

# CRST

Cataract & Refractive Surgery Today

## THE CLAREON® PANOPTIX® IOL:

**Setting the Standard in Trifocal Technology**

With optimized material design and  
ENLIGHTEN® technology, spectacle independence  
at all distances is possible.



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Jennifer Loh, MD



Robert F. Melendez, MD, MBA



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In a candid roundtable discussion moderated by *Cataract & Refractive Surgery Today* (CRST), four renowned cataract and refractive surgeons—Dr. Neel Desai, Dr. Jennifer Loh, Dr. Robert Melendez, and Dr. Sheri Rowen—shared their best practices and clinical pearls from 5 years of experience using the Clareon® PanOptix® Trifocal Intraocular Lens (IOL) (Alcon Laboratories, Inc.) with their patients. Together, they explored the innovation, clinical outcomes, and transformative impact of this groundbreaking technology.

**Cataract & Refractive Surgery Today (CRST):** What do you perceive to be the benefits of Clareon® PanOptix® Trifocal IOL (Alcon Laboratories) versus other multifocal IOLs currently on the market?

**Robert F. Melendez, MD, MBA:** The Clareon® PanOptix® Trifocal IOL is one of the few true trifocal lenses that is currently available to the US market. With a

true trifocal IOL, complete spectacle independence can be achieved in more than 90% of my patients. I have been in practice for over 20 years, and PanOptix® is a lens I can rely on to offer clear vision at near, intermediate, and distance.<sup>1</sup>

**Neel Desai, MD:** What I have found remarkable is that Clareon® PanOptix® Trifocal IOL allows for the reliable delivery of true spectacle independence at all ranges—distance, middle, and near.<sup>2</sup> PanOptix® provides me the highest level of confidence that I am able to achieve spectacle independence at all ranges for my patients. The Clareon® PanOptix® Trifocal IOL has brought this promise to life, allowing us to be confident that we can meet the expectations of patients who are suitable candidates.

The Clareon® PanOptix® Trifocal IOL has allowed me to have a patient-centric, outcome-focused

discussion that is far more efficient for my patients and me.

**Jennifer Loh, MD:** The Clareon® PanOptix® Trifocal IOL allows for excellent intermediate vision. In my experience, the Clareon® PanOptix® Trifocal IOL provides good results in allowing patients to achieve quality vision at all three distances, optimizing intermediate vision for daily activities.

**Dr. Desai:** Alcon created ENLIGHTEN® Technology (Enhanced Light Energy), which enables the Clareon® PanOptix® Trifocal IOL to maximize light utilization to provide a broad and functional range of vision (Figures 1 and 2).<sup>2-4</sup> The older bifocal IOLs had a near focal point at 40 cm and a distance focal point of 100 cm and beyond. Trifocal technology introduced a new diffractive step for intermediate vision with a focal point of 80 cm. Unfortunately, 80 cm



**“ANOTHER ADVANTAGE TO THIS DIFFRACTIVE, TRIFOCAL TECHNOLOGY IS FEWER ISSUES WITH DYSPHOTOPSIAS, WHICH IN MY PRACTICE TRANSLATES TO MORE SATISFIED PATIENTS.” - Neel Desai, MD**

is too far to be useful for intermediate vision and too close to be useful for distance vision, essentially creating a “no man’s land.”

The Clareon® PanOptix® Trifocal IOL is perhaps best understood as a quadrifocal lens in which the first intermediate diffractive step is truncated to provide distance focus. That has the benefit of not only maintaining the near focal point at 40 cm, but also adjusting the added intermediate focal point to an optimized 50 cm, or approximately 24 inches, which is ideal for tasks such as working on a computer or looking at a car’s dashboard display.

**CRST: How does the Clareon® PanOptix® Trifocal IOL maximize light utilization to decrease pupil dependence?**

**Dr. Melendez:** The Clareon® PanOptix® Trifocal IOL has the largest diffractive zone of any multifocal IOL at 4.5 mm,<sup>5</sup>

which allows for less dependence on pupil size in different lighting conditions.<sup>5</sup> With the older multifocal IOLs, such as the AcrySof® ReSTOR® (Alcon Laboratories), patients’ near vision have depended more on the lighting conditions and pupil size.

