A photograph of a man and two children playing soccer in a park. The man, wearing a green t-shirt and blue jeans, is in the foreground, kicking a soccer ball. A young boy in a blue and white striped shirt is in the middle ground, also kicking the ball. Another child in a red shirt is partially visible behind him. A younger child in a white shirt and blue pants is standing to the right, watching the game. The background shows lush green trees and a building in the distance.

ARE YOU AT RISK OF TYPE 2 DIABETES? Information Booklet



Leicester Diabetes Centre
Committed to Growing International Research, Education & Innovation



THIS BOOKLET HAS BEEN DESIGNED TO
HELP YOU TO UNDERSTAND:

- WHY YOU ARE AT HIGH RISK OF
DEVELOPING TYPE 2 DIABETES
- WHAT YOU CAN DO TO LOWER YOUR
RISK OF DEVELOPING DIABETES AND
STAY HEALTHY

WHAT DOES IT MEAN TO BE 'AT HIGH RISK' OF DEVELOPING TYPE 2 DIABETES?

The number of people with Type 2 diabetes is increasing worldwide. By the time people find out they have diabetes, they often have a complication caused by their diabetes such as eye or kidney disease. Type 2 diabetes is a serious disease where the body cannot keep blood glucose (sugar) levels within a healthy range.

We know that Type 2 diabetes develops over a long time. There is a stage where blood glucose levels are higher than normal but not high enough to be classed as diabetes. People who are picked up at this stage are often told that they are at 'high risk' of developing Type 2 diabetes.

Until recently, you may have heard this stage called:

- prediabetes
- non diabetic hyperglycaemia
- impaired glucose tolerance
- impaired fasting glucose.

All of these names relate to someone having a higher risk of developing Type 2 diabetes compared with the general population.

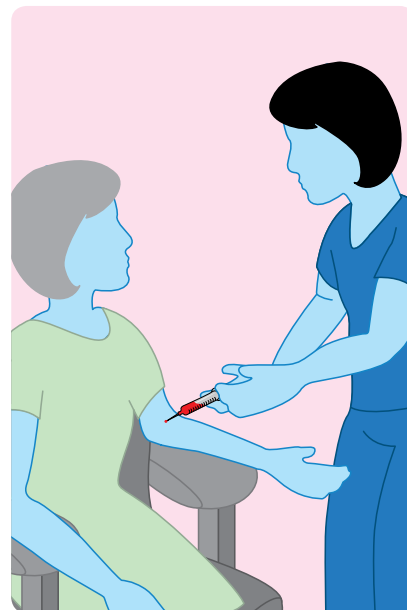
HOW CAN I TELL IF I AM AT HIGH RISK OF DEVELOPING TYPE 2 DIABETES?

Your GP may invite you to have one of two blood tests to measure how much glucose (sugar) you have in your blood:

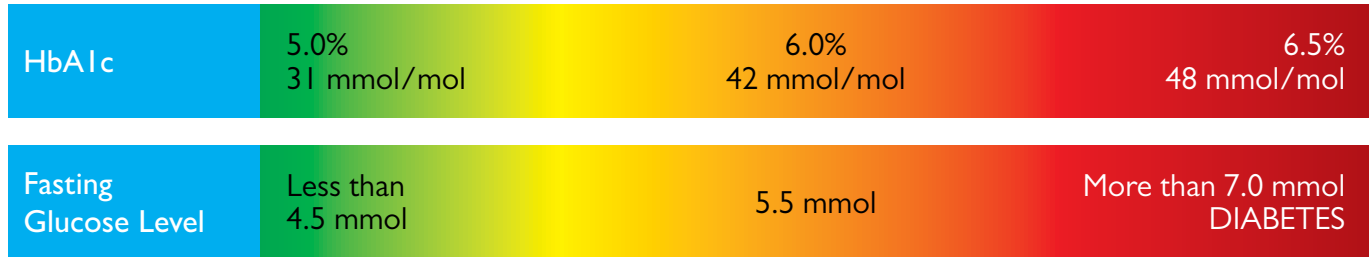
1. You may have a fasting blood glucose test taken which measures how much glucose (sugar) is in the blood first thing in the morning after you have not eaten all night.

or

2. You may have a blood test called an HbA1c. This test measures what your blood glucose (sugar) levels have been like over the past 8-12 weeks.



