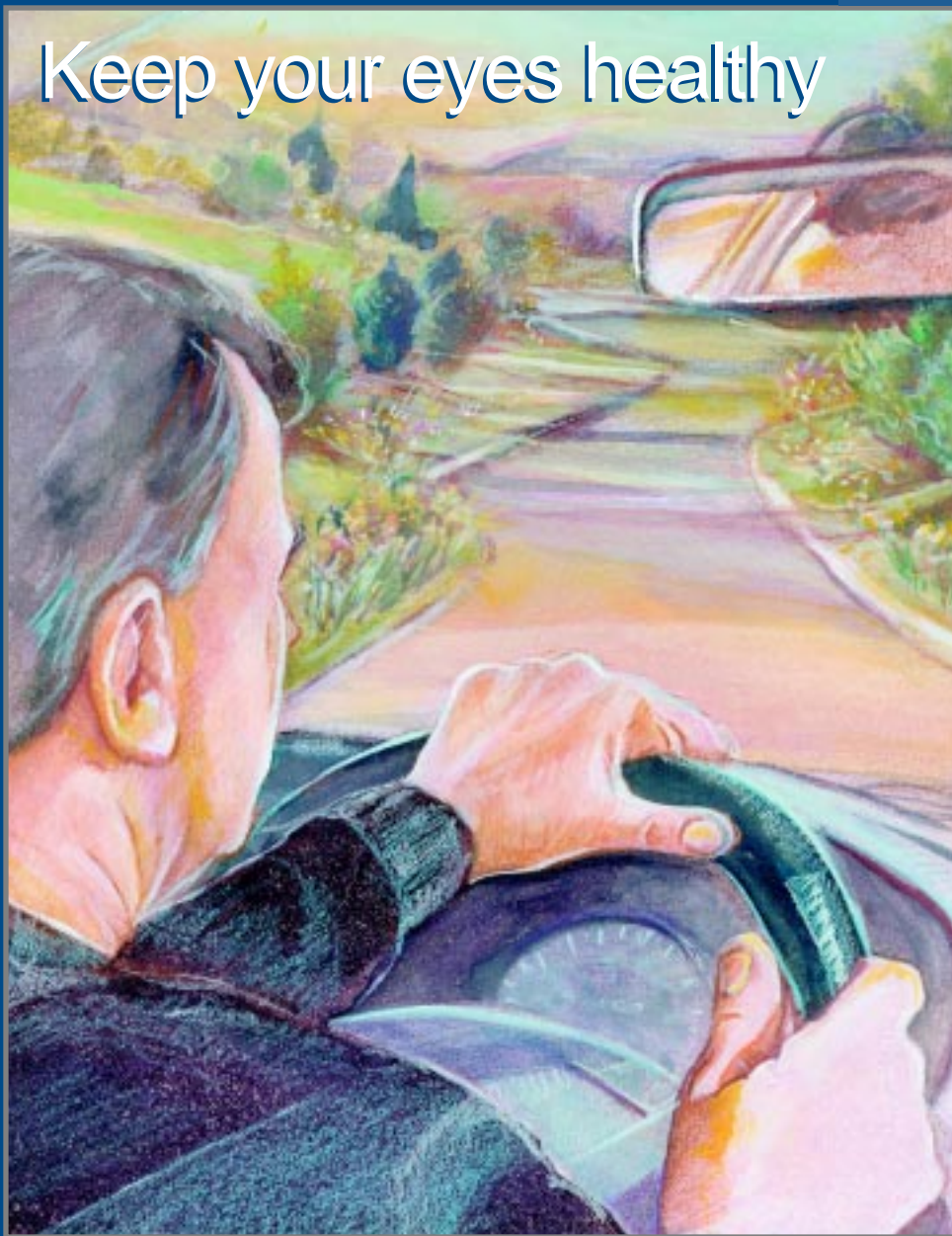


# Prevent diabetes problems

## Keep your eyes healthy



NATIONAL INSTITUTES OF HEALTH  
National Diabetes Information Clearinghouse



U.S. Department  
of Health and  
Human Services

# Prevent diabetes problems: Keep your eyes healthy



NATIONAL INSTITUTES OF HEALTH  
National Diabetes Information Clearinghouse

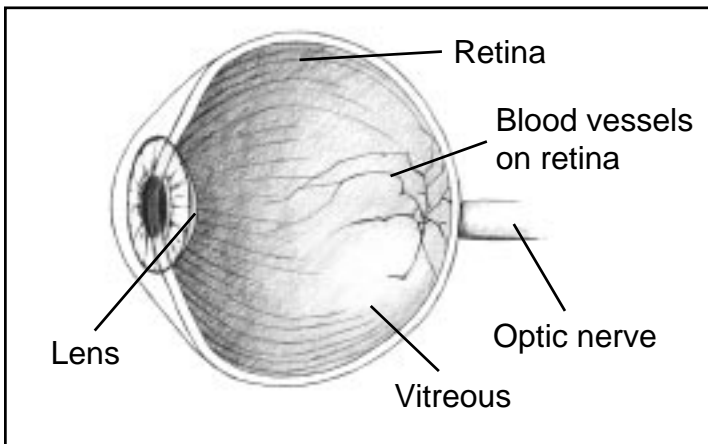
# Contents

What are diabetes problems? .....	1
What should I do each day to stay healthy with diabetes? .....	2
What can I do to prevent diabetes eye problems? .....	3
How can diabetes hurt my eyes? .....	4
How can diabetes hurt the retinas of my eyes? .....	5
What happens as diabetes retina problems get worse? .....	6
What can I do about diabetes retina problems? .....	8
How do I know if I have retina damage from diabetes? .....	9
Does diabetes cause other eye problems? .....	10
For More Information .....	11
More in the Series .....	13
Acknowledgments .....	14

## What are diabetes problems?

Too much glucose (sugar) in the blood for a long time can cause diabetes problems. This high blood glucose (also called blood sugar) can damage many parts of the body, such as the heart, blood vessels, eyes, and kidneys. Heart and blood vessel disease can lead to heart attacks and strokes. You can do a lot to prevent or slow down diabetes problems.

