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#### **Diabetes and its Prevalence**

#### What is diabetes?

Diabetes is a chronic metabolic condition caused by a lack of insulin or an inability to use insulin properly, resulting in elevated blood glucose levels.

During uncontrolled diabetes, high levels of glucose in the blood can have a damaging effect on your body and can particularly harm the tiny blood vasculature system found in your kidneys, heart, eyes, and nervous system. This can ultimately lead to severe complications such as heart disease, kidney disease, stroke, blindness, and nerve damage, and increases the risk of limb amputation. Diabetes is having a global impact and it is a widespread health problem affecting more and more people every year. The International Diabetes Federation describes diabetes as one of the largest health emergencies of the 21st century.

### How many people have diabetes?

The estimated number of people living with diabetes in 2015 was 415 million and this figure is expected to rise unless serious lifestyle modifications are adopted today.



Of the 415 million people with diabetes, 215 million are men and 200 million are women. It is also estimated that of those living with diabetes, 270 million live in urban areas, whereas 145 million live in rural areas. The three countries with the highest number of people living with diabetes are China (109.6 million), India (69.2 million) and the United States of America (29.3 million). In 2040, it is estimated that 642 million people, between the ages of 20-79 years, will have diabetes (IDF Diabetes Atlas 2015).

The current prevalence of diabetes worldwide is at 9% or 1 in 11 people. With the estimated rise in diabetes, this will increase to 1 in 10 people.

The <u>World Health Organisation's (WHO)</u> <u>Diabetes Report</u> estimates that 40% of the increase in the diabetes population since 1980 is as a result of population growth and ageing. Also notable, is the doubling of diabetes prevalence from 4.7% in 1980 to 9% today. With an increasing proportion of people over the age of 60 years, diabetes is likely to become more prevalent. In parallel with this, obesity in also increasing in prevalence, which may influence diabetes numbers in the near future.







### How many people have diabetes in Ireland and the UK?

The estimated total number of people living with diabetes in Ireland is almost a quarter of a million (225,840) (Diabetes Ireland). This is approximately a prevalence of 6.5% in the population between the ages of 20-79 years. Estimations for 2020 and 2030 have predicted there will be 233,000 and 278,850 people with the disorder, respectively. This equates to 7.5% of the population.



Diabetes also has a huge economic impact. Currently, there is approximately  $\leq 1.35$  billion being spent on diabetes care in Ireland per annum. This equates to 10% of the total annual Irish healthcare budget (National Diabetes Programme). In terms of the UK, there are almost 4 million people living with diabetes and £10 billion (or about 10% of the total annual NHS budget) is being expended on diabetes care (Diabetes UK – The Cost of Diabetes Report).



The impact of this metabolic condition is quite evident, not only in Ireland but worldwide. The prevalence of diabetes will only increase every year unless strict changes in lifestyle choices are adopted today. Despite the substantial number of people living with the disease, it is estimated that half of adults are unaware that they have the condition and are yet to be diagnosed. For this reason alone, increased awareness around diabetes is critical in order to facilitate effective prevention and management regimes.

#### **Glucose and Insulin**

#### What is Glucose?



There are three macronutrients or types of food, including carbohydrates, proteins, and fats. When we eat foods that contain carbohydrates, our digestive system breaks down these foods into a type of sugar known as glucose. Once glucose is extracted from these foods, it travels throughout the bloodstream to each cell in our body.



However, in order for the cells in our body to use this glucose as a fuel source, we need insulin. Insulin is the key which opens the door, allowing glucose to enter our body's cells. If the body is not producing insulin, then the cells cannot take up the glucose to use it for energy. Therefore, glucose builds up in the







bloodstream, and this results in diabetes' trademark high blood glucose levels, known as hyperglycaemia.

#### What is the Pancreas?

The pancreas is the organ responsible for releasing insulin in response to glucose in the bloodstream.



The pancreas is an organ or large gland which is located behind the stomach. It is about 6 inches long and is connected to the small intestine, or duodenum, via a small tube called the pancreatic duct (<u>WebMD</u>). This pancreatic duct delivers pancreatic juices or enzymes which help in the digestion of food.



The pancreas has a second function which is directly involved in diabetes. The pancreas produces insulin via a cluster of small cells called beta cells. These beta cells are located in the Islets of Langerhans and are vital for the production of the hormone insulin.

### What is Insulin?

Insulin is the key hormone that allows our bodies to absorb and use the glucose that is broken down from food in our diet.



