

pre-diabetes (IFG and IGT)

One in four adults over the age of 25 years has type 2 diabetes or a condition known as pre-diabetes. Two conditions fit into pre-diabetes – impaired fasting glucose (IFG) and impaired glucose tolerance (IGT).

Not everyone with impaired fasting glucose will progress to impaired glucose tolerance or type 2 diabetes. Likewise, not everyone with impaired glucose tolerance will progress to type 2 diabetes.

While there is more to be learned about these conditions, this information sheet explains the differences, how they are managed and how they can be avoided in the first place.

The condition	The cause
IMPAIRED FASTING GLUCOSE	
Also known as pre-diabetes, this is a condition in which fasting* blood glucose levels are higher than normal but not high enough to be diagnosed as type 2 diabetes.	It occurs when too much glucose is released into the bloodstream from the liver overnight. The liver is mainly responsible for keeping a proper supply of glucose in the blood when we have not eaten for several hours. In impaired fasting glucose, the liver does not respond normally to the hormone insulin and this is called 'hepatic insulin resistance' ('hepatic' means 'liver'). This results in too much glucose in the blood on waking.
IMPAIRED GLUCOSE TOLERANCE	
This condition is also known as pre-diabetes. Blood glucose levels are higher than normal and higher than in impaired fasting glucose but still not high enough to be diagnosed as type 2 diabetes.	It occurs when the insulin produced does not work properly or there isn't enough insulin released to meet the demand, or a combination of both. The result can be too much glucose in the blood throughout the day and after meals or on waking, or a combination of all three.

* 'Fasting' means having nothing to eat or drink for 8 hours before the test.

Pre-diabetes (impaired fasting glucose or impaired glucose tolerance) is a condition in which blood glucose levels are higher than normal but not high enough to be diagnosed as type 2 diabetes.



pre-diabetes

So what is the difference?

Impaired fasting glucose (IFG)	Impaired glucose tolerance (IGT)
IFG is diagnosed when the fasting blood glucose level is higher than the normal range, but does not rise abnormally after having a 75 gram glucose drink**.	IGT is diagnosed when the blood glucose level at 2 hours during an Oral Glucose Tolerance Test **is higher than the normal range but not high enough to diagnose type 2 diabetes.

** Refer 'How it is tested' below.

How do you know you have one of these conditions?

Any glucose test, fasting or not, that shows blood glucose levels above the normal range, needs further testing. The doctor may order an Oral Glucose Tolerance Test to investigate.

How it is tested

An Oral Glucose Tolerance Test is a test used to screen for, and diagnose, type 2 diabetes or pre-diabetes. It is a test that is performed at the pathologists and requires specific preparation:

- Having at least 150 grams of carbohydrates every day for three days prior to the test.
- Fasting before having a blood sample taken from a vein, usually in the arm, first thing in the morning.
- Having a sweet drink that contains 75 grams of glucose after the fasting blood sample.
- Resting in a chair during the test until the blood glucose level is tested again two hours after having had the glucose drink.

How it is diagnosed

The results of this laboratory test show four possible diagnoses:

1. Normal glucose levels
2. Impaired fasting glucose
3. Impaired glucose tolerance
4. Type 2 diabetes

Your doctor will review the results before determining the diagnosis using the following guideline:

Indications		Fasting blood glucose	Blood glucose two hours after a 75 gram glucose drink
1. Normal glucose levels		3.6mmol/L	Less than 7.8mmol/L
Pre-diabetes	2. Impaired fasting glucose	Equal to or above 6.1mmol/L or more but less than 7mmol/L	Less than 7.8mmol/L
	3. Impaired glucose tolerance		Above 7.8mmol/L but less than 11.1mmol/L
4. Type 2 diabetes		Equal to or above 7mmol/L	Equal to or above 11.1mmol/L

Who is at risk of developing pre-diabetes?

Risk factors for pre-diabetes are basically the same as those for type 2 diabetes which are:

- Being overweight – especially having excess weight around the waist
- Being physically inactive
- Having high triglycerides (bad cholesterol) and low HDL-C (good cholesterol) and/or high total cholesterol
- Having high blood pressure
- Having a family history of type 2 diabetes and/or heart disease.

Others at risk include:

- Women with Polycystic Ovarian Syndrome (refer to the *Polycystic Ovarian Syndrome and Diabetes* information sheet)
- Women who have had diabetes in pregnancy (gestational diabetes) or given birth to a baby weighing 4.5kg or more
- People from Aboriginal and Torres Strait Islander background
- People from certain ethnic backgrounds such as the Pacific Islands, Asia and the Indian sub-continent.

How is pre-diabetes managed?

As people with pre-diabetes are at risk of developing not only type 2 diabetes but also heart disease, the aim of management is to reduce the risk and/or delay the development of both conditions. Management involves the same lifestyle changes that are recommended for people who have been diagnosed with type 2 diabetes.

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Can type 2 diabetes be avoided?

Evidence shows that people with pre-diabetes are at high risk of progressing to type 2 diabetes. However the risk of developing type 2 diabetes can be delayed and reduced by up to 60% by adopting healthy lifestyle changes and reducing body weight by as little as 5–10% and keeping it off.

Lifestyle changes to avoid type 2 diabetes

Healthy eating: A healthy eating plan for losing weight and reducing the risk of type 2 diabetes should include a reduction in total energy (kilojoule) and fat intake, particularly foods containing saturated fat such as butter, full fat dairy products, fatty meats, takeaway foods, biscuits, cakes and pastries. Instead, choose a wide range of high fibre, low glycemic index (GI) carbohydrate foods such as wholegrain breads and cereals, legumes and fruit. An accredited practising dietitian (APD) can help you work out a meal plan that's right for you.

Regular physical activity: Regular physical activity helps your body to use insulin better and to feel fit and healthy. Aim to do at least 30 minutes of 'moderate intensity' physical activity (such as brisk walking or swimming) every day OR three 20 minute sessions of 'vigorous intensity' exercise per week (such as jogging, aerobics class, strenuous gardening). Try to include some resistance training twice a week to improve the way your muscles work (such as body weight exercises or lifting weights such as cans of food).

Starting a regular activity program – and sticking to it – can often be made a lot easier by joining up with a group or motivated friend to encourage you to keep going.

- **Before starting any new type of physical activity, always talk to your doctor.**
- **To find a local accredited practising dietitian (APD) contact your state or territory diabetes organisation on 1300 136 588, the Dietitians Association of Australia on 1800 812 942 or their website www.daa.asn.au.**

Would you like to join Australia's leading diabetes organisation?

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For more information phone **1300 136 588** or visit your State/Territory Organisation's website:

ACT	www.diabetes-act.com.au	NSW	www.australiandiabetescouncil.com
NT	www.healthylivingnt.org.au	QLD	www.diabetesqueensland.org.au
SA	www.diabetessa.com.au	TAS	www.diabetestas.com.au
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