**Dr. Desai:** The surface of the Clareon® PanOptix® Trifocal IOL, along with the equal light distribution, allows for less pupil-dependent vision. Twenty-five

percent of the light is allocated for near, 25% for intermediate, and 50% for distance vision, with a total light utilization of 88% at a 3-mm pupil size.<sup>2</sup> This all equates to less reliance on a patient’s pupil size compared to other IOLs.<sup>6</sup> Another advantage to this diffractive, trifocal technology is minimal issues with dysphotopsias, which in my practice translates to more satisfied patients.<sup>7</sup>

**Dr. Loh:** ENLIGHTEN® technology optimizes intermediate vision without compromising near and distance vision via a 4.5-mm diffractive zone, which reduces dependence on pupil size in different lighting conditions. This is important to our patients because, in the real world, they are subjected to different levels of light whether they’re outside, inside a room, or in a dimly lit restaurant. The refractive design of the lens and the optics lets 88% of light to transmit to the retina at a 3-mm pupil size.<sup>4</sup> When the pupil is smaller, we still want to have a high amount of light hitting the retina to allow good vision at all three different focal points. Each focal point has its unique profile in the retina that plays a key role in visual quality.

I feel confident when I’m recommending the Clareon® PanOptix® IOL for my patients that they will have good distance vision, which is mandatory for any patient who chooses a premium lens. I also feel confident knowing that their near vision will also be of high quality. With previous versions of multifocal lenses, it was always a concern for me that, while distance vision was

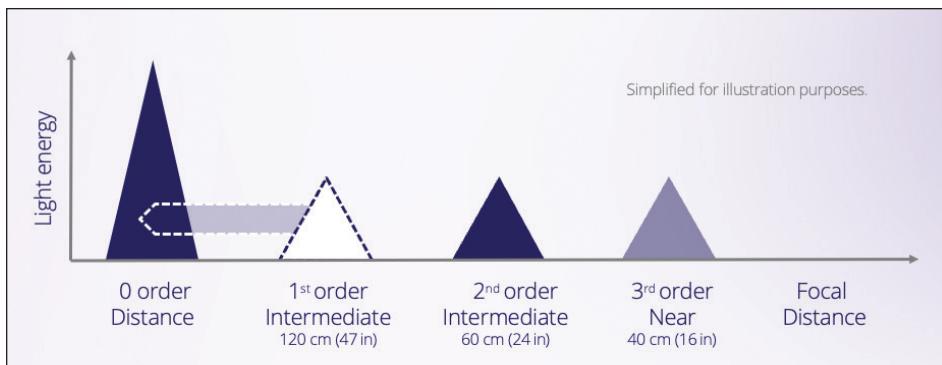


Figure 1. The Clareon® PanOptix® Trifocal IOL uses ENLIGHTEN® Technology, which includes an additional focal point at 120 cm to optimize intermediate vision without compromising near and distance visions.<sup>3</sup>

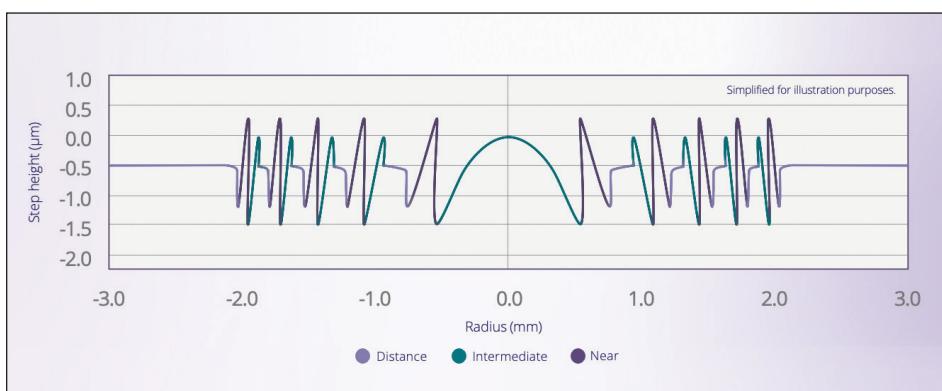


Figure 2. The surface profile of the Clareon® PanOptix® Trifocal IOL redirects light energy to distance viewing.<sup>4</sup>

# THE CLAREON® PANOPTIX® IOL: Setting the Standard in Trifocal Technology

good, the near vision would still be quite variable. For patients who choose a premium IOL over monofocal vision, the need to continue to rely on readers for near vision can be a big disappointment.

