



**Medical
Blueprints**

VISION BREAKTHROUGH: HELPING THE BLIND TO SEE REPORT #2743

BACKGROUND: Blindness is the state or condition of being unable to see because of injury, disease, or congenital condition. Around 26.9 million Americans 18 and older are reported to have experienced vision loss. Of those, 16.4 million are women and 10.5 million are men. There are several different levels of blindness. Functional limitation refers to the interaction of visual functioning and ability to perform activities of daily living. Legal blindness refers to a medically diagnosed central visual acuity of 20/200 or less in the better eye with the best possible correction, and/or a visual field of 20 degrees or less. Low vision describes a person who has measurable vision but has difficulty accomplishing or cannot accomplish visual tasks even with prescribed corrective lenses. Total blindness refers to an inability to see anything with either eye. An individual has vision loss when they have trouble seeing, even when wearing glasses or contact lenses. Visual impairment, or disability, is a term that encompasses both those who are blind and those with low vision. Additional factors influencing visual impairment are contrast sensitivity, light sensitivity, glare sensitivity, and light/dark adaptation.

(Source: <https://www.afb.org/research-and-initiatives/statistics/adults> and <https://www.afb.org/research-and-initiatives/statistics/key-definitions-statistical-terms>)

SYMPTOMS AND TREATMENT: The common symptom of people who are blind or have visual impairment is difficulty seeing. If a person is born blind, there is less adjustment to a non-seeing world than there is for someone who loses their vision late in life. Some associated symptoms, such as discomfort in the eyes, awareness of the eyes, foreign body sensation, and pain in the eyes or discharge from the eyes may be present or absent, depending on the underlying cause of the blindness. Blindness is diagnosed by testing each eye individually and measuring the visual acuity and visual field, or peripheral vision. An ophthalmologist is the specialist who diagnoses and treats eye disease. The treatment depends on the cause of the visual impairment or blindness. People who have poor vision due to refractive error can be prescribed glasses to help the problem. Dietary changes can help those who have nutritional causes of blindness. Cataracts cause blindness for millions of people in the world. In most cases, cataract surgery may restore their sight. Inflammatory and infectious causes of blindness can be treated with medication in the form of drops or pills. And, corneal transplantation may help people whose vision was affected by corneal scarring.

(Source: https://www.medicinenet.com/blindness/article.htm#what_specialists_treat_blindness)

STEM CELL TREATMENT BREAKTHROUGH: Research is being conducted to see if stem cells taken from the eyes of non-living donors can be used to cure blindness. Researchers from Scotland are still working to perfect the technique. All the patients who received treatment had drastic improvements in vision, with some recovering faster than others. Treatment was able to help with blindness caused by damage to the cornea. The focus was on limbal stem cells which are instrumental to vision, and usually at low levels in those suffering from corneal blindness. Sixteen patients were split into two groups. One group received transplant tissue along with eye drops and immune system suppressing drugs to reduce the risk of rejection. Everyone in that group had significant improvement to their eyesight over a period of a year and a half. Baljean Dhillon of the University of Edinburgh says, "Findings from this study are promising and show potential for safe stem cell eye surgery and improvement in eye repair."

(Source: <https://worldhealth.net/news/breakthrough-stem-cell-treatment-cures-blindness-2-patients/>)

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