

Diabetes

Diabetes is one of the fastest growing diseases in Ireland. This article is about **Symptoms and Causes** of diabetes, the **risks, complications** of diabetes and **myths** about diabetes. The final section deals with the **treatment** options for diabetes.

The Diabetic Federation of Ireland estimate there are over 200,000 diabetics in Ireland and that over half of these have no idea they have diabetes. Diabetes is one of the leading causes of death in the world. It is now reaching epidemic proportions mainly due to our increasing sedentary lifestyle and poor diet. According to the World Health Organisation, there were 30 million diabetics in the world in 1985, today there are approximately 230 million diabetics and this figure is expected to rise to 330 million in 20 years time if we do not take action.

What is diabetes?

Diabetes mellitus is a condition that occurs when the body can't use glucose normally. Glucose is the main source of energy for the body's cells. The levels of glucose in the blood are controlled by a hormone called insulin, which is made by the pancreas. Insulin helps glucose enter the cells.

Types

There are two types of Diabetes, Type 1 and Type 2. In **Type 1** diabetes, the pancreas does not make enough insulin. In **Type 2** diabetes, the body can't respond normally to the insulin that is made, which is often called insulin resistance. This causes glucose levels in the blood to rise, leading to symptoms such as increased urination, extreme thirst, and unexplained weight loss.

Type 1

This type of diabetes usually appears before the age of 40 and most often starts as a teenager. Type 1 diabetes is the least common of the two main types and accounts for between 5 and 15 per cent of all people with diabetes. You cannot prevent Type 1 diabetes.

Type 2

In most cases this is linked with being overweight. This type of diabetes usually appears in people over the age of 40, though in South Asian and African-Caribbean people, it often appears after the age of 25. However, recently, more children are being diagnosed with the condition, some as young as seven. Type 2 diabetes is the most common of the two main types and accounts for between 85 and 95 per cent of all people with diabetes

Diabetes symptoms

The signs and symptoms of diabetes are:

- Frequent urination
- Excessive thirst
- Extreme Hunger
- Increased fatigue
- Irritability
- Increased weight loss
- Blurred vision
- Genital itching or regular thrush (fungal infection)
- Slow healing of wounds

Type 1 diabetes symptoms develop very quickly, usually over a few weeks. In people with Type 2 diabetes the signs and symptoms will not be so obvious or even non-existent. If you're older you may put the symptoms down to the aging process, thus preventing diagnosis. Taking early action is key so if you feel some of these symptoms apply to you, ask your GP for a diabetes test.

In both types of diabetes, the symptoms are quickly relieved once the diabetes is treated. Untreated diabetes can lead to serious complications therefore early treatment is essential. Complications of untreated diabetes include heart disease, stroke, eye problems, erectile dysfunction, kidney disease, loss of feeling and sensation due to nerve damage, gangrene in the foot. Complications will be discussed in next week's article.

Causes and risk factors

Type 1 diabetes

Type 1 diabetes develops when the insulin-producing cells in the pancreas have been destroyed. Nobody knows for sure why these cells have been damaged but the most likely cause is an abnormal reaction of the body to the cells. This may be triggered by a viral or other infection.

Type 2 diabetes

The more risk factors that apply to you, the greater your risk of having diabetes.

Your age

You're at risk of diabetes if you're over 40 or you're over 25 and black, Asian or from a minority ethnic group. The risk also rises with age.

Your family and ethnicity

Having diabetes in the family puts you at risk. The closer the relative is, the greater the risk. So if your mum or dad has diabetes, rather than your aunt or uncle, it's more likely you will develop the condition too. People of Afro-Caribbean or South Asian origin are at least five times more likely to develop diabetes.

Your weight

Over 80 per cent of people diagnosed with Type 2 diabetes are overweight. The more overweight and the more inactive you are the greater your risk. If you are not sure if you are over weight, simply call into Whelehans and we can work out your Body Mass Index.