**CRST:** How does the Clareon® PanOptix® Trifocal IOL affect the predictability of postsurgical outcomes for patients with astigmatism?

**Dr. Melendez:** My colleagues and I published a study last year on the Clareon® PanOptix® Trifocal IOL that suggested that a trifocal toric IOL can provide excellent refractive and visual outcomes when implanted using femtosecond laser-assisted cataract surgery, swept-source OCT biometry, digital-image tracking, and intraoperative aberrometry technology.<sup>8</sup> We looked specifically at patients who had preoperative astigmatism and who underwent bilateral cataract surgery, and we evaluated their results at distance, intermediate, and near. Although this was a small sample of 40 eyes, it showed that using modern cataract surgical technology and the Clareon® PanOptix® Trifocal IOL provides consistent and reliable outcomes for patients with cataracts and astigmatism.

## PATIENT SELECTION AND EDUCATION

**CRST:** What are your criteria for patient selection for the Clareon® PanOptix® Trifocal IOL?

**Dr. Melendez:** In the past, the general thinking among cataract surgeons was that patients who are considered "Type A" would not be good candidates for a multifocal lens. However, I would argue against that, because these patients have spent time educating themselves about the benefits and side effects of the Clareon® PanOptix® Trifocal IOL and other IOLs. This provides me with an opportunity to have a good discussion and to compare and contrast the available lens options, whether monofocal or multifocal. It's critical to set expectations based on the goals of the patient and whether he or she

**“ MY APPROACH IS TO TREAT EVERY PATIENT AS A PANOPTIX® PATIENT UNTIL PROVEN OTHERWISE, BECAUSE EVERY PATIENT ULTIMATELY WANTS THE BEST QUALITY AND RANGE OF VISION AVAILABLE.” – Neel Desai, MD**

wants to be spectacle-independent after surgery with a full range of vision.

I have a simulation device that I use preoperatively with my patients to show them how they will see images with a monofocal versus a multifocal or the Clareon® PanOptix® Trifocal IOL.

**Dr. Desai:** I look for patients who have a healthy ocular surface and macula, a healthy optic nerve, and a controllable amount of astigmatism that can be addressed with the Clareon® PanOptix® Trifocal IOL, which can correct up to 3.00-D in the corneal plane.<sup>9</sup>

**Dr. Loh:** Assuming that the eye is healthy, I believe that most patients will benefit from a trifocal IOL, particularly those who are active, drive, and work on a computer or perform other tasks that require intermediate vision. However, I have come to realize that less-active patients can also benefit from a trifocal like the Clareon® PanOptix® Trifocal IOL, because most of them appreciate being able to glance down at their phone or see the dashboard when they're driving. Many people who have presbyopia simply take it for granted that they will have to continue to have these gaps in their vision; offering these individuals decreased dependence on glasses is an important factor.

**Sheri Rowen, MD:** For my patients who present wanting a full range of vision, I consider the Clareon® PanOptix® Trifocal IOL if they have a healthy ocular surface and are not adamantly against the

prospect of experiencing halos in their nighttime vision. My Clareon® PanOptix® Trifocal IOL patients tend to be highly motivated to be spectacle independent. Even if the patient does a lot of nighttime driving, and he or she does not want to wear glasses, I might advise them that we can implant the Clareon® PanOptix® Trifocal IOL in one eye and another IOL, such as the Clareon® Vivity® IOL (Alcon Laboratories) in the fellow eye, if they are still concerned with halos or dysphotopsias for distance.<sup>10</sup> For instance, a recent patient who underwent bilateral cataract surgery chose to have the Clareon® PanOptix® IOL implanted in his nondominant eye and the Clareon® Vivity® IOL in the dominant eye.