Look at the chart below and
see where your results sit:



If your blood glucose test(s)
is/are in the:

Green = you are at
low risk of developing
Type 2 diabetes

Yellow = you are at
risk of developing
Type 2 diabetes

Red = you are at
high risk of developing
Type 2 diabetes

TYPE 2 DIABETES RISK ASSESSMENT FORM

Work through this form to calculate your risk. For each question, tick one box. The number in the green box next to the box you have ticked is your score for that question. When you have answered all the questions, add up your total score.

1. Which age group are you in?				5. Which waist size group are you in?*								
49 yrs or younger	<input type="checkbox"/>	0	60 - 69 yrs	<input type="checkbox"/>	9	Less than 90 cm	<input type="checkbox"/>	0	100 - 109 cm	<input type="checkbox"/>	6	
50 - 59 yrs	<input type="checkbox"/>	5	70 yrs or older	<input type="checkbox"/>	13	90 - 99 cm	<input type="checkbox"/>	4	110 cm & above	<input type="checkbox"/>	9	
2. Are you male or female?				6. Which Body Mass Index (BMI) group are you in?*								
Male	<input type="checkbox"/>	1	Female	<input type="checkbox"/>	0	Less than 25	<input type="checkbox"/>	0	30 - 34	<input type="checkbox"/>	5	
3. How would you describe your ethnicity?				25 - 29				<input type="checkbox"/>	3	35 & above	<input type="checkbox"/>	8
White European	<input type="checkbox"/>	0	Any other Ethnic Group	<input type="checkbox"/>	6	7. Have you ever been told by a doctor or nurse that you have high blood pressure?						
4. Do you have a parent, brother, sister and/or child with Type 1 or Type 2 diabetes? (Do not count step-relatives)				Yes		<input type="checkbox"/>	5	No		<input type="checkbox"/>	0	
Yes		<input type="checkbox"/>	5	No		<input type="checkbox"/>	0	Add up your score here:				

* See Resources box

Check your risk score:

25 points or more = VERY HIGH RISK

You have a **very high** chance of having Type 2 diabetes now or getting it in the future. You need to visit you GP surgery for a diabetes test

16 to 24 points = HIGH RISK

You have a **high** chance of having Type 2 diabetes or getting it in the future. You should discuss your risk at your GP surgery; you may need a diabetes test

**7 to 15 points =
MEDIUM RISK**

You have a **medium** chance of having Type 2 diabetes or getting it in the future

**0 to 6 points =
LOW RISK**

You are at **low** risk of developing Type 2 diabetes if you follow a healthy lifestyle

* Resources:

To correctly calculate your waist size and Body Mass Index (BMI) please use the Diabetes UK website.

Find out more at:

www.diabetes.org.uk/Riskscore/

WHAT ARE THE RISK FACTORS FOR DEVELOPING TYPE 2 DIABETES?

There are many risk factors for developing Type 2 diabetes. Some of these risk factors can be changed, some can't be changed.



Being less active

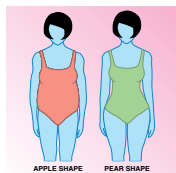
Yes ☐ No ☐



Depression/
chronic stress

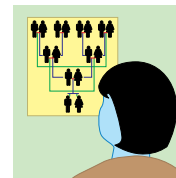
Yes ☐ No ☐

Tick the ones that you think can be changed.



Obesity - weight
around the
middle (tummy)

Yes ☐ No ☐



Family history

Yes ☐ No ☐



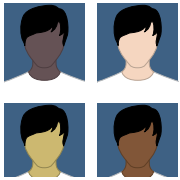
Saturated fat

Yes ☐ No ☐



Getting older

Yes ☐ No ☐



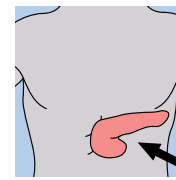
Ethnicity

Yes ☐ No ☐



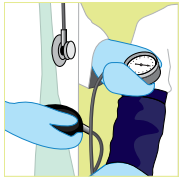
Abnormal blood glucose test

Yes ☐ No ☐



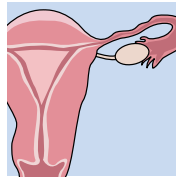
Pancreas damage

Yes ☐ No ☐



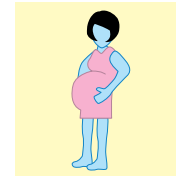
High blood pressure

Yes ☐ No ☐



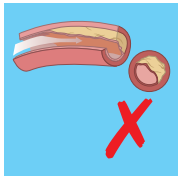
Polycystic ovary syndrome

Yes ☐ No ☐



Diabetes in pregnancy (gestational)

Yes ☐ No ☐



High blood cholesterol (fat)

Yes ☐ No ☐



Steroids

Yes ☐ No ☐

WHAT IS MY RISK?

