
- How long will it take to get my number within the recommended target levels?
- How are these treatments taken?
- How long are they taken for?
- Are there any side effects?
- What else can be done to lower cholesterol levels?

You may also wish to talk to your doctor about the new lower cholesterol numbers as recommended by leading UK heart doctors.

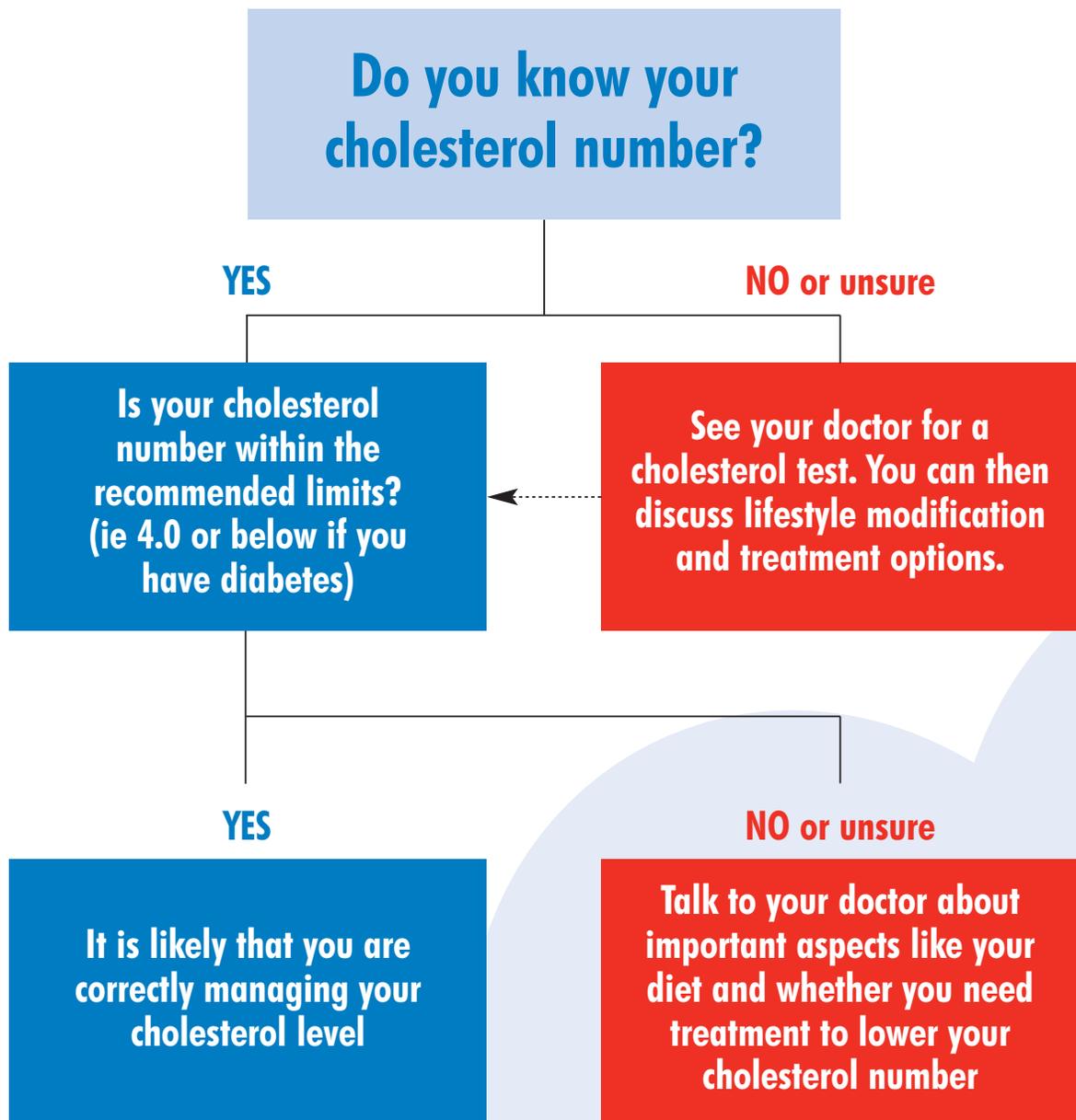
What is my doctor likely to do?

