

# Eye Drops to Replace Your Reading Glasses?

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## STORY AT-A-GLANCE

- › The U.S Food and Drug Administration approved prescription eye drops, called Vuity, to treat presbyopia, commonly known as age-related farsightedness
- › Its active ingredient is pilocarpine HCl ophthalmic solution 1.25%, a muscarinic receptor agonist
- › Vuity is intended to be used once daily, with one drop in each eye; it takes effect in about 15 minutes and lasts for six to 10 hours
- › A 30-day supply costs \$80 and is not covered by insurance at this time
- › The most common side effects reported were headache and eye redness, although a risk of retinal detachment was also reported in rare cases; during clinical trials, 1% to 5% of patients also reported blurred vision, eye pain, visual impairment, eye irritation and increased lacrimation (flow of tears)
- › Vuity is not a cure for presbyopia; it's a temporary fix that stops working after a set number of hours, and it may not allow you to get rid of your reading glasses entirely

The U.S Food and Drug Administration approved prescription eye drops, called Vuity, to treat presbyopia, commonly known as age-related farsightedness. People with presbyopia have trouble focusing on objects close up, and it commonly affects people beginning in their early- to mid-40s, progressively worsening until about age 65.<sup>1</sup>

If you have presbyopia, you may find that you need to hold books farther and farther away in order to see them clearly. The solution, until now, is typically reading glasses, which those affected may keep with them throughout the day – in the kitchen, the car, the office and the bedroom – just to go about their daily activities.

Vuity may change that, offering presbyopia patients an option to see nearby objects clearly without a need for glasses, but it does come with some risks that glasses do not.

## **Prescription Eye Drops Could Replace Reading Glasses**

Vuity is the first FDA-approved eye drop to treat presbyopia in adults. Its active ingredient is pilocarpine HCl ophthalmic solution 1.25%, a muscarinic receptor agonist.<sup>2</sup> The drug itself is not new; it's commonly used by eyecare practitioners to lower intraocular pressure, constrict pupils following dilation and treat dry eye.<sup>3</sup>

For presbyopia, Vuity works by reducing your pupil size. By contracting certain muscles in your eyes, it helps you to focus on nearby objects. "Reducing the pupil size expands the depth of field or the depth of focus, and that allows you to focus at different ranges naturally," Dr. George Waring, the principal investigator for one of Vuity's clinical trials, told CBS News.<sup>4</sup>

Two phase 3 clinical trials, involving 750 people, compared Vuity to a placebo drop. Although they haven't been published in a peer-reviewed journal, the trials reportedly found that Vuity led to a statistically significant improvement in vision compared to placebo.<sup>5</sup>

One trial participant told CBS News the eye drops are a "life changer," adding that once she started using them, "I would not need my readers as much, especially on the computer, where I would always need to have them on."<sup>6</sup>

Vuity is intended to be used once daily, with one drop in each eye.<sup>7</sup> It takes effect in about 15 minutes and lasts for six to 10 hours.<sup>8</sup> A 30-day supply costs \$80 and is said to work best in people aged 40 to 55 years.<sup>9</sup>

## What Are the Signs of Presbyopia?

An estimated 128 million Americans have blurry near vision, most of them aged 40 and older.<sup>10</sup> The term presbyopia comes from the Greek word for "old eye," alluding to the fact that many people have trouble seeing close-up objects clearly as they age. As for what causes it, the American Academy of Ophthalmology calls it a normal part of the aging process, explaining:<sup>11</sup>

*"Your clear lens sits inside the eye behind your colored iris. It changes shape to focus light onto the retina so you can see. When you are young, the lens is soft and flexible, easily changing shape. This lets you focus on objects both close-up and far away. After age 40, the lens becomes more rigid. It cannot change shape as easily. This makes it harder to read, thread a needle, or do other close-up tasks."*

If you've found that you need to hold reading material farther away in order for the letters to be clear, it's a sign of presbyopia. Other symptoms include blurred vision at a normal reading distance and eyestrain or headaches that occur after you've been reading or doing close-up work. The blurry close-up vision may be worse when you're tired or in a dimly lit area.<sup>12</sup>

Age is the greatest risk factor for presbyopia, with the Mayo Clinic stating, "Almost everyone experiences some degree of presbyopia after age 40."<sup>13</sup> However, certain medical conditions, including diabetes, multiple sclerosis and heart disease and drugs, including antidepressants, antihistamines and diuretics, increase the risk of premature presbyopia, which occurs in people younger than 40.

