

# Insulin resistance

**Insulin resistance** is a significant risk factor for Type 2 diabetes (non insulin dependant diabetes), and is present in most people with this condition. It is estimated that up to one quarter of the population has at least some degree of insulin resistance.

Insulin is a hormone that is produced by the pancreas to control glucose (sugar) levels in the blood. In people with Type 1 Diabetes, insulin is either present in very small quantities or is absent. In many people, particularly those with Type 2 Diabetes the insulin that the body produces does not work as well as it should and there is an increase in its production to compensate. People with insulin resistance will have higher than normal levels of insulin in their blood stream so that they can maintain normal blood glucose levels. In simple terms, this means that their insulin does not work effectively.



Type 2 Diabetes results when the pancreas is unable to produce excess insulin to overcome insulin resistance and blood glucose levels remain raised. Almost all individuals with type 2 diabetes mellitus (diabetes) and many with hypertension, cardiovascular disease, and obesity are insulin resistant.

## Causes

Insulin resistance tends to run in families; excess weight also contributes as too much fat interferes with the muscles' ability to use insulin. A lack of exercise further reduces the muscles' ability to use insulin.

Many people with insulin resistance and high blood glucose have excess weight around the waist, high LDL (bad) blood cholesterol levels, low HDL (good) cholesterol levels, high levels of triglycerides (another fat in the blood), and high blood pressure. These are all conditions

that put the heart at risk. This combination of problems is referred to as the metabolic syndrome or the insulin resistance syndrome, commonly known as **Syndrome X**.

In those who have a mild or moderate form of insulin resistance, blood tests may show normal or high blood glucose and high levels of insulin at the same time.

## Treatment

More than half of the North American population possesses at least one of the Syndrome X conditions. Therefore, as these are closely linked to insulin resistance it has been found that managing at least one of them can help to improve the rest. Some guidelines to achieve this can include:

- **Making dietary changes** - eat less fats (particularly saturated fats) and sugars. This results in less insulin being secreted by the pancreas, and helps to reduce body fat
- **Increase levels of physical activity** – not only does this help with loss of body fat, but also exercised muscle cells are more sensitive to insulin
- **Incorporate as many lifestyle changes as you can** - taking steps to maintaining a healthy diet and exercise regime will help to dramatically reduce risks of diseases associated with Syndrome X, such as diabetes and heart disease.

When discussing insulin, blood sugars and Type 2 Diabetes, terms such as hypoglycaemic and hyperglycaemia may arise. The following is a brief explanation of each.

**Hypoglycaemia** is abnormally low glucose (blood sugar). It occurs when a person's levels of glucose and insulin are unbalanced. Mild cases of hypoglycaemia can cause dizziness or weakness. Severe cases can lead to convulsions, unconsciousness or brain damage. It is important to remember when a client with Type 2 Diabetes has a "hypo" that they consume something high in sugar eg. fruit juice, and speak with their medical practitioner at their earliest convenience as they may require their medication to be adjusted.

**Hyperglycaemia** or abnormally high glucose (blood sugar) occurs when the body has too little insulin or when the body cannot use insulin properly. It occasionally occurs in people with diabetes, including those individuals who are undiagnosed. When readings are unusually high or frequently high, serious complications may develop, including eye disease (retinopathy), kidney disease (nephropathy) and nerve disease (neuropathy). Left untreated, hyperglycaemia can lead to coma or death.

References: <http://diabetes.niddk.nih.gov/dm/pubs/insulinresistance/>

[www.diabeteshealthonline.com](http://www.diabeteshealthonline.com) [www.betterhealth.vic.gov.au](http://www.betterhealth.vic.gov.au)