Glucose and insulin travel through the bloodstream to each cell in our body, for example muscle cells. As mentioned, insulin acts to allow glucose to enter the cells freely where it can provide the energy source the body needs in order to function.



How do Glucose and Insulin work together?

A healthy body requires an optimal and regular blood glucose level.







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Insulin allows cells to absorb glucose from the bloodstream. As a result, the overall blood glucose levels drop, and so the pancreas stops producing insulin as there is less need for it. When there is too much glucose in the bloodstream, we produce more insulin, which helps to bring the blood glucose back down to normal levels. However, in the case of diabetes, the body does not have full control over blood glucose levels. This is because of a lack of insulin or because the body does not react properly to insulin.

#### Type 1 and Type 2 Diabetes

#### What are the types of diabetes?



There are also many other less common types which include gestational diabetes, maturity onset diabetes of the young (MODY), and latent autoimmune diabetes of adults (LADA). Prediabetes is the term given to someone who has elevated blood glucose levels which are above the normal range, but do not reach the necessary levels for diabetes diagnosis. It is not inevitable that a person with prediabetes will develop diabetes, as factors such as lifestyle modifications can help prevent the onset of the condition.

### What is Type 1 Diabetes?

In type 1 diabetes, the pancreas is unable to produce any insulin.



Type 1 diabetes is caused by damage to the beta cells of the pancreas. As previously mentioned, the beta cells are a group of cells found in the Islets of Langerhans in the pancreas. These islets contain different types of cells, of which, the beta cells are essential for insulin production.

More specifically, the damage to beta cells is due to an autoimmune disorder whereby the body destroys the beta cells responsible for producing insulin. This autoimmune disorder normally begins in early childhood or early adult life and therefore was initially referred to as juvenile or childhood-onset diabetes.



Type 1 diabetes is a lifelong condition that typically occurs in early childhood, and accounts for about 1 in 10 cases of diabetes. The development of type 1 diabetes is





normally very quick and can occur in as little time as weeks to months.

Type 1 diabetes will always require treatment with insulin as the body is incapable of producing its own insulin, and for this reason it has been known as insulin-dependent diabetes. The lack of insulin means that cells of the body cannot take up glucose from the bloodstream.

#### What is Type 2 Diabetes?

In type 2 diabetes, the pancreas may produce some insulin, but it is either not enough insulin or the body may not be able to respond properly to the insulin that is produced.

With a slower development over a number of years, type 2 diabetes is the most common form of diabetes, and accounts for about 90% of all diabetes cases. Type 2 diabetes is not insulin-dependent, as the pancreas may produce some insulin.

However, the amount of insulin produced may not be enough for the body to function normally. Additionally, the body may not respond properly to the insulin being produced and therefore glucose cannot be taken up efficiently by the cells of the body. The reasons for this insulin resistance are not always clear.



The nature of type 2 diabetes is very different from type 1 diabetes as, in type 2 diabetes, it may be several years before glucose levels become elevated and uncontrolled by the body. Type 2 diabetes may go unnoticed between the time of onset and the time of diagnosis. As mentioned, half of those with diabetes are unaware that they have the condition. It may be up to 12 years, on average, before type 2 diabetes is recognised and appropriate management is taken (Diabetes Ireland).

Hence, it is vitally important to raise awareness and understanding of diabetes. In addition, it is important to know the symptoms associated with this chronic metabolic condition in order to help with early detection and timely diagnosis.

### The Causes & Risk Factors of Diabetes

What are the causes of type 1 and type 2 diabetes?

#### **Type 1 Diabetes**

As previously mentioned, type 1 diabetes is an autoimmune disorder where the beta cells of the pancreas are destroyed by the body. The exact cause of type 1 diabetes is unknown. It is suggested that it is as a result of a complex interaction between genetic and environmental factors. As of yet, there is no known specific environmental risk factor identified, that causes or increases the risk of onset of type 1 diabetes (<u>Global Report on</u> <u>Diabetes, WHO 2016</u>).

#### **Type 2 Diabetes**

Unlike type 1 diabetes, people with type 2 diabetes produce insulin but the insulin produced is either not sufficient for the body or the body is unable to use the insulin properly.

Regardless of the causes, both type 1 and type 2 diabetes result in glucose build-up in the







bloodstream. This is known as hyperglycaemia (<u>WebMD</u>).



**Hyperglycaemia** is the term used to describe when the blood glucose level is raised above the normal range. Hyperglycaemia is typically associated when diagnosing diabetes, as it specifically refers to high blood glucose levels.

