

## Hemoglobin A1c

As you know, keeping your diabetes in good control is the key to staying healthy. You check your blood glucose sugar levels at different times of the day to make sure your diabetes plan is working. These tests tell you what your blood sugar level is at that moment, which is very helpful. However, your blood sugar levels change many times over the course of a day. Frequent self testing is the best way to manage your diabetes, yet it alone does not give the whole picture.

There is another test that can tell you your average blood sugar for the past 2 – 3 months. This test is called a hemoglobin A1c.

Hemoglobin is a protein inside your red blood cells. It is the part of the red blood cell that carries oxygen from your lungs to the rest of your body. Hemoglobin also carries sugar, because sugars can stick to all kinds of proteins in your body. Once sugar sticks to hemoglobin, it is stuck there for the life of the red blood cell (about 3 – 4 months). The more sugar there is in your blood, the more that will be stuck to the hemoglobin.

The hemoglobin A1c is a measurement of how much sugar is stuck to your hemoglobin. Your hemoglobin A1c reading tells you and your Diabetes Care Team what your average blood sugar level has been for the past 2 – 3 months.

<u>If your Hemoglobin A1c reading is:</u>	<u>Your average blood sugar level has been:</u>	<u>Your Control is:</u>
4%	60 mg/dL	Very Good
5%	90 mg/dL	Very Good
6%	120 mg/dL	Very Good
7%	150 mg/dL	Good
8%	180 mg/dL	Marginal
9%	210 mg/dL	Poor
10%	240 mg/dL	Poor
11%	270 mg/dL	Poor
12%	300 mg/dL	Very Poor
13%	330 mg/dL	Very Poor
14%	360 mg/dL	Very Poor

If your hemoglobin A1c is high, your Diabetes Care Team may change your diabetes plan to help control your blood sugar better. Changes in your plan are expected from time to time and will help bring your hemoglobin A1c closer to normal. When your hemoglobin A1c is close to normal, you know you are doing all you can to stay healthy.

Research has found a direct link between high blood sugar levels and the complications of diabetes. Reducing your blood sugar levels to near normal can help reduce your risk of eye problems by up to 76%, nerve damage by 60%, and severe kidney problems by 56%.

## Diabetic Eye Disease

Diabetic eye disease refers to a group of eye problems that people with diabetes may face as a complication of this disease. All can cause severe vision loss or even blindness. Diabetic eye diseases include:

**Diabetic Retinopathy** - damage to the blood vessels in the retina.

**Cataract** - clouding of the eye's lens.

**Glaucoma**- increase in fluid pressure inside the eye that leads to optic nerve damage and loss of Vision.

Cataracts and glaucoma also affect many people that do not have diabetes.

Diabetic retinopathy is the leading cause of blindness in American adults. It is caused by changes in the blood vessels of the retina. In some people with diabetic retinopathy, retinal blood vessels may swell and leak fluid. In other people, abnormal new blood vessels grow on the surface of the retina. These both can lead to vision loss or blindness.

The longer someone has diabetes, the more likely he or she will get diabetic retinopathy. Nearly half of all people with diabetes will develop some degree of diabetic retinopathy during their lifetime.

Often there are no symptoms in the early stages of diabetic retinopathy. Vision may not change until the disease becomes severe and there is no pain. Blurred vision may occur when the macula – the part of the retina that provides sharp central vision – swells from the leaking fluid. This condition is called macular edema. If new vessels have grown on the surface of the retina, they can bleed into the eye, blocking vision. Even in more advanced cases, the disease can progress a long way without symptoms. This is why regular eye examinations for people with diabetes are so important.

Diabetic eye disease can be detected during a dilated eye exam. This means eye drops will be used to enlarge the pupils so the ophthalmologist can see deep inside of your eyes to check for signs of the disease. This exam should take place yearly starting as soon as you have been diagnosed with diabetes.

Diabetic retinopathy can be treated by laser surgery. However, laser surgery often cannot restore vision that has already been lost. That is why finding diabetic retinopathy early is the best way to prevent vision loss. Your risk of developing diabetic retinopathy or decreasing its progression can be greatly reduced by maintaining better control of blood sugar levels.

If you have diabetes, you are twice as likely to get a cataract and / or glaucoma than a person who does not have the disease. Cataracts also develop at an earlier age in people with diabetes. Cataracts can be removed by surgery. Glaucoma can be treated with medications, laser and other forms of surgery.

Finding and treating the disease early, before it causes vision loss or blindness, is the best way to control diabetic eye disease. If you have diabetes, make sure to get a dilated eye examination by an ophthalmologist at least once a year.

## Diabetes and Your Eye

Diabetes can damage your eye. About 12,000 new cases of blindness occur each year in the United States in people with diabetes. Finding and treating eye problems as soon as possible can help prevent blindness. You should have a complete eye exam at least once a year.

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Most people who have had diabetes for more than 10 years have some eye damage. Many small blood vessels line the inside of your eyes. Over time, high blood sugar and high blood pressure can damage these vessels. The damaged vessels are likely to break and bleed. Keeping blood sugar and blood pressure levels close to normal helps prevent eye damage. Blood vessel damage may not cause any problems with your ability to see until the damage is very serious. A complete eye exam with dilation is the only way to find less severe damage. Laser treatment can be used to treat damaged blood vessels and may prevent blindness.

### ??? What Can I Do To Help Protect My Eyes???

Have your eyes checked once each year, even if you see very well. Call your doctor right away if you experience any of the following: blurred or double vision, dark spots, pressure or pain in your eyes, difficulty seeing at night, or a reduction in the area you can see when you're looking straight ahead.

Test and record your blood pressure often. High blood pressure can cause eye problems to get worse more quickly.

### Your Diabetes Care Team Can Help Lower Your Risk For Eye damage

1. Ask about possible vision problems each time you visit.
2. Have you read an eye chart at least once a year?
3. An examination of the back of each eye (the retina) after dilation once a year, is preferable by an ophthalmologist.
4. Care for your eyes should begin as soon as you know you have diabetes.
5. Check your blood pressure at each visit. Begin treatment right away if it is high.
6. Suggest ways to help you keep your blood sugar and blood pressure levels close to normal.
7. Help you find a stop – smoking program.