

Healthy eating and insulin resistance

Nutrition & Dietetics Department



Patient information leaflet

This leaflet tells you about practical ways to eat a balanced diet to minimise the symptoms and complications of Insulin Resistance (IR).

What is insulin?

Insulin is a hormone produced by an organ in the body called the pancreas. Insulin is released by the body when our blood glucose rises after eating a meal or snack. Insulin allows the glucose to be removed from our blood stream and taken into our cells to be used as energy.

What is Insulin Resistance (IR)?

Insulin resistance occurs when the body does not respond correctly to the insulin that the pancreas is making and glucose is less able to enter cells. This means that our blood glucose levels rise. If these levels rise too high a person may be diagnosed with Diabetes.

What causes IR?

It is thought that IR is caused by both genetic and lifestyle factors. Being overweight and/or inactive has been linked to IR.

Which medical conditions are linked to IR?

- High blood pressure
- Raised cholesterol
- Polycystic Ovary Syndrome (PCOS)
- Type 2 Diabetes

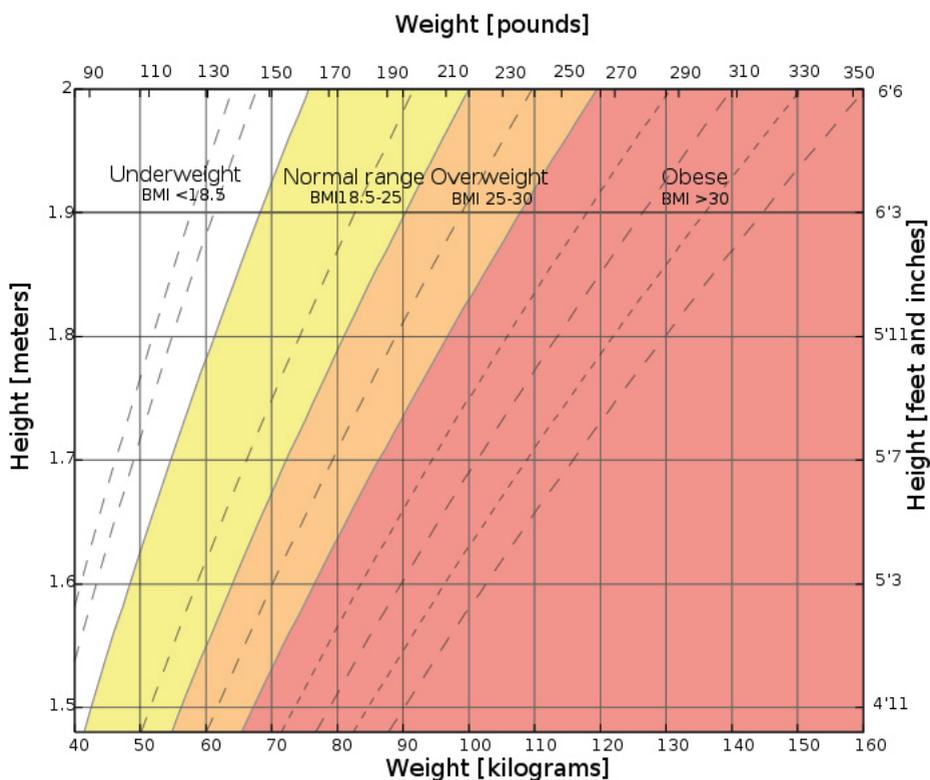
These conditions can lead to heart and circulation problems.

Why is body weight important in the management of IR?

An increase in body weight can trigger IR in people who are likely to inherit this condition.

The first step to overcoming IR is to lose weight, if your weight is greater than the recommended healthy range for your height.

