

Monsanto

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July 1982

TO: All Employees

The Office Safety Committee is sponsoring a quarterly program on eye safety, in conjunction with The National Society to Prevent Blindness.

Enclosed is the second quarterly series on "Diabetes - Threat to Sight" and "The Threat of Glaucoma."

It is our intent to increase the awareness of our personnel and their families toward eye safety, at home as well as at work.

Sincerely,



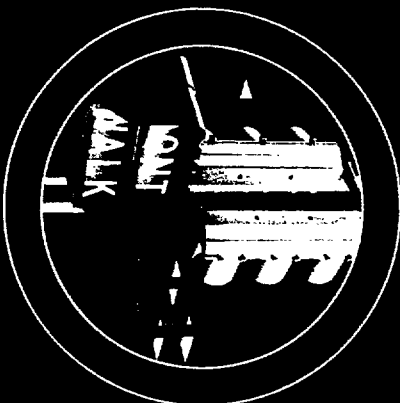
Gene L. Tromblee
Plant Manager

Office Safety Committee

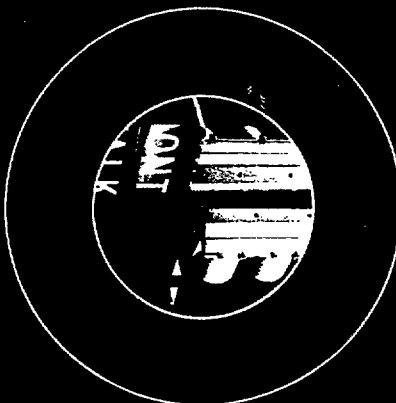
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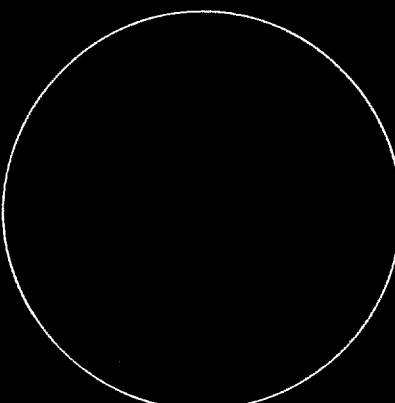
Glaucoma can sneak up on you.



Early glaucoma is hardly noticeable.

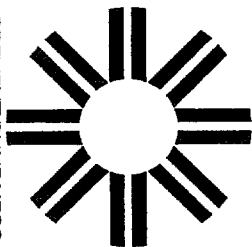


Without proper treatment it will advance



... and eventually result in blindness.

Most of all blindness can be prevented!



Our one purpose:
saving sight

The National Society to Prevent Blindness, founded in 1908, is the oldest voluntary health agency nationally engaged in the prevention of blindness through a comprehensive program of community services, public and professional education, and research. Publications, films, charts and advisory service are available on request.

The Society is supported entirely by contributions, memorial gifts, bequests and legacies, which are deductible for purposes of income taxes.

National Society to Prevent Blindness and its Affiliates
79 Madison Avenue, New York, N.Y. 10016



...a major campaign led by the National Society to bring glaucoma, a leading cause of blindness, under control throughout the country.

Glaucoma
Glaucoma
Glaucoma
Glaucoma
Glaucoma
Glaucoma

...sneak thief of sight

Glaucoma is a leading cause of blindness among adults in the United States. One out of every seven blind people you see is a victim of glaucoma (pronounced glaw-koma). Practically all of them had normal sight most of their lives. But sometime during their forties, fifties or sixties, they went blind, for glaucoma rarely strikes until after thirty-five.

There are two principal types of glaucoma: *acute* and *chronic*.
The acute type strikes suddenly, inflicting

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cloudy vision, sometimes with severe pain in and around the eyes.

The chronic type—which is much more common—works slowly and painlessly. The victim is only vaguely disturbed by the symptoms which come and go; as a result he postpones visiting his doctor.

If you are near or past thirty-five, you have a direct interest in knowing how to prevent blindness from glaucoma.

How Does Glaucoma

Destroy Sight?

The eyeball is shaped much like a basketball. But instead of air, a thick, jelly-like fluid fills most of the eyeball to give it shape. During the first stages of glaucoma, the pressure of this fluid in the front of the eyeball mysteriously increases. Medical science has not established just why the pressure rises.

The fluid in the rear of the eyeball—under the increased pressure from the front—pushes against the *retina*, which is located at the back of the eyeball. The job of the retina is to receive the light rays entering the eye, and send them on to the brain, where the rays are then interpreted as images.

