LEARN HOW TO PROTECT YOUR EYES FROM DIABETIC VISION LOSS
CHAPTER 1

LEARN

Why You Need To Protect Your Eyes
If you’ve been diagnosed with DIABETES, you’ve been warned about your blood sugar, your heart, your kidneys...

Having diabetes means more than just taking pills or getting injections every day. If you have diabetes, your vision is at risk. In fact, most people with diabetes who do not receive regular eye examinations will eventually lose some, if not all, of their vision.

Diabetes is a disease that occurs when the body loses the ability to digest sugar (glucose) properly. This can cause many health complications. Diabetes affects 9.3% of the US population - that's almost 30 million people. Since the year 2000, the prevalence of diabetes has increased by over 50%.
There are two forms of diabetes: type 1, which is rare, and type 2, which is the most common and usually caused by an unhealthy lifestyle. Both types of diabetes pose a serious threat to your vision.

**Type 1** In type 1 diabetes, the pancreas does not make insulin like it is supposed to do, so people with type 1 need to get insulin from an injection or a pump. Anyone, at any age, can get type 1 diabetes, though it is most common in children and young adults. There is no cure for type 1 diabetes at this time.

**Type 2** Type 2 diabetes is the most common form and is usually caused by an unhealthy lifestyle.

In type 2 diabetes, either the pancreas does not make enough insulin or the body cannot use it the way it should. Type 2 diabetes can remain undetected for years, so people usually get diagnosed when they are older, only once they notice another health problem caused by diabetes. Unlike type 1 diabetes, type 2 can often be managed with healthy lifestyle habits. Sometimes, healthy habits like eating a good diet and getting enough physical activity each day can even reverse type 2 diabetes by restoring normal blood glucose levels.

Diabetes is an ongoing disease that needs to be consistently kept on track so that your blood glucose levels stay normal. Abnormal levels of blood glucose can cause many health problems, affecting anything from the eyes to the feet. There are a number of strategies for maintaining normal blood glucose levels. Work with your doctor to choose the best methods for you.
Living with diabetes can be really hard. It requires a lot of daily tracking and discipline. If you don’t properly manage your diabetes, and sometimes even if you do, you may end up with other health problems. Vision loss is a major problem that you need to know about.

Among adults aged 20 - 74, diabetes is the most common cause of blindness. The CDC estimates that 28.5% of all Americans 40 years and older with diabetes - or 4.2 million individuals, have diabetic eye disease. Advanced cases of diabetic eye disease can lead to severe vision loss.
Your VISION is PRECIOUS because you need your sight to do so many important things in life.

Things we take for granted, like using the computer, reading books, driving, and getting from place to place are not possible without clear vision. Losing your vision means losing your independence and much of what makes life worth living.
Your vision is also crucial for managing your health when you have diabetes.

Whether it is cooking to ensure good nutrition, controlling your blood sugar and taking insulin, or simply getting out of the house and exercising, you need your vision in order to take good care of yourself and manage any other health complications you may be experiencing. When your body cannot digest glucose from the foods you eat, the glucose sticks to your blood, staying in your body for too long. When you have too much glucose in your bloodstream, this is called having high blood glucose (or high blood sugar). High blood glucose is the main indicator of diabetes and also the main cause of health problems related to diabetes.
Having diabetes means you have **HIGH BLOOD SUGAR**, also known as “**HIGH BLOOD GLUCOSE**.”

Why is too much glucose a problem?

Most people with diabetes know that blood glucose can spike to dangerously high levels, which can cause sudden death. But, did you know that having even slightly high levels of blood glucose for long periods of time is also dangerous? Even just a little more glucose in your blood than normal can damage cells all over the body. If this happens, it can cause serious problems like vision loss, organ failure, or premature death.

One of the most important things you can do as a person living with diabetes is to keep your blood glucose levels as close to normal as possible. You can prevent a lot of health problems by keeping your blood glucose levels from getting too high or too low. The ideal level will be different for everyone - work with your doctor to identify the best level for you and develop a strategy to maintain it.
HIGH levels of glucose in the blood HARM your EYES. It can cause conditions such as Diabetic Retinopathy and Diabetic Macular Edema.