**Hypoglycaemia** is the opposite term used when the blood glucose level is below the normal range. Hypoglycaemia is the condition which typical occurs in patients due to poor management of their diabetes. This might result from a lack of glucose after exercise, skipping a meal, or too much insulin in the bloodstream, leading to excessive uptake of glucose by the cells of the body.

When these conditions of hyperglycaemia and hypoglycaemia occur, they affect the normal functioning of the body, which become apparent as symptoms.

### What are the risk factors for type 2 diabetes?

Type 2 diabetes normally progresses over a number of years and there are several factors which can increase the risk of diabetes onset. While people with type 2 diabetes are not necessarily overweight, obesity and lack of physical activity are two of the most common risk factors of type 2 diabetes.



#### • Weight

One of the primary risk factors for type 2 diabetes is obesity. If you have more fatty tissue, your cells tend to become resistant to the action of insulin, resulting in elevated levels of glucose in your bloodstream. It is important to remember that you do not have to be overweight to develop diabetes.

#### • Diet

A poor diet can lead to a person becoming obese and storing more fatty tissue. Therefore, a poor diet can increase the risk of diabetes onset.

#### • Lack of Physical Activity

Your risk of type 2 diabetes developing increases significantly, the less active you are. Exercise helps to control weight by using up glucose in your body as energy. It may also increase your cell's sensitivity to insulin.

#### Family History

Diabetes has a genetic or hereditary element which may increase your risk of developing the condition if a parent or sibling has type 2 diabetes. This, however, is not necessarily a defining factor.

#### • Age

As your age increases, so too does your risk of developing type 2 diabetes. This may be as a result of people being less inclined to exercise as they age, leading to a loss of muscle mass,







and an increase in weight. However, type 2 diabetes can occur in children and young adults also.

#### • Ethnicity

Although it is unclear why, race tends to play a role in the development of diabetes. Asian Americans, Hispanics, non-Hispanic blacks, and American Indians, are thought to be more likely to develop type 2 diabetes than non-Hispanic whites are (<u>Diabetes.org</u>).

It is evident that there are a number of different risk factors for type 2 diabetes. Some risk factors such as your family history, age, and ethnicity may not be controlled; however, there are a number of risk factors which are in our control such as diet, exercise, and weight management. These factors are among the most important when avoiding the onset of diabetes.

### The Symptoms and Diagnosis of Diabetes

### What are the symptoms of type 1 and type 2 diabetes?

The majority of symptoms associated with diabetes arise from the conditions hyperglycaemia and hypoglycaemia.

There are a number of symptoms apparent during type 1 and type 2 diabetes, with some of these symptoms similar in both type 1 and type 2. <u>Diabetes Ireland</u> have helped us to recognise some of the common symptoms evident during type 1 diabetes. These include:

- Fatigue or tiredness
- Blurred vision
- Excessive thirst
- Constant hunger
- Weight loss
- Frequent urination



#### Irritability and mood changes

It is recommended that if you experience more than one of these symptoms consistently, you should refer to your doctor.

The symptoms of type 2 diabetes, on the other hand, may be less obvious at first, and the disease may go unnoticed after onset. Therefore, greater awareness of the symptoms of type 2 diabetes is key to identifying the condition at an early stage, which may enable a timely diagnosis. Symptoms of type 2 diabetes include:

- Blurry vision
- Fatigue or tiredness
- Excessive thirst
- Frequent urination
- Rapid weight gain/loss
- Frequent infections
- Numbness or pain/tingling in hands or feet



Unfortunately, by the time the symptoms of type 2 diabetes have become severe enough to prompt a check-up; the condition may be associated with long-term complications (such as vision loss or heart problems).

Why is the diagnosis of diabetes important?

Early detection and timely diagnosis of diabetes are vitally important for patients, to allow prompt lifestyle modifications and best outcome for your health.

Diabetes which goes undetected and undiagnosed for long periods of time can lead to an increased risk of severe complications. These complications result from prolonged high blood glucose levels (hyperglycaemia), as we have learned previously.

### How are blood glucose levels measured?

Blood glucose levels are represented using millimole per litre (mmol/L) or milligram per decilitre (mg/dl). Your levels of blood glucose will alter throughout the day and night, depending upon when, what, and how much you have eaten, as well as whether or not you have exercised.

The typical blood glucose range before meals can vary between 4-6 mmol/L or 72-108 mg/dl.

