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# Metabolic syndrome

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## Summary

- Metabolic syndrome is a collection of conditions that often occur together and increase your risk of diabetes, stroke and heart disease.
  - The main components of metabolic syndrome include obesity, high blood pressure, high blood triglycerides, low levels of HDL cholesterol and insulin resistance.
  - Healthy eating and increased physical activity are the keys to avoiding or overcoming problems related to metabolic syndrome.
  - Consult your doctor about ways to manage metabolic syndrome.
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Metabolic syndrome is a collection of disorders that occur together and increase your risk of developing type 2 diabetes or cardiovascular disease (stroke or heart disease). The causes of metabolic syndrome are complex and not well understood, but there is thought to be a genetic link. Being overweight or obese and physically inactive adds to your risk. Metabolic syndrome is sometimes called syndrome X or insulin-resistance syndrome.

As we get older, we tend to become less active and may gain excess weight. This weight is generally stored around the abdomen, which can lead to the body becoming resistant to the hormone insulin. This means that insulin in the body is less effective, especially in the muscles and liver.

More than 35 per cent of Australian adults have metabolic syndrome. This is higher in people with diabetes.

## Diagnosis of metabolic syndrome

Metabolic syndrome is not a disease in itself, but a collection of risk factors for that often occur together. A person is diagnosed as having metabolic syndrome when they have any three or more of:

- central (abdominal) obesity – excess fat in and around the stomach (abdomen)

- raised blood pressure (hypertension)
- high blood triglycerides
- low levels of high density lipoproteins (HDL) – the ‘good’ cholesterol
- impaired fasting glucose (IFG) or diabetes. IFG occurs when blood glucose levels are higher than normal, but not high enough to be diagnosed as type 2 diabetes.

## **Central obesity**

Central obesity is when the main deposits of body fat are around the abdomen and the upper body. The greater your waist circumference, the higher your risk. A person’s risk for central obesity varies depending on their gender and ethnic background.

As a general rule, if your waist measures 94 cm or more (men) or 80 cm or more (women), you probably need to lose some weight. Men from Middle Eastern, South Asian, Chinese, Asian-Indian, South and Central American ethnic backgrounds are considered at risk if their waist measures 90 cm or more.

## **High blood pressure (hypertension)**

In the absence of other risk factors, hypertension occurs when a person has a blood pressure higher than 140/90mmHg. This may be due to genetics, lifestyle or other diseases such as kidney or cardiovascular disease. High blood pressure also increases your risk of developing cardiovascular disease, stroke and kidney disease.

The ideal blood pressure range is less than 130/80 mmHg (or lower, if other diseases are present), but everyone is different. Consult your doctor to find the right target for you and make sure your blood pressure is checked regularly.

Lifestyle changes such as regular physical activity, not smoking, reducing the amount of sodium (salt) in your diet, reducing stress, limiting alcohol and achieving a healthy body weight may help, but sometimes medication is required.

## **Cholesterol and triglycerides**

Cholesterol is a fatty substance that we make in our liver. LDL (low density lipoproteins) cholesterol can block arteries by building up on the walls of blood vessels. HDL (high density lipoproteins) cholesterol helps protect against this build-up of fatty blockages.

Triglycerides may come from foods we eat, but they are also produced by the liver. Drinking excess alcohol can contribute to an increase in triglycerides. If you are insulin resistant, you are likely to have higher-than-normal triglyceride levels. High blood triglycerides tend to be associated with low levels of HDL cholesterol –

the 'good' or protective cholesterol.

Raised triglycerides and reduced HDL cholesterol increase your risk for atherosclerosis (narrowing of the arteries), which is a contributing factor in heart disease. Overweight or obesity is also a risk factor in itself for conditions such as high triglyceride levels, high blood pressure and atherosclerosis.

### **Impaired glucose tolerance (pre-diabetes)**

Impaired fasting glucose and impaired glucose tolerance are sometimes referred to as 'pre-diabetes'. They occur when your blood glucose level is higher than normal, but not high enough to be called diabetes. One third of people who have impaired glucose tolerance or impaired fasting glucose will develop diabetes unless lifestyle changes are made.