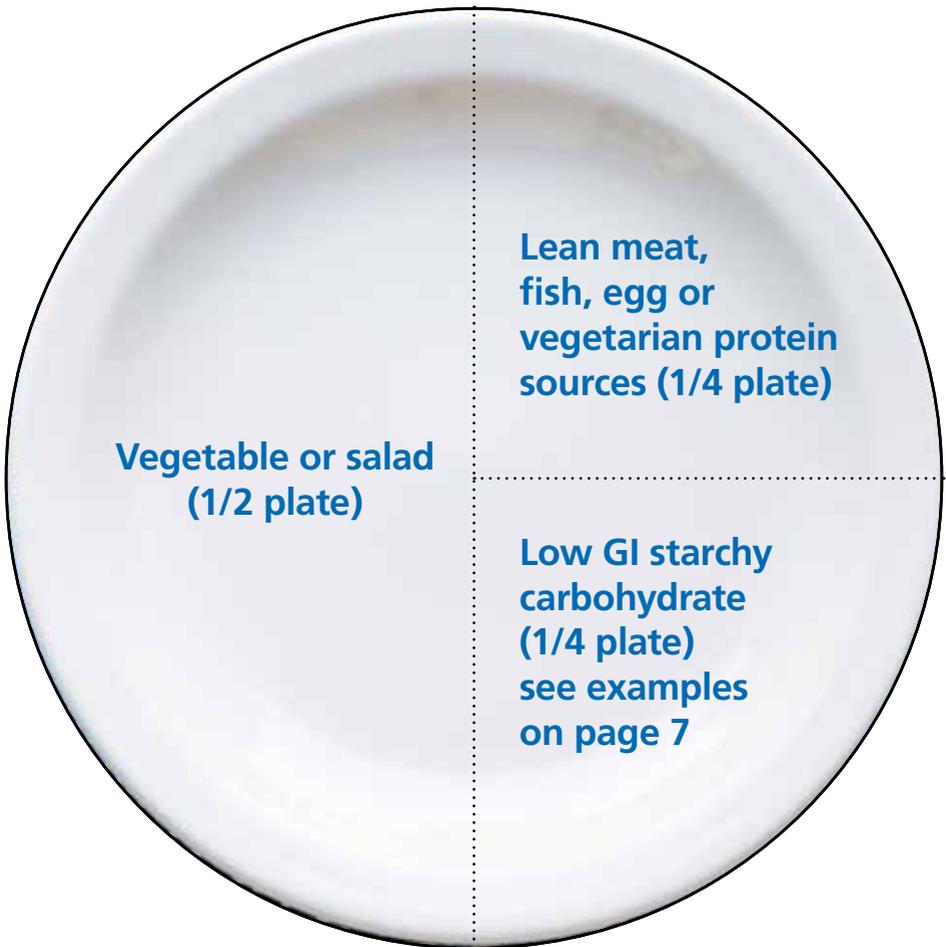
How do I know if I am a healthy weight for my height?



What type of diet is best to manage IR?

The best diet to manage IR is one which is healthy and balanced. The idea is to make changes for life as opposed to following any “quick fix” or “faddy” type diets. The aim is to maintain / achieve a healthy body weight and keep blood glucose levels steady. This helps to stabilise insulin levels.

You should have regular meals which are based as shown below:



Starchy foods (Bread, cereals, potatoes, rice, pasta)

These carbohydrate foods provide us with energy, fibre, vitamins and minerals. They help to control appetite and should be included at meals. Try to choose higher fibre and lower GI varieties (see page 7) to help keep you satisfied.

Fruit and vegetables

Provide vitamins, minerals, fibre and antioxidant nutrients to help keep the body healthy and reduce the risk of illness. With the exception of avocado they are all very low in fat. Aim to have a variety of at least 5 different fruits and vegetables in your diet. Fruit contains natural sugars, so limit yourself to 3 portions per day and have a maximum of 1 small glass of juice per day.

Meat, fish, eggs, beans, pulses and other proteins

Provide protein and minerals, especially iron, which are essential to health. Have 2 portions each day. As they also contain fat, reduce portion sizes, choose lean varieties and do not add fat during cooking.

Oily fish (salmon, sardines, mackerel etc) has many health benefits due to the omega 3 fatty acids, so try to have 1-2 portion each week.

Dairy foods

Provide protein and minerals, especially calcium. Have 3 portions each day. They also contain fat, so choose lower fat varieties e.g. skimmed/semi-skimmed milk.

