MULTIFOCALITY

Plus Uncompromised Distance

A monofocal-multifocal hybrid design IOL provides a true range of vision for patients with active lifestyles
Three Reasons to Love the AcrySof® IQ ReSTOR® +2.5D IOL with ACTIVEFOCUS™ Optical Design

It’s my go-to lens for cataract surgery patients who lead an active lifestyle

BY MICHAEL Y. WONG, MD

Since I began using the AcrySof IQ ReSTOR +2.5D IOL with ACTIVEFOCUS design (Alcon), it has become my first choice for patients who are looking for looking to lead an active lifestyle after cataract surgery. Here are the three reasons why this is the case.

Reason #1: Designed to Reduce Dysphotopsia
With the advancements made with the ACTIVEFOCUS design, very few of my patients who have this lens have complained of glare or halos. The central portion of the lens optic is 100% dedicated to distance vision, which creates a quality of distance vision similar to that of a monofocal IOL. Outside the central optic, seven apodized diffractive steps (fewer than the AcrySof IQ ReSTOR +3.0D IOL and spaced farther apart) manage light efficiently, and are designed to minimize the potential for visual disturbances while still providing an extended range of vision compared to a monofocal lens.

Reason #2: Excellent Distance Vision
The ACTIVEFOCUS design is also responsible for providing the most clear and crisp distance image compared to other multifocals on the market. Its modulation transfer function (MTF) is nearly identical to the MTF of the wavefront-optimized AcrySof IQ Monofocal IOL; therefore, contrast sensitivity is not lost to any significant degree. In the clinical trial that led to its FDA approval, ReSTOR +2.5 with the ACTIVEFOCUS design delivered comparable quality contrast sensitivity as the AcrySof IQ Monofocal IOL. In addition, patients binocularly implanted with the lens achieved uncorrected and best-corrected distance visual acuity similar to monofocal control subjects.

In my experience, the ACTIVEFOCUS design has resulted in patients being much more satisfied with their postoperative vision even if the surgery doesn’t result in a perfect plano refraction. I have found that any degradation of vision resulting from a missed target is much less significant as it is a much more forgiving lens. In my experience with other diffractive IOLs, missing the plano target by 0.5D sphere or 0.75D cylinder could reduce visual acuity from 20/20 to 20/60 or 20/70. With the ACTIVEFOCUS optical design, the same patient is more likely to have 20/40, rather than 20/20, visual acuity and have few or no complaints about his or her vision. Now surgeons have access to the ACTIVEFOCUS optical design in the ReSTOR +2.5D toric multifocal IOL, which will allow us to address sphere, toricity, and presbyopia at the same time and will be my first choice for premium lens patients who have significant levels of astigmatism.

Reason #3: Flexibility for Meeting Patients’ Vision Goals
A common strategy among surgeons using IOLs with the ACTIVEFOCUS design is to implant the lens in the patient’s first operated eye (See “Dominant or Non-dominant Eye?” on page 3) and evaluate the result before choosing a lens for the second eye. I, too, prefer to know the result in the first eye before performing surgery on the second eye. Most of my patients with active lifestyles — those who play sports, want to continue to drive at night, use their laptops and have a social life — know that they want to be as close as possible to emmetropic at distance. If I happen to miss the target with the first eye, I can remedy it by targeting the second eye differently. Patients experience the full visual benefit of surgery once both eyes are done. In addition, the potential to either use the ReSTOR +2.5D IOL in both eyes or the +2.5D IOL in the first eye and the ReSTOR +3.0D IOL in the second eye affords maximum flexibility for meeting patients’ vision goals.
After I implant the ReSTOR +2.5D IOL with the ACTIVEFOCUS design in the first eye:

- If the patient is happy with the distance vision, I use the ReSTOR +3.0D IOL in the second eye to enhance the range of vision by providing “casual near ability.” (See “Setting Expectations,” on page 4.) For the majority of my patients, I use this combination approach. They achieve crisp distance vision, most of them report little or no significant visual disturbances, and a good range of vision.

- If the refraction is -0.50D, and the patient desires an improvement in distance vision, I use the ReSTOR +2.5D IOL for the second eye, but I don’t use the IOL Master choice for plano. Instead, because I can expect healing and effective lens position to be the same in the second eye as it was in the first, I use a lower-power implant to achieve plano. If the patient desires improvement at near, I use a ReSTOR +3.0D IOL in the second eye.

- If the refraction is +0.50D and the patient isn’t completely satisfied, but has no dysphotopsias, I consider the +3.0 IOL targeted for plano for the second eye. The +2.5D IOL may provide a near focal point too far out for the patient’s liking, and the +3.0D IOL enhances the near ability.

- If the refraction is +0.50D, or astigmatism remains, and the patient complains of glare, I use a +2.5D IOL targeted for plano in the second eye and expect binocular summation to alleviate the symptoms.

- If the refraction is plano, but the patient complains of glare or halos, I use the +2.5D IOL targeted for plano in the second eye and expect binocular summation to work its magic.

**Quality-of-vision enhancements by design**

**Simulated headlight images**

*Pinhole images of AcrySof® using the 02 μm SA Modified ISO model eye and a 5-mm pupil at the IOL plane.

Data and images provided by Alcon Laboratories, Inc.; Alcon Data on File

**Figure 1.** This is a representation of the appearance of headlights through the AcrySof IQ ReSTOR +2.5 D IOL and the AcrySof IQ Monofocal IOL.

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**Dominant or Non-dominant Eye?**

Many surgeons prefer to implant the AcrySof IQ ReSTOR +2.5D IOL with the ACTIVEFOCUS design in the patient’s dominant eye. I take a different approach. I perform the patient’s first cataract surgery on the worse eye, whether or not it’s the dominant one. This makes more sense to me for two reasons.