Having too much glucose in the blood can damage your eye and can cause vision-threatening eye diseases. Diabetic Retinopathy and Diabetic Macular Edema are two common eye diseases caused by diabetes that can rob you of your vision. High blood glucose can also cause cataracts over time.
Over time, excessive blood glucose causes damage to blood vessels in the eye.

There are blood vessels in the back of the eye that keep the eye healthy. When you have too much glucose in your blood, it damages these blood vessels. The damaged blood vessels can start to overgrow, or leak fluid into your eye, causing vision problems.
Diabetic Retinopathy (DR) develops when excessive blood glucose causes the blood vessels in the eye to overgrow like weeds in a garden.

Although blood vessels are important and feed oxygen and nutrients to the eye, it’s the case of “too much of a good thing.” The overgrown blood vessels can cause damage to your vision. Over time DR can develop into Diabetic Macular Edema, or DME, the most common cause of vision loss in people under 65 years old.

DR is caused by damage to the blood vessels in the retina. The retina is the special tissue at the back of the eye that allows you to see. The blood vessels in your retina keep it healthy, with a supply of oxygen and nutrients. When the body has excess blood glucose, the vessels in the retina can overgrow or become damaged, causing diabetic retinopathy.
Diabetic Macular Edema (DME) can occur with DR, when the vessels “spring a leak” like a broken garden hose, causing a flood.

Diabetic macular edema is a complication of diabetic retinopathy. When the damaged blood vessels in the retina start to leak, it can cause swelling in the macula. The macula is the central part of the retina. It allows you to focus in the center of your vision, to do things like reading and driving. The swelling of the macula is what causes blurry and distorted vision.

**Why is it called Diabetic Macular Edema?**

*Diabetic* - this condition occurs in people with diabetes. *Macular* - swelling occurs in the macula, at the center of the retina. *Edema* - edema is another word for swelling, which is caused by the leaky blood vessels.

Diabetic macular edema can occur at any stage of diabetic retinopathy, but the longer you have DR, the more likely you are to progress to DME.
You might not notice that you are losing your vision. It can happen over the course of years, or it can be quite sudden!

It can take a while for high blood glucose to cause vision problems, so you may not notice symptoms right away. Not noticing symptoms until the disease progresses is a problem because treatments do not work as well once the disease is advanced. That is why annual eye exams are so important for catching early signs of damage BEFORE you notice any changes in your vision.
In fact, one eye can compensate for the other, so you might not even notice that you have a “bad” eye.

Even if you think you have perfect vision, you may have DR or DME. Vision loss can sneak up on you. If you are losing your vision in one eye, your brain will automatically compensate for those vision problems by relying on the other eye. Your vision will seem fine, but if you cover one eye at a time, you may notice changes in your vision. This is a good way to spot a problem. But the BEST possible way to spot a problem is to get screened by your eye doctor! Learn more about this in the next section.
Don’t think “IT WON’T HAPPEN TO ME...” most people with diabetes will experience some vision loss.

Many people who are diagnosed with diabetes start out believing that they can ignore their blood glucose levels as long as they watch what they eat. Some people don’t take diabetes seriously because it is so common. The longer someone has diabetes, the greater their chances are of getting DR and DME. It’s natural to think, “it won’t happen to me” but, if you have diabetes, the danger is real and it has serious consequences.
Roughly 1-in-3 people with diabetes develop DR, and about 1-in-10 suffer from DME.

Diabetic Retinopathy is a serious condition - it’s the #1 cause of blindness among adults (ages 20 - 74 years) around the world. In fact, at least 93 million people live with Diabetic Retinopathy, and 21 million people have DME worldwide. Anyone with type 1 or type 2 diabetes is at risk, even young people. This means everyone should get a comprehensive eye exam each year to test for DR and DME.
But don’t just take it from us. Listen to other folks with diabetes who have stories to share.