**CRST:** How do you introduce the Clareon® PanOptix® Trifocal IOL to patients who are candidates?

**Dr. Desai:** A common approach most physicians take is talking to patients in an upward direction about the available options for IOLs, starting with basic monofocals and ascending to presbyopia-mitigating IOLs. However, this approach has the potential to cause the patient to skew toward the nonclinical issues, such as cost. My approach is to treat every patient as a PanOptix® patient until proven otherwise, because every patient ultimately wants the best quality and range of vision available. I have the same discussion with every patient who is undergoing cataract surgery and IOL implantation. I take into consideration the answers to the lifestyle questionnaire





## CASE STUDY

JENNIFER LOH, MD

### Presentation

A female patient, 55 years of age, presented to me with no relevant medical history, a healthy ocular surface, and high myopia. The patient had blurry vision in the right eye with worsened night vision and glare. She also had a large myopic shift in her contact lens prescription. Her UCVA at presentation was counting fingers (CF) OD, with a BCVA of 20/40, 20/200 with glare. She saw 20/200 uncorrected OS with 20/40 BCVA and glare. In both eyes, the pupillary reflex was normal, IOP was 19 mm Hg, and the anterior segment evaluation was normal. Lens evaluation showed a 3+ brunescent cataract OD with trace nuclear sclerosis OS. Both eyes showed posterior vitreous detachment (PVD) and her refraction was -19.00 +0.75 x 012 OD and -12.75 +0.50 x 019 OS. My team and I used the ARGOS Biometer (Alcon Laboratories, Inc.) to measure and plan IOL implantation with the Clareon® PanOptix® Trifocal IOL at 8.50 D to provide a predicted result of +0.12 D sphere.

### Surgical Plan

The patient had been a successful contact lens wearer for many years and planned to continue to wear a soft contact lens in her left eye after undergoing cataract surgery for the right eye. Prior to the cataract surgery, she wore single-vision contact lenses OU for distance and reported moving the lens to the side in her left eye when she wanted to see up close. We discussed surgical options and how the cataract surgery in her right eye with implantation of a multifocal IOL would provide reading vision, negating the need to manually move the lens in her left eye to see at near. As a younger patient undergoing cataract surgery, she still had an active lifestyle that included distance driving (day and night), computer use for work, and reading vision while using her cell phone and also for reading novels. We used femtosecond-assisted cataract surgery with phacoemulsification and placed the Clareon® PanOptix® Trifocal IOL in the capsular bag with centration on the visual axis per the pupillary light reflex (Figure).

### Postoperative Care and Outcomes

The patient's postoperative care instructions included a strict focus on dry eye management. She was given Omni drops (prednisolone/moxifloxacin/bromfenac; Osrx) TID for 1 month with Hylo artificial tears TID/QID, and she was instructed to use warm compresses and apply a lash and lid spray (hypochlorous acid, Avenova) as needed.

The patient was 20/20 -1.00 D OD postoperatively, with J1+ D for near vision. The eye's residual refractive error postoperatively was +0.25 D. The patient was extremely happy after surgery, even on the first postoperative day. She reported that she had never seen so well and was grateful that her lifelong high myopia was finally corrected without sacrificing her near vision.