This booklet is about eye problems caused by diabetes. You will learn the things you can do each day and during each year to stay healthy and prevent diabetes problems.



High blood glucose can cause eye problems.

## What should I do each day to stay healthy with diabetes?



Follow the healthy eating plan that you and your doctor or dietitian have worked out.



Be active a total of 30 minutes most days. Ask your doctor what activities are best for you.



Take your diabetes medicines at the same times each day.



Check your blood glucose every day. Each time you check your blood glucose, write the number in your record book.



Check your feet every day for cuts, blisters, sores, swelling, redness, or sore toenails.



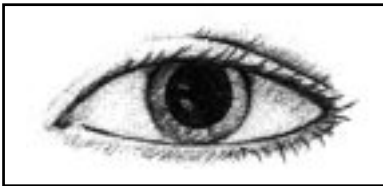
Brush and floss your teeth and gums every day.



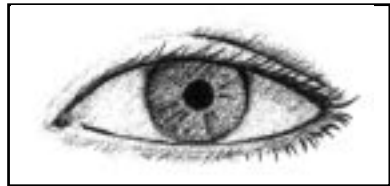
Don't smoke.

## What can I do to prevent diabetes eye problems?

- Keep your blood glucose and blood pressure as close to normal as you can.
- Have an eye doctor examine your eyes once a year. Have this exam even if your vision is OK. The eye doctor will use drops to make the black part of your eyes (pupils) bigger. This is called dilating (DY-lay-ting) your pupil, which allows the doctor to see the back of your eye. Finding eye problems early and getting treatment right away will help prevent more serious problems later on.