Most people with diabetes will lose some, if not all of their vision. These community members have been brave enough to share their stories as cautionary tales. The message is: take care of your health, control your blood glucose, and get a dilated eye exam with your eye doctor at least once a year if you have diabetes. Click here to watch educational videos.
Some people don’t take their diabetes seriously, but YOU are different. YOU are determined to protect your vision in order to protect yourself and those you love most. You have said “EYE Can Do It!” and you are now ready to learn how. We salute your bravery. To learn about vision loss risk factors, testing, and other ways to protect your vision, read on.
To protect your vision, you need to know what factors and behaviors increase your risk of vision loss.

Several factors increase your risk of vision loss when you have diabetes. Knowing which factors put you at risk and taking steps to control them is the best way to protect your vision. If you wait until you have problems with vision, it could be too late.
The longer you have lived with diabetes, the greater the chances of developing DR and, ultimately, DME. If you have diabetes, you need to get a comprehensive dilated eye exam every year.

**High Blood Glucose**
Having too much glucose in your blood greatly increases your risk for vision loss. Keeping blood sugar levels as close to normal as possible can delay or even prevent the development of DR.

**High Blood Levels of Fats (lipids)**
Our blood naturally has fats like cholesterol and triglycerides, but having too much of them increases your risk for DR and DME, by two- or three-fold. Keep these levels as close to normal as possible to prevent vision loss.

**High Blood Pressure**
High blood pressure increases the risk of developing DR and DME. High blood pressure can also damage certain organs, like the kidneys. Damaged kidneys are a risk factor for DME.

**Kidney Disease**
Having kidney disease may increase your risk for developing DR and especially DME.

**Other Diabetes Conditions**
Diabetes can harm many parts of your body and can cause a lot of different health problems. The more conditions you have from diabetes, like nerve damage or kidney disease, the greater your risk for getting even more problems, like DME.

**Pregnancy**
Pregnant women with diabetes may be at higher risk for Diabetic Retinopathy and should have a comprehensive dilated eye exam early in the pregnancy. Your doctor may recommend more frequent exams for the rest of the pregnancy.

**Other Factors**
Other risk factors include cardiovascular disease, anemia, sleep apnea, obesity, genetics, frequent alcohol consumption, and a sedentary (inactive) lifestyle.
The best way to protect yourself is to have your eyes **SCREENED** regularly by an eye doctor.

Find an eye care professional (such as a retina specialist, ophthalmologist, or optometrist) who has experience with early diagnosis of diabetic retinopathy and diabetic macular edema. If you get annual eye exams and your doctor does find early signs of DR or DME, you have a good chance of saving your vision with early treatment. It is important to get tested, even if you don’t notice any issues with your vision. Comprehensive eye exams catch early signs of eye problems that would be undetected otherwise.
Make sure you get a DILATED eye exam: this involves eye drops that make your pupils larger.

Up to 50% of diabetes patients do not get eye exams or are diagnosed when it is too late for treatment to work. Don’t let this be you! Get a comprehensive eye exam every year, which includes a visual acuity test using an eye chart, an eye pressure check, and a dilated eye exam.

A comprehensive eye exam can catch early signs of DR and DME, like:
- Leaky blood vessels in your retina
- Damage or any change to your blood vessels
- Swelling in the retina
A comprehensive eye exam usually includes: eye drops, eye chart, and eye pressure.

**Eye Drops**
You will get eye drops that make it easier for the doctor to see what is inside your eye. Your doctor will then use a magnifying lens to get a better look to check for anything abnormal.

**Eye Chart**
Your eye doctor will ask you to look at an eye chart to measure the clarity of your vision from a distance. The letters are large at the top of the chart and get smaller towards the bottom; if you have good vision, you will be able to see farther down the chart.
Eye Pressure

Your eye doctor will use a special microscope with a light to measure the pressure inside your eye. Numbing eye drops may be given before the test. If, based on these tests, your doctor suspects DME, you should have a retina specialist test you for DME with a special camera technique called optical coherence tomography (OCT). If, based on these tests, your doctor notices any problems, you may be given additional tests, including:

- Fundus photography
- Optical coherence tomography (OCT)
- Fluorescein angiography (FA)

A fundus camera takes color photographs of the retina to help diagnose and monitor problems on the surface of the retina. OCT is the recommended tool to test for DME. It uses a special type of camera that photographs and measures the thickness of your retina. It can show any swelling and fluid in the retina.