1) Patients want to begin seeing better as soon as possible, and 2) cataract patients tend to be older and no longer accommodating: therefore, eye dominance is fluid. With an artificial IOL in place, a non-accommodating patient will use whichever eye is better suited for the task at hand. We see with our brain, and the brain figures out which eye is best for a given task and moves back and forth between eyes as necessary.

The practice of correcting the dominant eye for distance started when we learned that eye dominance did matter for LASIK patients, who tend to be younger than cataract patients and still accommodating. They do better using the dominant eye for distance vision. However, again, this isn’t a factor for non-accommodating patients who are receiving fixed lenses. They’ll switch between eyes as needed, just as we see them do when they have, for example, monofocal IOLs set for monovision.
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Setting Expectations
As with any presbyopia-correcting lens, success with the AcrySof IQ ReSTOR +2.5D IOL with the ACTIVEFOCUS design depends quite a bit on properly setting expectations. I start by making sure patients understand that our primary priority is safely removing the cataract to create a clear optical pathway. Our goal is to remove the clouded lens and replace it with a clear one. This sets up a low hurdle for me to clear with regard to refractive outcome.

Next, most of my patients seeking some level of spectacle independence after cataract surgery want to keep their good distance vision, and I can tell them with confidence that it’s possible. However, I ensure that they know they may not achieve their best distance vision until after we operate on the second eye. Not every eye heals the same, which means effective lens position may deviate from the average. We may have to utilize the second-eye surgery to compensate for that.

Finally, while the goal is to provide a broader range of vision than a monofocal lens can provide, I temper enthusiasm in this area. I don’t tell patients they’ll have great close-up reading ability. Instead, I explain that they’ll have what I call “casual near ability.” They won’t have to hassle with reading glasses for every near and intermediate visual task, for example, when they need to sign a credit card receipt or use the computer. But they’ll likely need to use the readers to see small print, such as on a medicine label or in a magazine. All of my patients have been very happy with this scenario. In general, they achieve the best near vision when I place an AcrySof IQ ReSTOR +2.5D IOL with ACTIVEFOCUS in one eye and an AcrySof IQ ReSTOR +3.0 IOL in the other. They’re thrilled they don’t have to fumble for reading glasses when they’re on the move, and they don’t mind using them in predictable locations, such as for reading a book on the couch.

More Patients Can Benefit
Given the excellent distance vision and quality range of vision the ACTIVEFOCUS design provides, it’s a great choice for:

- younger, active cataract patients who perform many activities that require good distance vision
- patients who do a great deal of work on computers. Many prefer to view the screen at a distance of about 20 to 22 inches, and the lens has a near focal point of 21 inches.
- patients, such as those with mild dry eye or early AMD, in whom loss of contrast with other presbyopia-correcting IOLs would be worrisome
- patients in whom dysphotopsias would be a significant concern, such as pilots, truck drivers, or engineers. While I may be cautious about recommending this lens for a commercial airline pilot, I’ve used it for several pilots for whom flying is more of a hobby.
- patients who want a range of vision but want to avoid a multifocal IOL because they have read about halos and rings on the Internet. I show these patients a representation of the appearance of headlights through the AcrySof IQ ReSTOR +2.5D IOL and the AcrySof IQ Monofocal IOL. I also educate patients about the benefits of the ACTIVEFOCUS design. I also explain to this group of patients that some of the ReSTOR information on the Internet is quite old and predates the advancements with the ACTIVEFOCUS design.
- patients who have previously had LASIK, provided their level of higher-order aberrations isn’t too high. Unless the goal of the procedure was to correct extreme nearsightedness, or it was a now-outdated procedure resulting in a small optical zone, the ReSTOR +2.5D IOL with ACTIVEFOCUS design has been used in my practice with great success in former LASIK patients. The aberrations on the cornea may even help to provide better-than-expected near vision due to added depth of field.

A Range of Vision With Uncompromised Distance
Prior to the availability of the ACTIVEFOCUS design, implanting a diffractive lens to give patients a range of good vision meant sacrificing best potential distance vision. With this more advanced option, with contrast sensitivity comparable to the AcrySof IQ monofocal, this concern goes away, and my patients and I couldn’t be happier about it.

References
3. AcrySof® IQ ReSTOR® +2.5D Multifocal IOL Directions for Use.
When we think of correcting presbyopia with cataract surgery, we have tended to focus on near vision. After all, that’s the problem with presbyopia. However, in my experience, presbyopic patients also value intermediate and distance vision, perhaps more than ever given their likelihood to be tech-savvy and to have active lifestyles. While I’ve been a believer in multifocal IOL technology since its debut, I hadn’t been using it in patients who wanted excellent distance vision. The AcrySof IQ ReSTOR +2.5D IOL with ACTIVÉFOCUS design (Alcon) has completely changed this. I wholeheartedly recommend this lens for patients who want excellent distance vision, and I don’t hesitate to recommend it for those who also want to see the computer screen without eyeglasses. It has expanded the pool of patients I consider potential candidates for a premium lens in another significant way as well. I no longer automatically disqualify patients only because they’ve previously undergone LASIK. In fact, I recently used the lens in a post-RK patient who experienced a great outcome.

Why the ACTIVÉFOCUS Design Makes a Multifocal IOL Suitable for More Patients

ReSTOR +2.5D with the ACTIVÉFOCUS design may be suitable for more patients than other presbyopia-correcting IOls because the center of the lens is dedicated 100% to distance vision (Figure 1), providing comparable contrast sensitivity comparable to the AcrySof® IQ IOL.