Dilated eye



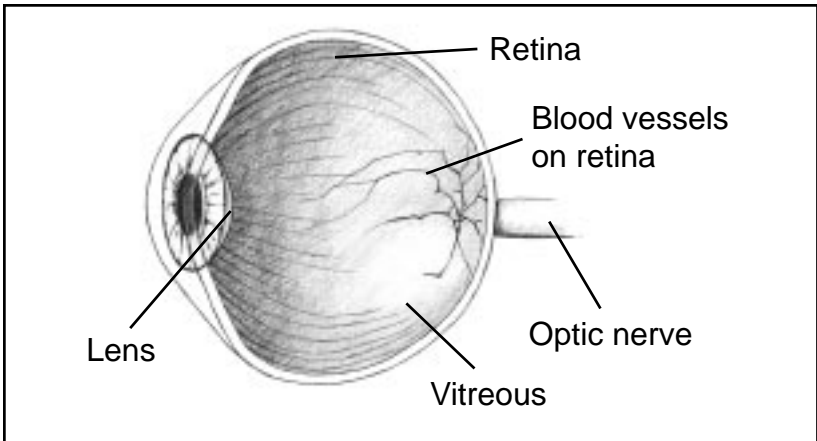
Undilated eye

- Ask your eye doctor to check for signs of cataracts and glaucoma. (See page 10 to learn more about cataracts and glaucoma.)
- If you are pregnant and have diabetes, see an eye doctor during your first 3 months.
- If you are planning to get pregnant, ask your doctor if you should have an eye exam.
- Don't smoke.

## How can diabetes hurt my eyes?

High blood glucose and high blood pressure from diabetes can hurt four parts of your eye:

1. **Retina** (REH-ti-nuh). The retina is the lining at the back of the eye. The retina's job is to sense light coming into the eye.
2. **Vitreous** (VIH-tree-us). The vitreous is a jelly-like fluid that fills the back of the eye.
3. **Lens**. The lens is at the front of the eye and it focuses light on the retina.
4. **Optic nerve**. The optic nerve is the eye's main nerve to the brain.



This is a picture of an eye from the side.

## How can diabetes hurt the retinas of my eyes?

Retina damage happens slowly. Your retinas have tiny blood vessels that are easy to damage. Having high blood glucose and high blood pressure for a long time can damage these tiny blood vessels.

First, these tiny blood vessels swell and weaken. Some blood vessels then become clogged and do not let enough blood through. At first, you might not have any loss of sight from these changes. This is why you need to have a dilated eye exam once a year even if your sight seems fine.

One of your eyes may be damaged more than the other. Or both eyes may have the same amount of damage.

Diabetic retinopathy (REH-tih-NOP-uh-thee) is the medical term for the most common diabetes eye problem.