What is my personal risk of developing Type 2 diabetes?

Your risk of developing Type 2 diabetes will depend on the type and number of risk factors that you have. Research shows us that within the next ten years up to half of people at 'high risk' of developing Type 2 diabetes will go on to develop it.

What are the symptoms of being 'at high risk' of developing Type 2 diabetes?

There are no symptoms associated with being at high risk of developing Type 2 diabetes. Symptoms only occur when blood glucose levels are high enough to result in Type 2 diabetes.

Common symptoms of Type 2 diabetes are:

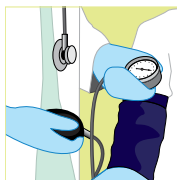
- Feeling tired
- Going to the toilet to pass water often, especially at night time
- Feeling thirsty
- More infections
- Blurred vision
- Weight loss

Many people can have Type 2 diabetes for months or years without realising it. This is because the symptoms of diabetes can quite easily be put down to old age. By this time some diabetes complications associated with diabetes such as heart problems, nerve damage, eye and foot problems may have already developed.

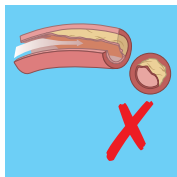


HOW CAN BEING AT 'HIGH RISK' OF TYPE 2 DIABETES AFFECT MY FUTURE HEALTH?

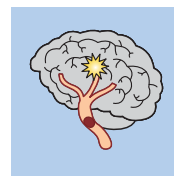
Being at high risk of developing Type 2 diabetes is associated with having heart problems such as heart attack, angina and stroke. Often these individuals, already have high blood pressure and high cholesterol (fat) levels. These are strong predictors of heart attack, stroke and angina.



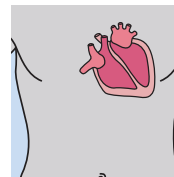
High blood pressure



High cholesterol



Stroke



Heart attack

CAN I REDUCE MY RISK OF DEVELOPING TYPE 2 DIABETES?

The answer is - **yes you can!**

The good news is that everyone at risk of Type 2 diabetes can do things to keep healthy and slow down or even stop the development of Type 2 diabetes. Recent studies have shown that lifestyle changes are more effective than taking tablets in stopping the development of Type 2 diabetes.

For every 100 individuals who develop Type 2 diabetes over a given period of time, 90 cases may have been prevented by undertaking simple lifestyle changes.

These are:

- Be more active
- Keep a healthy weight
- Eat less fat, especially saturated fat
- Eat more fibre



HOW CAN BEING MORE ACTIVE BENEFIT ME?

What is moderate activity?

Moderate activity refers to any activity that makes you feel breathless and increases your heart rate. As a rule of thumb, if you can sing whilst exercising, you are at light-intensity. If you can't sing, but can talk, you are at moderate-intensity. If you can't talk, you are at vigorous-intensity.

Many every day activities may count as moderate activity. You do not have to go to a gym. Walking, hoovering, gardening, shopping all can count as part of your daily activity. You will know if you are working at a moderate level as you will feel a little breathless but still be able to talk.



Do I have to do the 30 minutes all at once?

The 30 minutes per day recommendation can be broken down into three 10 minute chunks or two fifteen minute chunks.

What if I can't do moderate activity?

Evidence suggests that even if you sit down less you can gain many positive health benefits. So getting up in TV adverts, breaking your sitting time and moving around a bit more will all help you to improve your health. The message for everyone, even if they are unable to be moderately active is to sit less and move more.



REMEMBER!
SIT LESS,
MOVE MORE

BE MORE ACTIVE

Being active has many health benefits such as:

- Reducing your risk of developing Type 2 diabetes by 50%
- Helping you to maintain a healthy weight
- Reducing your risk of having a heart attack by 30%
- Improving your blood cholesterol (fat) levels
- Reduce your blood pressure
- Helping keep your joints healthy
- Helping with stress and depression.

How much exercise should I do?

To reduce your risk of developing Type 2 diabetes, aim for a minimum of 30 minutes of moderate intensity physical activity on most days of the week. Aim for this to add up to at least 150 minutes per week. The more activity you can do, the greater the health benefit for you.

