



New Approaches to Presbyopia

It's critical for the public to understand presbyopia and the range of treatment options available to patients.

Presbyopia: What is it?

Presbyopia (Greek for “elderly or aged eyes”) is a vision condition in which the ability to focus on objects up close (reading and other near tasks) decreases as we get older. It's normal and happens to nearly everyone, because the natural lens inside our eyes loses its ability to change focus from distant objects to near ones. Thus, the image on the retina becomes blurred when viewing at certain distances; distances at which we could see clearly earlier in our lives.

What are its risk factors?

Increasing age is the most prominent risk factor for presbyopia, and the typical age of onset is usually in the fifth decade of life. It affects 128 million Americans, and the numbers continue to grow as the population ages.^{1,2} More specifically, it affects nearly 90% of Americans over the age of 45.³ The first of 73 million millennials turn 40 this year, following the 61 million people in generation X, who are aged 41 to 56 in 2021—substantially increasing the potential number of presbyopes.^{4,5} Additionally, conditions such as diabetes, cardiovascular disease and multiple sclerosis lead to a higher risk of presbyopia and a decreased age of onset.⁶ Certain drugs, including antidepressants, antihistamines and diuretics, are associated with premature presbyopic symptoms.⁶ Lastly, the ubiquitous use of digital technologies for both professional and social purposes is increasing significantly for both social and professional purposes and has been shown to lead to eye strain or vision stress.⁷ The adoption of digital technology has made better near vision a necessity due to exponential increase in the use of screens for work and leisure.⁸

Human beings have also depended on high-quality near vision for survival through the millennia. The ability to identify a potential risk or threat, or the ability to identify food which is edible and not poisonous or toxic. In more recent times, the ability to read medication names, or proper instructions on

¹ Care of the Patient with Presbyopia. American Optometric Association. 2011

² Zebardast et al. The Prevalence and Demographic Associations of Presenting Near-Vision Impairment Among Adults Living in the United States. *Am J Ophthalmol*. 2017;174:134-144

³ Bourne RRA, et al. Magnitude, temporal trends, and projections of the global prevalence of blindness and distance and near vision impairment: a systematic review and meta-analysis. *Lancet Glob Health*. 2017;5(9):e888–e897.

⁴ Washington Post. Searing. 2021. https://www.washingtonpost.com/national/health-science/the-big-number-millennials-to-overtake-boomers-in-2019-as-largest-us-population-group/2019/01/25/a566e636-1f4f-11e9-8e21-59a09ff1e2a1_story.html. Accessed 2022.

⁵ Pew Research Center. Defining generations: Where Millennials End and Generation Z begins. 2019.

⁶ Mayo Clinic. Presbyopia. 2021. <https://www.mayoclinic.org/diseases-conditions/presbyopia/symptoms-causes/syc-20363328>.

⁷ Berdahl J, et al. Patient and Economic Burden of Presbyopia: A Systematic Literature Review. *Clin Ophthalmol*. 2020 Oct 22;14:3439-3450.

⁸ Pew Research Center. Americans 60 and Older are Spending More Time in Front of Their Screens Than a Decade Ago. 2019.

a pill bottle, or identify a proper measurement on an insulin syringe for medication dosage or dial 9-1-1 in case of emergency, can mean the difference between life and death. All these tasks require high-quality near vision. Uncorrected presbyopia challenges all of them.

What is its impact?

Given the difficulty that people with presbyopia experience with reading and other near vision tasks, presbyopia has been found to be associated with negative impacts on quality of life. If left uncorrected or under-corrected, presbyopia could result in potential productivity losses and reduced vision-related quality of life.^{9,10} Further, nearly 80% of patients with uncorrected presbyopia have reported functional difficulty in performing daily activities such as reading, writing, threading needles and using mobile phones.¹¹

Treatment options

Options for correcting presbyopia include both fixed- and variable focus lens systems, as well as surgical interventions, with ongoing efforts to improve the presbyopic visual experience.

