

New therapies expected to help reduce future visual burden of age-related eye disease

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The prevalence of the eye disease age-related macular degeneration is projected to increase substantially by 2050, but the use of new therapies is expected to help mitigate its effects on vision, according to results of simulation modeling reported in the April issue of *Archives of Ophthalmology*.

Age-related [macular degeneration](#) (AMD) occurs when the macula, the area of the eye's retina responsible for sharp vision, begins to deteriorate. In 2000, as many as 1.75 million Americans reached the advanced, vision-threatening stages of AMD, according to background information in the article. "The prevalence of AMD and its resultant morbidity [illness and disability] is likely to increase as the U.S. population ages because the annual incidence of AMD increases with age from less than 1 percent for those younger than 60 years to greater than 5 percent for people aged 80 years and older," the authors write.

"Newly discovered prophylactic [preventive] and treatment therapies for AMD offer substantial improvements over past therapies and could potentially offset some degree of future AMD morbidity," they continue. Preventive therapies include antioxidant vitamins that could slow the progression of AMD from early to late stages. Treatments for more advanced forms of the disease include laser and photodynamic therapies and anti-vascular endothelial growth factor (anti-VEGF) injections, which can prevent growth of excess [blood vessels](#) in the [eye](#) and thereby improve vision or prevent further [vision loss](#) for up to two years.

To estimate the possible effects these new treatments might have on future disease burden, David B. Rein, Ph.D., of RTI International, Research Triangle Park, N.C., and colleagues simulated cases of AMD and related complications for the years 2010 through 2050. Using existing data to estimate the number of individuals in each stage of the disease based on age, sex and race or ethnicity, they modeled the population's progression over time under five different treatment scenarios. These ranged from no treatment at all to combinations of vitamins to prevent progression of early AMD with laser and anti-VEGF therapies for those at later stages.

"Cases of early AMD increased from 9.1 million in 2010 to 17.8 million in 2050 across all scenarios," the authors write. However, the forecast indicated that the rate of visual impairment and blindness due to AMD could be reduced from 0.73 percent with no treatment to 0.48 percent when combining the use of antioxidant vitamins for prevention and anti-VEGF and laser therapy for individuals with AMD.

"Our model predicts large increases in both cases of early and advanced AMD and the visual impairment and blindness attributable to it over the next 40 years regardless of the treatment steps taken, with virtually all of these increases attributable to the aging of the U.S. population," the authors continue. "However, existing medical therapies have the potential to reduce the visual impairment and blindness attributable to AMD by as much as 35 percent, translating to 565,000 fewer cases of visual impairment and blindness in 2050."

With an annual cost of approximately \$100 per patient, vitamin therapy is a cost-effective method of delaying AMD progression, but research indicates it is not widely used among patients with early-stage disease. "Public prevention efforts should focus on expanding the use of antioxidant vitamins in people with early AMD and ensuring that these patients use the correct dosage," the authors write. Efforts should also be

undertaken to improve access to anti-VEGF and laser therapies for eligible patients, they conclude.

More information: Arch Ophthalmol. 2009;127[4]:533-540.

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