## **Metabolic syndrome conditions are linked**

All of these conditions are interlinked in complicated ways and it is difficult to work out the chain of events. Which condition – if any – is the main trigger? Some researchers consider that obesity could be the starting point for metabolic syndrome.

Reducing your body weight and participating in regular physical activity may improve your triglyceride and cholesterol levels, lower your blood pressure and increase your body's response to insulin. This may help prevent you from developing type 2 diabetes and cardiovascular disease.

## **Metabolic syndrome and insulin resistance**

Insulin resistance means that your body does not use the hormone insulin as effectively as it should, especially in the muscles and liver.

Normally, your digestive system breaks down carbohydrates into glucose, which then passes from your intestine into your bloodstream. As your blood glucose level rises, your pancreas secretes insulin into your bloodstream. Insulin allows glucose to move into your muscle cells from your blood. Once inside a cell, the glucose is 'burned' – along with oxygen – to produce energy.

When a person has insulin resistance, the pancreas needs to produce and release more insulin than usual to maintain normal blood glucose levels. It is thought that more than a quarter of the population has some degree of resistance to insulin.

## **Insulin resistance and diabetes**

Insulin resistance increases your risk of developing type 2 diabetes and is found in most people with this form of diabetes. If the pancreas can't produce extra insulin

to overcome your body's resistance, your blood glucose levels will rise and you will develop impaired fasting glucose, impaired glucose tolerance (IGT) or diabetes.

People with type 2 diabetes frequently also have other features of metabolic syndrome and a significantly increased risk of cardiovascular (heart and blood vessel) disease.

## Reducing your risk of metabolic syndrome

More than half of all Australians have at least one of the metabolic syndrome conditions. Suggestions for reducing your risk include:

- **Incorporate as many positive lifestyle changes as you can** – eating a healthy diet, exercising regularly and losing weight will dramatically reduce your risk of diseases associated with metabolic syndrome, such as diabetes and heart disease.
- **Make dietary changes** – eat plenty of natural wholegrain foods, vegetables and fruit. To help with weight loss, reduce the amount of food you eat and limit foods high in fat or sugar. Reduce saturated fats, which are present in meat, full-cream dairy and many processed foods. Stop drinking alcohol or reduce your intake to less than two standard drinks a day.
- **Increase your physical activity level** – regular exercise can take many different forms depending on what suits you best. Try and do at least 30 minutes of exercise on at least five days of each week. Also try to avoid spending prolonged periods of time sitting down, by standing up or going for a one-to-two minute walk.
- **Manage your weight** – increasing physical activity and improving eating habits will help you lose excess body fat, and reduce your weight.
- **Quit smoking** – smoking increases your risk of cardiovascular disease, stroke, cancer and lung disease. Quitting will have many health benefits, especially if you have metabolic syndrome.
- **Medication may be required** – lifestyle changes are extremely important in the management of the metabolic syndrome, but sometimes medication may be necessary to manage the different conditions. Some people will need to take antihypertensive tablets to control high blood pressure or lipid-lowering medications (or both) to keep blood pressure and cholesterol within the recommended limits. The most important thing is to reduce your risk of heart attack, diabetes and stroke.
- Consult your doctor to decide what the best management strategy is for you.

## Where to get help

- Your GP (doctor)  
(<http://www.betterhealth.vic.gov.au/health/serviceprofiles/general-practitioner-services>)
- Dietitian  
(<http://www.betterhealth.vic.gov.au/health/serviceprofiles/dietitian-service>)

- **Dietitians Australia**  
(<https://dietitiansaustralia.org.au/>)  
Tel. 1800 812 942
- **Baker Heart and Diabetes Institute**  
(<https://baker.edu.au/>)  
. Tel. (03) 8532 1111
- **Diabetes Victoria**  
(<https://www.diabetesvic.org.au/>)  
Tel. 1300 437 386
- **Heart Foundation**  
(<https://www.heartfoundation.org.au/>)
- **Quit Victoria**  
(<https://www.quit.org.au/>)  
Tel. 13 78 48  
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