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**Figure 1. Designed for Distance Vision**

1. AcrySof® IQ ReSTOR® +2.5D Multifocal IOL Directions for Use
2. Alcon Data on File. (11 Apr 2016)
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corresponding sensitivity to a monofocal lens.\textsuperscript{1-3} Seven gradual steps in the diffractive portion of the optic produce balanced performance at near and intermediate focal points. At the same time, a large peripheral zone allocates more light to the distance focal point at every pupil size, especially in mesopic conditions. Light distribution through a 3.0-mm pupil is 69.4\% for distance and 18.0\% for near, for a total of 87.4\%.\textsuperscript{3}

I was the first surgeon in Utah to implant the AcrySof IQ ReSTOR +2.5D IOL with the ACTIVEFOCUS optical design and I’ve never looked back. The three cases below illustrate the outcomes I’ve been able to provide for my patients. All three of these patients had corneal astigmatism, and two of the patients had previously undergone LASIK. I managed the astigmatism with incision placement and limbal relaxing incisions created with a femtosecond laser. For the post-LASIK patients, I used the HICSOAP nomogram. For all three patients, I used my usual surgeon-adjusted Holladay 2 IOL formula and further refined the lens choice with intraoperative aberrometry (ORA, Alcon). The refractive outcomes here reflect the patients’ vision after surgery in both eyes, with time in between. In all three cases, I used my preferred refractive strategy of implanting the dominant eye with ReSTOR +2.5D with ACTIVEFOCUS design and the non-dominant eye with the AcrySof IQ ReSTOR +3.0D IOL. In my hands, this leads to the widest range of high-quality vision from near to distance.

**Case 1**
A 61-year-old male presented with complaints of worsening vision, both at night and during the day. He noted that reading was difficult and his job required long hours working on a computer, causing headaches. In 2005, he had undergone LASIK with monovision, with his left eye corrected for near.

Prior to cataract surgery, his visual acuity (VA) without correction was 20/40 OU. Best-corrected visual acuity (BCVA) was 20/30 OU (with glare 20/60 OU). Except for 2+ nuclear sclerotic cataract OU, his exam was unremarkable. Both LASIK flaps were clear and well-centered.

In two uncomplicated cataract surgeries, the patient received the ReSTOR +2.5D IOL with the ACTIVEFOCUS design in his dominant right eye and an AcrySof IQ ReSTOR +3.0D IOL in the left eye.

Thirty days after his second surgery, he was extremely happy with his uncorrected postoperative vision, which is 20/25 OU at distance, J1+ at near, and 20/20 at intermediate.

**Case 2**
A 62-year-old female presented complaining of difficulty driving, watching TV, and reading. She noted that she uses the computer for several hours each day and is a heavy reader. She had LASIK in 2000.

Upon examination, the LASIK flap in each eye was clear and well-centered. A 2+ nuclear sclerotic cataract and cortical changes were present OD, and a 1+ nuclear sclerotic cataract with cortical changes was present OS. Uncorrected VA was 20/80 OD and 20/30 OS. BCVs measured 20/40 OD and 20/25 OS (with glare 20/100 OD and 20/30 OS). The exam was otherwise unremarkable.

The patient received a ReSTOR +2.5D IOL with the ACTIVEFOCUS design in her dominant right eye and an AcrySof IQ ReSTOR +3.0D IOL in her left eye. I also performed a LASIK “touch-up” to treat residual astigmatism. Thirty days later, this patient was extremely happy with her vision. She sees uncorrected 20/20 OU at distance, J1+ at near, and 20/20 at intermediate.

**Case 3**
A 66-year-old female patient presented with complaints of difficulty driving at night, glare, and difficulty watching TV. She also reported being an avid reader and having trouble reading even with her glasses. She’d had no prior eye surgery.

Her examination revealed 2+ nuclear sclerotic cataract in both eyes, uncorrected vision of 20/30 OU (with glare 20/60 OU), and no improvement with correction.

After uncomplicated surgery in the right (dominant) eye, which received ReSTOR +2.5D with the ACTIVEFOCUS design, and in the left eye, which received an ReSTOR +3.0D IOL, this patient’s uncorrected vision was a very satisfying 20/20 OU at distance, J1 at near, and 20/20 at intermediate.

“I focus my education and expectation-setting on what [patients] do care about, which is their results.”
— MATTHEW D. HAMMOND MD, FACS, PCEO
Discussing the ACTIVEFOCUS Difference With Patients

As these three cases show, the strategy of implanting the dominant eye with the ReSTOR +2.5D with the ACTIVEFOCUS optical design and the non-dominant eye with the ReSTOR +3.0D IOL produces a great range of vision that is highly satisfying for patients. Most of my patients report being glasses-free approximately 80% of the time. Because this point has held true consistently, I include it in my preoperative discussion with my patients who qualify for this IOL. I also make sure they understand this also means approximately 20% of the time they may need glasses for some near vision tasks. I also discuss with my patients the potential for visual disturbances due to the multifocality of the IOL; however, I am happy to report very few complaints about halos and glare with the ACTIVEFOCUS design.

In my experience using presbyopia-correcting lenses, I’ve learned that patients aren’t interested in the technical aspects of IOLs. As such, I focus my education and expectation-setting on what they do care about, which is their results — in other words, how they will see after surgery. I make my IOL recommendation based on what they do in their daily lives. When the choice is the ReSTOR +2.5D IOL with the ACTIVEFOCUS design, I explain that we’ll insert in their dominant eye a lens that will give them sharp distance vision and good computer vision. (This is something I hadn’t been able to say about other presbyopia-correcting lenses.) I explain that in the other eye, we’ll insert a lens that will give them good distance vision, not quite as good as the first eye, which is intentional, but very good reading vision. And without necessarily using the technical term binocular summation, I let them know that with both eyes open, the eyes will work together, and they’ll experience the full range of vision. It’s important, too, to ensure that patients understand they may not experience the full benefits of their cataract surgery until both eyes are done. I want them to know from the start that it’s a process. For example, I inform patients who are having their non-dominant eye operated on first that their distance vision may be a bit “smudgy” until we do the second eye. And if I expect a patient to have residual astigmatism after femtosecond laser LRIs, he or she will be expecting a post-cataract surgery LASIK or PRK to address it. In addition, we now have the option of using the ReSTOR +2.5D multifocal toric IOL with the ACTIVEFOCUS optical design.