The 30 minutes per day recommendation is thought to be the minimum to gain meaningful health benefits. In general terms the benefit of physical activity works on a continuum, where some activity is better than no activity and the more you do the greater the benefit. Therefore, someone doing 45 minutes per day of moderate-intensity physical activity will gain greater benefit than doing 30 minutes. However, doing 30 minutes is better than 15 minutes and so on.



HOW CAN BEING MORE ACTIVE HELP ME?

How can I be more active?

Being active can be difficult especially as we live in a world of labour saving devices such as escalators, remote controls and cars. Many people are unable to achieve 30 minutes a day of moderate intensity physical activity.

Pedometers can be a useful tool to help you start being more active and keep activity going. Pedometers measure your physical activity by counting how many steps you take.

It is important that you follow the instructions carefully as wearing a pedometer incorrectly may make it count the number of steps inaccurately. There are some instructions over the page.

There are a wide range of pedometers available to buy, however, it is important that you choose one that is accurate. There are different types available:

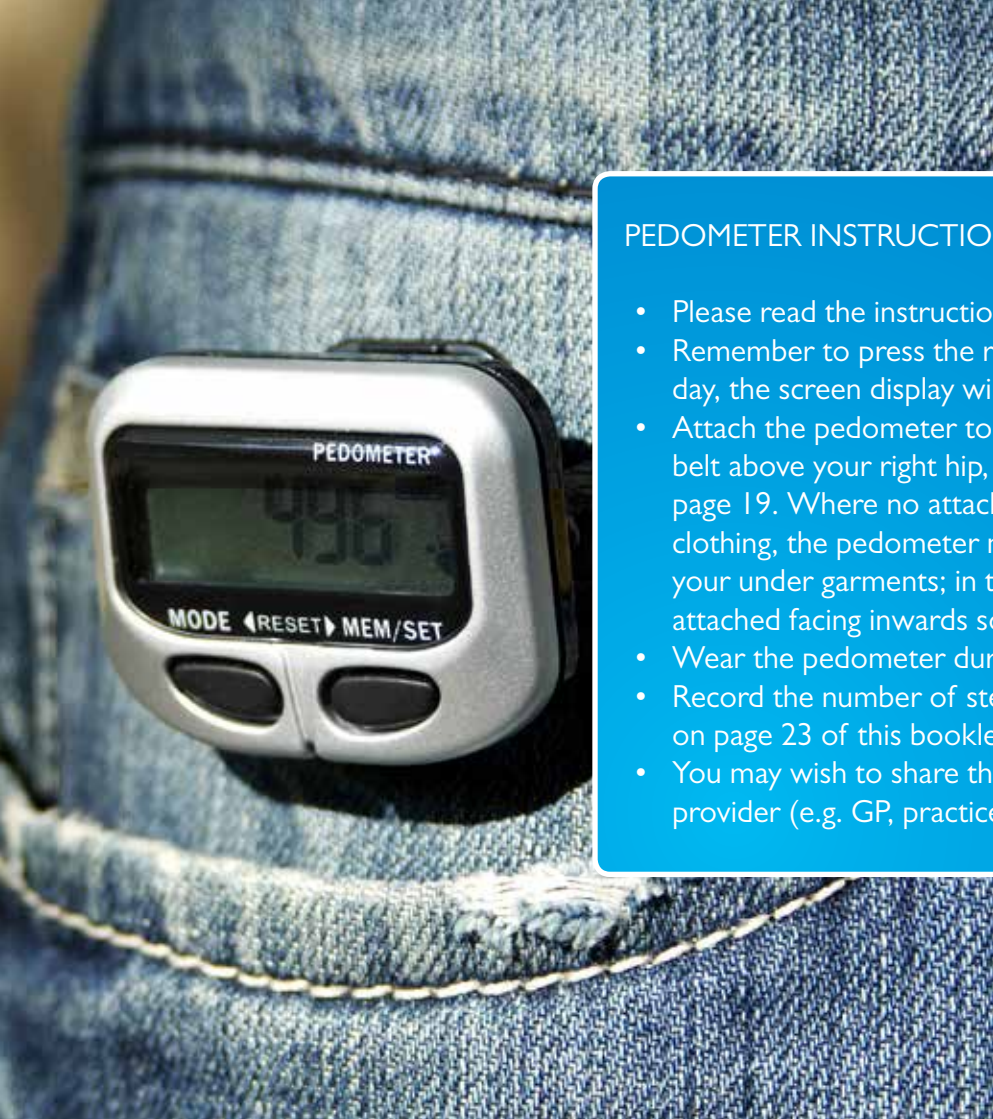
The **traditional** style pedometer is designed around a 'spring-loaded' mechanism that moves up and down with each step. There can be problems with the reliability of these types of pedometer however, the Digiwalker range has been shown to be accurate and reliable.