Your eye doctor may also use something called a fluorescein angiogram (FA) to test for DME. If you get this exam, you will get an injection in your arm with a type of dye. Once this dye is in your blood, your doctor can take pictures of the blood vessels in your retina and see if any vessels are leaking.
In addition to screening, MONITORING is key. YOU are in control of your destiny!

Beyond getting screened, you should monitor your health as a way to prevent vision loss. This means controlling your blood glucose, eating healthy, maintaining an active lifestyle, and checking your vision at least every week in both eyes.
If you experience any vision problems, CALL YOUR EYE DOCTOR PROMPTLY.

If you have DR or DME, vision loss can be sudden, but it can also be “on and off.” You may start seeing blind spots - areas where your vision is blocked - which may clear temporarily. DO NOT IGNORE THIS. If you do not get treatment, your vision may become damaged permanently. You may also experience blurry vision, or colors may look “washed out” or faded. Go see an eye care professional at the first sign of any of these symptoms.
Your optometrist, ophthalmologist or retina specialist will test you for DR and DME.

If you have vision symptoms, find an optometrist, ophthalmologist or retina specialist to test you for Diabetic Retinopathy and Diabetic Macular Edema using an OCT (Ocular Coherence Tomography) device to look at your retina.
If you have DR or DME, you can SAVE YOUR VISION by getting treatment!

If signs of diabetic retinopathy or diabetic macular edema are found, you can be treated. People aged ten or older with type 1 diabetes should get their first comprehensive eye exam within five years of developing diabetes, and should continue getting exams each year. Anyone with type 2 diabetes should have their first comprehensive eye exam as soon as they find out they have diabetes.
CHAPTER 3

TREAT
Your Condition Promptly
If you have Diabetic Retinopathy or Diabetic Macular Edema, getting treated PROMPTLY can SAVE your vision!

If you have Diabetic Retinopathy or Diabetic Macular Edema, there are a few treatment options that can help save your vision: anti-VEGF injections, laser therapy, steroids, and surgery. Anti-VEGF injections are the newest and usually most effective intervention for treating DR and DME. Ask your doctor if injections are a good option for you.
The cause of these problems are the blood vessels in the back of your eye. They may be overgrown, or leaking fluid.

Remember: Diabetic Retinopathy (DR) occurs when the blood vessels in the back of your eye grow out of control. Diabetic Macular Edema (DME) occurs when the blood vessels leak fluid into the eye, causing swelling that often leads to vision loss.
The most effective treatments are called Anti-VEGF injections. They can stop blood vessels from growing and dry the fluid in the eye.

The new standard of care for Diabetic Retinopathy and Diabetic Macular Edema are anti-VEGF injections. These treatments stop the leakiness of the blood vessels in your retina. This can get rid of the swelling in your eye. Injections can keep you from losing your vision and can even help you regain vision that has already been lost.

When you get an injection, you will be given eye drops to numb your eye. Your eye doctor will then place a needle into your eye to inject the medicine that will stop your blood vessels from leaking. This injection only takes a few seconds. In most cases, the injection does not hurt, but everyone responds differently. There is no cure for DME, so it is important to continue treatment - even once your vision improves - to continue having better vision.
Some of the most common side effects from injections include redness, small specks in vision, eye pain, and increased eye pressure, which usually go away a few days after the injection. Other effects include infection inside your eye, throat or nose infections, anemia, and nausea. The retina can also detach from the blood vessels in your eye. More serious effects include blood clots, stroke, inflammation inside the eye, and cataract. Do not get injections if you are allergic to any of its materials. Work with your doctor to make sure you are not allergic. After the procedure, ask your retina specialist if you should avoid doing any activities to make sure you have a smooth
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Steroids
Steroids can stop the swelling in your eye by reducing the leakiness of the blood vessels in your retina. Steroids are a type of hormone (chemicals that flow through your bloodstream and tell cells and organs how to function) naturally produced by the body. Some steroids are man-made medicines to treat different health conditions, like DME.