Normal fasting glucose levels, measured after 8 hours of not eating, are between 3.9-5.5 mmol/L or 70-99 mg/dl. Normal glucose levels, measured 2 hours after eating, are less than 7.8 mmol/L or 140 mg/dl.

#### How is diabetes diagnosed?

Diabetes is diagnosed by any one of the following tests:

- Two consecutive fasting blood glucose test that are greater than or equal to 7 mmol/L or (126 mg/dl).
- 2. Any random blood glucose test that is greater than **11 mmol/L** or 200 mg/dl.
- A two-hour oral glucose tolerance test greater than 11 mmol/L or 200 mg/dl following a 75g oral glucose load.
- 4. A HbA1c test greater than or equal to **6.5%**.

The HbA1c test gives a 3 month average of blood sugars and can be measured even when the patient is not in a fasting state. It is representative of the patient's average blood glucose level over a longer period of time, compared to testing blood glucose levels which only provides a short term reading.

To reiterate, early detection and timely diagnosis of diabetes are vitally important for patients, to allow prompt lifestyle modifications and best outcome for your health.

#### Diabetes Management

#### How is diabetes managed?

- 1. Lifestyle Modifications
- 2. Diabetes Medication

What are the lifestyle modifications?

Lifestyle modifications include an increase in physical activity and a healthy diet, which offer the potential to manage diabetes after onset and can even prevent type 2 diabetes development.









As discussed, a lack of physical activity and a poor diet are two of the major risk factors associated with the development of type 2 diabetes.

It is crucial that if diabetes is diagnosed, both lifestyle modifications are adopted. Diabetes can often be managed with simple dietary changes and by taking on some form of physical exercise each day of the week. It is also very important, that the cessation of smoking is adopted into your lifestyle. Smoking can severely exacerbate your diabetes, with long-term complications of heart disease, kidney disease, limb amputation, and blindness, being accelerated as a result.

People with diabetes can live a long and healthy life, if they manage their condition properly. This involves strict control of their blood glucose level, as well as early detection and prompt treatment of potential diabetic complications.

#### What is diabetes medication?

As all diabetes patients are aware, medication, typically in the form of insulin, is vital for their diabetes management. As we learned already, insulin is not produced by the beta cells of the pancreas in patients with type 1 diabetes and therefore, insulin must be taken as diabetes medication. In the case of type 2 diabetes, lifestyle modifications may be used to control the condition, but over time there is an eventual need for insulin to be taken.



There are also other diabetes medications prescribed for patients with type 2 diabetes. These medications may be prescribed as an initial treatment before insulin therapy. These types of treatments may help to increase the body's sensitivity to insulin or help the pancreas to increase the secretion of insulin. No two people are the same, and for this reason, diabetes medication may vary from patient to patient.

#### How is insulin taken?



The traditional method of administering insulin was to use a syringe and disposable needle to draw out insulin from a bottle or glass vial. This, however, is less common than the insulin pen or insulin pump of today.



An insulin pen is a small device with a cartridge integrated into the pen to store insulin. The pen has a dial on the top end







which is twisted to adjust your required dose of insulin. The needles used to deliver the insulin are disposable after use. The insulin is normally injected in the abdomen, but can also be administered in the thigh or buttock. Overall, the insulin pen offers a simplistic way of administering insulin that is easily portable in pocket-size.

The insulin pump is a slightly larger device in the shape a small smart phone. This also contains a cartridge of insulin. The pump continuously monitors your blood glucose level and administers insulin through an infusion set instead of an injection. This offers an alternative for those younger patients managing their diabetes and is more common among type 1 diabetes patients.

### Can smart devices help to manage my diabetes?

There are a number of apps available on smart devices which you can use to monitor your blood glucose level. These offer a simple way to track your diabetes information, including your blood glucose levels; when you last administered insulin; how many carbohydrates you ate in your last meal; and the exercise you completed, each day. This way of managing your diabetes may be beneficial for both you, and also for your doctor.



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Remember, being active and maintaining a healthy diet is extremely important in the management of your diabetes. These key lifestyle modifications reduce the risk of severe complications, which result from poor blood glucose control. Also, a greater awareness of the symptoms of diabetes is vital to identify the condition at an early stage, and enable a timely diagnosis with prompt treatment of your diabetes.







#### What is Diabetic Retinopathy?

Diabetic retinopathy is a common complication of diabetes which affects the eyesight of patients with diabetes.