Your waist

Women – if your waist measures 31.5in (80cm) or more you've got an increased risk.
Men – if your waist is 37in (94cm) or more means increased risk of developing diabetes

The other risk factors

If you've been diagnosed with any problems with your circulation, had a heart attack or stroke, or if you've got high blood pressure you may be at an increased risk of diabetes. Pregnant women can develop a temporary type of diabetes – gestational diabetes. Having this – or giving birth to a large baby – can increase the risk of a woman going on to develop diabetes in the future. Women with polycystic ovary syndrome who are overweight are at an increased risk of developing diabetes. If you've been told you have either impaired fasting glycaemia (IFG) or impaired glucose tolerance (IGT) it means the level of glucose (sugar) in your blood is higher than normal but you don't have diabetes and you should follow a healthy diet, lose weight if you need to and keep active, to help yourself prevent diabetes. But make sure you're regularly tested for diabetes. Other conditions such as raised triglycerides (a type of blood fat) and severe mental health problems can also increase your risk.

Diagnosis

Guidelines exist to help doctors diagnose diabetes. According to these guidelines, people without diabetes have fasting blood glucose no higher than 6.0 mmol/l; after a meal blood glucose does not exceed 7.8 mmol/l. If fasting blood glucose is 7.0 mmol/l or above, and /or it rises to more than 11.1 mmol/l after a meal, you are diagnosed as having diabetes. A further blood test called a HbA1c can then be used to monitor diabetes control over a three month period.

Short term complications

Hypoglycaemia

Hypoglycaemia (or a 'hypo') occurs when the level of glucose in the blood falls too low, usually under 4 mmol/l. People with diabetes who take insulin and/or certain diabetes

tablets are at risk of having a hypo. A hypo may occur if you have taken too much diabetes medication, delayed or missed a meal or snack, not eaten enough carbohydrate, taken more strenuous exercise than usual, and have been drinking alcohol without food. Symptoms of hypoglycaemia include feeling shaky, sweating, tingling in the lips, paleness, pounding heart, confusion and irritability. It can be easily treated by drinking a glucose or sugary drink. If left untreated, hypoglycaemia can lead to unconsciousness and would need to be treated with a glucagon injection, which is a hormone that raises blood glucose.

Diabetic Ketoacidosis

Consistent high blood glucose levels over the short term can lead to a serious condition called diabetic ketoacidosis. This happens because there is a lack of glucose entering the body's cells where it can be used as energy so the body begins to use stores of fat as an alternative source of energy. This in turn produces an acidic by-product known as ketones. This leads to nausea, vomiting and dehydration. If left untreated it can lead to a coma and even death.

Hyperosmolar Hyperglycaemic State

Hyperosmolar Hyperglycaemic State (HHS) or hyperosmotic non-ketotic coma (HONK) is a rare condition which occurs in people with Type 2 diabetes, who may be experiencing very high blood glucose levels (often over 40mmol/l). It can develop over a course of weeks through a combination of illness, dehydration and an inability to take normal diabetes medication due to the effect of illness.

Symptoms can include frequent urination and extreme thirst, nausea, dry skin, disorientation and, in later stages, drowsiness and a gradual loss of consciousness. It needs to be treated in hospital.

Long term complications

The long term complications of both type 1 and type 2 diabetes are similar if not treated properly. Complications include:

- angina
- heart attack
- stroke
- diabetic kidney damage
- diabetic foot ulcers or circulation problems in your legs and feet
- diabetic eye

More Info about Diabetic Kidney Damage (Nephropathy)

Each kidney is made of hundreds of thousands of filtering units called nephrons. Each nephron has a cluster of tiny blood vessels called a glomerulus which remove waste from the body. Too much blood sugar can damage nephrons, causing them to thicken and become scarred. Slowly, over time, more and more blood vessels are destroyed.

The kidney structures begin to leak and protein (albumin) begins to pass into the urine. High blood pressure exacerbates the problem.

Symptoms

Symptoms develop late in the disease and may include:

- Fatigue
- Foamy appearance or excessive frothing of the urine
- Frequent hiccups
- General ill feeling
- Generalized itching
- Headache
- Nausea and vomiting
- Poor appetite
- Swelling of the legs
- Swelling, usually around the eyes in the mornings; general body swelling may occur with late-stage disease
- Unintentional weight gain (from fluid buildup)

Examination

The main sign of diabetic nephropathy is persistent protein in the urine. A microalbuminuria test will be done and positive test can confirm diabetic nephropathy.