Thus the nerve cells and fibers of the retina are a major link in the process of seeing. It's this link which glaucoma attacks, by reducing the blood supply which nourishes the cells and fibers.

At first, the increased fluid pressure damages only those retinal nerve cells and fibers

which enable you to see on each side. As a result, side vision is gradually destroyed. In the final stages of the disease, the pressure destroys the nerves which permit front or central vision, and all sight is gone.

Signs and Symptoms Suggesting Chronic Glaucoma...

Keep in mind that having any of these symptoms does not necessarily mean a person has glaucoma. They may be caused by some other less serious eye trouble. On the other hand, these symptoms might not even be present, and yet you could have early glaucoma.

- Frequent changes of glasses, none of which is satisfactory.
- Inability to adjust the eyes to darkened rooms, such as theatres.
- Loss of side vision.
- Blurred or foggy vision.
- Rainbow-colored rings around lights.

Can Blindness from Glaucoma Be Prevented?

If glaucoma is discovered early, medical treatment can halt its progress. However, sight destroyed by glaucoma cannot be restored. For

each month that a glaucoma victim postpones treatment, he may lose a small but priceless percentage of his sight—which he can never reclaim.

But the needless blindness can be prevented. Your eye physician or clinic has the equipment and knowledge to find out whether you have glaucoma, and to start treatment to check its progress. But remember, you may be free of glaucoma when you're thirty-five and have it at forty.

That's why the best defense against glaucoma is an eye examination at least once every two years.

In treating glaucoma, the physician's primary aim is to reduce the pressure within the eyeball. To do this, he uses either an operation or drugs, and sometimes both.

The operation to reduce the pressure—if performed early—is not dangerous, and requires only a short stay in the hospital.

If drugs are prescribed, they usually must be used regularly for the rest of the patient's life. The patient must also avoid taking any other drugs or medications without first consulting his eye physician; and must be sure to "declare" his glaucoma to any other physician he may consult on other personal health matters.

Here are four main points to remember about glaucoma:

- Strikes after 35 in most cases.
- Is difficult to detect in the first stages.
- Can usually be controlled if caught early.
- Tends to run in families.

Hope for the Future

A national study aimed at establishing the best treatment for diabetic retinopathy is underway at major medical centers, sponsored by the National Eye Institute. Results to date show that photocoagulation is of definite benefit in many advanced cases of the disease. Vitrectomy, used only after there has been severe bleeding into the vitreous, is not advised for all patients, however, as this treatment does entail complicated surgical procedures.

In order to create the basis for future preventive measures, intensive research is also underway to discover what causes blood vessels to close and why abnormal vessels form. And medical scientists continue to work toward a better understanding and management of diabetes itself, which will provide the real key to preventing its complications, including retinopathy.

In the meantime, early diagnosis of retinopathy and close observation by an ophthalmologist on the schedule he advises are major objectives in the treatment of all diabetics. Perfecting the techniques of photocoagulation and vitrectomy and determining the best time for treatment can offer even those with advanced diabetic retinopathy real hope for retaining useful vision.

For a list of medical centers and eye institutes participating in the national diabetic retinopathy treatment program, you may write to the National Society to Prevent Blindness.

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Other informative pamphlets are available from the National Society or its state affiliates.

- ☐ Home Eye Test for Preschoolers
- ☐ Crossed Eyes: A Needless Handicap (G106)
- ☐ Glaucoma... Sneak Thief of Sight (G1)
- ☐ Glaucoma — for the patient (G2)
- ☐ First Aid for Eye Emergencies — sticker (G117)
- ☐ Macular Degeneration (G5)
- ☐ The Aging Eye: Eye Care for Older Persons (G3)
- ☐ Your Eyes for a Lifetime of Sight (G510)
- ☐ The Eye and How We See (V-7)
- ☐ Sunglasses... know what you're getting and what they're really for (G501)

National Society to Prevent Blindness and its Affiliates

79 Madison Avenue, New York, NY 10016

NSPB is a non-profit, voluntary health agency with a national program of service, education and research. It is supported entirely by public contributions which are tax deductible.



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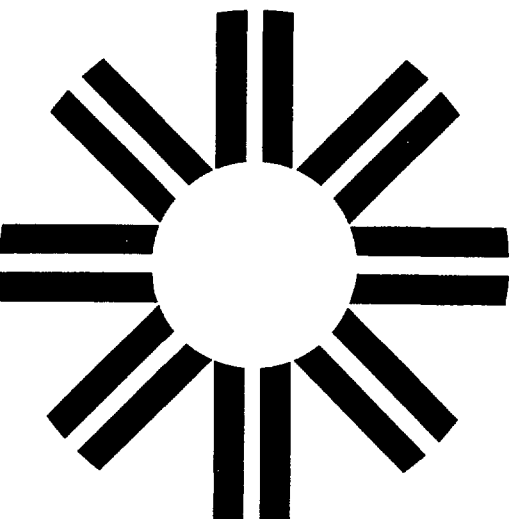
PREVENT BLINDNESS.