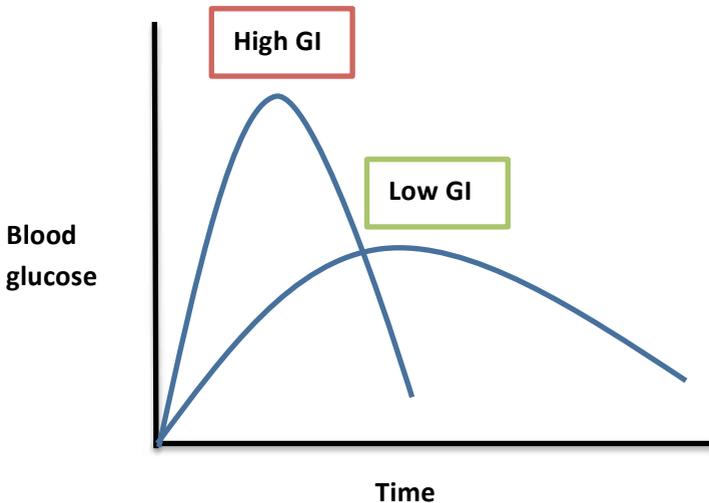
Foods containing fat and foods containing sugar

These include oils, spreads, pudding, confectionary, snacks and fast foods and high sugar fizzy drinks. This group of foods can be high in fat and/or sugar but contain few other nutrients so are not necessary for health. Use all oils and spreads sparingly and choose ones from plant sources e.g. olive/rapeseed as these contain unsaturated fats which are healthier for the heart.

What is the Glycaemic Index (GI)?

The GI is a ranking of foods based on their overall effect on blood glucose (sugar) levels. Slowly absorbed foods have a low GI rating, foods that are more quickly absorbed have a higher rating.

The diagram below shows how lower GI foods can help stabilise blood glucose levels and reduce the body's insulin response.



Do other factors affect the GI of foods?

There are many factors which affect the GI of a food. These include: type of sugar or starch, ripeness, processing, preparation, cooking methods, fibre, fat and protein content.

Remember:

- LOW GI does **NOT** always = HEALTHY
- HIGH GI does **NOT** always = UNHEALTHY

E.g. a chocolate bar can be low GI due to the high fat content.

What is the Glycaemic load (GL)?

GL provides a value for foods combining the effect they have on blood glucose (GI) plus their portion size. If you are eating a high GI food keep the portion size very small to limit the effect on blood glucose.

Tips for low GI diet

- Include a low GI starchy carbohydrate with each meal
- Use breakfast cereals based on oats, barley or bran
- Use wholegrain breads
- Avoid large portion sizes of potatoes
- Choose sweet potato
- Have all types of fruit and vegetables
- Use basmati rice
- Have pasta and noodles but be aware of portion size
- Include a low fat protein with each of your meals
- Add acidic dressing such as vinaigrette to salads and avoid high fat mayonnaises and dressings

Is there a detailed list of GI values?

Low GI options can be found for each of the 5 food groups, see the table below. You can also find lists on the internet and in books. Try to avoid making GI too complicated. Just aim to have a balanced diet and then adapt your starchy choice to a low GI, high fibre option where possible.

Low GI (55 or less)	Medium GI (56-69)	High GI (70 or more)
Breads		
<ul style="list-style-type: none">■ Burgen bread® (Soya & Linseed)■ Wholegrain/multigrain/granary■ Fruit loaf■ Rye bread■ Sourdough■ Pumpnickel■ Breads made from chickpea flour e.g. chapattis	<ul style="list-style-type: none">■ Wholemeal■ Pita bread■ Crumpet■ Cream crackers■ Oat cakes	<ul style="list-style-type: none">■ Bagel■ Baguette■ White