The **piezoelectric** style pedometer relies on an electronic sensory device. These pedometers are more accurate than the traditional spring-loaded ones, especially for obese individuals.

If you have a smart phone, there are several apps available to measure your step count.

The most accurate pedometers are the **NL Series** produced by New Lifestyles. These are considered research grade pedometers and are recognised for being the best pedometers on the market. Unfortunately, they are not widely available in the UK and need to be ordered from the USA via www.thepedometercompany.com





PEDOMETER INSTRUCTIONS

- Please read the instructions for your pedometer
- Remember to press the reset button at the start of each day, the screen display will return to zero
- Attach the pedometer to the top of your trousers, skirt or belt above your right hip, as demonstrated in the picture on page 19. Where no attachment point is available on your clothing, the pedometer may be placed on the waistband of your under garments; in this case the pedometer should be attached facing inwards so that it is facing your body
- Wear the pedometer during all waking hours
- Record the number of steps you take each day in the diary on page 23 of this booklet
- You may wish to share this diary with your health care provider (e.g. GP, practice nurse or dietitian).

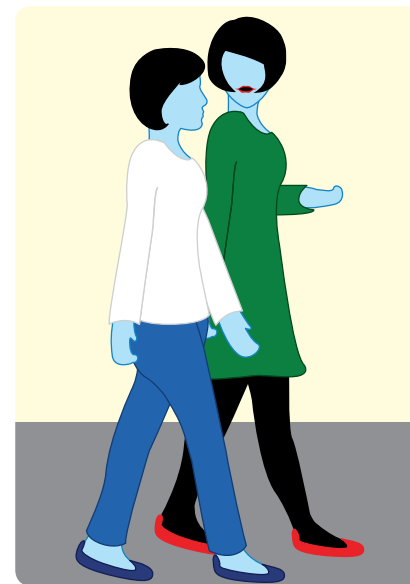
WHAT SHOULD I DO IF I AM ALREADY ACTIVE?

Thirty minutes of moderate intensity physical activity per day is equivalent to around 3,000 steps. To set yourself a healthy goal, work out your starting step count after you have worn the pedometer for a day and then add 3,000 steps.

For example, if you find that you are currently walking 4,000 steps, then you should aim to walk:

$$4,000 + 3,000 = 7,000 \text{ steps}$$

Increasing your steps gradually is more achievable and sustainable than increasing your steps too quickly. Increasing your steps by 500 every week or walking an extra 5 minutes per week is a more achievable short term goal.



WHY SHOULD I BE MORE ACTIVE?

Recording your activity

People who record their activity levels are often more successful at starting activity and keeping it going than those who do not record.

Can being more active be dangerous?

Doing moderate levels of activity like walking should not be a danger to your health. However, if you have a history of heart disease or if exercising makes you feel dizzy or gives you pains in your chest you should see your doctor for advice.

If you plan to start doing vigorous forms of exercise that involve running or lifting heavy weights you should consult your doctor before you start in order to rule out any underlying problems that may be made worse by vigorous activity.

ACTIVITY DIARY

You may want to photocopy this page or create your own record/diary to record your daily step count.

Date Started:		What activity did I do today?	How long did it last?	Today's steps taken	Have I achieved my goal for this week?:
	Sun				
Starting Steps:	Mon				If yes, will I continue with this goal or set myself a new one?:
	Tue				
My long term goal is:	Wed				If no, what has stopped me?:
	Thu				
My goal for this week is:	Fri				How can I overcome this?:
	Sat				
Total for the week:					

HAVING A HEALTHY WEIGHT

How can I lose weight?

Most of us know if we're overweight by looking in a mirror or by how our clothes feel. You may have had your Body Mass Index (BMI) taken which measures your weight in relation to your height.

Your shape, as much as your weight, will increase your health risk. Carrying excess weight around your middle increases your risk of developing Type 2 diabetes and heart disease.