Treatment of Diabetic Nephropathy

The goals of treatment are to keep the kidney disease from getting worse and prevent complications. Keeping blood pressure under control (under 120/80) is the best way to prevent diabetic nephropathy. The following medicines are used to lower blood pressure and protect kidneys from damage in diabetic nephropathy:

- Angiotensin-converting enzyme (ACE) inhibitors (eg) Zestril®
- Angiotensin receptor blockers (ARBs) (eg) Aprovel®

It is important to note that non-steroidal anti-inflammatory drugs such as ibuprofen and diclofenac should be avoided in diabetic nephropathy as they can further damage the kidneys.

More information on Diabetic Neuropathy

Diabetic neuropathy is a common complication of diabetes, in which nerves are damaged as a result of high blood sugar. Approximately 50% of people with diabetes will eventually develop nerve damage.

Symptoms

Digestive tract:

Constipation, Diarrhoea, Nausea and vomiting, Swallowing difficulty

Legs and arms:

- Deep pain, most commonly in the feet and legs
- Loss of the sense of warm or cold
- Muscle cramps
- Numbness
- Tingling or burning sensation in the extremities, particularly the feet
- Weakness

Other symptoms:

- Dizziness
- Drooping eyelid
- Drooping face
- Drooping mouth
- Impotence
- Light-headedness when standing up (orthostatic hypotension)
- Loss of bladder control
- Rapid heart rate
- Speech impairment
- Vision changes

Treatment of diabetic neuropathy

The goals of treating diabetic neuropathy are to prevent the disease from getting worse and to reduce the symptoms of the disease. Tight control of blood sugar (glucose) is important to prevent symptoms and problems from getting worse.

Medications may be used to reduce the symptoms in the feet, legs, and arms, including:

- Antidepressant drugs, such as amitriptyline, doxepin (Sinequan[®]), or duloxetine (Cymbalta[®])
- Antiseizure medications, such as gabapentin (Neurontin[®]), pregabalin (Lyrica[®]), carbamazepine (Tegretol[®]), and valproate (Epilim[®])
- Drugs that block bladder contractions may be used to help with urinary control problems.
- Domperidone (Motilium[®]), or metoclopramide (Maxalon[®]) may help with nausea and vomiting.
- Analgesics may work for some patients on a short-term basis, but in most cases they do not provide much benefit.
- Phosphodiesterase type 5 (PDE-5) drugs, such as sildenafil (Viagra[®]) and tadalafil (Cialis[®]) are safe and effective for treating impotence in patients with diabetes.

- Capsaicin (Axsain[®]) can be used topically to reduce pain caused by diabetic neuropathy.

Regular foot exams are important to identify small infections and prevent foot injuries from getting worse.

Possible complications

- Injury to the feet due to loss of feeling
- Muscle breakdown and imbalance
- Poor blood sugar control due to nausea and vomiting
- Skin and soft tissue breakdown (ulceration) that may require amputation

More information on Diabetic Retinopathy

Diabetic retinopathy is caused by damage to blood vessels of the retina, the tissue at the back of the eye. Symptoms of diabetic retinopathy include:

- Blurred vision and gradual vision loss
- Floaters
- Shadows or missing areas of vision
- Difficulty seeing in the dark

Many people with early diabetic retinopathy have no symptoms before major bleeding occurs in the eye. Therefore annual dilated eye examinations are important for diabetics.

Possible Complications

- Blindness
- Glaucoma
- Retinal detachment

Treatment of diabetic retinopathy

Most sight-threatening diabetic problems can be prevented by laser treatment if it is given early enough. It is important to realise however that laser treatment aims to save the sight you have - not to make it better. The laser, a beam of high intensity light, can be focused with extreme precision. So the blood vessels that are leaking fluid into the retina can be sealed.