Steroids can be injected into the eye or given through eye implants. The steroid implants used for DME are tiny devices shaped like a rod that are injected in the back of the eye. Some of the most common side effects from steroids include cataract development, redness, inflammation in the eye, and an increase in eye pressure. You should not use steroids if you are allergic to the drug or if you have advanced glaucoma, an artificial lens lacking a posterior capsule, eye infection, history of eye surgery, ulcers, or injury that has removed the lens in your eye.

Laser
Laser was once the standard treatment for DME, but is now used less often since injections have become available and are proven to be much more effective. Laser is a tool that shines a special kind of light. Treatment with laser can slow down the development of DME and prevent vision loss, but it rarely improves vision that has already been lost.

During laser treatment, a tool will be placed at your eye. It will direct light at the damaged blood vessels in your eye. This light converts to heat when it reaches your eye and can stop or slow down the leakiness in your retina. One laser session is usually enough to stop the leakiness, but some patients may need multiple sessions. You may have a follow-up exam three months after the procedure to check if you need more laser treatment. If you have DME in both eyes, laser therapy will be applied to one eye at a time, with procedures typically separated by several weeks. Laser therapy is not always effective. You may experience discomfort during the procedure, and laser can damage or scar the retina.

Surgery
If all other treatments fail, your doctor may recommend a procedure that would replace the vitreous of your eye with a salt solution. The vitreous is a gel-like substance that helps to keep the round shape of your eye, and it can play a role in the development of macular edema. Replacing the vitreous can reduce the leakiness of the blood vessels in your eye to reduce the thickness of your retina and macula. This can prevent further vision loss or even improve vision for some patients. However, the effectiveness of surgery is uncertain and the subject remains controversial.
Talk to your doctor about the right treatment for you. Ask how often you need to get treated to save your sight.

Once you are familiar with all your treatment options, talk to your doctor about the best treatment for your condition. Find out if injections are a good choice for you. As a DME patient, you can manage your condition. It’s important to know your options and become an active member of your care team!
Make sure you show up for your appointments. Be strong and CARRY ON!

Only you can protect your vision by staying on top of your treatment schedule! Keeping up with treatments is essential. Patients who consistently show up for their appointments have a better chance of keeping and/or regaining their vision. In clinical trials, regular treatments yield better results.
Do it for your loved ones, and do it for yourself!

Sticking with the plan might seem hard, especially when you have loved ones to care for and other priorities in life. Just remember: saving your sight and keeping your independence is TOTALLY WORTH THE EFFORT. Nobody wants to become a burden on their loved ones. Diabetic vision loss is preventable and treatable, and you can protect your independence through screening, monitoring, and keeping up with your treatments.
It's time to take ACTION!
Learn what you can do RIGHT NOW to protect your vision.

Doctors use them. Airline pilots use them. Checklists are the best safety tool known to man. Now you can make a To-Do list with these items and check them off to guarantee you are doing everything possible to keep your eyes safe and protected. Living with diabetes brings a lot of challenges, but vision loss doesn’t have to be one of them.
EYECanDoIt To Do List

- Review the EYECanDoIt Resource

- Find an eye doctor. If you need to find a retina specialist, click here.
  If you need to find an ophthalmologist, click here.
  If you need to find an optometrist, click here.

- Make sure to get a dilated eye exam on a regular basis.

- Print an Amsler grid and use one every day to check your vision. Click here to download an Amsler grid now.