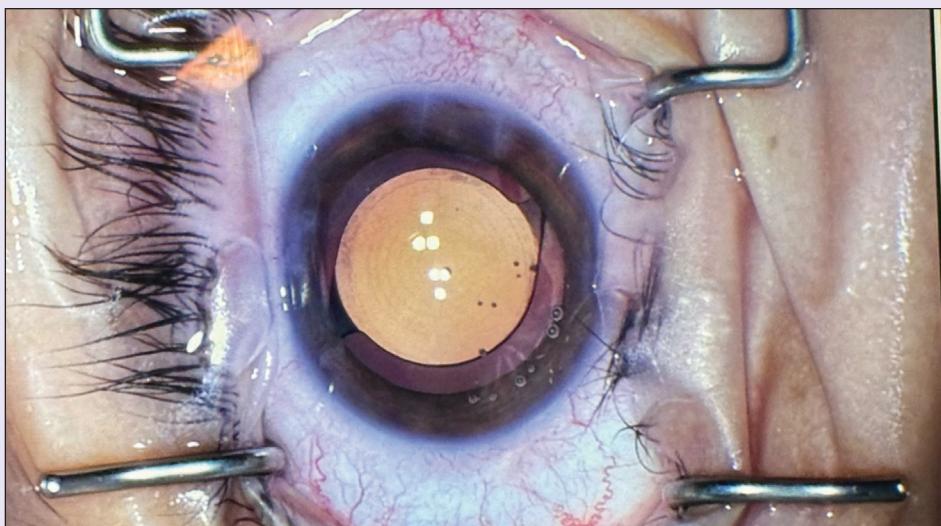


Figure. Dr. Loh centers the Clareon® PanOptix® Trifocal IOL in the eye of a high myope during implantation.

that we give to all of our patients who are undergoing any vision-correcting procedure. Some examples of questions we ask are whether they drive, use a computer at home or work, or have hobbies that require close-up vision. I will also ask if they do a lot of nighttime driving, as I will have to counsel them on the possible side effects of dysphotopsia,

as previously discussed. While the conversation might follow a predictable path, ultimately the patient will perceive the lens recommendation as truly personalized for them.

The benefits of the Clareon® PanOptix® Trifocal IOL with ENLIGHTEN® optical technology make it an easy conversation in which to educate

patients who are good candidates for full spectacle independence.

**Dr. Loh:** I agree. Historically, many physicians have worried about patients with more analytical or demanding personalities being dissatisfied with multifocal IOLs. However, I have had very successful outcomes with even

the most high-maintenance patients. Patient education, along with setting reasonable expectations, is key to successful outcomes.

I tell patients that with this lens, they should have a very good range of functional vision, and that I expect them to be mostly free of glasses. I always use the phrase “mostly free,” because there may still be instances where they will need magnifiers, such as reading the tiny print on a medicine bottle or threading a small-eyed needle.

**Dr. Rowen:** I totally agree with Drs. Desai and Loh on those last points. I tell patients that after surgery, it may take a day or two for their vision to clear. But, most people can actually see at a good range as soon as the IOL has been implanted, and even better once the corneal swelling from the surgery has returned to normal. I also counsel patients to test the vision with their multifocal lenses at night 3 to 5 days after surgery to assess the level of initial dysphotopsias. Most visual phenomena do improve quite a bit with time, because of the neuroadaptation process. It may take a little longer for patients to realize the lens' full range of vision, but in my experience, this is not an issue.

**“PATIENT SATISFACTION WITH THE CLAREON® PANOPTIX® TRIFOCAL IOL HAS BEEN HIGH WITH MY PATIENTS, AROUND 99%.<sup>12</sup> I ATTRIBUTE THIS HIGH RATE OF SATISFACTION TO PATIENT EDUCATION AND THE HIGH-END TECHNOLOGY THAT I USE FOR IOL POWER CALCULATIONS AND FLACS.” - Robert F. Melendez, MD, MBA**



#### ADDRESSING HALOS AND CONTRAST SENSITIVITY

**CRST:** Some patients will experience glare and halos with this lens. How do you address this issue?

**Dr. Desai:** The Clareon® PanOptix® Trifocal IOL has a nonapodized surface across its entire 4.5-mm diffractive zone, which lends itself to equal light distribution across a variety of pupil sizes and lighting conditions. Perhaps more importantly, when combined with the ENLIGHTEN® technology that dedicates 50% of total light utilization

for distance, these optics seem to reduce dysphotopsias.<sup>7</sup>

At the end of the day, patients don't necessarily care about the mechanics of how an IOL works; they only care about the outcomes. I have patients tell me that after seeing the broad range of vision that they achieved with the Clareon® PanOptix® Trifocal IOL, they would recommend it to their friends and family. It's important, however, to discuss the dysphotopsia profile with patients ahead of time so that they are aware and expect it to some degree.

**Dr. Loh:** I discuss the potential for visual disturbances with the Clareon® PanOptix® Trifocal IOL, particularly when driving at night, but I refer to these as glare and halos. Thus, it's important to know if a particular patient does drive at night frequently, because it could change the discussion. Regardless, I set this expectation for all patients who are considering the Clareon® PanOptix® Trifocal IOL. The vast majority of my patients tell me that they are not that bothered by these visual phenomena, which makes sense, as we know that neuroadaptation plays a part in resolving the intensity of halos over time.<sup>11</sup>

In my experience with the Clareon® PanOptix® Trifocal IOL, the side effects have, in general, been minimal.