In addition, we discuss the potential for glare or halos at night, although most of my patients who experience these optical effects at all mostly stop reporting them after 3 to 6 months. While the ACTIVEFOCUS design hasn’t made glare and halos completely an issue of the past, when they do occur, they don’t seem to be as life-altering as they once were. Another key explanation I provide for my patients is how postoperative vision is about points of focus rather than zones of focus, meaning they have to learn to hold objects and reading material at the distance(s) that are comfortable for them.

Happy Patients, Happy Surgeon

In my experience, the chair time associated with IOLs with the ACTIVEFOCUS design is less than with other presbyopia-correcting lenses. It’s still necessary to screen patients with unstable refractions, highly aberrated corneas or other pathologies, a high level of coma, or a high angle kappa, and my discussions with patients still include topics such as the potential for nighttime halos and the importance of good lighting at home. However, because this lens has been so successful for my patients, the entire process is simply smoother for them and me. The support provided by the lens manufacturer has made my life easier as well. Several hours of education were provided for my surgical coordinator; therefore, she understands the lens. That knowledge, along with my enthusiasm for the lens, makes it easy for her to conduct her discussions with patients, too. On my first day using the lens, two company representatives were on hand all day to ensure everything went well. Using an IOL with the ACTIVEFOCUS design has gone very well for me, my staff and our practice, and expanded the number of patients who can benefit from refractive cataract surgery, from that day forward.

References

2. AcrySof® IQ ReSTOR® +2.5D Multifocal IOL Directions for Use.
3. Alcon Data on File (11 Apr 26).

See Important Product Information about the AcrySof® ReSTOR® Multifocal IOLs on page 15
The AcrySof® IQ ReSTOR® family of lenses advances technology with the ACTIVEFOCUS™ design

BY DONALD N. SERAFANO, MD

IOLs for Today’s Cataract Surgery Patients

With a central portion 100% dedicated toward distance, the AcrySof IQ ReSTOR +2.5D IOL with ACTIVEFOCUS design moves refractive cataract surgery forward so that it can meet the vision needs of an increasing number of patients. Based on its optical design — an aspheric apodized diffractive surface with a distant-dominant refractive zone at the center — the lens provides a range of functional vision from distance to near and distance vision comparable to a monofocal.¹ These features make it suitable for both presbyopes and non-presbyopes who are motivated to reduce their dependence on eyeglasses and contact lenses.

In my practice, the ReSTOR +2.5D IOL with the ACTIVEFOCUS optical design allows me to meet a fuller spectrum of patients’ vision goals. Having it as a potential choice in addition to the AcrySof IQ ReSTOR +3.0D IOL enables fine-tuning of patient satisfaction.

Matching Patients’ Goals with Solutions

Because of the uncompromised distance vision the lens provides, I’m very comfortable implanting it in the dominant eye of my athletic, active patients, many of whom are golfers, sailors, cyclists, or actors. Previously, I didn’t consider a multifocal in the dominant eye to be an ideal choice due to the potential for glare and halo and/or reduction of contrast sensitivity. What I had been doing instead was placing a monofocal IOL for distance in the dominant eye, and if the patient wanted “social reading” ability, e.g., seeing the cell phone, or eating a meal without glasses, I’d place a multifocal in the non-dominant eye. While this was effective, the patient’s range of vision wasn’t necessarily maximized. Because the ReSTOR +2.5D IOL with the ACTIVEFOCUS design is available, virtually taking away distance vision complaints I typically used to hear, it’s a great choice for the dominant eye, which sets the stage for addressing each patient’s personal priorities more optimally.

I most commonly use ReSTOR +2.5D with the ACTIVEFOCUS design in the dominant eye with the AcrySof IQ ReSTOR +3.0D IOL in the fellow eye. I’ve found that it provides the best range of vision without distance vision complaints. Nuijts and colleagues² showed that, with this approach, there is no compromise of the distance vision defocus curve and patients also achieve good intermediate vision (at around 26 inches) and good reading vision (at 16 to 20 inches) (Figure 1).

I have also implanted ReSTOR +2.5D IOLs with the ACTIVEFOCUS design bilaterally, targeted for plano, with good results. This approach is best when distance vision, or intermediate and distance vision, is the priority for a patient.

I recently implanted bilateral ReSTOR +2.5D IOLs with the ACTIVEFOCUS design for a patient who is an actor but also spends all day using a computer because he’s an engineer. He prefers not to have a refractive difference between his two eyes and he doesn’t mind using reading glasses for closer tasks. He’s very happy with his bilateral ReSTOR +2.5D with ACTIVEFOCUS, and is also a good example of how the lens has improved the intermediate vision that can be achieved with a multifocal. Good intermediate vision is an important consideration for many of today’s cataract surgery patients, an insight drawn from the 2016 ASCRS Clinical Survey.³ Respondents to the survey reported that “on average, presbyopia-correcting IOL patients were less satisfied with intermediate vision than near and distance vision.” For individualized results for patients whose absolute priority is near vision, I recommend bilateral AcrySof IQ ReSTOR +3.0D IOLs.