More information on Foot Care in Diabetes

Daily Care Routine

It is important that diabetics check their feet everyday. Look carefully at the top, sides, soles, heels, and between the toes. The feet should be washed every day with lukewarm water and mild soap. Strong soaps may damage the skin.

- A diabetic should test the temperature of the water with your fingers or elbows before putting your feet in warm or hot water. Because of diabetes, a person may not be able to sense if the water is too hot. Burns can easily occur.
- Gently and thoroughly dry feet, particularly between toes. Infections can develop in moist areas.
- Feet may become very dry and may crack, possibly causing an infection. After bathing the feet, soften dry skin with lotion, petroleum jelly, lanolin, or oil. Do not put lotion between toes.

Care must be taken when cutting toenails because if toenails are not trimmed correctly, it may cause a foot sore or ulcer.

- Soak feet in lukewarm water to soften your nails before trimming.
- Cut the nail straight across, because curved nails are more likely to become ingrown.

Avoid sitting with legs crossed or standing in one position for long periods of time.

Tips on shoes and socks

- Wear comfortable, well-fitting shoes that have plenty of room in them. Never buy shoes that do not fit properly, hoping the shoes will stretch with time. Nerve damage may prevent the sense of pressure from improperly fitting shoes. Wear shoes made out of canvas, leather, or suede. Do not wear shoes made out of plastic, or another material that does not breathe. Do not wear thong sandals
- Check the inside of shoes for rough areas or torn pieces that can cause irritation.
- Wear shoes that can easily adjust. They should have laces, Velcro, or buckles.
- Do not wear shoes with pointed or open toes, such as high heels, flip-flops, or sandals.

Socks will provide an extra layer of protection between the shoe and foot.

MORE HELPFUL TIPS ON FOOTCARE IN DIABETICS

- DO NOT use antiseptic solutions on your feet because these can burn and injure skin.
- DO NOT apply a heating pad or hot water bottle to your feet. Avoid hot pavement or hot sandy beaches.
- DO NOT treat corns or calluses yourself using over-the-counter remedies. Make an appointment with a chiropodist to treat foot problems.
- If obesity or stiffness prevents a patient from physically examining their feet, a family member or carer should examine them for the patient.

Myths about diabetes

There are many myths about diabetes which are not true. For example you can not catch diabetes from someone. You can eat sweets and chocolates if you are diabetic (moderation and a balanced diet is the key). You can drink alcohol if you are diabetic (again moderation is key, no more than two or three units per day and definitely no binge

drinking). Eating too much sugar does not cause diabetes (there are many other factors such as genetic factors) There is no need to eat “special” diabetic foods (a healthy and balanced low fat diet is fine). People with diabetes are no more likely to catch colds or other illnesses. Insulin does not cause weight gain.

Diabetes Care Team in Mullingar General Hospital

The people of Westmeath are in the lucky position to have a state of the art diabetes care service on their doorstep. The HSE appointed Dr Shu Hoashi as a consultant endocrinologist in Mullingar General Hospital in 2008 along with a team of three diabetes nurse specialists. GP’s can refer patients to this team for the most up to date treatment and care options.

Diabetes treatment

Aim of treatment

The aim of diabetes treatment is to do what your body once did automatically which is to mimic the insulin pattern you had before diabetes and to keep blood sugar under control.

Treatment Options

For type 1 diabetes, insulin is always part of treatment as your body does not produce any insulin. In type 2 diabetes, your body still produces some insulin so your doctor may try non-drug options to help your body make better use of the insulin that it still produces. Initial non drug options include improving your diet and eating times and losing weight if you need to. If this is not successful, your doctor may prescribe medication that will increase your body’s insulin production or its sensitivity to insulin. If this is still not effective or if your body is still under stress due to illness, you may require insulin injections.

Treatment of Type 1 Diabetes

There is no cure for type 1 diabetes but it can be kept under control. Type 1 diabetes is controlled by giving your body insulin. This allows glucose to be absorbed into cells and converted into energy, stopping it building up in the blood.