You can find out if your weight is putting you at risk, by simply taking your waist measurement. Find the bottom of your ribs and the top of your hips, and measure around your middle at a point half way between these.

For many people this will be around where your tummy button is.

Use the chart below to check if your weight/waist increases your risk.

Male	Less than 69 cm	97 cm	More than 103 cm
	Less than 27 inches	38 inches	More than 41 inches
Female	Less than 60 cm	81 cm	More than 89 cm
	Less than 24 inches	32 inches	More than 35 inches

Your risk of developing Type 2 diabetes increases if you are a:

- **White or Black male** with a waist measurement of 37 inches (94 cm) or above
- **Asian male** with a waist measurement of 35 inches (89 cm) or above
- **White/Black/Asian female** with a waist measurement of 31.5 inches (80 cm) or above



HAVING A HEALTHY WEIGHT

How can losing weight benefit me?

If your weight is putting you at risk, try to lose some weight to reduce your waist size. Losing 10% of your body weight can reduce your health risks hugely by:

- Reducing your risk of developing Type 2 diabetes.
- Reducing your risk of having a heart attack/stroke
- Lowering your blood pressure
- Lowering your cholesterol levels
- Improving your ability to move and do activities

Losing weight can also help you to feel more energetic, and also get into the clothes you want to wear! When thinking about trying to lose weight set yourself realistic targets that you know you will be able to follow.

Try not to be too ambitious with your goal, or you may be disappointed with the results.

For many people maintaining their current weight and not gaining more is a major achievement in itself.

What can I do to lose weight?

Think about where you can make small changes to your food choices. These changes should be realistic and manageable so that you can stick to them.

You may want to focus on:

- **How much food you put on your plate.** Large portions of healthier foods such as bread, potato, pasta and rice can still make you heavier if you eat these foods in excess.

- **Whether you snack in between your meals.**

Regular snacking will add extra calories to your diet, which may make it difficult for you to lose weight.

- **The type of snack you choose.** Some snacks will be higher in calories than others. Try to choose lower calorie snacks where possible, such as fruit.

- **How you cook your food or whether your meals are often ready made.** Cooking your food in any type of oil or having ready made foods, can provide you with lots of calories due to their high fat content.

If you are able to make changes to one or more of these and keep them going, this is a good starting point. Don't worry if you have a day where your diet doesn't go to plan, try and get back on track the next day.

REDUCING TOTAL FAT AND SATURATED FAT INTAKE

How does a high fat diet put me at a higher risk of developing diabetes?

Eating a high fat diet can make you heavier. Extra weight around the tummy will put you at a higher risk of developing Type 2 diabetes and other health problems.

What is the link between saturated fat and increased risk of developing diabetes?

Too much saturated fat in the diet can:

- Make it difficult for your body's insulin to do its job of managing blood glucose levels
- Raise your cholesterol levels



What is saturated fat and where is it found?

Saturated fat is a type of fat that can be found in many processed foods and in foods from animal sources. Foods high in saturated fat include:

- Fatty meats e.g. sausages/corned beef
- Butter/ghee/lard
- Cream/soured cream/full fat mayonnaise
- Cakes/biscuits/chocolates
- Sandwich spreads e.g. meat spread/full fat/cheese spreads
- Full fat cheese
- Pastry coated foods e.g. pies/samosas
- Palm oil/coconut oil



REDUCING TOTAL FAT AND SATURATED FAT INTAKE

What can I do to eat less total fat and less saturated fat?

Where possible try to:

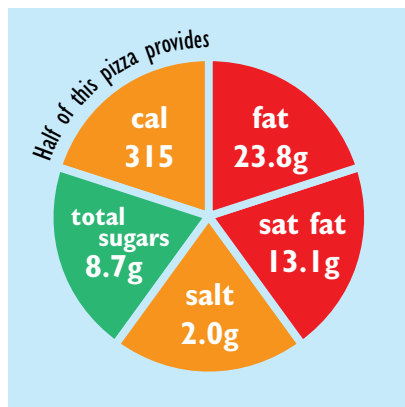
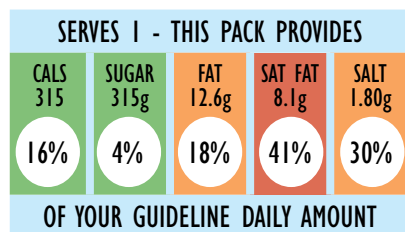
- Choose lower fat products, as these will contain less total and saturated fat e.g. low fat margarine
- Cut off any visible fat on meat and take skin off chicken
- Swap butter for an oil when cooking such as olive oil/ sunflower oil (try to use only small amounts as these are still very high in fat)

- Measure the oil you use in cooking, to help you manage how much you use
- Cook using a non stick pan, as you need only the tiniest amount of oil to cook with
- Grill, boil, dry roast food where possible
- Try a spray oil as this will help you to reduce your fat intake hugely
- Choose healthier snacks such as fruit if you are hungry in-between meals

What can help me to make better food choices?