Patient Selection Remains Important

Early in the era of presbyopia-correcting IOLs, it became clear that a thorough understanding of patients’ personal
postoperative vision goals was necessary for success. Both surgeon and patient had to understand what was desired, what was obtainable, and what wasn’t, and they had to consider the patient’s lifestyle. Today, while the evolution in multifocal lens technology, such as the advanced ACTIVEFOCUS lens design, has provided more ways to individually tailor a case and reduce the incidence of post-op visual disturbances, patient education and expectation-setting still matter. It’s something I happen to enjoy. I like discussing with patients what they want, analyzing the situation, and coming up with the best recommendation. By the time I leave the room, the patient and I have decided on the best refractive approach to their cataract surgery. I convey the quick summary to the surgery scheduler, and she goes over further details and dates. The time I spend with each patient has been key to the success of premium IOLs in my practice. Patients always understand what I can and can’t deliver, so it’s rare to have unexpected results, an unhappy patient, or an unexpected need for a secondary intervention.

While I’m discussing with a patient what he or she does for a living and with free time, I review the auto-refraction data, particularly the automated keratometry values. Astigmatism is an important aspect of patient selection, as it always has been with presbyopia-correcting IOLs. It will be a variable much easier to address now that the AcrySof IQ ReSTOR Multifocal Toric IOLs — both +2.5D and +3.0D — have received FDA approval (more on that later). For nearly 100% of my ReSTOR IOL patients, I use the VERION Image Guided System and the LensTx laser (Alcon). Also, I don’t recommend a presbyopia-correcting IOL to patients unless the health of their eye indicates a good prognosis, i.e., no corneal or macular pathology.

With Each Innovation, My Use of ReSTOR IOLs Increases

Since I began using the ReSTOR +2.5D IOL featuring the ACTIVEFOCUS design, the percentage of my patients receiving a ReSTOR lens has increased by 5%. When the recently FDA-approved AcrySof IQ ReSTOR +3.0D Multifocal Toric and the AcrySof IQ ReSTOR +2.5D Multifocal Toric IOLs make their way into my practice, I expect my ReSTOR volume to increase by an additional 10%. IOLs with the ACTIVEFOCUS design deliver excellent distance vision, minimal to no vision disturbances, and a range of good vision for my patients, a combination of benefits that is ideally suited for the significant number of them who lead active lifestyles.

References
1. AcrySof® IQ ReSTOR® +2.5D Multifocal IOL Directions for Use.
Having been the first doctor in Tallahassee to implant a ReSTOR multifocal IOL (Alcon) many years ago, I’ve accumulated much experience working with this lens platform. All of the ReSTOR IOLs, which share the same proven material, mechanics, and optics, are designed to provide presbyopic patients with a range of vision. Most recently, I was the first surgeon in my area to implant the AcrySof IQ ReSTOR +2.5D multifocal IOL with the ACTIVEFOCUS optical design, and this lens has been one of the two best things to happen for my practice in quite some time.

The ACTIVEFOCUS lens design dedicates the center optic to distance vision. It allocates more light than other diffractive presbyopia-correcting lenses to the distance focal point at most pupil sizes, especially in mesopic conditions. The result is excellent, sharp distance vision, the same quality contrast sensitivity as the AcrySof IQ Monofocal IOL, and near (40 cm) and intermediate (53 cm) vision two lines better than the monofocal.1 With fewer defractive zones than other ReSTOR models, the ACTIVEFOCUS design offers better nighttime vision and improved computer-distance focusing as well. It truly creates a “wow” factor for my patients. Importantly, I have yet to have a patient complain of any halos or “rings.”

The Importance of Intraoperative Aberrometry

I mentioned that the ACTIVEFOCUS design has been one of the two best things to happen for my refractive cataract surgery practice in quite some time. The other very welcome advance has been my use of intraoperative aberrometry. The ORA SYSTEM with VerifEye+ Technology (Alcon) allows me to refine IOL power in real time. It has not only reduced my IOL exchange rate to zero but also has enabled me to achieve 20/20 distance visual acuity in every eye where it’s possible without fail. Patients pay more for presbyopia-correcting lenses and outcomes, making it imperative that I deliver this level of results.

I enter the OR for each case with my preoperative lens calculations as I have always done, but when the patient is aphakic, I measure the eye with the ORA SYSTEM. In all but the occasional case, I implant whichever IOL power the system recommends for achieving plano. It’s actually intraoperative aberrometry that gives me the confidence to aim for plano. With traditional mathematical IOL calculations, the standard deviation is an issue. Once a surgeon performs a certain number of procedures, some patients inevitably will be overcorrected and some will be undercorrected. A typical fix for this has been to intentionally shift the IOL power toward slight myopia to avoid a hyperopic surprise. Unfortunately, the effect of the fix is not allowing everybody to achieve perfect plano. The ORA SYSTEM, on the other hand, allows just that. It makes IOL power choice specific to the individual patient, without using formula math, and the results are outstanding.

The ORA SYSTEM (Figure 1) also allows fine-tuning of cylinder power and IOL alignment in real time, which means it’s also an important tool when I’m implanting the AcrySof IQ ReSTOR Multifocal Toric IOL. The potential to change the planned IOLs does create a need to have multiple lens options at hand. This can detract from efficiency, in particular if ASC policy dictates, as ours does, that only one lens at a time can be in the OR. Our solution was to move our IOL stock into cabinets as close to the OR as possible.