- Put a reminder in your digital calendar or ask a family member to help you remember your appointment.
Control your Blood Glucose: test frequently and monitor your diet

Control your Blood Pressure: try to keep your blood pressure readings below 140/90

Work with your doctor to make a plan for controlling your blood glucose, blood pressure, and blood fats

Follow directions carefully in taking all prescribed medications

Make an exercise plan that fits with your schedule

Avoid smoking, and only drink in moderation

Make a healthy diet plan that works with your lifestyle.
CHAPTER 5

Get To Know Your TEAM
Your care team is anyone who helps you manage your diabetes, including any complications you may have.

If you have diabetes, your care team is likely to extend beyond your family doctor. You have to work with one or more of the following healthcare providers:

- dentist
- diabetes doctor (endocrinologist)
- diabetes educator
- dietitian
- eye doctors (retina specialist, ophthalmologist, optometrist)
- foot doctor (podiatrist)
- heart doctor (cardiologist)
- mental health counselor
- nurse
- nurse practitioner
- pharmacist
- social worker
You may also get help in managing your diabetes from friends and family.

You and your loved ones can work together to manage diabetes as a team:

- Help them understand factors that contribute to diabetes and how it’s managed and treated
- Take them to meet your doctor or diabetes educator
- If you need to test your blood sugar or take medication on a regular basis, ask them for help with the process and your schedule
- Explain the signs and symptoms of low blood sugar as well as how they can help if you experience it
- Try new healthy foods or recipes together
- Find activities you can enjoy together that get you moving
Your primary care provider (PCP), also known as your general practitioner or family doctor, is usually the primary team member when it comes to diabetes. Your PCP will help you manage your diabetes, order and review routine bloodwork, and may prescribe you with medications used to keep your blood glucose levels stable and in control. Your PCP will also send you to talk to other healthcare professionals, such as ophthalmologists, optometrists, diabetes educators, dieticians, and others.
Your health care team can help you manage the ABC's of Diabetes.

In addition to your primary doctor, you may have a diabetes doctor (also known as an endocrinologist or diabetologist) who works with you specifically on your diabetes and managing any complications you might have. You also may work with a diabetes educator and a dietician to manage the ABC's of diabetes:

A for the A1c test (also known as HbA1c). The A1C Test is a blood glucose that tests your levels over the past three months. The A1C goal for many people is below 7.

B for Blood pressure. Many people have a blood pressure goal of below 140/90. Yours may be different, so ask your doctor.

C for Cholesterol. Your care team will also monitor your cholesterol: ask what your goal numbers should be.
You should visit your vision specialist every year for a dilated eye exam.

You can work with your PCP or endocrinologist, as well as your nurses, educators, and dieticians to create a “game plan” to manage your diabetes, including setting goals for your ABCs. But don’t forget about screening your eyes! Your endocrinologist may be the one to refer you to an eye care specialist for a dilated eye exam.

Either your primary care doctor or your endocrinologist will refer you to a vision specialist for an annual screening. Be sure to get a DILATED eye exam. A regular vision check won’t do. If you don’t already have an ophthalmologist or optometrist, you can find one online. If you need to find an ophthalmologist, click here. If you need to find an optometrist, click here.
If your optometrist notices any problems in your eye, you will go to an ophthalmologist or retina specialist for diagnosis and treatment. Diagnosis of Diabetic Retinopathy and Diabetic Macular Edema is handled by an ophthalmologist or retinal specialist. These doctors will also administer treatment for these conditions, which can save you from going blind. If you need to find an ophthalmologist, click here. If you need to find a retina specialist, click here.
Everyone has a role to play, but the only person who directly interacts with ALL members of the healthcare team is YOU. That’s why YOU must be the team captain and take a leadership role in your own healthcare. To protect your vision, you must take the lead in connecting with your eye doctor, getting screened, and if needed, getting treatment.

But don’t forget, the most important member of the team is you!
Follow us on our social media channels

Find an eye doctor
If you need to find a retina specialist, click here.
If you need to find an ophthalmologist, click here.
If you need to find an optometrist, click here.

Check your vision weekly
Download and print this Amsler grid and follow the directions to track changes in your vision.

Watch Videos
Visit our Youtube channel to watch educational videos about DME

Learn the Science
Learn more about the Science of DME on our educational companion website
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