More specifically, diabetic retinopathy affects the small blood vessels at the back of the eye in a layer known as the retina. The retina is involved in helping to send messages along the optic nerve to the brain to process images for eyesight.

### What is the prevalence of diabetic retinopathy?

Diabetic retinopathy is the single leading cause of vision loss for those with diabetes. With the global prevalence of diabetes increasing rapidly, the number of diabetic complications is also on the rise. Of the 415 million people worldwide living with diabetes, it is expected that one-third of those will be affected by diabetic retinopathy during their lifetime. Today, more than 93 million people suffer from a diabetic eye condition, with diabetic retinopathy being the leading cause of blindness among the working age population.



# What are the risk factors associated with diabetic retinopathy?

All patients with diabetes have an increased risk of developing diabetic retinopathy.

#### **Blood Glucose Levels**

The primary risk factor for the development of diabetic retinopathy is poor control of blood glucose leading to hyperglycaemia, or high blood glucose levels. Chronic exposure to hyperglycaemia for prolonged periods of time will lead to excessive damage to tiny blood vessels (known as retinal capillaries), found at the back of the eye. This damage leads to diabetic retinopathy. Therefore, strict blood glucose management is very important for eye health in patients with diabetes.



#### Duration of Diabetes

The longer you have diabetes, the higher the risk of developing diabetic retinopathy. This is thought to be as a result of prolonged







exposure to the other risk factors associated with diabetic retinopathy.

#### High Blood Pressure

Blood pressure is the force of blood from the heart, pressing against the interior walls of blood vessels. Therefore, when you have high blood pressure, there is extra pressure placed on blood vessel walls. As a result, blood vessels may become weak and permeable, leading to leakage of blood or fluid into the eye.



#### • Elevated Cholesterol

Elevated cholesterol or blood lipids can result in the build-up of lipid deposits in your blood vessels. Over time, these lipid deposits may form plaques or can even leak into the eye in the form of hard exudates, which may interfere with normal vision.



#### Smoking

Smoking can exacerbate the condition of diabetes, leading to long-term complications, including retinopathy progressing at an accelerated rate.



#### • Ethnicity

Ethnicity is the fact or state of belonging to a social group that has a common national or cultural tradition. Diabetic retinopathy can occur in anyone with diabetes, but there are certain ethnic groups which have been reported to have a higher risk.



#### Pregnancy

Pregnancy may have a severe effect on the progression of diabetic retinopathy. This means that if a woman with diabetes, who becomes pregnant, has early stage retinopathy, this may progress very rapidly to an advanced stage of retinopathy during pregnancy. For this reason, it is essential that







you have regular eye doctor visits during your pregnancy.

### What are the symptoms of diabetic retinopathy?

People with diabetic retinopathy may not experience any symptoms in its initial stage. Typically, by the time patients experience symptoms, retinopathy may have advanced and can present as blurred vision, 'floaters', and partial or significant visual loss, depending on the stage of diabetic retinopathy.

'Floaters' can be clumpy or stringy and may be light or dark. They are caused by specks of undissolved vitreous gel material floating in the dissolved gel-like fluid (vitreous) in the back of the eye, which cast shadows on the retina when light enters the eye (AllAboutVision).



It is extremely important if you have diabetes, even if you do not have any visual impairment, to visit your eye doctor for a simple eye exam before serious damage to the retina occurs. Early detection and timely diagnosis are critical, as prompt treatment can stop or delay vision loss.

As outlined above, the risk of developing diabetic retinopathy may be reduced with good blood glucose control, maintenance of healthy blood pressure and blood lipids levels, as well as regular eye screening.

#### Stages of Diabetic Retinopathy

### *What is Diabetic Macular Edema (DME)?*

Diabetic Macular Edema (DME) is the most common cause of vision loss in diabetic retinopathy patients. It can occur at any stage during diabetic retinopathy progression.

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The macula is a highly sensitive area of the retina responsible for central and colour vision. It can be found close to the centre of the retina, where it has the highest density of photoreceptors which are needed to absorb light. The macula is especially important for sharp, focused vision at the centre of the eye.



During DME, damage to blood vessels leads to leakage of blood or fluid into the macula, which results in swelling and thickening of the retina. In order to develop DME, you must first have diabetic retinopathy.

### What are the stages of diabetic retinopathy?

- 1. Non-Proliferative Diabetic Retinopathy
- 2. Proliferative Diabetic Retinopathy





The early stage of diabetic retinopathy is known as non-proliferative diabetic retinopathy.