Dr. Weaver practices with Eye Associates of Tallahassee in Florida, where he specializes in refractive cataract surgery with premium implants. He’s also a clinical professor for the Florida State University School of Medicine and Tallahassee Memorial Hospital Family Medicine and Internal Medicine program. Dr. Weaver is a paid consultant to Alcon.
Nuances in My Approach to Patient Selection and Education

Another advantage of the ACTIVEFOCUS design is a somewhat simplified patient selection and education process. Given my lack of concern about potential postoperative distance vision issues, fewer patients are eliminated as candidates for a presbyopia-correcting lens. I’m still cautious about recommending a lens in this category for patients with a Type-A personality, but I have used the ReSTOR +2.5D IOL with ACTIVEFOCUS design in several because they were highly motivated to obtain a range of vision and they fully accepted the risks. In addition, while I wouldn’t fault another surgeon for using the ReSTOR +2.5D IOL with ACTIVEFOCUS design in a patient who makes his or her living flying a plane or driving a truck — the outcomes have been that good — my personal philosophy is to err on the side of caution. I say to these patients, “Why would you put your livelihood at risk, regardless of how low that risk might be?” I have, however, used the lens in patients for whom driving at night is important but not their source of income.

I also ensure that patients understand that the ACTIVEFOCUS design doesn’t specifically provide the best extremely near vision, such as what’s needed to read a medicine bottle label. While it offers functional near vision, much better than a monofocal, other lenses in the ReSTOR family might be best if extremely close-up vision is the main goal. I tell them they’ll have great vision at intermediate and distance with the ReSTOR +2.5D IOL, with the lowest risk of visual disturbances, but they may need reading glasses for some near tasks. As long as they know this up front, they’re very satisfied postoperatively. I take a one-eye-at-a-time approach. I implant the dominant eye with the ReSTOR +2.5D IOL with ACTIVEFOCUS design and then evaluate the patient’s vision post-operatively.

Having this option has resulted in great outcomes in my practice.

When it comes to astigmatism, because the center optic of the AcrySof IQ ReSTOR +2.5D IOL with ACTIVEFOCUS performs like a monofocal, the lens is more forgiving than other presbyopia-correcting IOLs that include multifocality. Still, given the importance I place on achieving minimal residual astigmatism for all of my cataract surgery patients, I limit use of the AcrySof IQ ReSTOR +2.5D IOL to eyes with less than 1.0D of cylinder. I am certainly excited about the FDA approval of the AcrySof IQ ReSTOR +2.5D multifocal toric with ACTIVEFOCUS optical design so I can now offer this technology to those with astigmatism.

Mix and Match or Mini-Monovision?

I estimate that I target both eyes for plano in 90% to 95% of my patients who receive bilateral ReSTOR +2.5D with the ACTIVEFOCUS design. As I’ve said, they’re a very happy group of patients. However, while distance vision is usually their top priority, they often would like to have better near vision than bilateral ReSTOR +2.5D IOLs targeted for plano can provide. I’ve found I can deliver this, but I accomplish it differently than most of my colleagues. Whereas most other surgeons currently prefer to implant the fellow eye with an AcrySof IQ ReSTOR +3.0D IOL in this scenario, I prefer to use the ReSTOR +2.5D with the ACTIVEFOCUS design in both eyes to create “mini-monovision.” Following surgery on the first (dominant) eye, if a patient expresses a desire for more near vision, I use ReSTOR +2.5D in the second eye targeted for -0.50D. This enhances the range of near vision, with a focal point not as far out as would be expected with contact-lens or monofocal-IOL monovision. I prefer this approach.

> Continued on page 14
Not Using Multifocal IOLs? This Lens Is a Good Start

Notes from an early adopter of multifocal technology

BY JOSEPH L. PARISI, MD, FRCSC, FACS

I was an early adopter of multifocal IOLs, and our practice has experienced tremendous growth as a result of becoming accustomed to deploying the technology. However, some surgeons who tried lenses in this category when they were first introduced were unsatisfied with the results so they stopped using them. The evolution of the options that has taken place in the intervening years makes this a good time to reconsider. For example, the AcrySof IQ ReSTOR +2.5D multifocal IOL with the ACTIVEFOCUS design (Alcon) is a much different lens than previous-generation multifocals. It’s much easier to use and provides good results. Here, I explain why and share strategies that have helped our practice succeed with IOLs designed to give patients reduced dependence on glasses.

How the ACTIVEFOCUS design is different.
This lens fits under the umbrella of low-add multifocals, but it stands out because of the improved quality of distance vision it provides, something that had been lacking with earlier options. The central optic is 100% distance-directed, essentially the same as a monofocal. Outside of that area, there are fewer diffractive steps and they are farther apart. The area of apodization is smaller, and the peripheral area of distance focus is larger. All of these changes combine to produce excellent distance vision and reduce the impact of multifocality on quality of vision. The near-vision advantages of multifocality are achieved with uncompromised distance vision for sharp, clear images.

Patient selection and education. In our practice, everyone is a candidate for a multifocal IOL until proven otherwise. Ideal candidates for the ReSTOR +2.5D IOL with the ACTIVEFOCUS design are those who have a distance-dominant lifestyle but also want to have the decreased spectacle dependence that comes from having some multifocality. As with any advanced IOL, patients shouldn’t have any ocular pathology that could interfere with best possible postoperative vision, such as moderate or severe glaucoma that compromises contrast sensitivity, macular degeneration, epiretinal membrane, or corneal pathology. In some cases, dry eye should be addressed prior to surgery to help ensure the best outcome. With prior lenses, it was necessary to reduce corneal astigmatism to significantly low levels, ideally less than 0.50D. However, with the FDA approval of the ReSTOR +2.5D toric IOL with the ACTIVEFOCUS design, we will have a chance to address any patients with astigmatism.

