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NIH NEWS RELEASE

NATIONAL INSTITUTES OF HEALTH
National Eye Institute
National Center on Minority Health and Health Disparities

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Eye Drops Delay Onset of Glaucoma in People at Higher Risk

Researchers have discovered that eye drops used to treat elevated pressure inside the eye can be effective in delaying the onset of glaucoma. These results mean that treating people at higher risk for developing glaucoma may delay -- and possibly prevent -- the disease. These findings are reported in the June 2002 issue of [Archives of Ophthalmology](#).

Scientists found that pressure-lowering eye drops reduced by more than 50 percent the development of primary open-angle glaucoma, the most common form of glaucoma and one of the nation's leading causes of vision loss. Researchers noted that 4.4 percent of the study participants who received the eye drops developed glaucoma within five years. By comparison, 9.5 percent of the study participants who did not receive the eye drops developed glaucoma. Additionally, several significant risk factors were found to be associated with the development of glaucoma in study participants. These included personal risk factors, such as older age and African descent, as well as ocular risk factors, such as higher eye pressure, certain characteristics in the anatomy of the optic nerve, and thinness of the cornea.

Elevated eye pressure results when the fluid that flows in and out of the eye drains too slowly, gradually increasing pressure inside the eye. It is estimated that between three and six million people in the U.S. -- including between four and seven percent of the population above age 40 -- have elevated eye pressure and are at increased risk for developing open-angle glaucoma. Until now, doctors did not know if treating elevated eye pressure -- before glaucoma developed -- could delay the onset of the disease. Some doctors treat people with elevated eye pressure, others do not. This study provides some important information to consider in reaching a decision about treatment.

"This study showed that treating elevated eye pressure delays or prevents the onset of glaucoma in some people," said Paul A. Sieving, M.D., Ph.D., director of the National Eye Institute (NEI), a component of the Federal government's National Institutes of Health (NIH) and one of the study's sponsors. "The study clearly makes a connection between elevated eye pressure and the onset of glaucoma. However, not all people with elevated eye pressure should be treated with the eye drops. If you are at risk for glaucoma, see

your eye care professional to receive a comprehensive eye exam and find out if eye drops might help."

The study -- called the Ocular Hypertension Treatment Study -- examined 1636 people 40-80 years of age who had elevated eye pressure but no signs of glaucoma. Half were assigned daily eye drops, and the other half were assigned to observation (no medication). In the medication group, treatment reduced eye pressure by approximately 20 percent.

"It is significant that this modest 20 percent reduction in eye pressure had such an important protective effect in the development of glaucoma," said Michael Kass, M.D., of the Washington University Department of Ophthalmology and Visual Sciences and chair of the study.

Dr. Kass sounded a cautionary note. "Eye care professionals should not prescribe eye drops for all people who have elevated eye pressure with no sign of glaucoma," he said. "Doctors should take into account several factors, including the simple fact that 90 percent of participants in the observation group did not develop glaucoma within the five-year study period. An individual's risk of developing glaucoma, along with their health status and life expectancy, should be considered. The burden of daily treatment, including cost, inconvenience, and possible side effects, are other factors that the doctor and patient should discuss." Dr. Kass said that study researchers prescribed commercially available eye drops, either singly or in combination, to reduce eye pressure. "The availability of many different types of pressure-lowering eye drops allows eye care professionals to choose the safest regimen for each patient," he said. In the study, the group receiving the eye drops did not show increased evidence of health problems in comparison to the observation group.

Open-angle glaucoma affects about 2.2 million Americans age 40 and over; another two million may have the disease and don't know it. Glaucoma occurs when the optic nerve is damaged. In most cases, increased pressure in the eye plays an important role in this damage. The damage to the optic nerve causes loss of peripheral (side) vision. As the disease worsens, the field of vision gradually narrows and blindness can result. However, if detected early through a comprehensive eye exam, glaucoma can usually be controlled and serious vision loss prevented. Comprehensive eye examinations are recommended for all people over age 60, and African Americans over age 40.

Glaucoma is the leading cause of blindness in African Americans, according to John Ruffin Ph.D., director of the National Center on Minority Health and Health Disparities (NCMHD), part of NIH and another study sponsor. "Glaucoma is three to four times more likely to develop in African Americans than Whites," Dr. Ruffin said. "This study took that into account: 25 percent of study participants were African American."

Dr. Sieving said this clinical trial is among the studies supported in the National Eye Institute's glaucoma research program. "We will continue to conduct and support research aimed at finding better ways to detect, treat, and possibly prevent glaucoma," he said.

In addition to support from the NEI and NCMHD, the Ocular Hypertension Treatment Study was supported by Research to Prevent Blindness and Merck Research Laboratories. The study was conducted at 22 clinical centers across the country. A list of study centers and principal investigators is attached.

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The National Eye Institute (NEI), the Federal government's lead agency for vision research, is part of the National Institutes of Health (NIH) under the U.S. Department of Health and Human Services. NEI-supported research leads to sight-saving treatments and

plays a key role in reducing visual impairment and blindness.

The NIH's National Center on Minority Health and Health Disparities (NCMHD) conducts and supports research, training, information dissemination and other programs aimed at reducing the disproportionately high incidence and prevalence of disease, burden of illness, and mortality experienced by certain American populations, including racial and ethnic minorities and other groups with disparate health status, such as the urban and rural poor.

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