#### TAKE-HOME POINTS FOR THE CLAREON® PANOPTIX® TRIFOCAL IOL

- ▶ Full range of vision with exceptional clarity<sup>12,13</sup>
- ▶ ENLIGHTEN® optics optimize intermediate vision at a 60 cm (intermediate) focal point without comprising near and distance vision<sup>3,14</sup>
- ▶ The refractive structure allows the lens to transmit 88% of light to the retina at a 3-mm pupil size, producing the highest light utilization of any lens<sup>4</sup>
- ▶ The lens' 4.5-mm diffractive zone helps reduce dependence on pupil size in different lighting scenarios<sup>5</sup>
- ▶ The most advanced biomaterial on the market<sup>2</sup>
- ▶ Proprietary edge design to provide exceptional clarity<sup>15</sup>



**CRST:** Can you discuss point spread function and how it differs between the Clareon® PanOptix® Trifocal IOL and other multifocal IOLs, and what role it plays in visual disturbances?

**Dr. Melendez:** Point spread function is the amount of extra light that one can see next to an object. For instance, when looking at the moon, one might see a halo around the object itself. With the Clareon® PanOptix® Trifocal IOL, the point spread function and halo profile are very low compared to some of the other available multifocal IOLs (Figure 3).<sup>2,16,17</sup>

### PATIENT SATISFACTION

**CRST:** What has been your patients' overall satisfaction with the Clareon® PanOptix® Trifocal IOL?

**Dr. Melendez:** Patient satisfaction with the Clareon® PanOptix® Trifocal IOL has been high with my patients, around 99%.<sup>12</sup> I attribute this high rate of satisfaction to patient education and the high-end technology that I use for IOL power calculations and femtosecond-laser-assisted cataract surgery (FLACS). If the patient's ocular surface is unhealthy (eg, dry eye) or if the biometry readings are inaccurate, it is difficult to nail the outcome.

**Dr. Loh:** I have used the Clareon® PanOptix® Trifocal IOL in a high percentage of my patients' eyes. Out of the several hundred lenses I have implanted, I have never needed to explant a Clareon® PanOptix® Trifocal IOL; and I have only had to explant one AcrySof® PanOptix® Trifocal IOL due to the patient's dissatisfaction with the halos. The patient was 20/20, but she couldn't tolerate the halos, even 1 year after implantation. Every other PanOptix® Trifocal recipient has been satisfied with the visual quality and the acuity for near, intermediate, and distance vision.

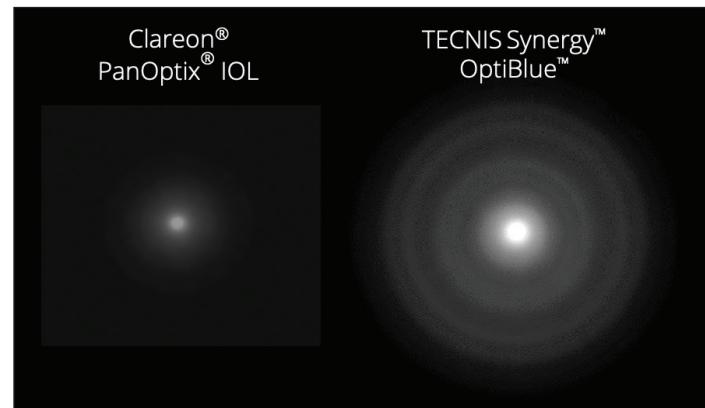


Figure 3. Clareon® PanOptix® Trifocal IOL and TECNIS Synergy™ OptiBlue™ IOL (Johnson & Johnson Vision) Optical Bench Halo Measurements (4.5-mm pupil size, 0.28-μm cornea).<sup>16,17</sup>

**Dr. Rowen:** The prior comments speak volumes to the need for proper preoperative counseling to manage patients' expectations. When they expect "halos and glare," they will not be frightened or disappointed when they notice them, and many find that today's multifocal technology is very manageable. Every one of my patients expects to have some dysphotopsias, and even with setting those expectations, I have a 95% satisfaction rate. ■

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Interested in learning more about Alcon's Clareon® Collection of IOLs? Scan the QR code below to watch related video content from Eyetube.