Also, patients who may receive the ReSTOR +2.5D with the ACTIVEFOCUS design should be accepting of the occasional need for reading glasses, not looking for a guarantee of full-time spectacle freedom. They should have realistic expectations as to how the lens will function. The latter includes an awareness of the potential for glare and halos, i.e., rings around lights, that they may notice postoperatively. These optical effects are less common with the ACTIVEFOCUS design than they are with some other advanced lens designs, but some people do notice them. I show every patient a plastic model of the lens that has the diffractive steps/rings on it. I tell them this is how the lens is designed; when they look at a light through it, it’s normal to see some rings. Based on my experience with this lens, I feel confident telling patients that even if they’re conscious of the rings, they’ll most likely forget about them after a while. When patients know preoperatively they may see some rings, they don’t consider it a complication, and it certainly saves on subsequent chair time.

We begin by providing patients with information about cataract surgery before they come in for their consultation. Via snail mail or e-mail, we send them animations and registration materials. We let them know what to expect at their consult, that we’ll be performing tests to help plan their surgery, and what types of IOLs we offer.
### Clemson Eye

**Lifestyle Questionnaire**

**Your Information**

What is your name?

**Visual Functioning**

Do you have difficulty, even with glasses, with the following activities?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading small print, pill bottle labels, newspapers, books or the telephone book?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognizing people when they are close to you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeing steps, stairs or curbs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading traffic signs, street signs, or store signs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doing fine handwork like sewing, knitting, or carpentry?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing checks or filling out forms?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Playing games such as bingo, dominoes or card games?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaving or putting on your makeup?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooking?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Symptoms**

Have you been bothered by:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor night vision, color vision or double vision?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hazy and/or blurry vision?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeing well in poor or dim light?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you currently drive a car?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeing rings or halos around lights at night while driving?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glare caused by headlights or bright sunlight?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you do a lot of night driving?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On a scale of 1-5 (where 1 is none and 5 is a great deal), how much difficulty do you have driving:

<table>
<thead>
<tr>
<th>Difficulty</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Lifestyle Considerations**

What is or was your occupation?

List your favorite hobbies, sporting / recreational / outdoor activities?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
<th>Somewhat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you use a computer frequently?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you do a lot of close detailed work?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you ever tried monovision contact lenses?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If “yes”, did/do you like it?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you wear progressive/no-line bifocals now?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over your lifetime, have you generally been satisfied with your vision with prescription glasses?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If “no”, please explain:

Would you like to have, without glasses, good distance and near vision in good light, even if you might see some rings around lights at night? Yes | No | Maybe

Do you have any specific vision concerns?

Cataract surgery can be safely postponed until you feel you need better vision. If stronger glasses will not improve your vision, and if the only way to see better is cataract surgery, then do you feel your vision problem is bad enough to require cataract surgery now? Yes | No

Name (print): __________________________ Date: __________________________

Signature: __________________________

**Figure 1.** To streamline the patient selection process, we provide a lifestyle questionnaire.
To streamline the patient selection process and facilitate our discussions with patients, we include a lifestyle questionnaire (Figure 1) with the information we send out. It helps us to zero in on a number of factors, including whether patients have a near-dominant or distant-dominant lifestyle and whether postoperative glare or halo would be considered disturbing or tolerable.

When patients arrive at the office, they see a pre-evaluation counselor who talks about how surgery will be performed and provides more information about the IOL options. They also watch a video that reinforces the information. By the time they see me for the exam, they’ve already learned a great deal. After the exam, I give my IOL recommendation and we discuss it further if necessary.

While the preoperative patient education is crucial, it shouldn’t end after surgery. In addition to making sure issues such as dry eye are in check, follow-up visits should be used to encourage patients and reinforce previously provided information as they work toward their vision goals.

Refractive strategy. For patients who ultimately choose the AcrySof IQ ReSTOR +2.5D IOL with the ACTIVEFOCUS design, my default refractive strategy is to use it bilaterally. I’ve never been a big fan of mixing different types of lenses, regardless of whether they’re multifocal or monofocal. My results have been best when the same lens is used in both eyes. Initially, I expected that I’d want to use the AcrySof IQ ReSTOR +3.0D IOL in the non-dominant eye of my ReSTOR +2.5D IOL patients to give them better near vision than bilateral ReSTOR +2.5D IOLs would provide. I did that in some cases, and it worked well. However, I found that the patients with bilateral ReSTOR +2.5D IOLs read very well, and I didn’t feel the need to introduce the ReSTOR +3.0D IOL, especially because the distance vision was superior with the ACTIVEFOCUS design of ReSTOR +2.5D IOL bilaterally.

That said, if a patient specifically prioritizes near vision over distance vision, I’m not averse to implanting the ReSTOR +3.0D IOL in the non-dominant eye, provided, of course, he or she meets all of the candidacy criteria. Finally, with range-of-vision lenses such as these, it continues to be important for the surgeon to individualize the A-constant for calculating IOL power and to ensure lens centration during surgery.

Surgeon confidence and enthusiasm. Few patients would choose an advanced IOL if they felt the surgeon didn’t have 100% confidence in it. Therefore, it’s important to convey confidence and enthusiasm about the IOLs we’re recommending. Your positive attitude will flow to staff members and the patients with whom they interact. Knowing that the ACTIVEFOCUS design truly does improve the options we can offer patients makes it easy to discuss it in a positive light. That, along with quality outcomes, never fails to feed into patient satisfaction and word-of-mouth referrals.

Visual acuity outcomes and patient satisfaction. We track all of our visual acuity results and survey all of our cataract surgery patients after their procedures to learn how they view their experience with us and the IOLs they received. In a series of 38 patients who received bilateral ReSTOR +2.5D IOL with the ACTIVEFOCUS design, binocular uncorrected distance visual acuity was 20/15 in 8%, 20/20 or better in 74%, and 20/25 or better in 100%. Binocular uncorrected near acuity (or best near acuity of either eye if binocular acuity wasn’t measured) was J1 in 42% of the patients, J2 or better in 60%, and J3 or better in 86%.