Looking at food labels can be a way for you to learn more about the food you are eating. Most products have nutritional information on the label. Many have a traffic light system on the front to help you make healthier choices at a glance.

The traffic light colours tell you whether the product has low, medium or high amounts of fat, saturated fat, sugars and salt. Examples of how these may look are shown over the page:



Green = low
Choose these more often as they are a healthier choice.

Amber = medium
When you have a choice, try to go for green.

Red = high
Try to choose these less often or eat them in smaller quantities.

Most foods will either have a colourful grid or dial on the front of the packaging. Try to choose products with more green and amber and less with red. You don't need to avoid all foods high in fat, sugar or salt - it's the overall balance in your diet that is important. Eaten occasionally, or in small amounts, foods with more red labelling won't affect your overall diet.

REDUCING TOTAL FAT AND SATURATED FAT INTAKE

Below are some statements
you may have seen when you
have been to the supermarket

Low Fat	Food contains less than 3g per 100g or 100ml of the product
Less than 5% fat or 95% fat free	Food contains less than 5g fat per 100g e.g. if a ready meal size was 400g then the whole meal would contain 20g fat
Reduced fat	Food must contain 25% less fat than a similar standard product. It doesn't mean the product is low fat especially if the standard product is very high in fat



Reading food labels can help you work out whether a food has a lot or a little of

something in it. Look out for products that are lower in fat.

A little	A lot
These amounts or less:	These amounts or more:
2g of sugar	10g of sugar
3g of fat	20g of fat
1g of saturated fat	5g of saturated fat

For example, if a ready meal contains 30g of fat it would contribute a lot of fat to your daily intake



REDUCING TOTAL FAT AND SATURATED FAT INTAKE



Below is a guide to help you choose foods that are lower in total fat, saturated fat, sugar

and salts. **Beware! Low fat options may still be high in sugar!**

	Sugar	Fat	Saturated fat	Salt
What is HIGH per 100g	Over 15g	Over 20g	Over 5g	Over 1.5g
What is MEDIUM per 100g	Between 5g and 15g	Between 3g and 20g	Between 1.5g and 5g	Between 0.3g and 1.5g
What is LOW per 100g	5g and fewer	3g and fewer	1.5g and fewer	0.3g and fewer

EAT MORE FIBRE

How does eating more fibre
reduce my risk of developing
Type 2 diabetes?

Evidence suggests that fibre is
protective to the heart and it
can also help to minimise the
rise in blood glucose levels
after eating.

Which foods are high in fibre?

Good sources of fibre include:

- fruit
- vegetables
- wholegrain cereals
- wholegrain bread
- brown rice and pasta
- oats
- peas
- beans
- lentils
- grains



EAT MORE FIBRE

How can I make sure I get enough fibre in my diet?

Try to include 5 portions of fruit and vegetables in your diet every day. Include these as snacks or puddings.

The list below outlines what makes a portion:

- One piece of medium-sized fruit, such as an apple, peach, banana or orange.
- One slice of fruit, such as melon, mango or pineapple.
- A side salad.
- One handful of grapes or two handfuls of cherries or berry fruits.
- One small glass (150 ml) of unsweetened fruit or vegetable juice. Juice counts as a maximum of one portion regardless of how much you drink.
- A smoothie containing all of the edible pulped fruit and/or vegetable may count as more than one portion but this depends on how it's made. Smoothies count as up to a maximum of two portions per day.
- One heaped tablespoon of dried fruit.
- A small 200g tin of fruit.
- 3 tablespoons of fruit salad or stewed fruit.
- One portion of canned fruit equates to one piece of fresh fruit.
- A serving (roughly 80g) of vegetables, such as frozen or mushy peas, carrots or broccoli.
- Cooked dishes that contain significant amounts of vegetables may also count.

