



# Diabetes Mellitus and Diabetic Retinopathy

## What is Diabetes Mellitus?

Diabetes mellitus, or simply diabetes, is a group of diseases in which a person does not produce enough insulin, or because it does not respond to the insulin that is produced. Insulin is a hormone that controls the amount of glucose (sugar) in the blood. Diabetes leads to high blood sugar levels, which can lead to damage of blood vessels, organs, and nerves.

## There are three main types of Diabetes Mellitus (DM):

**Type 1 Diabetes:** This results from not making insulin. People with type 1 diabetes need insulin, either by injection or using an insulin pump.

**Type 2 Diabetes:** This results from insulin resistance, where cells fail to use insulin properly. Patients are treated with combinations of diet, exercise, oral medication, or a combination.

**Type 3:** Gestational Diabetes: Diabetes during pregnancy.

## How is Diabetes Mellitus diagnosed?

Diabetes may have symptoms in some people, and no symptoms in others. Generally, people with Type 1 diabetes have increased thirst (polydipsia), frequent urination (polyuria), and increased hunger (polyphagia). Symptoms may develop over weeks to months. Untreated, this condition may cause a person to lose consciousness and become very ill (diabetic ketoacidosis).

People with type 2 and gestational diabetes may have minimal symptoms. A single, elevated blood glucose measurement can make a diagnosis, or it may require multiple measurements of blood glucose. Your doctor will help you determine if you have diabetes.

## How is Diabetes Mellitus treated?

Diabetes mellitus is a chronic disease for which there is treatment but no known cure. Treatment is aimed at keeping blood glucose levels as close to normal as possible. This is achieved with a combination of diet, exercise and insulin or oral medication. People with type 1 diabetes need to be hospitalized right after they are diagnosed to get their glucose levels down to an acceptable level.

## How important is it to control blood sugar levels?

Studies show that good control of blood sugar levels decreases the risk of complications from diabetes. Patients with better control of blood sugar have reduced rates of diabetic eye disease, kidney disease, and nerve disease. It is important for patients to measure their measuring blood

glucose levels. Hemoglobin A1c can also be measured with a blood test and gives information about average blood glucose over the past 3 months.

## What are complications of Diabetes Mellitus?

Diabetes increases the risk of cardiovascular disease, stroke, and peripheral vascular disease. Small blood vessel (capillary) damage can affect the eyes, kidneys and nerves.

## How can Diabetes Mellitus affect the eyes?

1. **Blurred vision** - If a person's blood glucose is very high, the lens within the eye can swell and temporarily cause blurred vision. This type of blurred vision will usually get better after the blood glucose level comes back to normal.
2. **Retinopathy** - Diabetes may cause blood vessels in the retina (the light sensitive lining of the eye) to become leaky, blocked, or grow abnormally [Figure 1]. Retinopathy is rare before the age of 10 and the risk increases with the length of time a person has diabetes. Treatments such as laser, injections in the eye, or other procedures may be helpful to prevent visual loss or restore sight. The longer a patient has diabetes, the greater chance of developing an eye problem. All patients with diabetes are at risk for developing retinopathy, but the risk is higher for patients with worse blood sugar control. Early retinopathy may have no symptoms, but early treatment is essential to prevent any loss of vision.
3. **Cataract** - Cataract is a clouding of the lens of the eye and can occur at a younger age in patients with diabetes. If the clouding is significant enough to blur vision it may require surgery.
4. **Glaucoma** - People with diabetes are more likely to develop glaucoma than the general population.



**Fig. 1:** Retinopathy may cause blood vessels in the retina to become damaged or grow abnormally.

## How often should I have my eyes examined if I have Diabetes Mellitus?



An eye examination is recommended at the time of diagnosis. Your doctor will recommend follow-up visits based on your condition. Most patients require yearly dilated eye examinations.

**Where can I find more information regarding diabetes in children?**

- [Juvenile Diabetes Research Foundation](#)
- [American Academy of Pediatrics policy statement](#): Eye examination in infants, children, and young adults by pediatricians

**Updated 7/2018**