When the same group of patients was asked how they would rate their postoperative vision without glasses, 92.1% reported their distance vision (e.g., watching TV, driving) as good, very good, or excellent; 86.8% reported their intermediate vision (e.g. computer, cooking) as good, very good, or excellent; and 63.1% reported their up-close vision (e.g., reading the newspaper, books) as good, very good, or excellent.

We’ve been very happy with our outcomes and survey responses pertaining to the ACTIVEFOCUS design. I suspect that for any practice considering adopting or re-adopting multifocal lenses, this lens would be a good place to start and build success.

Uncompromised Distance Vision
>> Continued from page 11

mini-monovision strategy because even though the AcrySof IQ ReSTOR +3.0D is a very good lens, I want to do everything I can to lessen the occurrence of a patient experiencing excessive halos or nighttime glare.

A Winning Combination of Technologies
Overall, I find the ACTIVEFOCUS design to be “just what the patient ordered.” It’s a presbyopia-correcting lens that appeals to the large number of patients who want more usable near vision than a monofocal can provide but also want terrific intermediate and distance vision to support an active lifestyle. Patient reactions to this lens resemble the reactions of my LASIK patients: glowingly happy and hugging my neck post-op day 1. And it’s worth repeating that intraoperative aberrometry plays a role in producing those types of reactions time and time again.

Reference
1. AcrySof® IQ ReSTOR® +2.5D Multifocal IOL Directions for Use.
ORA SYSTEM® IMPORTANT PRODUCT INFORMATION

CAUTION: Federal (USA) law restricts this device to the sale by or on the order of a physician.

INDICATIONS: Federal (USA) law restricts this device to sale by, or on the order of, a physician.

INTENDED USE: The ORA SYSTEM® uses wavefront aberrometry data in the measurement and analysis of the refractive power of the eye (i.e. sphere, cylinder, and axis measurements) to support cataract surgical procedures.

CONTRAINDICATIONS: There are no known contraindications for this device.

WARNINGS AND PRECAUTIONS: The following conditions may make it difficult to obtain accurate readings using the ORA SYSTEM®:

- Post refractive keratectomy eyes might yield inaccurate refractive measurements.
- Significant central corneal irregularities resulting in higher order aberrations might yield inaccurate refractive measurements.
- Postoperative keratectomy eyes might yield inaccurate refractive measurement.
- The safety and effectiveness of using the data from the ORA SYSTEM® have not been established for determining treatments involving higher order aberrations of the eye such as coma and spherical aberrations.
- The ORA SYSTEM® is intended for use by qualified health personnel only.
- Improper use of this device may result in exposure to dangerous voltage or hazardous laser-like radiation exposure. Do not operate the ORA SYSTEM® in the presence of flammable anesthetics or volatile solvents such as alcohol or benzene, or in locations that present an explosion hazard.

ATTENTION: Refer to the ORA SYSTEM® Operator’s Manual for a complete description of proper use and maintenance, as well as a complete list of contraindications, warnings and precautions.

IMPORTANT PRODUCT INFORMATION FOR THE ACRYSO® IN RESTORE® FAMILY OF IOLs

CAUTION: Federal (USA) law restricts this device to the sale by or on the order of a physician.

INDICATIONS: The AcrySof® IQ ReSTOR® Posterior Chamber Intraocular Lens (IOL) is intended for primary implantation for the correction of aphakia secondary to removal of a cataractous lens in adult patients with and without presbyopia, who desire near, intermediate and distance vision with increased spectacle independence. The lens is intended to be placed in the capsular bag.

WARNINGS/PRECAUTIONS: Careful preoperative evaluation and sound clinical judgment should be used by the surgeon to decide the risk/benefit ratio before implanting a lens in a patient with any of the conditions described in the Directions for Use labeling. Physicians should target emetropia, and ensure that IOL centration is achieved. Care should be taken to remove viscoelastic from the eye at the close of surgery.

Some patients may experience visual disturbances and/or discomfort due to multifocality, especially under dim light conditions. As with other multifocal IOLs, visual symptoms may be significant enough that the patient will request explant of the multifocal IOL. Spectacle independence rates vary with all multifocal IOLs; as such, some patients may need glasses when reading small print or looking at small objects.

Clinical studies with the AcrySof® ReSTOR® lens indicated that posterior capsule opacification (PCO), when present, developed earlier in clinically significant PCO. Prior to surgery, physicians should provide prospective patients with a copy of the Patient Information Brochure available from Alcon for this product informing them of possible risks and benefits associated with the AcrySof® IQ ReSTOR® IOLs.

Studies have shown that color vision discrimination is not adversely affected in individuals with the AcrySof® Natural IOL and normal color vision. The effect on vision of the AcrySof® Natural IOL in subjects with hereditary color vision defects and acquired color vision defects secondary to ocular disease (e.g., glaucoma, diabetic retinopathy, chronic uveitis, and other retinal or optic nerve diseases) has not been studied. Do not resterilize; do not store over 45°C; use only sterile irrigating solutions such as BSS® or BSS PLUS® Sterile Intraocular Irrigating Solutions.

ATTENTION: Reference the Directions for Use labeling for a complete listing of indications, warnings and precautions.
Raise your expectations. Deliver theirs.

Now you can give your patients the best of both worlds with the first and only hybrid designed monofocal-multifocal IOL.

ACTIVE FOCUS
Optical Design

AcrySof.IQ ReSTOR. +2.5
PRESBYOPIA-CORRECTING IOL

See adjacent page for Important Product Information.