



Macugen Facts

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On December 18, 2004, the U.S. Food and Drug Administration approved the use of Macugen as a new therapy to slow vision loss in people with neovascular (wet) age-related macular degeneration (AMD). The wet form of macular degeneration is caused by the abnormal growth of leaky blood vessels in the retina that eventually damage the area of the eye responsible for central vision. Central vision is essential for most fine detail visual activities like reading, driving a car, and crossing streets. The new drug, Macugen, works by blocking vascular endothelial growth factor (VEGF), a protein that promotes blood vessel growth.

The safety and efficacy of Macugen was studied in two randomized, multicenter, doublemasked clinical trials with over 1200 patients with AMD for two years. Subjects received injections every 42 days for 48 weeks of either 0.3 mg of Macugen or a control (placebo). The results of the trials showed that among patients receiving Macugen, 70% lost less than three lines of vision on the eye chart, compared with 55% of patients receiving placebo. In other words, Macugen had a 27% relative treatment advantage over placebo with respect to three line loss. Macugen also helped limit progression to legal blindness by

50% compared to placebo. On average, Macugen-treated patients and placebo-treated patients continued to experience vision loss, but the rate of vision decline in the Macugen-treated group was slower.

Overall, Macugen was well tolerated by patients. Most of the adverse events reported were mild in severity and transient. Patients reported side effects such as eye irritation, eye pain, blurred vision, and hemorrhage under the outer member of the eye (conjunctiva). Serious adverse effects reported were infections, retinal detachment, and traumatic cataract. Many of these effects are believed to be related to the injection procedure. The treatment regimen consists of an intravitreal injection into the eye at six-week intervals for a total of nine injections per year. Eyetech Pharmaceuticals, the manufacturer, reported the list price of Macugen for doctors to be about \$995 per injection, with the price to patients of around \$1243 per injection.

While Macugen represents a breakthrough in treatment for AMD, it has not been officially shown to improve vision. Rather, Macugen helps to preserve vision and to slow vision loss. Also, there has been no formal testing of

Macugen on patients with PXE.
Therefore, the efficacy of Macugen on vision loss in PXE patients is unknown.

As with any drug, it is important to establish its usefulness in PXE. Anecdotal reports are important; however, we need to evaluate a series of patients with choroidal neovascularization secondary to PXE to establish its efficacy.

Genentech reported on May 23, 2005 that Lucentis, its experimental drug for wet AMD, either maintained or improved vision in 95% of patients participating in the Phase III trial. Lucentis is also designed to bind and inhibit VEGF. But, while Macugen slows vision loss, the new data suggest that Lucentis may actually make eyesight better. According to Genentech, it's the first time in a Phase III trial that a drug was shown to be statistically significant in improving vision for patients. Time will tell particularly if PXE International can initiate a study of one of these drugs in individual affected by PXE