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**IMPORTANT PRODUCT INFORMATION - CLAREON® PANOPTIX® FAMILY OF TRIFOCAL HYDROPHOBIC IOLS**

**CAUTION:** Restricted by law to sale by or on the order of a physician.

**INDICATIONS:** The Clareon® PanOptix® Family of Trifocal Hydrophobic IOLs include Clareon® PanOptix® and Clareon® Panoptix® Toric and are indicated for primary implantation in the capsular bag in the posterior chamber of the eye for the visual correction of aphakia in adult patients, with less than 1 diopter of pre-existing corneal astigmatism, in whom a cataractous lens has been removed. The lens mitigates the effects of presbyopia by providing improved intermediate and near visual acuity, while maintaining comparable distance visual acuity with a reduced need for eyeglasses, compared to a monofocal IOL. In addition, the Clareon® PanOptix® Toric Trifocal IOL is indicated for the reduction of residual refractive astigmatism.

**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 emmetropia, and ensure that IOL centration is achieved. For the Clareon® PanOptix® Toric Trifocal IOLs, the lens should not be implanted if the posterior capsule is ruptured, if the zonules are damaged, or if a primary posterior capsulotomy is planned. Rotation can reduce astigmatic correction; if necessary lens repositioning should occur as early as possible prior to lens encapsulation. Some visual effects may be expected due to the superposition of focused and unfocused multiple images. These may include some perceptions of halos, radial lines around point sources of light (starbursts) under nighttime conditions, or glare, as well as other visual symptoms. As with other multifocal IOLs, there is a possibility that visual symptoms may be significant enough that the patient will request explant of the multifocal IOL. A reduction in contrast sensitivity as compared to that expected with a monofocal IOL may be experienced by some patients and may be more prevalent in low lighting conditions. Therefore, patients implanted with multifocal IOLs should exercise caution when driving at night or in poor visibility conditions. Patients should be advised that unexpected outcomes could lead to continued spectacle dependence or the need for secondary surgical intervention (e.g., intraocular lens replacement or repositioning). As with other multifocal IOLs, patients may need glasses when reading small print or looking at small objects. Posterior capsule opacification (PCO), may significantly affect the vision of patients with multifocal IOLs sooner in its progression than patients with monofocal IOLs. Prior to surgery, physicians should provide prospective patients with a copy of the Patient Information Brochure available from Alcon informing them of possible risks and benefits associated with the IOLs.

**ATTENTION:** Reference the Directions for Use labeling for each IOL for a complete listing of indications, warnings and precautions.

**ARGOS® Optical Biometer Important Product Information**

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

**INDICATIONS:** ARGOS® is a non-invasive, non-contact biometer based on swept-source optical coherence tomography (SS-OCT). The device is intended to acquire ocular measurements as well as perform calculations to determine the appropriate intraocular lens (IOL) power and type for implantation during intraocular lens placement.

**INTENDED USE:** The Reference Image functionality is intended for use as a preoperative and postoperative image capture tool. It is intended for use by ophthalmologists, physicians, and other eye-care professionals and may only be used under the supervision of a physician.

**WARNINGS / PRECAUTIONS:**

Only properly trained personnel with experience may operate the device and control software and interpret the results.

Factors that influence the measurement of patient's eyes are listed in the User Manual (Table 1): pseudophakic eye, wearing contact lenses, fixation problem, cornea opacity, non-intact cornea, refractive surgery, blood in the vitreous humor, retinal detachment, keratoconus, asteroid hyalosis, ambient light in the room, and deformation of the corneal shape. Please consider the guidance provided in Table 1 when you encounter these factors.

Optical Radiation - This device is equipped with a Class 1 laser light source.

**ATTENTION:** Refer to the ARGOS® User Manual for a complete description of proper use and maintenance, optical and technical specifications, as well as a complete list of warnings and precautions.