If your doctor decides that your cholesterol level needs measuring, you will have to give a small sample of blood. Don't worry, this is a simple procedure and only takes a minute or two. Your doctor may ask you to fast (not eat) for a number of hours before taking your blood – again they will advise you whether this is suitable as part of your diabetes management.

From this blood sample, your total cholesterol level can be measured. The result should be available within a number of days, after which your doctor will be able to tell you your cholesterol number, and you can discuss how you can reduce your cholesterol level and whether you need to receive treatment.



Your next steps...



“So, most people with diabetes are likely to need help controlling their cholesterol number?”

Yes. And finding out your cholesterol number is the first step to managing your cholesterol.

Summary

-  **If you have just been diagnosed with diabetes or if you have had diabetes for a while and you don't know your cholesterol number, it is likely you need to talk to your doctor**
-  **If you have diabetes, even mildly raised cholesterol can significantly increase your risk of heart disease or stroke**
-  **If you have diabetes, experts now recommend that your total cholesterol number is 4.0 or below and your 'bad' LDL-cholesterol is 2.0 or below. Check with your healthcare team what level is right for you.**
-  **Measuring your cholesterol levels is quick and simple and you can control your level by modifying your lifestyle and/or taking treatment**
-  **You should make an appointment to talk to your doctor if you are not sure whether you are correctly managing your cholesterol number**

Further help and information



Diabetes UK
Macleod House
10 Parkway
London NW1 7AA
Tel: 020 7424 1000

DIABETES UK is the leading charity in the UK working to improve the lives of people with diabetes.

They provide education and support to people with diabetes and campaign to influence diabetes health policy and healthcare delivery throughout the UK. Diabetes UK also funds research that has the potential to deliver a better quality of life for people with diabetes.

Diabetes UK operates a membership scheme, designed to help people with diabetes manage their condition and lead a healthy life. To find out more about Diabetes UK and what they do, visit their website www.diabetes.org.uk, or to become a member call free on **0800 1385605** or visit www.diabetes.org.uk/jointoday.

For confidential support and information about any aspect of diabetes, contact the Diabetes UK Careline on **0845 120 2960**.



H•E•A•R•T UK
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Maidenhead
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Tel: 01628 628 638
Fax: 01628 628 698

www.heartuk.org.uk

H•E•A•R•T UK supports the identification of people at risk of heart disease.

Further help and information



Netdoctor is an online health resource where qualified doctors and specialists provide information and advice on a range of health issues.

Netdoctor has recently developed a Diabetes Community where there is extensive information about the many aspects of managing diabetes, including ways to minimise your risk of heart disease and stroke. It can be found at <http://diabetes.netdoctor.co.uk>

Know your numbers

Everyone should know the important numbers below that relate to health. However, this is particularly important if you have diabetes, since you need to keep a closer check on your health.

Your weight / BMI

Your body mass index (BMI) is used to judge your weight according to your height:

BMI value
18.5-24.9 – normal weight
25-29.9 – overweight
30 and over – obese

The following numbers are all based on the new recommendations from leading UK heart doctors (JBS 2) and are regarded as optimal (or ideal) for people with diabetes.

Your blood pressure

For people with Type 2 diabetes, the goals are:

Below 130mmHg for systolic pressure
Below 80mmHg for diastolic pressure

Check with your healthcare team what is the right target for you.

Your blood glucose

HbA1c below 6.5%

Your healthcare team will agree a target with you.

Your cholesterol

As outlined in this booklet, if you have diabetes, your cholesterol number should be:

Total cholesterol: below 4.0mmol/l
'Bad' LDL-cholesterol: below 2.0mmol/l

Keeping a check on your cholesterol number here

You may wish to record your cholesterol number here and make a note of any further appointments with your doctor to check your number.

Date	Your cholesterol number
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Notes
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