There are different kinds of insulin that act at different rates and act for different lengths of time. You may use one or more types of insulin depending on the control required. You may be on a combination of slow, medium and fast acting insulin. For many years, insulin was derived from animals but now it is synthetically made. Modern insulin such as Lantus® provide far better control than older types, meaning less injections and less chance of hypoglycaemic attacks.

There are two main methods of taking insulin.

- Insulin injections are the most common form of treatment, where insulin is injected under the skin (usually in the stomach). You will usually give these to

- yourself two to four times a day, using either a small hypodermic needle or a pen-type syringe with refillable cartridges.
- Portable insulin pumps may be appropriate for you if you find it difficult to control your blood glucose with regular injections despite careful monitoring of its level. Insulin pumps can be programmed to inject you with insulin at a rate that you can control. However, these aren't appropriate for most people with diabetes.

Modern insulin pens now mean the administration of insulin is virtually pain free.

Treatment of type 2 diabetes

Many people with type 2 diabetes can manage to control their condition simply by changing their lifestyle. Changes include:

Diet

A healthy diet is essential if you have diabetes and it's important to eat regularly three times a day. Special diabetic foods are not needed for a healthy diet; you just need to eat a balanced diet that is low in saturated fat, sugar and salt, and high in fibre, vegetables and fruit. Include carbohydrates, such as pasta, potatoes or sugary foods such as fruit in each meal. More comprehensive information on diet can be obtained in Whelehans.

Exercise

Exercise promotes a healthy circulation and will help you to stay a healthy weight. At least half an hour of moderate activity on at least five days a week is recommended.

Smoking

Smoking is unhealthy for everyone, but it's especially important for people with diabetes to quit. This is because a diabetic already has a five fold increased chance of developing cardiovascular disease or circulatory problems. Smoking makes the chances of developing these diseases even greater.

Alcohol

If you have diabetes, there's no need to give up alcohol completely, but it's important to drink in moderation. However, you should not drink on an empty stomach - eat food containing carbohydrate before and after drinking (as alcohol reduces your glucose levels). You should monitor your blood glucose levels more regularly if drinking alcohol.

Medicines

If lifestyle changes alone don't reduce your glucose levels, you may be prescribed medicines to increase insulin production and strengthen its effect. Some examples are listed here.

- Metformin improves the effectiveness of insulin by reducing the amount of glucose released from the liver and improving the way glucose is used by muscles. It causes less weight gain than other diabetic medication.
- Sulphonylureas encourage your pancreas to produce more insulin, and include glibenclamide and glipizide.
- Thiazolidinediones reduce your body's resistance to insulin and are sometimes used with metformin and sulphonylureas if other standard treatments aren't working or aren't tolerated. Examples include rosiglitazone and pioglitazone.
- Newer medicines called DPP-4 inhibitors, such as sitagliptin, help your body to produce more insulin in response to meals. They don't cause weight gain and only rarely cause hypos.
- Acarbose lowers blood glucose by slowing the breakdown of some carbohydrates.

Two or more of the medicines listed here can be given in combination as they may give better control than one on its own. If your blood pressure or cholesterol levels are high your doctor will also prescribe medication to keep these under control. All diabetics, regardless of means, are entitled to all medication related to diabetes for free in Ireland under the Long Term Illness Scheme. Ask in store for more details.

Monitoring Blood Glucose

Diabetics can monitor their blood glucose levels with a home test kit. This involves taking a pinprick of blood from your finger and putting a drop on a testing strip. A meter will read the result automatically. Your local diabetic clinic will provide you with a blood glucose meter for free when first diagnosed. The test strips are available for free from your pharmacy under the Long Term Illness Scheme if you are diabetic and have a valid prescription for them from your GP. You can adjust your diet and insulin to keep your blood glucose within the recommended range. The recommended range is between 4 to 7mmol/litre before meals and less than 8.5mmol/litre after meals. A further blood test called a HbA1c can be performed by your doctor and is used to monitor diabetes control over a three month period.

Disclaimer: Please ensure you consult with your healthcare professional before making any changes recommended

For comprehensive and free health advice and information call in to Whelehans, log on to www.whelehans.ie or dial 04493 34591. You can also e-mail queries to info@whelehans.ie.