

## **Medical Enhancements in The Blind Community Moving Forward**

**There are around 300 million people in the world who have some type of blindness or visual impairment. Scientists and medical experts are working on new technology that can improve the vision of those with weak eyesight and save the vision of patients who have illnesses like macular degeneration and glaucoma. Like any other field, medical science has also seen amazing inventions that have made it possible for doctors to treat or manage some previously incurable kinds of blindness. For instance, the bionic eye is a promising invention that would enable visually impaired people who could once see, be able to see again artificially.**

Here are some medical advancements that are instrumental in protecting against, reversing or even treating blindness:

### **1. Corneal Inlays**

As we grow older, like all our organs, our eyes also begin to wear out, leading to eyesight degeneration, and the need for reading glasses, bifocal glasses or corrective lenses. These tools, which have been in use since centuries, can potentially be replaced by corneal inlays. A corneal inlay is a surgical solution to the problem. In this procedure, a laser is used to make a small incision in the patient's eye. Then a tiny implant, called a corneal implant, is placed inside. This plays the role of focusing the light entering the eye, which fixes nearsightedness.

### **2. HIV/AIDS Medication Re-purposed for Macular Degeneration**

Macular degeneration is one of the principal reasons behind age-related blindness, which is untreatable in about 90% patients worldwide. There are two types of macular degeneration: wet and dry. Wet macular degeneration is far more understood than dry macular degeneration so it has more approved treatments. To solve this problem, a study by [University of Kentucky College of Medicine](#) found that some anti-HIV drugs can be employed to treat the untreatable form of the illness.

### **3. Nano Diamonds**

Glaucoma is a common illness that leads to blindness. Those who are diagnosed with it have to use eye drops in the correct doses regularly. It is challenging to manage the administering of these eye drops. A better alternative is new contact lenses that have the Glaucoma medication – timolol maleate – bound to nano-diamonds. The contact lenses have a layer which has time-release medication. They ensure that the medication is administered automatically, in the right dose, right place, and at the right time. This is done when the interaction between the patient's natural tears and the nano-diamonds happens. Experts from the University of California (UCLA) are still developing and testing this medical technology, and it could prove to be very useful if it successfully passes the trials.

## **4. Gene Therapy for Inherited Diseases of the Eye**

Some researchers and scientists are working on developing gene therapies to treat eye disorders and illnesses that are a result of gene mutation. For example, to treat retinal dystrophy, an approved gene therapy involves manipulating a virus carrying an unmutated version of the gene. This virus is injected into the area which has been affected, where it takes over the cells' DNA and overrides their genetic code. This way, mutated genes are replaced by unmutated ones, which could lead to the correction of the DNA and healthy cells, and therefore prevention of eyesight loss.

Similar to this, many other gene therapies are currently being studied. Their successful trials will decide whether they can be used as treatments for many eye problems that result from a gene mutation.

## **5. Bionic Eyes**

The bionic or prosthetic eye is an innovative device that may reinstate limited sight to people having total blindness. The US FDA approved it in 2013, and developments in this technology are advancing at a commendable rate. In the clinical trials of one device, called Argus® II, after the implementation of the prosthetic eye, the patients could make out lights, windows, pathways, obstacles, shapes and forms, and outlines of some people. Some were even able to read letters which were more than nine inches in length. This improved their daily life as it enabled them to carry out some tasks more easily than before. Many other useful versions of this device are being developed right now.

These medical advancements provide new hope for the visually-impaired. The future looks promising; depending on the success of the technologies currently in the trial phase, doctors could be able to manage and treat blindness better than ever before.