## What happens as diabetes retina problems get worse?

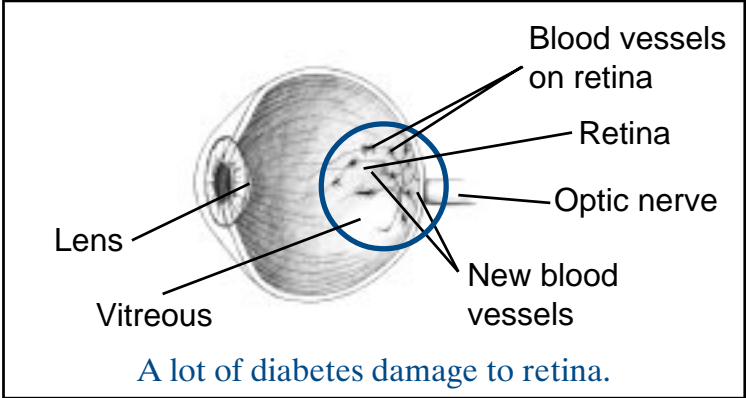
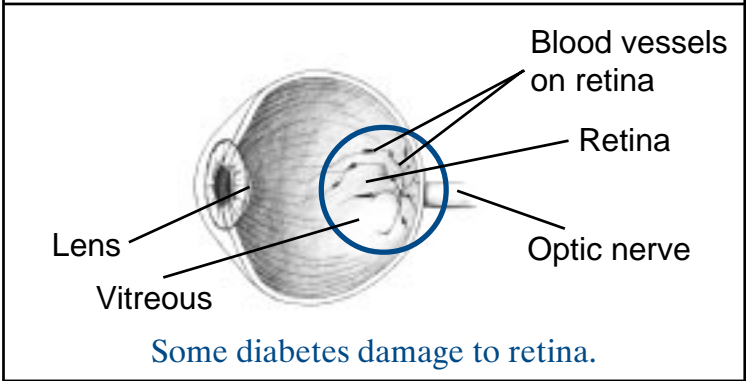
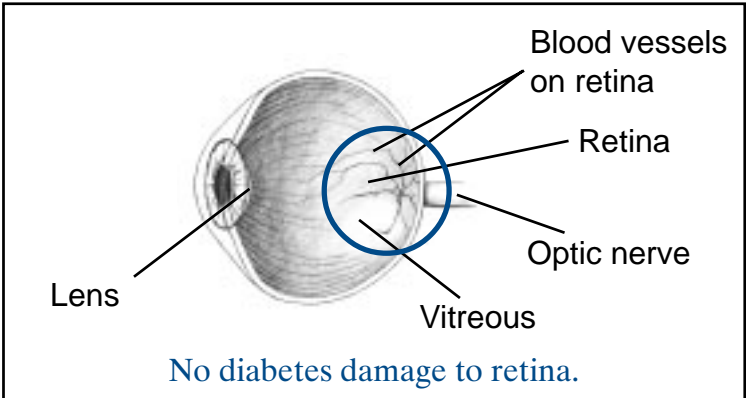
As diabetes retina problems get worse, new blood vessels grow. These new blood vessels are weak. They break easily and leak blood into the vitreous of your eye. The leaking blood keeps light from reaching the retina.

You may see floating spots or almost total darkness. Sometimes the blood will clear out by itself. But you might need surgery to remove it.

Over the years, the swollen and weak blood vessels can form scar tissue and pull the retina away from the back of the eye. If the retina becomes detached, you may see floating spots or flashing lights.

You may feel as if a curtain has been pulled over part of what you are looking at. A detached retina can cause loss of sight or blindness if you don't take care of it right away.

Call your doctor right away if you are having any vision problems or if you have had a sudden change in your vision.



## What can I do about diabetes retina problems?

First, keep your blood glucose and blood pressure as close to normal as you can.

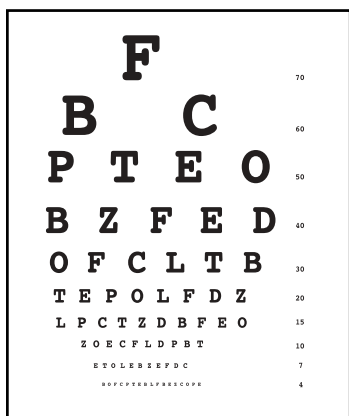
Your eye doctor may suggest laser treatment, which is when a light beam is aimed into the retina of the damaged eye. The beam closes off leaking blood vessels. It may stop blood and fluid from leaking into the vitreous. Laser treatment may slow the loss of sight.

If a lot of blood has leaked into your vitreous and your sight is poor, your eye doctor might suggest you have surgery called a vitrectomy (vih-TREK-tuh-mee). A vitrectomy removes blood and fluids from the vitreous of your eye. Then clean fluid is put back into the eye. The surgery often makes your eyesight better.

## How do I know if I have retina damage from diabetes?

You may not get any signs of diabetes retina damage or you may get one or more signs:

- blurry or double vision
- rings, flashing lights, or blank spots
- dark or floating spots
- pain or pressure in one or both of your eyes
- trouble seeing things out of the corners of your eyes



Normal



Blurry

If you have retina damage from diabetes, you may have blurry or double vision.