Low GI (55 or less)	Medium GI (56-69)	High GI (70 or more)
Cereals		
<ul style="list-style-type: none"> ■ All-Bran® ■ Muesli ■ Porridge ■ Hot oatmeal 	<ul style="list-style-type: none"> ■ Just Right® ■ Special K® ■ Weetabix® ■ Instant porridge ■ Shredded wheat® 	<ul style="list-style-type: none"> ■ Cheerio's® ■ Coco pops® ■ Cornflakes®
Grains		
<ul style="list-style-type: none"> ■ Brown rice ■ Brown, basmati rice ■ Long grain rice ■ Pasta (durum wheat) ■ Spaghetti/Noodles ■ Quinoa ■ Bulgar ■ Noodles 	<ul style="list-style-type: none"> ■ White, basmati rice ■ Couscous ■ Rice noodles ■ Gnocchi ■ Risotto rice 	<ul style="list-style-type: none"> ■ Instant pasta/rice ■ White rice
Vegetables & Legumes		
<ul style="list-style-type: none"> ■ Sweet potato, peeled and boiled ■ Yam ■ Baked beans ■ Lentils/ Pulses 	<ul style="list-style-type: none"> ■ Canned potato ■ New potato, unpeeled and boiled ■ Beetroot 	<ul style="list-style-type: none"> ■ Baked potato ■ Mashed potato/ Instant mash ■ Parsnips
Fruit		
<ul style="list-style-type: none"> ■ Apples, Banana, Cherries, Orange, Pear, Peach, Mango, blueberries 	<ul style="list-style-type: none"> ■ Apricots, Pineapple, Raisins 	<ul style="list-style-type: none"> ■ Watermelon

Can physical activity help with IR?

Increasing your physical activity level can help reduce IR especially if in combination with making healthy dietary changes. You should aim to increase your general physical activity as well as doing regular exercise.

Examples of ways to increase your general physical activity:

- Using the stairs rather than taking lifts
- Getting off the bus one stop earlier to increase walking
- Park further away from your destination in the car park
- Active play with your children
- Gardening

Examples of exercise

- Brisk 30 minute walk
- Jogging
- Aerobics/aqua aerobics
- Cycling
- Swimming
- Rowing
- Dancing

Try to do an additional 30 minutes of exercise 5 days per week minimum (150 minutes per week). For weight loss and maintenance, it is recommended to do up to 60 minutes 5 days per week (or up to 300 minutes per week). If you feel slightly out of breath, but you can still carry on a conversation then this is about right. Remember it is better to do a little bit each day than infrequently.

When you are thinking about an exercise routine remember to find one that you enjoy. If necessary change your activity regularly to avoid getting bored and set yourself specific short-term goals.

Plan activities for the week ahead to ensure a regular exercise routine. You could look for activities in your local area and take a friend to make it more enjoyable. It is important that you are able to keep to your exercise routine in the long term.

Always consult your doctor or Consultant before starting a new exercise programme.

Example menu

Breakfast

Low fat protein + low GI starchy food + fruit such as:

- ½ can baked beans with a slice of wholegrain bread
- Toast with low fat spread + an apple
- Poached egg + slice of wholegrain bread with low fat spread + fresh tomatoes and mushrooms
- Low fat yoghurt + porridge made with water and semi-skimmed milk + stewed fruit

Light meal

Low fat protein + low GI carbohydrate + low fat yoghurt / fruit such as:

- Whole grain bread sandwich with ham and salad
- Pasta salad with chicken or fish
- Chicken and vegetable soup with oatcakes

Main meal

Low fat protein + low GI starchy food + vegetables/salad + low fat yoghurt/fruit such as:

- Grilled meat or fish + sweet potato mash + green beans, carrots, cauliflower
- 'Quorn®' bolognaise and wholemeal pasta + salad
- Chicken casserole with brown basmati rice + vegetables

Reference sources

- Verity (2010) *The Benefits of Exercise, A guide for women with PCOS*, London
- Dr. Jennie Brand-Miller et al, (2015) *Make healthy carb choices easy with the shopper's guide 2015*, Hachette, Australia
- DONNELLY, JOSEPH E. Ed.D (Chair) et al. "Appropriate Physical Activity Intervention Strategies for Weight Loss and Prevention of Weight Regain for Adults" [Med Sci Sports Exerc. 2009;41(2):459-71]
- www.glycemicindex.com
- www.gisymbol.com
- www.bda.uk.com/foodfacts/GIDiet.pdf

Contact details

For further information or advice please contact us.

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PALS and Advocacy contact details

Contact details of independent advocacy services can be provided by our Patient Advice and Liaison Service (PALS) who are located on the right hand side as you enter the main reception area. PALS are also your first point of contact for health related issues, questions or concerns surrounding RSCH patient services.

Telephone: 01483 402757

Email: rsc-tr.pals@nhs.net

Opening hours: 9.00am–3.00pm, Monday to Friday

If you would like information documents in large print, on tape or in another language or form please contact PALS.

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