## Vuity Might Not Work in Advanced Cases

Presbyopia is typically a progressive condition, and the eye drops may not work as well in people with more advanced cases. Speaking with Eyes on Eyecare, Sathi Maiti, OD with the Periman Eye Institute, stated that the eyedrops would appeal to many of her patients.<sup>14</sup>

*"If Vuity works well it could be a game-changer in terms of how we treat presbyopia. As eye doctors, because it is so common I think a lot of the time we forget how much presbyopia really impacts the quality of life of many of our patients, and this is a type of solution that many of them might be seeking out."*

However, it's possible that not everyone will benefit to the same degree. Maiti said:<sup>15</sup>

*"It will likely work best for those who don't have very precise vision needs and are okay with some compromise or fluctuation in clarity. Since I haven't had the chance to see how it works in real life yet, it's a little hard to say, but my best guess would be for early presbyopes who don't need super high adds yet."*

Alanna Nattis, DO, a refractive cornea surgery specialist at SightMD, also speaking with Eyes on Eyecare, echoed Maiti, stating:<sup>16</sup>

*"I believe the drop will have the strongest effect on early presbyopes with minimal refractive error. That being said, I do think there is room for use of this drop in patients who prefer to wear distance-only and reading-only spectacles or contact lenses ... I do not believe this eye drop will be as efficacious for patients who have advanced presbyopia, nor those with relatively dense cataracts."*

## **What Are the Risks?**

Vuity is not a cure for presbyopia; it's a temporary fix that stops working after a set number of hours – until you add more drops. Further, it may not allow you to get rid of your reading glasses entirely. Even the Vuity website states, "VUITY™ is not intended to replace other options for presbyopia."<sup>17</sup>

By shrinking your pupils, Vuity also affects low-light vision, which is why its maker warns that the drops should be "used with caution in night driving and other hazardous activities in poor light." They also warn that temporary problems may occur when changing focus between near and distant objects, so you shouldn't drive or use machinery if your vision isn't clear while you're using the drops.<sup>18</sup>

The most common side effects reported were headache and eye redness, although a risk of retinal detachment was also reported in rare cases. There's also a potential for eye injury or contamination, particularly if the dispensing bottles touches the eye or other surfaces. During clinical trials, 1% to 5% of patients also reported:<sup>19</sup>

- Blurred vision
- Eye pain
- Visual impairment
- Eye irritation
- Increased lacrimation (flow of tears)

Cost will also be a factor for many, as the drug isn't currently covered by insurance because it's considered "not medically necessary" since glasses are widely available and less expensive. "I don't think anyone knows yet how much it will cost to patients and if it will be covered by insurance. I think many doctors are wondering how we will bill for it as well," Maiti said.<sup>20</sup>

As for other options for treating presbyopia, reading glasses are the least invasive option. Contact lenses, refractive surgery and even lens implants are also available, as are corneal inlays, in which a small plastic ring is inserted into the eye's cornea. The opening in the ring acts like a pinhole camera, which allows focused light to enter so you can see nearby objects more clearly.<sup>21</sup>

Google has also invested in "smart" contact lenses for people with age-related farsightedness,<sup>22</sup> and other eye drops that work similar to Vuity are in trials.<sup>23</sup> While the eye drops are convenient and potentially could reduce reliance on reading glasses for a sizeable number of middle-aged adults with presbyopia, their usefulness must be weighed against the potential for adverse effects.

Glasses do not come with a risk of retinal detachment, for instance, however rare it may be. That being said, I recommend avoiding reading glasses as much as possible.

# Try This Instead of Reading Glasses

There is some evidence that training your brain, namely targeting perceptual learning by repeatedly practicing a demanding visual task, may improve visual performance in people with presbyopia. In one study, the brain training enabled subjects to "overcome and/or delay some of the disabilities imposed by the aging eye."<sup>24</sup>

A number of apps are available that offer this form of brain training for improved vision. In a study published in Scientific Reports, researchers explained that the vision benefits seemed to stem from changes in the brain – not in the eye itself:<sup>25</sup>

*"This improvement was achieved without changing the optical characteristics of the eye. The results suggest that the aging brain retains enough plasticity to overcome the natural biological deterioration with age."*

For presbyopia, I recommend not wearing sunglasses and avoiding reading glasses. As you age, there's a tendency to want to make that font bigger to see text better, but I recommend resisting that temptation, as it's only going to make matters worse.

Also, avoid squinting and simply blink instead. Blink multiple times until the text becomes clear, then relax your eyes to refocus. Brighter light may also help you read without increasing the font size on your tablet or computer, or using reading glasses.

## Sources and References

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- <sup>1</sup> [Mayo Clinic, Presbyopia, Overview](#)
- <sup>2, 3, 14, 15, 16, 20</sup> [Eyes on Eyecare November 29, 2021](#)
- <sup>4, 6, 8, 9, 10</sup> [CBS News December 9, 2021](#)
- <sup>5, 23</sup> [Science Alert December 15, 2021](#)
- <sup>7</sup> [Vuity.com](#)
- <sup>11</sup> [American Academy of Ophthalmology January 13, 2020](#)
- <sup>12, 13</sup> [Mayo Clinic, Presbyopia](#)
- <sup>17, 18</sup> [Vuity, FAQs](#)
- <sup>19</sup> [Vuity Prescribing Information, Pages 2-3](#)
- <sup>21</sup> [Mayo Clinic, Presbyopia, Diagnosis and Treatment](#)
- <sup>22</sup> [CNBC November 16, 2016](#)
- <sup>24, 25</sup> [Scientific Reports volume 2, Article number: 278 \(2012\), Abstract](#)