## Does diabetes cause other eye problems?

Yes. You can get two other eye problems—cataracts and glaucoma. People without diabetes can get these eye problems, too. But people with diabetes get them more often and at a younger age.

- A cataract (KA-ter-act) is a cloud over the lens of your eye, which is usually clear. The lens focuses light onto the retina. A cataract makes everything you look at seem cloudy. You need surgery to remove the cataract. During surgery your lens is taken out and a plastic lens, like a contact lens, is put in. The plastic lens stays in your eye all the time. Cataract surgery helps you see clearly again.
- Glaucoma (glaw-KOH-muh) starts from pressure building up in the eye. Over time, this pressure damages your eye's main nerve—the optic nerve. The damage first causes you to lose sight from the sides of your eyes. Treating glaucoma is usually simple. Your eye doctor will give you special drops to use every day to lower the pressure in your eye. Or your eye doctor may want you to have laser surgery.

## For More Information



### Eye Care Professionals

(ophthalmologists, optometrists)

To find an eye doctor near you, ask your doctor for a recommendation, contact a nearby hospital or medical school, or call a state or county association of ophthalmologists or optometrists.

Look for the American Academy of Ophthalmology on the Internet at [www.aaopt.org](http://www.aaopt.org) and click on “Find an Eye M.D.”

Look for the American Optometric Association on the Internet at [www.theaoa.org](http://www.theaoa.org) and click on the public website and then “Dr. Locator” or call the AOA Diabetes Hot Line at 1-800-262-3947.

**Diabetes Teachers** (nurses, dietitians, pharmacists, and other health professionals)

To find a diabetes teacher near you, call the American Association of Diabetes Educators toll-free at 1-800-TEAMUP4 (1-800-832-6874), or look on the Internet at [www.diabeteseducator.org](http://www.diabeteseducator.org) and click on “Find a Diabetes Educator.”

### Dietitians

To find a dietitian near you, call the American Dietetic Association toll-free at 1-800-366-1655, or look on the Internet at [www.eatright.org](http://www.eatright.org) and click on “Find a Nutrition Professional.”

### Government

The National Eye Institute (NEI) is part of the National Institutes of Health. To learn more about eye problems, write or call NEI, 2020 Vision Place, Bethesda, MD 20892-3655, (301) 496-5248; or see [www.nei.nih.gov](http://www.nei.nih.gov) on the Internet.

To get more information about taking care of diabetes, contact

**National Diabetes Information Clearinghouse**

1 Information Way

Bethesda, MD 20892-3560

Phone: 1-800-860-8747 or (301) 654-3327

Fax: (301) 907-8906

Email: [ndic@info.niddk.nih.gov](mailto:ndic@info.niddk.nih.gov)

Internet: [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov)

**National Diabetes Education Program**

1 Diabetes Way

Bethesda, MD 20892-3600

Phone: 1-800-438-5383

Fax: (301) 907-8906

Internet: <http://ndep.nih.gov>

**American Diabetes Association**

1701 North Beauregard Street

Alexandria, VA 22311

Phone: 1-800-342-2383

Internet: [www.diabetes.org](http://www.diabetes.org)

**Juvenile Diabetes Research Foundation  
International**

120 Wall Street

New York, NY 10005-4001

Phone: 1-800-533-2873

Internet: [www.jdrf.org](http://www.jdrf.org)

## More in the Series

The “Prevent Diabetes Problems” series has seven booklets that can help you learn more about how to prevent diabetes problems.



For free single copies of these booklets, write, call, fax, or email the

National Diabetes Information Clearinghouse  
1 Information Way  
Bethesda, MD 20892-3560

Phone: 1-800-860-8747 or (301) 654-3327

Fax: (301) 907-8906

Email: [ndic@info.niddk.nih.gov](mailto:ndic@info.niddk.nih.gov)

These booklets are also available at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov) on the Internet.