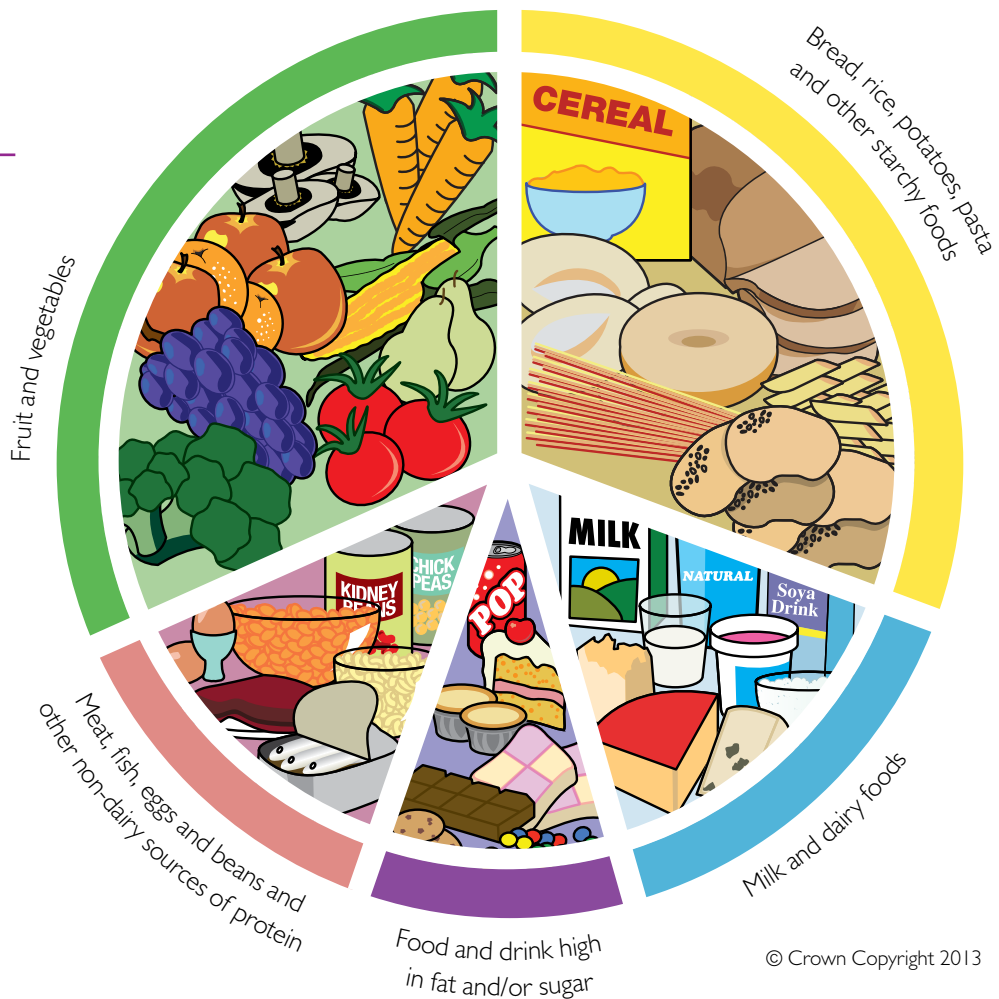
Where possible include a variety of starchy foods into your daily diet such as:

- Wholemeal/
wholegrain cereal
- Pasta
- Basmati or easy cook rice
- Granary bread such
as pumpernickel
- New potatoes
- Porridge oats



HEALTHY FOOD CHOICES

The 'eatwell plate' shows the different types of food we should aim to eat and in what proportions, to have a well balanced and healthy diet. Eating healthily is about eating the right amount of food for your energy needs.



MY FOOD PLAN

If you plan to make some changes to your food choices you may want to record your thoughts below:

To improve my diet I will:

(be specific - what will you do, how much will you reduce by, how often, when will you do it?)

How can I overcome this?:

What might stop me from making these changes?:

What support might I need?:

Want more information?

These are websites where you can
find practical information to support you.

www.leicesterdiabetescentre.org.uk

www.leicestershirediabetes.org.uk

www.diabetes.org.uk



Leicester Diabetes Centre
Committed to Growing International Research, Education & Innovation



**University of
Leicester**

**NIHR Leicester-Loughborough
Diet, Lifestyle and Physical Activity
Biomedical Research Unit**

University Hospitals of Leicester 
NHS Trust