Glasses

- ✓ **Near vision or reading glasses:** Generally considered the simple treatment option, near vision glasses are designed to supply the additional focusing needs of the patient when needed. Typically, the patient puts them on for near tasks and then removes them. Usually, because left and right eyes are not identical, and other refractive errors may be present, these glasses are prescribed by an eye doctor. However, some patients require only very simple prescriptions which can be obtained in over-the-counter reading glasses.
- ✓ **Bifocals:** Intended for people with a need for distance vision correction as well as a near correction. Both corrections are incorporated into the same spectacle frame with the distance correction on the top and the near correction on the bottom.
- ✓ **Progressive addition lenses:** Also called PALs, progressive addition lenses treat presbyopia using the same concept as the bifocal but utilizing more modern technology wherein the transition from distance to near is gradual and results in giving the patient not only distance and near correction, but an intermediate one as well.

Contact Lenses

- ✓ **Multifocal contact lenses:** Multifocal contact lenses have multiple lens powers, similar to the progressive or bifocal lenses in eyeglasses and are used to help with improving vision at all distances.
- ✓ **Monovision contact lenses:** Monovision contact lenses, in which one eye wears a distance prescription and the other eye a near vision prescription, are an option in patients who typically are already contact lens wearers. For the successful patient, the brain learns to switch between left and right eyes depending upon the task at hand.

⁹ Frick KD, et al. The global burden of potential productivity loss from uncorrected presbyopia. *Ophthalmology*. 2015;122(8):1706–1710.

¹⁰ Berdahl J, et al. Patient and Economic Burden of Presbyopia: A Systematic Literature Review. *Clin Ophthalmol*. 2020 Oct 22;14:3439-3450.

¹¹ Holden BA, et al. Global vision impairment due to uncorrected presbyopia. *Arch Ophthalmol*. 2008;126(12):1731–1739.

Eye Drops

- ✓ **Presbyopia eye drops:** Presbyopia eye drops contain a prescription medication that helps constrict the size of the pupil to improve near vision. When the pupil is constricted, patients find that the range of clear focus is extended, resulting in an enhanced ability to accomplish near tasks without the need of lenses, either spectacles or contacts.

Surgical Options

- ✓ **Monovision LASIK:** Monovision LASIK is a refractive surgery that corrects one eye for distance vision and one eye for near vision. Akin to monovision contact lenses, this method requires the brain to adapt to relying on different eyes for different distances. A LASIK surgeon will typically trial the monovision approach with contact lenses before surgery, as not everyone will adapt well.
- ✓ **Refractive Lens Exchange:** Refractive Lens Exchange is a surgery in which each eye's natural lens is replaced with an advanced intraocular lens. It can correct a variety of refractive errors and reduce or eliminate the need for reading glasses. Often multifocal lens implants are used depending upon the counsel of eye doctor.

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Therapeutic drops are a relatively new approach to caring for the presbyopic patient. Like any other clinical interventions, doctors will examine a patient to assess whether the patient is a good candidate for the intervention. For therapeutic drops for presbyopia, a comprehensive eye examination with particular attention to the retina is strongly recommended to ensure that the patient is a good candidate for the drops.¹² This recommendation is consistent with the standard of care for adults as pharmacologic dilation of the pupil is generally required for thorough stereoscopic evaluation of the ocular media, retinal vasculature, macula, optic nerve, and the peripheral retina.¹³ As with any treatment approach, doctors will ensure that patients have realistic expectations for the clinical outcome that can be expected, and risks and benefits will be discussed. With therapeutic drops for presbyopia, doctors emphasize that the intervention is not a full replacement for optical correction but may reduce a patient's reliance on glasses or contacts for a portion of the day. Given the huge number of Americans impacted by presbyopia additional interventions can trigger excitement in the patient community and provides an opportunity for doctors of optometry to work with patients to find treatments and interventions that best suit the patient's unique needs.

¹² https://www.rxabbvie.com/pdf/vuity_pi.pdf

¹³ <https://www.aoa.org/AOA/Documents/Practice%20Management/Clinical%20Guidelines/EBO%20Guidelines/Comprehensive%20Adult%20Eye%20and%20Vision%20Exam.pdf>