# Acknowledgments

The National Diabetes Information Clearinghouse thanks the people who helped review or field-test this booklet.

*For American Association of Diabetes Educators*

Lynn Grieger, R.D.,  
C.D.E.  
Arlington, VT  
Celia Levesque, R.N.,  
C.D.E.  
Montgomery, AL  
Teresa McMahon,  
Pharm.D., C.D.E.  
Seattle, WA  
Barbara Schreiner, R.N.,  
M.N., C.D.E.  
Galveston, TX

*For American Diabetes Association*

Phyllis Barrier, M.S.,  
R.D., C.D.E.  
Alexandria, VA  
Linda Haas, Ph.C., R.N.,  
C.D.E.  
Seattle, WA  
Kathleen Mahoney,  
M.S.N., R.N., C.D.E.  
Drexel Hill, PA  
Randi Kington, M.S.,  
R.N., C.S., C.D.E.  
Hartford, CT

*For Centers for Medicare & Medicaid Services*

Baltimore, MD  
Jan Drass, R.N., C.D.E.

*For Diabetes Research and Training Centers*

Albert Einstein School  
of Medicine  
Norwalk Hospital  
Norwalk, CT  
Jill Ely, R.N., C.D.E.  
Sam Engel, M.D.  
Pam Howard, A.P.R.N.,  
C.D.E.

Indiana University  
School of Medicine  
Indianapolis, IN  
Madelyn Wheeler, M.S.,  
R.D., F.A.D.A., C.D.E.

VA/JDF Diabetes  
Research Center  
Vanderbilt School of  
Medicine  
Nashville, TN  
Ok Chon Allison,  
M.S.N., R.N.C.S.,  
A.N.P., C.D.E.

Barbara Backer, B.S.  
James W. Pichert, Ph.D.  
Alvin Powers, M.D.  
Melissa E. Schweikhart  
Michael B. Smith  
Kathleen Wolffe, R.N.

*For Grady Health System Diabetes Clinic*

Atlanta, GA  
Ernestine Baker, R.N.,  
F.N.P., C.D.E.  
Kris Ernst, R.N., C.D.E.  
Margaret Fowke,  
R.D., L.D.  
Kay Mann, R.N., C.D.E.

*For Indian Health Service*

Albuquerque, NM  
Ruth Bear, R.D., C.D.E.  
Dorinda Bradley, R.N.,  
C.D.E.  
Terry Fisher, R.N.  
Lorraine Valdez, R.N.,  
C.D.E.

Red Lake, MN  
Charmaine Branchaud,  
B.S.N., R.N., C.D.E.

*For Medlantic Research Center*

Washington, DC  
Resa Levetan, M.D.

*For National Eye Institute*

Judith Stein  
Bethesda, MD

*For Texas Diabetes Council*

Texas Department of  
Health  
Austin, TX  
Luby Garza-Abijaoude,  
M.S., R.D., L.D.

# National Diabetes Information Clearinghouse

1 Information Way  
Bethesda, MD 20892-3560  
Phone: 1-800-860-8747 or (301) 654-3327  
Fax: (301) 907-8906  
Email: [ndic@info.niddk.nih.gov](mailto:ndic@info.niddk.nih.gov)  
Internet: [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov)

The National Diabetes Information Clearinghouse (NDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health under the U.S. Department of Health and Human Services. Established in 1978, the clearinghouse provides information about diabetes to people with diabetes and to their families, health care professionals, and the public. NDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about diabetes.

Publications produced by the clearinghouse are carefully reviewed by both NIDDK scientists and outside experts.

This publication is not copyrighted. The clearinghouse encourages users of this booklet to duplicate and distribute as many copies as desired.

This booklet is also available at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).



U.S. DEPARTMENT OF HEALTH  
AND HUMAN SERVICES  
National Institutes of Health



National Institute of Diabetes and  
Digestive and Kidney Diseases

NIH Publication No. 04-4279  
February 2004