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Statement from Paul A. Sieving, M.D., Ph.D., Director of the National Eye Institute, National Institutes of Health, on World Glaucoma Day, March 12, 2009

On the second annual World Glaucoma Day, the National Eye Institute (NEI), part of the National Institutes of Health (NIH), joins with groups around the globe to recognize this blinding visual condition as a scientific research priority and a public health concern. We at NEI reaffirm our commitment to support research that will identify glaucoma risk factors and lead to treatments that will prevent vision loss and blindness.

Glaucoma is one of the world's primary causes of vision loss. It affects nearly 70 million people worldwide, including an estimated 2.2 million Americans. An additional 2 million Americans remain undiagnosed. African-Americans over age 40 and all adults over age 60, especially Hispanics, are at a higher risk for the condition. Even with this striking prevalence, only 8 percent of Americans recently surveyed knew that glaucoma has no early warning signs.

The term glaucoma encompasses a group of disorders that cause damage to the optic nerve, leading to vision loss or blindness if left untreated. The most common form is primary open-angle glaucoma (POAG), in which fluid builds up in the front chamber of the eye. The resulting increase of pressure within the eye damages the optic nerve, so visual information cannot be transmitted to the brain.

Glaucoma usually begins silently during midlife with painless, gradual vision loss. Only an eye care professional can detect subtle signs of glaucoma within the eye. Early detection offers an opportunity to stop or slow disease progression with eye drops or surgery. Regular, comprehensive dilated eye examinations are crucial because once vision is lost, it is gone forever.

We at NEI recognize the importance of preventing glaucoma-related vision loss by currently contributing nearly $65 million in support of 168 glaucoma studies. In 2008, NEI also initiated the NEI Glaucoma Human genetics collaBORation, known as NEIGHBOR, through which seven U.S. research teams will lead genetic studies of the condition.

One major NEIGHBOR project involves comparative analysis of genetic variations among 1,800 people who have POAG and 1,800 people without the condition. This

comprehensive information will help scientists identify genetic and environmental risk factors for glaucoma and investigate the underlying biological causes of the condition.

Another area of ongoing research is neuroprotection, or the protection of nerve cells. When retinal ganglion cells in the eye are destroyed, vision loss occurs. However, proteins called neurotrophic factors can activate nerve cells' natural growth abilities, perhaps preventing cell death. NEI-supported investigators recently used gene transfer therapy in rodent models of glaucoma to stimulate the supply of a particular neurotrophic factor. Survival of retinal ganglion cells greatly improved with this treatment.

In addition, NEI-supported glaucoma research over the past several decades has consistently led to breakthroughs in the scientific and clinical understanding of the disease. Through the Ocular Hypertension Treatment Study (OHTS), scientists discovered that eye drops used to treat high pressure inside the eye are effective in delaying the onset of glaucoma in high-risk people. Pressure-lowering drops reduced the development of POAG by more than 50 percent.

OHTS investigators also identified risk factors for the condition, including age, African-American descent, high eye pressure, corneal thickness, and certain anatomical features of the optic nerve. These have been useful in helping eye care professionals predict which patients will likely develop glaucoma and may benefit from treatment.

Previous research helped set the standard of care for surgical treatment of glaucoma as well. The Advanced Glaucoma Intervention Study (AGIS) found that African-Americans with advanced glaucoma had better visual results after laser surgery, whereas whites with advanced glaucoma benefitted more from trabeculectomy, or surgical removal of eye tissue that allows fluid to drain properly.

On World Glaucoma Day 2009, we at NEI applaud the efforts of all scientists who are committed to increasing our knowledge of this blinding eye condition. We acknowledge the importance of glaucoma research today and every day though our scientific programs. We reaffirm our commitment to increasing public awareness of glaucoma and the importance of regular, comprehensive dilated eye exams through our National Eye Health Education Program. We look forward to continuing to advance the scientific and societal understanding of glaucoma in the years ahead.

For more information about glaucoma research programs at NEI, visit www.nei.nih.gov. For more information about glaucoma and eye health, visit www.nei.nih.gov/glaucoma.

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The National Eye Institute, part of the National Institutes of Health, leads the federal government's research on the visual system and eye diseases. NEI supports basic and clinical science programs that result in the development of sight-saving treatments. For more information, visit www.nei.nih.gov.

The National Institutes of Health (NIH) — The Nation's Medical Research Agency — includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. It is the primary federal agency for conducting and supporting basic, clinical, and translational medical research, and it investigates the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit www.nih.gov.