



If you have cataracts, you are considering surgery because your cataracts prevent you from seeing well even with corrective eyeglasses. After cataract surgery, you should be able to see well at far, mid-range, and near distances with new eyeglasses (assuming no other eye health problems). The decision about which type of artificial lens implant to have will affect your ability to see *without eyeglasses* following cataract surgery. There are 3 categories of artificial lenses for cataract patients to choose from: **single focus** (monofocal), **bifocal** (also called a multifocal because it has 2 separate focal points), and **extended focus**.

Our eye is like a camera that must constantly shift its focus from far to near and various distances in-between. There are four primary zones or distances that we need to be able to see.

- 1) Far distance (road signs, distant animals, movie screens)
- 2) Indoor distances (pictures on the wall, faces across the dinner table, TV 8 feet away)
- 3) Arm's length (dashboard, store shelves, stove, desktop computer, piano, bathroom mirror)
- 4) Reading distance

The best system is what a young person has, a human lens that is constantly and automatically changing shape to adjust focus. This is like having an “auto-focus” camera where you just point the camera (or eye) at something and the focus is automatically and instantly adjusted. With age, we all lose this convenience and end up with a “manual” focus camera—we must manually change the focus. We do this either by switching between different pairs of eyeglasses for each distance that we need or by using bifocal, trifocal, or progressive (“no line bifocal”) eyeglasses. Progressive glasses allow us to see all four zones by looking through different parts of the spectacle lens as though we had 4 different pairs of glasses stacked one above the other.

With the standard **single focus** (monofocal) lens implant, you can select which of the 4 zones you'd want to see optimally without any eyeglasses on. You then have the same eyeglass options as everyone else over the age of 50 to allow you to “manually” change your focus (i.e., moving the focus farther away or closer up). This could mean separate distance, reading, and computer glasses, bifocals, trifocals, or progressive “no line bifocals”. You can also continue to wear contact lenses.

**Bifocal** lens implants are designed to produce a dual focus (“multifocal” means more than 1 focus). Because part of the lens is set for distance focus (zone 1), and part of the lens is set for reading distance (zone 4), this technology can significantly reduce your dependence on reading glasses. **Extended focus** lens implants employ a completely different mechanism to reduce dependence on eyeglasses—extended depth-of-focus. Instead of creating one or two separate focal points, this lens is designed to provide continuous focus over a range of distances. It is advantageous for patients that want good natural focus without eyeglasses at outdoor and indoor distances and mid-range (zones 1, 2, and 3). Compared to a conventional monofocal lens implant set for far distance (zone 1), patients with the **extended focus** lens have noticeably better mid-range vision at arm's length (zone 3), but still require reading glasses (zone 4).

If the shape of the cornea at the front of the eye is imperfect, this creates a natural blur or misfocus called **astigmatism**. Like nearsightedness, astigmatism isn't a disease, but rather a natural misfocus that requires corrective eyeglasses for the clearest vision. Instead of placing the astigmatism correction into the patient's spectacles, it can be incorporated into the lens implant instead. This feature can be incorporated into each of the 3 lens implant categories (monofocal, bifocal, or extended focus), and any lens containing astigmatism correction is called a **toric** lens.