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Diabetic Retinopathy

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PREVENT BLINDNESS.

Diabetic

Retinopathy, a major cause of vision impairment and blindness, is a disorder in which small blood vessels nourishing the retina, the back layer of the eye, weaken and break down. The retina is essential to vision and is somewhat like the film of a camera — receiving an image to be “developed” in the brain. Its delicate network of light-sensitive nerves is normally supplied with oxygen and other nutrients by blood vessels which, in retinopathy, may begin to bulge out, leak fluid, bleed, grow wildly, or close down completely.

Who Is at Risk?

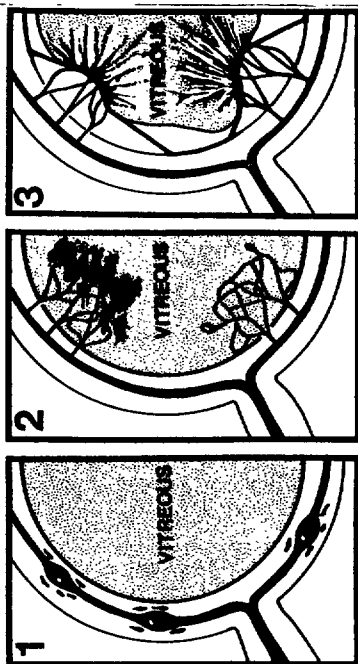
Diabetic retinopathy is one of the complications associated with the general circulatory problems developed by people who have had diabetes for many years. The longer a person has diabetes, the greater the risk of retinopathy — 60 per cent of those who have had diabetes for 15 or more years have some degree of blood vessel damage. Of these, however, only about 5 per cent develop the most serious consequences of the disease: severe vision impairment or blindness.

The disease does not follow a predictable course; there can be episodes of blood vessel damage followed by self-healing and remission of symptoms.

Careful control of diabetes and early treatment of retinopathy improve the potential for avoiding impairment of sight. Every diabetic should receive regular care from his or her doctor, and should also see an ophthalmologist — a physician specializing in eye treatment — before any visual symptoms appear.

Stages of the Disease

In early stages of diabetic retinopathy blood vessels swell and sometimes bulge. The vessels may leak fluid, which can accumulate in the retina and distort vision. Although these fluid deposits often clear up on their own, they sometimes leave fatty deposits which can also interfere with vision. Later, these vessels may begin to bleed within the retina.



1. Cross-section showing blood vessels in retina lining the back of the eye. After many years of diabetes they may bulge and leak. 2. Weak new vessels grow, later rupture, and blood spreads into eye's interior, clouding vision. 3. Scars form, shrinking vitreous, pulling on the retina, tearing or detaching it. Result: vision loss or blindness.

In the most critical stage of the disease, the small blood vessels close down — which can signal the development of abnormal new blood vessels. These abnormal vessels are not able to provide nourishment to the retina; but they can penetrate the vitreous, the normally clear jelly-like fluid filling the major portion of the eye's interior.

The new vessels, which are very weak, can bleed into the vitreous, causing dark spots or cobweb-like strands in the affected person's

vision, or severe clouding of vision. These ruptures can lead to the formation of fibrous scar tissue, which can shrink the vitreous causing a pull on the retina. This may tear or detach the retina, resulting in serious loss of vision or even blindness.

Treatment

The treatment most commonly used for vision-threatening retinopathy is photocoagulation. This is the use of an intense beam of light, often a laser, to weld or seal the leaking or bleeding vessels and the fragile or torn retinal tissue. The light beam is also used to control or prevent the growth of non-functional, abnormal new blood vessels.

The light beam is carefully targeted to the trouble spots, areas that have been pinpointed earlier with the aid of a fluorescent dye. The injected dye can be traced by photos of the eye's interior, as the dye passes through normal vessels or shows up as leaks from the abnormal ones. In advanced cases of retinopathy, photocoagulation is more extensive and can be used to reinforce torn retinas.

Another recent treatment for advanced cases of diabetic retinopathy, where abnormal vessel growth is severe and bleeding persists, is called vitrectomy. In this technique, a delicate instrument is used to break up the blood deposits and scar tissue strands within the vitreous and remove them by suction. At the same time, through another channel of the instrument, a clear salt solution is injected to replace the vitreous.