As previously mentioned, there are no obvious symptoms of eye damage at the early stage of diabetic retinopathy. However, at this stage, the walls of the small blood vessels in the retina, called retinal capillaries, may have already begun to weaken and change shape. This change in retinal capillary wall structure may be as a result of some of the risk factors including high blood glucose levels, high blood pressure or elevated cholesterol.



In addition, microaneurysms or small bulges in the blood vessel walls may form during nonproliferative retinopathy. These small swellings result in the blockage of blood vessels that typically nourish the retina. As more blood vessels become damaged and blocked, this leads to leakage of blood or fluid into the eye.



When diabetic retinopathy progresses to the advanced stage, it is then known as proliferative diabetic retinopathy (PDR).

As diabetic retinopathy progresses to the advanced stage, more blood vessels become blocked, and the retina becomes deprived of necessary blood supply. This leads to new blood vessel growth occurring in order to replenish the oxygen delivery to the retina of the eye.



However, these newly formed vessels are abnormal, fragile, and are liable to bleed into the vitreous (gel-like substance in the eye) in front of the retina. When these abnormal blood vessels leak or bleed fluid, this is known as a vitreous haemorrhage, which can cause sudden and profound vision loss.

Further growth of new abnormal blood vessels can lead to the generation of scar tissue, leading to retinal detachment, and even glaucoma (or high pressure in the eye), during the advancing stage of retinopathy.









To reiterate, symptoms may not be apparent during the early stage of retinopathy. As a result, diabetic retinopathy may appear to develop quite quickly. In reality, the condition could be developing in the background for some time. It is therefore, vital to visit your eye doctor for a simple eye exam at least once per year if you have diabetes.

#### Treatment for Diabetic Retinopathy

## What are the treatments available for diabetic retinopathy?

### Anti-VEGF Treatment Laser Treatment

While there is no cure for diabetic retinopathy, prompt treatment may be effective in preventing, delaying or reducing vision loss in patients with this diabetes complication. However, treatment for diabetic retinopathy will also depend on the cause of vision loss to the patient. In any case of diabetic retinopathy, patients are advised to maintain strict control of their blood glucose levels and should be continuously monitored by their eye doctor.



If loss of vision is due to diabetic macular edema (DME), the most effective treatment is anti-VEGF therapy. VEGF, short for Vascular Endothelial Growth Factor, is responsible for the growth of abnormal blood vessels, as well as the breakdown of the retinal capillary walls, which leads to DME. Therefore, anti-VEGF treatment blocks the action of VEGF, and can restore vision by preventing leakage occurring in damaged retinal capillaries.



If loss of vision is due to proliferative diabetic retinopathy (PDR), patients are typically treated with laser therapy called photocoagulation. Laser photocoagulation stops new blood vessel growth and prevents further fragile blood vessels from bleeding into the eye.

Laser photocoagulation is usually a pain-free procedure, with an anaesthetic applied before the treatment, and it is typically performed in an outpatient setting. There are two types of laser treatment. Focal photocoagulation is used to target specific blood vessels which may leak into the macula of the retina. Scatter







photocoagulation is used to treat the slow growth of blood vessels over a wider area of the retina.



While treatments can be effective in preventing blindness from diabetic retinopathy, it is important to attend an eye screening soon after diagnosis of diabetes. Regular eve examinations should be maintained each year to monitor the condition of your eyes, as this will enable you to receive the best form of treatment.

In Ireland, you can attend free diabetic retinopathy screening by registering through Diabetic Retina Screen at www.diabeticretinscreen.ie or freephone 1800 45 45 55.

#### Management of Diabetic Retinopathy

## What is involved in the management of diabetic retinopathy?

Firstly, controlling your blood glucose levels should be at the forefront of managing your condition. As mentioned in an earlier post on Diabetes Management, it is critical to maintain optimal glucose ranges using appropriate lifestyle modifications (including a healthy diet and regular physical activity) and diabetes medication.



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It has been proven that tight control of your blood glucose levels, cholesterol, and blood pressure, can delay or prevent the occurrence of diabetic retinopathy. Therefore, strict glucose control with diabetes medication, in addition to physical activity, a healthy diet, and cessation of smoking, are key measures when managing your diabetes and eye health.

Secondly, while sustaining a healthy lifestyle, regular eye examinations should be maintained each year to monitor the condition of your eyes. Also, if you are pregnant and have diabetes, it is important to have regular eye exams during your pregnancy, as accelerated progression of diabetic retinopathy may occur during this time.













